NIAGARA MOHAWK | PROCEDURE CHANGE EVALUATION (PCE) | PCE No. 07-764-91

1. Initiation

Procedure No.	Rev. No.	Title
N2-OP-72	04	Standby and Emergency A.C. Distribution System

Describe Change: Amend valve lineup (See copy attached) to reflect that breaker for 2ENS*SWG102-5 should be removed to coincide with "cubicle only" description on 12177-EE-M013-4 electrical print and N2-OSP-LOG-W001

Reason for Change:

☐ NCTS No. _____ ☐ DER No. _____ ☐ Mod/SDC No. _____

☐ Other (Explain): See "Describe Change" above

2. Method of Change

☑ Immediate Change

Change Is: ☑ Permanent ☐ One-Time Only

☐ Technical Change to TSR Procedure | ☑ NTSR Procedure OR Editorial Change

Pages Affected: 104

Initiator (Print & Initial): Michael Eros M.E. Date: 8/19/91

RPO App'l: (Both if Site) ☑ Accept ☐ Reject ☐ Redirect to Future

Date: 8/19/91 Date:

Safety Review Req'd: ☐ Yes TSR or Temp Alteration ☑ No NTSR or Editorial

☒ Future Change

Initiator (Print): James F. Emery

Mail Location	Phone	Date
Operations, Unit 2	x1237	8-19-91

Disposition

RPO Name: Alan DeGracia PPU

☑ Redirect to IMMEDIATE Change (To RPO)
☐ Inactivate Procedure (To PPU)
☐ Future Revision or New Procedure (To PPU)
☐ Reject (To PPU)

PPU

RPO Approval: Alan DeG Date: 8/19/91

Interim Approval (Technical TSR Changes Only)

Add'l Technical Review: ☐ Accept ☐ Reject ☐ N/A Date

SRO: ☐ Accept ☐ Reject Date

SRO (Site Only): ☐ Accept ☐ Reject ☐ N/A Date

Plant Manager (Technical TSR Changes Only)

Signature Date

Signature (Site Only) Date

Implementation

☐ Incorp'd Rev. _____, Proc No.: _____

☐ Cancel, ☐ Transfer to Proc. No.: _____

PU Closeout Date

9305070053

SM-5

SATELLITE MASTER COPY

NINE MILE POINT NUCLEAR STATION UNIT 2

OPERATING PROCEDURE

PROCEDURE NO. N2-OP-72

STANDBY AND EMERGENCY A.C. DISTRIBUTION SYSTEM

APPROVALS	SIGNATURES	DATE AND INITIALS REVISION 4	REVISION 5	REVISION 6
Operations Superintendent NMPNS Unit 2 R. G. Smith		12/14/88		
Station Superintendent NMPNS Unit 2 R. B. Abbott		12/13/88		
General Superintendent Nuclear Generation J. L. Willis		12/14/88		

Summary of Pages (Cont'd on Cover Sheet 2)

Revision 4 (Effective 12/14/88)

Pages	Date
ii-v,1,2,4-15,28,30,34,39, 43,46,47,49,51	May 1987
27	August 1987 (TCN-5)
32	October 1987 (TCN-6)
Periodic Review (12/19/90)	No Changes

NIAGARA MOHAWK POWER CORPORATION

THIS PROCEDURE NOT TO BE USED AFTER December 1992
SUBJECT TO PERIODIC REVIEW.

NINE MILE POINT NUCLEAR STATION UNIT #2

OPERATING PROCEDURE

PROCEDURE NO. N2-OP-72

STANDBY AND EMERGENCY A.C. DISTRIBUTION SYSTEM

Cover Sheet Continuation (page 2)

Summary of pages (Cont'd)

Pages	Date
53,55,57,59,60,62,64,66,71, 75,78,81,83,85,87,89,90,92,94	May 1988 (Reissue)
101-105	April 1990 (TCN-9)
3,106,107	November 1990 (TCN-10 and TCN-11)
26,29,31,33,37,38,41,42, 44,45,48,50,52,54,56,58,61, 63,65,69,70,73,74,76,77, 79,82,84,86,88,91,93, 95-100	January 1991 (TCN-12)
i,vi,16-25,25a,35,36,36a, 36b,40,67,68,68a,68b,72	May 1991 (TCN-13 and TCN-14)
80	August 1991 (PCE 16366)

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1.0 FSAR

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N/A

3.0 ELECTRICAL DIAGRAM

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LSK24-9.1A	Standby Station Service Supply Breaker Controls
LSK24-9.1B	Standby Station Service Supply Breaker Controls
LSK24-9.1C	Standby Station Service Supply Breaker Controls
LSK24-9.1D	Standby Station Service Supply Breaker Controls
LSK24-9.1E	Standby Station Service Supply Breaker Controls
LSK24-9.1F	Standby Station Service Supply Breaker Controls
LSK24-9.1G	Standby Station Service Supply Breaker Controls
LSK24-9.2A	Standby Generator Breaker Controls
LSK24-9.2B	Standby Generator Breaker Controls
LSK24-9.2C	Standby Generator Breaker Controls
LSK24-9.4A	Standby Diesel Generator Load Sequence
LSK24-9.4B	Standby Diesel Generator Load Sequence
LSK24-9.4C	Standby Diesel Generator Load Sequence
LSK24-9.4D	Standby Diesel Generator Load Sequence
LSK24-9.5A	Standby Station Service Supply Bus Feeder Breaker Control
LSK24-9.5B	Standby Station Service Supply Bus Feeder Breaker Control
LSK24-9.6A	4 KV Standby Station Service Typical Breaker Control
LSK24-9.6B	4 KV Standby Station Service Typical Breaker Control
LSK24-11.1A	Standby Station Service Load Center Supply Control Breaker
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b. Electrical Schematics

ESK5EGP01	Standby Diesel Generator 2EGS*EG1 ACB 101-1
ESK5EGP03	Standby Diesel Generator 2EGS*EG3 ACB 103-14
ESK5EGP05	ACB 101-N1 Control
ESK5EGP06	ACB 103-N1 Control
ESK5EJS01	Feeder to XFMR 2EJS*X1A ACB 101-14
ESK5EJS02	Feeder to XFMR 2EJS*X1B ACB 101-2
ESK5EJS03	Feeder to XFMR 2EJS*X3A ACB 103-1
ESK5EJS04	Feeder to XFMR 2EJS*X3B ACB 103-13
ESK5ENS02	4.16 KV Emergency Switchgear ACB 101-11 Control

REFERENCES (Cont.)

ESK5ENS03	4.16 KV Emergency Switchgear ACB 103-8 Control
ESK5ENS05	ACB 101-10 Control
ESK5ENS07	ACB 103-2 Control
ESK5ENS08	Bus 2ENS*SWG101 Normal Supply ACB 101-13
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ESK5ENS11	4.16 KV Switchgear 2ENS*SWG101 Protection
ESK5ENS12	4.16 KV Switchgear 2ENS*SWG101 Protection
ESK5ENS13	4.16 KV Switchgear 2ENS*SWG101 Protection
ESK5ENS14	Bus 2ENS*SWG101 Undervoltage and Load Sequencing
ESK5ENS15	4.16 KV Switchgear 2ENS*SWG103 Protection
ESK5ENS16	4.16 KV Switchgear 2ENS*SWG103 Protection
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ESK5ENS20	4.16 KV Switchgear 2ENS*SWG103 Protection
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ESK5ENS23	ACB 102-4 and ACB 102-5 Backup trip
ESK6EJS01	Unit Sub 2EJS*US1 Supply Breaker
ESK6EJS02	Unit Sub 2EJS*US1 Supply Breaker
ESK6EJS03	Unit Sub 2EJS*US3 Supply Breaker
ESK6EJS04	Unit Sub 2EJS*US3 Supply Breaker
ESK6EJS05	Bus 2EJS*US1 and 2EJS*US3 Undervoltage Protection
ESK7EGP01	Emergency Diesel Division I & II Computer Alarms
ESK7EJS01	Emergency Unit Sub Supply Breaker Inop Indication
ESK7EJS02	Emergency Switchgear Division I & II Computer Alarms
ESK7EJS03	Emergency Load Center Inop Division I & II
ESK7EJS04	600V Emergency Bus V and I Monitoring
ESK7EJS05	600V Emergency Bus V and I Monitoring
ESK7ENS01	4 KV Emergency Switchgear Inop Div. I & II
ESK7ENS02	4 KV Emergency Switchgear Division I & II Computer Alarms
ESK7ENS03	4 KV Emergency Switchgear Inop Division I & II
ESK7ENS04	4 KV Emergency Switchgear Inop Division I & II

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ESK7ENS05	4 KV Emergency Bus V and I Monitoring
ESK7ENS06	4 KV Emergency Bus V and I Monitoring
ESK7ENS07	4 KV HPCS Bus V and I Monitoring
ESK7ENS08	4 KV HPCS Bus V and I Monitoring
ESK8EGP01	Diesel Generator 2EGS*EG1 Relay and Metering
ESK8EGP02	Diesel Generator 2EGS*EG1 Relay and Metering
ESK8EGP03	Diesel Generator 2EGS*EG3 Relay and Metering
ESK8EGP04	Diesel Generator 2EGS*EG3 Relay and Metering
ESK8EGP05	Diesel Generator 2EGS*EG1 Protection
ESK8EGP06	Diesel Generator 2EGS*EG1 Protection
ESK8EGP07	Diesel Generator 2EGS*EG3 Protection
ESK8EGP08	Diesel Generator 2EGS*EG3 Protection
ESK8EGP09	Diesel Generator 2EGS*EG1 Relay and Metering
ESK8EGP10	Diesel Generator 2EGS*EG3 Relay and Metering
ESK8EGS01	Diesel Generator 2EGS*EG1 Control
ESK8EGS02	Diesel Generator 2EGS*EG3 Control
ESK8EJS01	Feeder to XFMR 2EJS*X1A & X1B Relay and Metering
ESK8EJS02	Feeder to XFMR 2EJS*X3A & X3B Relay and Metering
ESK8EJS03	600V Emergency Bus V and I Monitoring
ESK8EJS04	600V Emergency Bus V and I Monitoring
ESK8ENS01	4 KV Emergency Switchgear 2ENS*SWG101 Relay and Metering
ESK8ENS02	4 KV Emergency Switchgear 2ENS*SWG103 Relay and Metering
ESK8ENS03	4 KV Emergency Switchgear 2ENS*SWG101 Relay and Metering
ESK8ENS04	4 KV Emergency Switchgear 2ENS*SWG103 Relay and Metering
ESK8SYD01	Synchronizing Diesel Generators
ESK8SYD02	Synchronizing Diesel Generator Panels
ESK7VBS01	UPS2A/2B Current/Voltage to ERF Computer
ESK8VBS01	UPS2A/2B Current/Voltage to Opt. Isolators

3

REFERENCES (Cont.)

C. Electrical One Line Drawings

EE-1B	13.8 KV Main One Line - Reserve and Normal Station Service XFMR
EE-1C	Main One Line - Auxiliary XFMR Normal 4 KV & 600V
EE-1D	Main One Line - Emergency 4 KV & 600V System
EE-1Q	4.16 KV One Line - Emergency Bus 2ENS*SWG 101
EE-1R	4.16 KV One Line - Emergency Bus 2ENS*SWG 103
EE-1Z	600V One Line - Emergency Bus 2EJS*US1 & 2EJS*US3
EE-1AQ	600V One Line - 2EHS*MCC101 and 2EHS*MCC301
EE-1AR	600V One Line - 2EHS*MCC102
EE-1AT	600V One Line - 2EHS*MCC103
EE-1AU	600V One Line - 2EHS*MCC103
EE-1AV	600V One Line - 2EHS*MCC302
EE-1AW	600V One Line - 2ENS*MCC302
EE-1AX	600V One Line - 2EHS*MCC303
EE-1AY	600V One Line - 2EHS*MCC303
EE-1CA	600V One Line - Emergency and Vital Bus Power Distribution
EE-M01A	Plant Master One Line - Normal Power Distribution
EE-M01B	Plant Master One Line - Emergency Power Distribution
EE-M01C	Plant Master One Line - Normal 600V & 120V AC
EE-M01D	Plant Master One Line - Normal 600V & 120V AC
EE-M01E	Plant Master One Line - Emergency 600V & 120V AC
EE-M01F	Plant Master One Line - Emergency and Normal 125V & 24/48V DC
EE-M01G	Plant Master One Line - Normal 125V DC
EE-1CB	Emerg. 600V Panel 2LAC*PNL100A, 2LAC*PNL300B
EE-1CC	Emerg. 600V Panel 2EJS*PNL100A, 2EJS*PNL300B
EE-1CM	Emerg. 125V DC Switchgear 2BYS*SWG002A
EE-1CN	Emerg. 125V DC Switchgear 2BYS*SWG002B
EE-1P	4160V One Line Diagram Normal Bus 2NNS-SWG016, SWG017, SWG018

3

REFERENCES (Cont.)

D. GE Drawings and Diagrams

1. Logic Diagrams

828E156, (MPL E22-1040) HPCS Power Supply

2. Electrical Schematics

807E183TY (MPL E22-1070) HPCS Power Supply

3. Electrical One Line Drawings

731E302AF (MPL E22-1060) HPCS System

4.0 INSTRUCTION MANUAL

NMP2-E014T - AC and DC Panel Boards
NMP2-E015F - 4.16 KV Metal Clad Switchgear
NMP2-E015N - 600V AC Load Centers and 125V DC Switchgear, Grounding Disconnect Switch and 13.8 KV 1,000-MVA Class 1E Metal Clad Switchgear
NMP2-E015Q - 600V AC and 125V DC Motor Control Centers for Normal Duty and Standby Duty
NMP2-E031A - Standby Diesel Generator Systems
NMP2-P800A - NSSS Contract - GE
NMP2-E035A - Uninterruptible Power Supplies, Rev. 1 Including Add. 1 to 5

5.0 COMMITMENTS

Sequence Number	Commitment Number	Description
1	NCTS 502810-01	Clarify Response to Local Trouble Alarms for UPS2A and 2B

TCN- 1

STANDBY AND EMERGENCY A.C. DISTRIBUTION SYSTEM

A. TECHNICAL SPECIFICATIONS

1.0 Section 3/4.8 - Electrical Power Systems

1.1 3/4.8.1, 3/4.8.2 and 3/4.8.3 A.C. Sources, D.C. Sources and On-Site Power Distribution Systems

B. SYSTEM DESCRIPTION

1.0 System Purpose or Function

The purpose of the system is to provide reliable power to safety related loads and vital buses. Reliability is achieved by multiple sources; automatic switching; and electrical, and physical independence and separation. In an emergency, the system automatically isolates itself from all except safety related loads, automatically starts safety related loads, and automatically blocks manual loading activities until safety related loads are energized.

2.0 General Description

The emergency distribution system is divided among three color coded divisions. Equipment, cables, and raceways are identified with color coded markers. Division I is green, Division II is yellow, and Division III is purple. Equipment in Divisions I and II consist of one 4160V switch gear lineup, one unit substation (load center), three motor control centers, distribution panels, drytype transformers, and an uninterruptible power supply.

Division III equipments are, one 4160V switchgear lineup, a transformer, one motor control center, drytype transformers, and distribution panels. Division III is HPCS dedicated. Divisions I and III are normally supplied from reserve station service transformer A. Division II is normally supplied by reserve station service transformer B. Alternate offsite power source is the auxiliary boiler transformer for Division I and II. Division III alternate offsite power supply is from reserve station service transformer B. Each of the divisional buses is supplied by a diesel generator automatically, in the event of loss of, or sustained degraded voltage from the offsite power supply.

Load centers and Division I and II motor control centers have two feeders, and motor control centers use kirk-key interlocks. The key is captive unless the breaker is open, and the breaker cannot close without a key. For MCC's with a tie breaker, two keys are provided for the three breakers. For MCC's with no tie breaker, one key is provided for the two feeders. Uninterruptible power supplies are provided with three feeders, including a DC feed from divisional batteries.

B. SYSTEM DESCRIPTION (Cont'd)

3.0 Summary of Operation

3.1 The system is automatic, and self diagnostic after start-up, and operator action is not required for normal operation. Some of the operational features are discussed here even though operator participation in their evolution is blocked. 3

3.2 Stub Buses

Two normal station power buses may be connected to the Division I and II buses to power loads such as turning gear oil pump and lift pumps in the event of loss of offsite power, and loss of station power. These "stub" buses are separated automatically from emergency buses in the event of loss of coolant accident. This automatic separation can be prevented by operating a keylocked "LOCA BYPASS" switch on Control Room panel 852.

3.3 Load Shedding

In the event of loss of offsite power, or sustained degraded voltage, or a loss of coolant accident, the Division I and II emergency buses automatically separate from certain loads, and manual loading is blocked for approx. 1 minute. A loss of coolant accident causes separation of stub buses from the emergency buses. Loss of offsite power, or sustained degraded voltage (also offsite) causes all loads and feeders except load centers to separate from emergency buses. Loss of offsite power and sustained degraded offsite voltage trips occur when two out of three undervoltage, or degraded voltage relays operate, or two out of three test switches are operated, and a certain time delay elapses. Load shedding will not occur automatically for undervoltage or degraded voltage, if the bus is powered by the Diesel Gen. alone. Division III sheds no loads. Load shedding may be prevented by operating a keylocked switch on Control Room panel 852. Attempts to start a load while the bus is blocked will bring in a "Fail-to-Start" annunciator.

3.4 Load Sequencing

To maintain emergency bus voltage at an acceptable level, loads are applied to the bus sequentially, following load shedding. After a loss-of-offsite-power load shed, one service water pump is selected, and started. After a loss of coolant accident load shed, RHS and CSL pumps are started sequentially. Manual loading of the bus is blocked for approx. 1 min. following loss of power, and/or loss of coolant accident signals, and the timing sequence is such that loads will not be started simultaneously in any event.

B. SYSTEM DESCRIPTION (Cont'd)

3.5 Uninterruptible Power Supply

UPS provides divisional 120VAC loads from any of 3 sources, and transfers loads upon loss of a feeder by make-before-break static switching. Normal supplies are from divisional emergency distribution panels, maintenance supplies are from divisional emergency lighting panels, and divisional batteries provide DC. Upon loss of normal supply, the UPS transfers its loads to DC. Upon loss of normal and DC supplies, the UPS transfers its loads to its maintenance supply. Upon return of normal supply, the UPS will switch loads from DC to the normal supply. Once loads are transferred to maintenance supply, they must be manually returned to normal. FCN-11

C. OPERATING REQUIREMENTS

1.0 Prerequisites

1.1 Emergency D.C. Distribution system N2-OP-74A

1.2 HPCS 125V D.C. System N2-OP-74B

1.3 Standby Diesel Generators N2-OP-100A

1.4 HPCS Diesel Generator N2-OP-100B

1.5 Station Electrical Feed and 115 KV Switchyard N2-OP-70

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 fuses must be removed where applicable with the breaker in the "tripped" condition.

2.0 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.

3.0 Placing keylock switch 43LS (at the switchgear) in the ON position will prevent the undervoltage start of the emer. diesel.

4.0 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.

5.0 To meet seismic qualification requirements, ensure all 4160V switchgear cubicle doors are fully dogged down and all 600V switchgear/load center cubicle doors have thumb screws fully engaged.

E. START UP PROCEDURE

1.0 To place de-energized 4.16 KV emergency bus 2ENS*SWG101 in service from normal feed, reserve station service transformer 2RTX-XSR1A via 4.16 KV bus 2NNS-SWG016:

a. At panel 852, lockout emergency diesel generator 2EGS*EG1 output, breaker 101-1.

b. At panel 852, lockout feed to auxiliary transformer 2EJS*X1B (600V feed to emergency load center 2EJS*US1), breaker 101-2.

c. At panel 852, lockout 4.16 KV feed from 2NNS-SWG018 to emergency bus 2ENS*SWG101, breaker 101-10 (cubicle only).

d. At panel 852, lockout 4.16 KV feed to 4.16 KV bus 2NNS-SWG014, breaker 101-11.

e. At panel 852, lockout 4.16 KV feed from 2NNS-SWG016 to emergency bus 2ENS*SWG101, breaker 101-13.

f. At panel 852, lockout feed to auxiliary transformer 2EJS*X1A (600V feed to emergency load center 2EJS*US1), breaker 101-14.

g. At panel 601, lockout the following motor breakers:
Residual Heat Removal Pump A - 2RHS*P1A
Service Water Pump A - 2SWP*P1A
Service Water Pump C - 2SWP*P1C
Service Water Pump E - 2SWP*P1E
Low Pressure Core Spray Pump - 2CSL*P1

h. At panel 873, lockout the motor breaker for spent fuel cooling pump A - 2SFC*P1A

i. At panel 852, check closed 4.16 KV feed to emergency 2ENS*SWG101 and 2ENS*SWG102, breaker 16-2. Check voltage on bus 2NNS-SWG016 as nominally 4.16 KV (see OP 71).

j. At emergency bus 2ENS*SWG101, rack in normal feed to bus 2ENS*SWG101, breaker 101-13, as required. Check the following lockout relays reset to assure closing permissives satisfied:

Cubicle 101-10	86A-2ENSX02
	86B-2ENSX02
Cubicle 101-13	86A-2ENSX01
	86B-2ENSX01
Cubicle 101-N2	86C-2ENSX01
	86C-2ENSX02

k. At emergency bus 2ENS*SWG101 check fuses in place and potential transformer compartment 101-13 doors closed.

l. At panel 852, turn on synch switch across 4.16 KV bus 2NNS-SWG016 and emergency bus 2ENS*SWG101, Breaker 101-13.

m. At panel 852, Bus 2ENS*SWG101, close breaker 101-13, normal 4.16 KV feed from Bus 2NNS-SWG016. Check voltage on Bus 2ENS*SWG101 as nominally 4.16 KV.

NOTE: If a breaker is in the racked in position in cubicle 101-10 Breaker 101-13 will not close.

n. At panel 852, turn off synch switch across 4.16 KV bus 2NNS-SWG016 and emergency bus 2ENS*SWG101, breaker 101-13.

o. Lineup and place in service all loads off of emergency bus 2ENS*SWG101, as warranted by plant conditions, in accordance with their applicable operating procedures.

p. At panel 852 remove the diesel generator breaker control switch from pull-to-lock. 3

2.0 To energize 4.16 KV/600V auxiliary transformers 2EJS*X1A and 2EJS*X1B and place emergency load center 2EJS*US1 in service:

a. At panel 852, lockout emergency bus 2ENS*SWG101, 4.16 KV feed to auxiliary transformer 2EJS*X1A, breaker 101-14.

b. At panel 852, lockout emergency bus 2ENS*SWG101, 4.16 KV feed to auxiliary transformer 2EJS*X1B, breaker 101-2.

c. At panel 852, lockout 600V supply breaker from auxiliary transformer 2EJS*X1A, breaker 3B.

d. At panel 852, lockout 600V supply breaker from auxiliary transformer 2EJS*X1B, breaker 9B.

e. At panel 852, check voltage on emergency bus 2ENS*SWG101 as nominally 4.16 KV

f. At emergency bus 2ENS*SWG101, rack in supply breaker to auxiliary transformer 2EJS*X1A, breaker 101-14. Check lockout relay 86-2EJSX03 reset.

g. At emergency bus 2ENS*SWG101, rack in supply breaker to auxiliary transformer 2EJS*X1B, breaker 101-2. Check lockout relay 86-2EJSX04 reset.

h. At panel 852, close supply breaker to auxiliary transformer 2EJS*X1A, breaker 101-14.

i. At panel 852, close supply breaker to auxiliary transformer 2EJS*X1B, breaker 101-2.

j. At emergency load center 2EJS*US1, rack in 600V supply breaker from auxiliary transformer 2EJS*X1A, breaker 3B.

k. At emergency load center 2EJS*US1, rack in 600V supply breaker from auxiliary transformer 2EJS*X1B, breaker 9B.

l. At panel 852, close 600V supply breaker from auxiliary transformer 2EJS*X1A, breaker 3B. Check voltage on emergency load center 2EJS*US1 as nominally 600V.

NOTE: Auxiliary transformer 2EJS*X1B, 600V supply breaker to emergency load center 2EJS*US1, breaker 9B, will be the alternate feed.

3.0 To energize 600V emergency motor control center 2EHS*MCC101:

a. At emergency load center 2EJS*US1, check open supply breaker to 2EHS*MCC101, breaker 4B.

b. At emergency load center 2EJS*US1, check open supply breaker to 2EHS*MCC101, breaker 9C.

c. At 2EHS*MCC101, check open breaker 1A, 600V supply from emergency load center 2EJS*US1 (breaker 4B).

d. At 2EHS*MCC101, check open breaker 10A, 600V supply from emergency load center 2EJS*US1 (breaker 9C).

e. Check voltage on emergency load center 2EJS*US1 as nominally 600V.

f. At emergency load center 2EJS*US1, rack in supply breaker to 2EHS*MCC101, breaker 4B, as required.

g. At emergency load center 2EJS*US1, rack in supply breaker to 2EHS*MCC101, breaker 9C, as required.

h. At emergency load center 2EJS*US1, close supply breaker to 2EHS*MCC101, breaker 4B.

i. At emergency load center 2EJS*US1, close supply breaker to 2EHS*MCC101, breaker 9C.

j. At 2EHS*MCC101, close breaker 1A, 600V supply from emergency load center 2EJS*US1 (breaker 4B). Check voltage on 2EHS*MCC101 as nominally 600V.

NOTE 1: At 2EHS*MCC101, breaker 10A, the 600V supply from emergency load center 2EJS*US1 (breaker 9C), will be the alternate source.

NOTE 2: The motor control center supply breakers will be lined up utilizing the kirk-key control system.

4.0 To energize 600V Emergency Motor Control Center 2EHS*MCC102:

a. At emergency load center 2EJS*US1, check open supply breaker to 2EHS*MCC102, bus A, breaker 3C.

b. At emergency load center 2EJS*US1, check open supply breaker to 2EHS*MCC102, bus C, breaker 8C.

c. At 2EHS*MCC102, bus A, check open breaker 1A, 600V supply from emergency load center 2EJS*US1 (breaker 3C).

d. At 2EHS*MCC102, bus C, check open breaker 22A, 600V supply from emergency load center 2EJS*US1 (breaker 8C).

e. At 2EHS*MCC102, bus C, check open tie breaker 13A between bus A and bus C.

f. Check voltage on emergency load center 2EJS*US1 as nominally 600V.

g. At emergency load center 2EJS*US1, rack in supply breaker to 2EHS*MCC102, bus A, breaker 3C.

h. At emergency load center 2EJS*US1, rack in supply breaker to 2EHS*MCC102, bus C, breaker 8C.

CAUTION: Before closing supply breaker reverify Bus A to C tie breaker (13A) is open.

i. At emergency load center 2EJSS*US1, close supply breaker to 2EHS*MCC102, bus A, breaker 3C.

j. At emergency load center 2EJS*US1, close supply breaker to 2EHS*MCC102, bus C, breaker 8C.

k. At 2EHS*MCC102 bus A, close breaker 1A, 600V supply from emergency load center 2EJS*US1 (breaker 3C). Check voltage on 2EHS*MCC102 bus A as nominally 600V

l. At 2EHS*MCC102 bus C, close breaker 22A, 600V supply from emergency load center 2EJS*US1 (breaker 8C). Check voltage on 2EHS*MCC102 bus C as nominally 600V.

NOTE 1: At 2EHS*MCC102, tie breaker 13A will be the alternate source for either bus A or bus C.

NOTE 2: The motor control center supply breakers and tie breaker will be lined up utilizing the kirk-key control system.

5.0 To energize 600V emergency motor control center 2EHS*MCC103:

a. At emergency load center 2EJS*US1, check open supply breaker to 2EHS*MCC103, bus A, breaker 5D.

b. At emergency load center 2EJS*US1, check open supply breaker to 2EHS*MCC103, bus C, breaker 7D.

c. At 2EHS*MCC103, bus A, check open breaker 1A, 600V supply from emergency load center 2EJS*US1, (Breaker 5D).

d. At 2EHS*MCC103, bus C, check open breaker 27A, 600V supply from emergency load center 2EJS*US1 (breaker 7D).

e. At 2EHS*MCC103, bus C, check open tie breaker 16A between bus A and bus C.

f. Check voltage on emergency load center 2EJS*US1 as nominally 600V.

g. At emergency load center 2EJS*US1, rack in supply breaker to 2EHS*MCC103, bus A, breaker 5D.

h. At emergency load center 2EJS*US1, rack in supply breaker to 2EHS*MCC103, bus C, breaker 7D.

CAUTION: Before closing supply breaker, reverify Bus A to C tie breaker (16A) is open.

i. At emergency load center 2EJS*US1, close supply breaker to 2EHS*MCC103, bus A, breaker 5D.

j. At emergency load center 2EJS*US1, close supply breaker to 2EHS*MCC103, bus C, breaker 7D.

k. At 2EHS*MCC103, bus A, close breaker 1A, 600V supply from emergency load center 2EJS*US1 (breaker 5D). Check voltage on 2EHS*MCC103, bus A, as nominally 600V.

l. At 2EHS*MCC103, bus C, close breaker 27A, 600V supply from emergency load center 2EJS*US1 (breaker 7D). Check voltage on 2EHS*MCC103, bus C, as nominally 600V.

NOTE 1: At 2EHS*MCC103, tie breaker 16A will be the alternate source for either bus A or bus C.

NOTE 2: The motor control center supply breakers and tie breaker will be lined up utilizing the kirk-key control system.

6.0 To place de-energized 4.16 KV emergency bus 2ENS*SWG103 in service from normal feed, reserve station service transformer 2RTX-XSR1B via 4.16 KV bus 2NNS-SWG017:

a. At panel 852, lockout emergency diesel generator 2EGS*EG3 output, breaker 103-14.

b. At panel 852, lockout feed to auxiliary transformer 2EJS*X3B (600V feed to emergency load center 2EJS*US3), breaker 103-13.

c. At panel 852, lockout 4.16 KV feed from 2NNS-SWG018 to emergency bus 2ENS*SWG103, breaker 103-2 (cubicle only).

d. At panel 852, lockout 4.16 KV feed to 4.16 KV bus 2NNS-SWG015, breaker 103-8.

e. At panel 852, lockout 4.16 KV feed from 2NNS-SWG017 to emergency bus 2ENS*SWG103, breaker 103-4.

f. At panel 852, lockout feed to auxiliary transformer 2EJS*X3A (600V feed to emergency load center 2EJS*US3), breaker 103-1.

g. At panel 601, lockout the following motor breakers:

Residual Heat Removal Pump B - 2RHS*P1B
Residual Heat Removal Pump C - 2RHS*P1C
Service Water Pump B - 2SWP*P1B
Service Water Pump D - 2SWP*P1D
Service Water Pump F - 2SWP*P1F

h. At panel 875, lockout the motor breaker for spent fuel cooling pump B - 2SFC*P1B

i. At panel 852, check closed 4.16 KV feed to emergency 2ENS*SWG103 and 2ENS*SWG102, breaker 17-2. Check voltage on bus 2NNS-SWG017 as nominally 4.16 KV (see OP 71).

j. At emergency bus 2ENS*SWG103, rack in normal feed to bus 2ENS*SWG103 breaker 103-4, as required. Check the following lockout relays reset to assure closing permissives satisfied:

Cubicle 103-2	86A-2ENSY02
	86B-2ENSY02
Cubicle 103-4	86A-2ENSY01
	86B-2ENSY01
Cubicle 103-N2	86C-2ENSY01
	86C-2ENSY02

k. At emergency bus 2ENS*SWG103 check fuses in place and potential transformer compartment 103-4 doors closed.

l. At panel 852, turn on synch switch across 4.16 KV Bus 2NNS-SWG017 and emergency bus 2ENS*SWG103, Breaker 103-4.

m. At panel 852, Bus 2ENS*SWG103, close breaker 103-4, normal 4.16 KV feed from Bus 2NNS-SWG017. Check voltage on Bus 2ENS*SWG103 as nominally 4.16 KV.

n. At panel 852, turn off synch switch across 4.16 KV bus 2NNS-SWG017 and emergency bus 2ENS*SWG103, breaker 103-4.

o. Lineup and place in service all loads off of emergency bus 2ENS*SWG103, as warranted by plant conditions, in accordance with their applicable operating procedures.

p. At panel 852 remove the diesel generator breaker control switch from pull-to-lock. 3

7.0 To energize 4.16 KV/600V auxiliary transformers 2EJS*X3A and 2EJS*X3B and place emergency load center 2EJS*US3 in service:

a. At panel 852, lockout emergency bus 2ENS*SWG103, 4.16 KV feed to auxiliary transformer 2EJS*X3A, breaker 103-1.

b. At panel 852, lockout emergency bus 2ENS*SWG103, 4.16 KV feed to auxiliary transformer 2EJS*X3B, breaker 103-13.

c. At panel 852, lockout 600V supply breaker from auxiliary transformer 2EJS*X3A, breaker 3B.

d. At panel 852, lockout 600V supply breaker from auxiliary transformer 2EJS*X3B, breaker 9B.

e. At panel 852, check voltage on emergency bus 2ENS*SWG103 as nominally 4.16 KV

f. At emergency bus 2ENS*SWG103, rack in supply breaker to auxiliary transformer 2EJS*X3A, breaker 103-1. Check lockout relay 86-2EJSY03 reset.

g. At emergency bus 2ENS*SWG103, rack in supply breaker to auxiliary transformer 2EJS*X3B, breaker 103-13. Check lockout relay 86-2EJSY04 reset.

h. At panel 852, close supply breaker to auxiliary transformer 2EJS*X3A, breaker 103-1.

i. At panel 852, close supply breaker to auxiliary transformer 2EJS*X3B, breaker 103-13.

j. At emergency load center 2EJS*US3, rack in 600V supply breaker from auxiliary transformer 2EJS*X3A, breaker 3B.

k. At emergency load center 2EJS*US3, rack in 600V supply breaker from auxiliary transformer 2EJS*X3B, breaker 9B, as required.

l. At panel 852, close 600V supply breaker from auxiliary transformer 2EJS*X3A, breaker 3B. Check voltage on emergency load center 2EJS*US3 as nominally 600V.

NOTE: Auxiliary transformer 2EJS*X3B, 600V supply breaker to emergency load center 2EJS*US3, breaker 9B, will be the alternate feed.

8.0 To energize 600V emergency motor control center 2EHS*MCC301:

a. At emergency load center 2EJS*US3, check open supply breaker to 2EHS*MCC301, breaker 4B.

b. At emergency load center 2EJS*US3, check open supply breaker to 2EHS*MCC301, breaker 9C.

c. At 2EHS*MCC301, check open breaker 1A, 600V supply from emergency load center 2EJS*US3 (breaker 4B).

d. At 2EHS*MCC301, check open breaker 8A, 600V supply from emergency load center 2EJS*US3 (breaker 9C).

e. Check voltage on emergency load center 2EJS*US3 as nominally 600V.

f. At emergency load center 2EJS*US3, rack in supply breaker to 2EHS*MCC301, breaker 4B, as required.

g. At emergency load center 2EJS*US3, rack in supply breaker to 2EHS*MCC301, breaker 9C, as required.

h. At emergency load center 2EJS*US3, close supply breaker to 2EHS*MCC301, breaker 4B.

i. At emergency load center 2EJS*US3, close supply breaker to 2EHS*MCC301, breaker 9C.

j. At 2EHS*MCC301, close breaker 1A, 600V supply from emergency load center 2EJS*US3 (breaker 4B). Check voltage on 2EHS*MCC301 as nominally 600V.

NOTE 1: At 2EHS*MCC301, breaker 8A, the 600V supply from emergency load center 2EJS*US3 (breaker 9C), will be the alternate source.

NOTE 2: The motor control center supply breakers will be lined up utilizing the kirk-key control system.

9.0 To energize 600V Emergency Motor Control Center 2EHS*MCC302:

a. At emergency load center 2EJS*US3, check open supply breaker to 2EHS*MCC302, bus B, breaker 3C.

b. At emergency load center 2EJS*US3, check open supply breaker to 2EHS*MCC302, bus D, breaker 8C.

c. At 2EHS*MCC302, bus B, check open breaker 1A, 600V supply from emergency load center 2EJS*US3 (breaker 3C).

d. At 2EHS*MCC302, bus D, check open breaker 22A, 600V supply from emergency load center 2EJS*US3 (breaker 8C).

e. At 2EHS*MCC302, bus D, check open tie breaker 11A between bus B and bus D.

f. Check voltage on emergency load center 2EJS*US3 as nominally 600V.

g. At emergency load center 2EJS*US3, rack in supply breaker to 2EHS*MCC302, bus B, breaker 3C.

h. At emergency load center 2EJS*US3, rack in supply breaker to 2EHS*MCC302, bus D, breaker 8C.

CAUTION Before closing supply breaker, reverify Bus B to D tie breaker (11A) is open.

i. At emergency load center 2EJS*US3, close supply breaker to 2EHS*MCC302, bus B, breaker 3C.

j. At emergency load center 2EJS*US3, close supply breaker to 2EHS*MCC302, bus D, breaker 8C.

k. At 2EHS*MCC302 bus B, close breaker 1A, 600V supply from emergency load center 2EJS*US3 (breaker 3C). Check voltage on 2EHS*MCC302 bus B as nominally 600V

l. At 2EHS*MCC302 bus D, close breaker 22A, 600V supply from emergency load center 2EJS*US3 (breaker 8C). Check voltage on 2EHS*MCC302 bus D as nominally 600V.

NOTE 1: At 2EHS*MCC302, tie breaker 11A will be the alternate source for either bus B or bus D.

NOTE 2: The motor control center supply breakers and tie breaker will be lined up utilizing the kirk-key control system.

10.0 To energize 600V emergency motor control center 2EHS*MCC303:

a. At emergency load center 2EJS*US3, check open supply breaker to 2EHS*MCC303, bus B, breaker 5D.

b. At emergency load center 2EJS*US3, check open supply breaker to 2EHS*MCC303, bus D, breaker 7D.

c. At 2EHS*MCC303, bus B, check open breaker 1A, 600V supply from emergency load center 2EJS*US3, (Breaker 5D).

d. At 2EHS*MCC303, bus D, check open breaker 24A, 600V supply from emergency load center 2EJS*US3 (breaker 7D).

e. At 2EHS*MCC303, bus D, check open tie breaker 13A between bus B and bus D.

f. Check voltage on emergency load center 2EJS*US3 as nominally 600V.

g. At emergency load center 2EJS*US3, rack in supply breaker to 2EHS*MCC303, bus B, breaker 5D.

h. At emergency load center 2EJS*US3, rack in supply breaker to 2EHS*MCC303, bus D, breaker 7D.

CAUTION: Before closing supply breaker, reverify Bus B to D tie breaker (13A) is open.

i. At emergency load center 2EJS*US3, close supply breaker to 2EHS*MCC303, bus B, breaker 5D.

j. At emergency load center 2EJS*US3, close supply breaker to 2EHS*MCC303, bus D, breaker 7D.

k. At 2EHS*MCC303, bus B, close breaker 1A, 600V supply from emergency load center 2EJS*US3 (breaker 5D). Check voltage on 2EHS*MCC303, bus B, as nominally 600V.

l. At 2EHS*MCC303, bus D, close breaker 24A, 600V supply from emergency load center 2EJS*US3 (breaker 7D). Check voltage on 2EHS*MCC303, bus D, as nominally 600V.

NOTE 1: At 2EHS*MCC303, tie breaker 13A will be the alternate source for either bus B or bus D.

NOTE 2: The motor control center supply breakers and the tie breaker will be lined up utilizing the kirk-key control system.

11.0 To place de-energized 4.16 KV emergency bus 2ENS*SWG102 in service from normal feed, reserve station service transformer 2RTX-XSR1A, via 4.16 KV bus 2NNS-SWG016:

a. At panel 852, lockout emergency diesel generator 2EGS*EG2 output, breaker 102-1.

b. At panel 601, lockout the motor breaker for the high pressure core spray pump, 2CSH*P1.

c. At panel 852, lockout feed to auxiliary transformer 2EJS*X2 (600V feed to emergency motor control center 2EHS*MCC201), breaker 102-3.

d. At panel 852, lockout 4.16 KV feed from 2NNS-SWG016 to emergency bus 2ENS*SWG102, breaker 102-4.

e. At panel 852, lockout 4.16 KV feed from 2NNS-SWG017 to emergency bus 2ENS*SWG102, breaker 102-5.

f. At panel 852, check closed 4.16 KV feed to emergency buses 2ENS*SWG101 and 2ENS*SWG102, breaker 16-2. Check voltage on bus 2NNS-SWG016 as nominally 4.16 KV (see OP 71).

g. At emergency bus 2ENS*SWG 102, rack in normal feed to bus 2ENS*SWG102, breaker 102-4. Check the following lockout relays reset to assure closing permissives satisfied:

Breaker 102-4	86NA
	86NB
Breaker 102-5	86NA
	86NB

h. At emergency bus 2ENS*SWG102 check fuses in place and potential transformer compartment 102-1 doors closed.

i. At panel 852, turn on synch switch across 4.16 KV bus 2NNS-SWG016 and emergency bus 2ENS*SWG102, breaker 102-4.

j. At panel 852, bus 2ENS*SWG102, close breaker 102-4, normal 4.16 KV feed from bus 2NNS-SWG016. Check voltage on bus 2ENS*SWG102 as nominally 4.16 KV.

k. At panel 852, turn off synch switch across 4.16 KV bus 2NNS-SWG016 and emergency bus 2ENS*SWG102, breaker 102-4.

l. Line up and place in service all loads off of emergency bus 2ENS*SWG102, as warranted by plant conditions, in accordance with their applicable operating procedures.

m. At panel 852 remove the diesel generator control switch from pull-to-lock. | 3

12.0 To energize 4.16 KV/600V auxiliary transformer 2EJS*X2 and place emergency motor control center 2EHS*MCC201 in service:

a. At panel 852, lockout feed to auxiliary transformer 2EJS*X2 (600V feed to emergency motor control center 2EHS*MCC201) Breaker 102-3.

b. Check voltage on emergency bus 2ENS*SWG102, both locally and at panel 852, as nominally 4.16 KV.

c. At emergency bus 2ENS*SWG102, rack in supply breaker to auxiliary transformer 2EJS*X2 (600V feed to 2EHS*MCC201) breaker 102-3. Check lockout relay 86T on breaker 102-3 reset to assure closing permissive satisfied. | 3

d. Close breaker for meter and indicator light breaker 1B.

e. At panel 852, close supply breaker 102-3 to auxiliary transformer 2EJS*X2 (600V supply to 2EHS*MCC201). Check voltage on emergency motor control center 2EHS*MCC201 as nominally 600V

f. Line up and place in service all loads off of emergency motor control center 2ENS*MCC201, as warranted by plant conditions, in accordance with their applicable operating procedures.

13.0 To start standby diesel generators 2EGS*EG1, Division I or 2EGS *EG3, Division II and synchronize to emergency bus 2ENS*SWG101 or 2ENS*SWG103, refer to N2-OP-100A Section F. Normal Operation.

To shutdown the above diesel generators refer to N2-OP-100A Section G. Shutdown.

To start standby diesel generator 2EGS*EG2 (Division III [HPCS]) and synchronize it to bus 2ENS*SWG102, or to shutdown the above diesel generator, refer to N2-OP-100B Section F. Normal Operation or Section G. Shutdown.

14.0 This section contains the start-up procedure for energizing the 2VBA*UPS2A loads off its maintenance supply with 2VBA-UPS 2A totally de-energized.

a. Verify that the loads off 2VBS*PNL101A and 2VBS*PNL102A are in a safe condition in order to allow energization of 2VBS*PNL101A and 2VBS*PNL102A.

b. Verify all circuit breakers on 2VBA-UPS 2A are off.

c. Turn the manual switch to the "maintenance" position.

d. Place AC voltmeter select switch (S52) in the "Output" position.

e. Energize the maintenance feed to 2VBA-UPS2A by closing breaker 19 on 2LAC*PNL100A.

f. Close the maintenance input circuit breaker CB-1. This will energize the UPS maintenance internal regulator/transformer.

g. Close the static switch input breaker CB-2

h. Close the static switch output breaker CB53 and observe output to be 120 VAC nominal voltage.

i. Close the input power knife switch on 2VBS*PNL101A and 2VBS*PNL102A.

j. Close in the loads off panel 2VBS*PNL101A and 2VBS*PNL102A as desired.

k. Verify LED's (two each) are lit on regulator control card behind CB-2. If not F81 fuse or control card is bad. (This signifies the loss of maintenance supply regulation. Loads may continue to be supplied from maintenance power or transferred to a more reliable source IAW Sect H.15.0). TCN-13

15.0 This section contains the start-up procedure for energizing 2VBA*UPS2A:

a. Verify that the maintenance supply to 2VBA-UPS2A is in service by observing output voltage on the AC output voltmeter is 120 VAC nominal.

b. On 2VBA*UPS2A, check breaker CB-51, and CB-52 are open.

c. On 2EJS*PNL100A, close breaker 7.

d. On 2BYS*SWG002A check voltage is 130-140VDC.

e. On 2BYS*SWG002A, close breaker 3-C

f. On 2VBA*UPS2A, verify circuit breaker, CB-2, "Static Switch Input", breaker is closed.

g. On 2VBA*UPS2A, verify circuit breaker, CB-53, "Static Switch Output", breaker is closed. TCN-13

h. Place S-51 - the DC voltmeter selector switch, to the "Rectifier" position.

i. Place S-52 - the AC voltmeter selector switch, to the "Inverter" position.

j. Close the normal AC input power circuit breaker - CB-51.

k. Observe that the DC rectifier volts increases to 140V DC. The UPS inverter will then start with an audible increase in noise level.

l. Verify AC output voltage at 120V AC.

m. Verify that the static switch is in the "maintenance" position and, in approx. 15 seconds, the loss of synch light is out.

n. Push the lamp test pushbutton - all lamps will light and then go out when the button is released.

o. Check the following indications:

1. "Low Battery" lamp is lit (because CB-52 is open).

2. "Reverse Transfer" lamp is lit.

p. Place the DC voltmeter selector switch S-51 in the "Battery" position, then close circuit breaker CB-52, "Battery Input" breaker.

NOTE: This breaker will trip if the rectifier output is less than 100V AC.

q. Verify battery voltage between 133V - 140V DC.

r. Turn the manual switch to the "UPS" position. The load is now being supplied by maintenance power through the static switch.

s. Verify that the loss of synch light is out and then push the "Forward" static switch pushbutton. The static switch will now transfer the load to the inverter. TCN-13

NOTE: The "Reverse transfer" light will go out if lamp test button is pushed.

t. Load can be monitored on the AC output current ammeter.

u. Check that all alarm lights are out.

NOTE: Pushing the Lamp Test pushbutton will reset alarms.

16.0 This section contains the start-up procedure for energizing the 2VBA*UPS2B loads off its maintenance supply with 2VBA-UPS2B totally de-energized:

a. Verify that the loads off 2VBS*PNL301B and 2VBS*PNL302B are in a safe condition in order to allow energization of 2VBS*PNL301B and 2VBS*PNL302B.

b. Verify that all circuit breakers on 2VBA*UPS2B are open.

c. Turn the manual switch to the "maintenance" position.

d. Place the AC voltmeter select switch (S-52) in the "Output" position.

e. Energize the alternate feed to 2VBA*UPS2B by closing breaker 19 on 2LAC*PNL300B.

f. Close the maintenance input circuit breaker CB-1. This will energize the UPS maintenance internal regulator/transformer.

g. Close the Static Switch Input breaker, CB-2.

h. Close the Static Switch Output breaker, CB-53, and observe the output to be 120 VAC nominal.

i. Close the input power knife switch on 2VBS*PNL301B and 2VBS*PNL302B.

j. Close in the loads off panel 2VBS*PNL301B and 2VBS*PNL302B as desired.

k. Verify LED's (two each) are lit on regulator control card. If not, fuse F81 or control card is bad. (This signifies the loss of maintenance supply regulation. Loads may continue to be supplied from maintenance power or transferred to a more reliable source IAW Sect H.17.0). TCN-13

17.0 This section contains the start-up procedure for energizing 2VBA*UPS2B:

a. Verify that the maintenance supply to 2VBA*UPS2B is in service by observing output voltage on the AC output voltmeter is 120 VAC nominal.

b. On 2VBA*UPS2B, check breaker CB-51 and CB-52 are open.

c. On 2EJS*PNL300B, close breaker 7.

d. On 2BYS*SWG002B, check that voltage is 133-140V AC.

e. On 2BYS*SWG002B, close breaker 3-C.

f. On 2VBA-UPS2B, verify circuit breaker CB-2 - "Static Switch Input" breaker is closed.

g. On 2VBA-UPS2B, verify circuit breaker CB-53 - static switch "Output" breaker is closed.

h. Place S-51 - the DC voltmeter selector switch, to the "Rectifier" position.

i. Place S-52 - the AC voltmeter selector switch, to the "Inverter" position.

j. Close the AC input power circuit breaker - CB-51.

k. Observe that the DC rectifier volts increases to 140V DC. The UPS inverter will then start with an audible increase in noise level.

l. Verify AC output voltage at 120V AC.

m. Verify that the static switch is in the "maintenance" position and in approx. 15 seconds the loss of synch light is out.

n. Push the lamp test pushbutton - all lamps will light and then go out when the button is released.

o. Check the following indications:

1. "Low Battery" lamp is lit (because CB-52 is open).

2. "Reverse Transfer" lamp is lit.

p. Place the DC voltmeter selector switch S-51 in the "Battery" position, then close circuit breaker CB-52, "Battery Input" breaker.

NOTE: This breaker will trip if the rectifier output is less than 100V DC.

q. Verify battery voltage between 133-140V DC.

r. Turn the manual switch to the "UPS" position. The load is now being supplied by maintenance power through the static switch.

s. Verify that the loss of synch light is out and then push "Forward" Static Switch pushbutton. The static switch will now transfer the load to the inverter. TCN-13

NOTE: The "Reverse Transfer" light will go out if lamp test button is pushed.

t. Load can be monitored on the AC output current ammeter.

u. Check that all alarm lights are out.

NOTE: Pushing the lamp test pushbutton will reset alarms.

F. NORMAL OPERATION

1.0 During normal operation, the 4160V emergency buses 2ENS*SWG101 (Div I) and 2ENS*SWG102 (Div III) are energized from normal supply breakers 101-13 and 102-4, respectively, by reserve station transformer 2RTX-XSR1A. Power from the transformer to the associated supply breakers is supplied through the 4160V normal bus 2NNS-SWG016, breaker 16-2.

The 4160V emergency bus 2ENS*SWG103 (Div. II) is energized from normal supply breaker 103-4, by reserve station transformer 2RTX-XSR1B. Power from the transformer to the supply breaker is supplied through the 4160V normal bus 2NNS-SWG017, breaker 17-2.

The diesel generator output breakers 101-1, 103-14, 102-1 (Div. I, II, III, respectively) are open, and the diesels are in standby mode.

Breakers are lined up in accordance with Table II, to energize associated 4160V, 600V, and 120V power.

1.1 During all modes of operation on the 4.16 KV emergency buses 2ENS*SWG101, 2ENS*SWG102 and 2ENS*SWG103, the voltage should not be allowed to go below 4060 Volts.

1.2 The normal operation of 2VBA*UPS2A and 2VBA-UPS2B require little operator action. However, the individual UPS should be checked periodically for the following:

a. Ventilation filters clean.

b. Doors and panels secured.

c. AC output voltage 120V AC ± 2% (117.6 - 122.4V AC).

TCN 13

G. SHUTDOWN PROCEDURE

1.0 Once established, this system will not be shut down as a unit. Shutdown will be the removal of one Division for maintenance purposes.

1.1 Once the UPS systems are put into service, they should not be shut down as a unit - this would de-energize the UPS loads. However, certain individual components of the UPS systems may be taken out of service for maintenance, etc. These procedures will be discussed under section H - "Off Normal" procedures.

H. OFF NORMAL PROCEDURE

1.0 To transfer emergency bus 2ENS*SWG101 feed from reserve station service transformer 2RTX-XSR1A to Aux. Boiler transformer 2ABS-X1, see OP-71 Section H.

To transfer emergency bus 2ENS*SWG102 feed from reserve station service transformer 2RTX-XSR1A to reserve station service transformer 2RTX-XSR1B see OP-71 section H.

NOTE: Prior to taking 2ENS*SWG102 out of service, place 43LS-2ENSC10 in the ON position. This switch is located on 2ENS*SWG102 cubicle 2 and will prevent the start of 2EGS*EG2 when 2ENS*SWG102 is de-energized.

To transfer emergency bus 2ENS*SWG103 feed from reserve station service transformer 2RTX-XSR1B to Aux. Boiler transformer 2ABS-X1 see OP-71, Section H.

2.0 To Re-energize 4160V/600V Stub buses, 2NNS-SWG014/2NJS-US5 or 2NNS-SWG015/2NJS-US6 following a loss of offsite power AND/OR a loss of coolant accident, proceed as follows:

2.1 2NNS-SWG014/2NJS-US5

a. Verify 2ENS*SWG101 energized.

b. Verify normal supply breaker to 2NNS-SWG014 (14-2) OPEN at P-852. Place its control switch in PTL.

c. Open feeder breakers to 2NJS-US5 (14-4 and 14-8).

d. If a loss of coolant accident signal is "SEALED IN" place the DIV I "LOCA SIGNAL BYPASS" switch to "ON" at P852.

e. Close breaker 101-11 at P852. (emergency feed to 2NNS-SWG014)

f. Close breaker 14-1 P852. (emergency feed from 2ENS*SWG101)

g. Close feeder breakers to 2NJS-US5. (14-4 and 14-8)

h. Verify 2NJS-US5 re-energized.

i. Restart the following equipment as required.

2. 1RDS-P1A (N2-OP-30)
2. 2CCP-P1C (N2-OP-13)
3. 2CCP-P3C (N2-OP-13)
4. 2IAS-C1A (N2-OP-19)
5. 2WCS-P1A (N2-OP-37)
6. 2BYS-CHGR1A1 (N2-OP-73A)
7. Turning gear oil pump

2.2 2NNS-SWG015/2NJS-US6

a. Verify 2ENS*SWG103 energized.

b. Verify normal supply breaker to 2NNS-SWG015 (15-3) OPEN at P-852. Place its control switch in PTL.

c. Open feeder breakers to 2NJS-US6 (15-1 and 15-7).

d. If a loss of coolant accident signal is "SEALED IN" place the DIV I "LOCA SIGNAL BYPASS" switch to "ON" at P852.

e. Close breaker 103-8 at P852. (emergency feed to 2NNS-SWG015)

f. Close breaker 15-8 at P852. (emergency feed from 2ENS*SWG103)

g. Close feeder breakers to 2NJS-US6. (15-1 and 15-7)

h. Verify 2NJS-US6 re-energized.

i. Restart the following equipment as required.

1. 2RDS-P1B (N2-OP-30)
2. 2CCP-P1B (N2-OP-13)
3. 2CCP-P3B (N2-OP-13)
4. 2IAS-C1B (N2-OP-19)
5. 2WCS-P1B (N2-OP-37)
6. 2BYS-CHGR1B1 (N2-OP-73A)
7. 2BYS-CHGR1C1 (N2-OP-73A)
8 MAIN TURBINE TURNING GEAR (N2-OP-22A)

3.0 Loss of normal AC feed to 2VBA*UPS2A or 2VBA*UPS2B:

NOTE 1: Upon loss of normal AC feed to UPS2A or 2B, the UPS automatically begins to draw power from the backup DC source - 125V DC batteries. In this condition the UPS is still operable in accordance with Tech Spec 3.8.3.1 and 3.8.3.2. As long as the battery voltage remains above the undervoltage level, The UPS can continue to operate off the batteries. Two battery chargers must be in service when a UPS is on its backup power source per T.S. 3.8.2.1, 3.8.2.2. (If the battery voltage falls to an undervoltage level, the UPS will automatically transfer to the maintenance AC source.) Upon loss of normal AC to the UPS, battery voltage should be monitored so that the 125V DC system is not compromised due to heavy loading from the UPS. It may be desirable to transfer load to the maintenance AC source if heavy UPS loading exists on the batteries. When the UPS is powered from the maintenance AC source and the plant is in Mode 1,2 or 3, action per T.S. 3.8.3.1 must be taken. TCN-13 TCN-13

NOTE 2: When normal AC power is restored to the UPS, the UPS will automatically "Bias Off" (stop drawing from) the batteries and the rectifier section of the UPS will automatically pick up the load. Local alarms should be reset by pushing "LAMP TEST."

a. Refer to N2-OP-74A Section C.2.0 and Section H.4.0.

3.1 Loss of normal AC power to 2VBA*UPS2A or 2VBA*UPS2B with added loss of DC:

When there is a loss of normal AC power to UPS2A or UPS2B combined with a loss of DC power (possibly caused by a DC undervoltage condition), the UPS will automatically transfer its load to the maintenance AC source. Once the UPS loads are operating from the maintenance source, it can operate indefinitely until normal and backup power is restored. When the UPS is powered from the maintenance AC source and the plant is in Mode 1,2 or 3, action per T.S. 3.8.3.1 must be taken. TCN-13

When normal and DC power is restored, the load can be manually retransferred back to the UPS as outlined in the start-up section, 15.0, and 17.0.

3.2 Loss of DC power to 2VBA*UPS2A or 2VBA*UPS2B without loss of normal AC power. An energized UPS operating on normal AC power can experience the loss of DC power with no effect on the UPS or its loads. Upon loss of DC power, a local "Low Battery" alarm will initiate with a subsequent "UPS System Trouble" alarm in the control room. With a loss of DC power to the UPS, the UPS is inoperable and action per Tech. Spec. 3.8.3.1 must be taken when the plant is in Mode 1, 2 or 3. TCN-13

3.3 Transfer of load from 2VBA*UPS2A or 2VBA*UPS2B to the maintenance source and shutdown of the UPS (output being supplied by maintenance source):

NOTE: This is only allowed in Modes 4,5, * per T.S. 3.8.3.2.

Initial Conditions -

a. UPS module supplying the critical load

b. The maintenance Regulator/Transformer is energized.

UPS Transfer and Shutdown -

a. Check "Loss of Synch" lamp is out

b. Push the "Reverse" Static Switch pushbutton TCN-13

c. Put switch S-52, "AC Voltmeter Select Switch" in the "Output" position

d. Verify output voltage to be nominally 120V and 60 Hz.

e. Turn off "Battery Input" circuit breaker CB-52

f. Turn off AC "Input Power" circuit breaker CB-51

g. Verify that DC rectifier and the inverter output volts drop to zero

h. Turn the manual switch to the "maintenance" position

i. Turn off "Static Switch Input" circuit breaker, CB-2. TCN-13

j. Turn off the "Static Switch Output" circuit breaker, CB-53.

k. Open and mark-up normal AC and DC input power circuit breaker at their respective switchgear as required

NOTE: Lethal voltages still exist inside of unit.

3.4 Removing the maintenance supply to 2VBA*UPS2A or 2VBA*UPS2B with the UPS supplying the critical load:

a. On the UPS, verify CB-51 closed

b. On the UPS, verify CB-52 closed

c. On the UPS, verify CB-53 closed

d. Verify UPS DC volts to be nominally 140V DC

e. Verify UPS AC output volts to be nominally 120V AC

f. Verify UPS frequency at nominal 60 Hz

g. Check all alarms clear

h. Verify manual switch S-5 is in the "UPS" position

i. Verify that the static switch inverter position lamp is lit. (The yellow mimic light above the "Forward" Static Switch pushbutton). TCN-13

j. Turn off "Static Switch Input" circuit breaker - CB-2

k. Turn off "Maintenance Input" circuit breaker CB-1

l. Open the maintenance supply circuit breaker on its respective switchgear as desired

NOTE: With the UPS and maintenance supply in this position, any UPS fault (trip) condition will result in the loss of load.

3.5 2VBA*UPS2A or 2VBA*UPS2B restart after a UPS failure trip/transfer to maintenance supply:

a. Verify that the critical load is being supplied by the maintenance supply.

1. "Reverse Transfer" lamp lit

2. Static switch maintenance position lamp lit

3. Output volt meter indicates 120V A.C.

b. Record all alarms and switch positions

c. Clear all alarms as necessary ("Reverse Transfer" will stay lit).

NOTE: If alarms do not clear report problem to Electrical Maintenance for repair.

d. Verify AC "Input Power" circuit breaker CB-51 closed

e. Place S-51, the DC Voltmeter Selector Switch, to the "Rectifier" position. TCN-13

f. Verify DC Rectifier volts greater than 120 VDC.

g. Place S-52, the AC Voltmeter Selector Switch, to the "Inverter" position.

h. Verify AC output voltage at 120 VAC.

i. Verify DC "Battery Input" circuit breaker CB-52 closed

j. Check UPS rectifier volts nominally 140V DC

k. Check inverter output volts and frequency to be nominally 120V AC and 60 Hz respectively

ℓ. Verify "Loss of Synch" lamp is out

m. Push the "Forward" Static Switch pushbutton TCN-13

n. Verify "Reverse Transfer" light goes out after pushing "LAMP TEST" pushbutton.

o. If the load transfers back to the maintenance, investigate the cause. If UPS shutdown is warranted, do so per section H, 3.3.

3.6 2VBA*UPS2A or 2VBA*UPS2B shutdown after failure with maintenance source feeding load

a. Record all alarms and switch positions

b. Follow section H, 3.3, Steps a-k.

4.0 Inadvertent Loss of Buss

NOTE: Loss of Buss may be indicated by any of the following: TCN-14

- 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.

4.1 OPERATOR ACTIONS

4.1.1 Take the necessary actions to place the Plant in a Safe Condition.

4.1.2 Refer to Operating Procedures as required.

4.1.3 Place all loads on affected Switchgear, Unit sub or Motor Control Center in the Pull-to-Lock position.

4.1.4 Place affected Feeder Breakers in the Pull-to-Lock position.

4.1.5 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 and Test as necessary.
- Refer to electrical diagrams and load lists as necessary to identify affected loads.

4.1.6 Refer to Technical Specifications for possible entry into LCO's.

4.1.7 Attempt to correct or isolate the cause of loss of buss.

TCN-14

* *

CAUTION

Trips or Lockouts should not be reset until the cause of the loss of buss has been determined and corrected.

* *

4.2 RESTORATION

4.2.1 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.

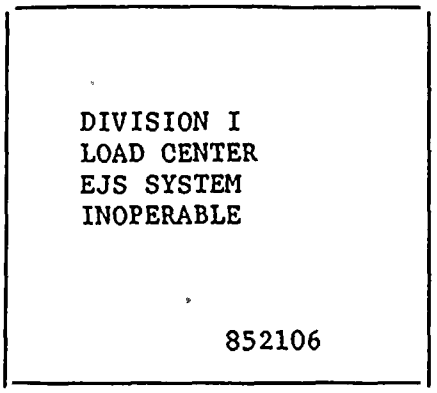
e. Control Room panels should again be scanned to verify that all abnormal indications and alarms caused by the loss of buss have been corrected.

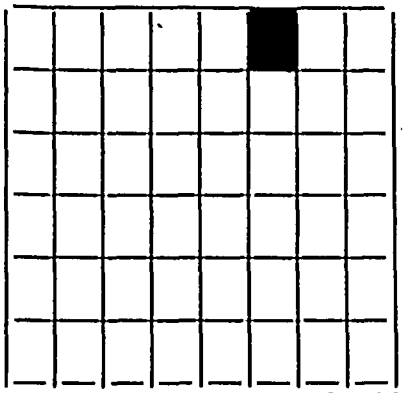
I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (Cont.)

1.0 852106 Division I Load Center EJS System Inoperable

Reflash: No

ITCN-1





1.1	Computer Point	Computer Printout	Source
	a. EJSBC13	DIV 1 LD CTR EJS SYS	1) EMER SWGR XFMR FDR ACB 101-14 AND 2) EMER SWGR XFMR FDR ACB 101-2 OR 3) EMER US1 NORM FEED ACB 1-3B AND 4) EMER US1 ALT FEED ACB 1-9B OR 5) EMER US1 MAN OUT OF SER

1.2 Corrective Action

a. Refer to the following INOP windows for response.

TCN-5

Window	Source	Automatic Action
1. EMER SWGR XFMR FDR ACB 101-14	(74-2EJSX03) a) Loss of DC Control power b) Control Room Fire Disconnect	Annun. for any event in both inop windows
2) EMER SWGR XFMR FDR ACB 101-2	c) Control Room control switch PTL d) Breaker racked out (74-2EJSX04)	

Corrective Action

a. For loss of 125VDC control power, check fuses in cubicle 101-2, and brkr 2D in 2BYS*SWG002A, DC switchgear.

b. For Control Room Fire, return switches 2CESA15 and 2CESA16 on Control Room Fire Disconnect Panel 2CES*PNL415 to NORMAL.

c. For breakers not in operate position, rack in breaker 101-14, and/or 101-2.

d. For Control Room panel 851 control switches in pull-to-lock, remove one switch, or both switches from pull-to-lock.

Window	Source	Automatic Action
3) EMER US1 NORM FEED ACB 1-3B	(74-2EJSX05) a) Loss of DC control power	Annum. for any event in both inop windows
4) EMER US1 ALT FEED ACB 1-9B	b) Control Room Fire Disconnect c) Control Room control switch PTL d) Breaker racked out (74-2EJSX06)	

1.2 Cont'd Corrective Action

a. For loss of 125VDC control power check fuses in cubicle 1-3A, and brkr 4C in 2BYS*SWG002A, D.C. switchgear.

b. For Control Room fire, return switch 2CESA20 to normal in Control Room fire disconnect panel 2CES*PNL415.

c. For Control Room panel 852 control switches in pull-to-lock, remove one or both switches from pull-to-lock.

d. For breakers not in operate position, rack in breaker 1-3B and/or 1-9B.

Window	Source	Automatic Action
EMER US1 MAN OUT of SER	EMER US1 MAN OUT of SER Pushbutton	None

Corrective Action

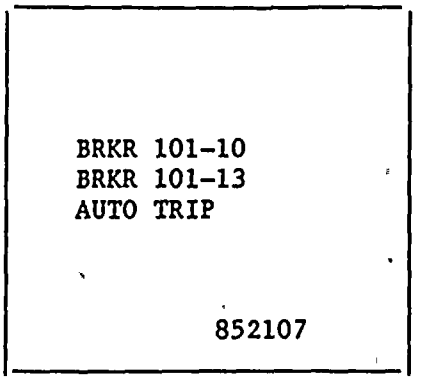
a. Restore the pushbutton to normal.

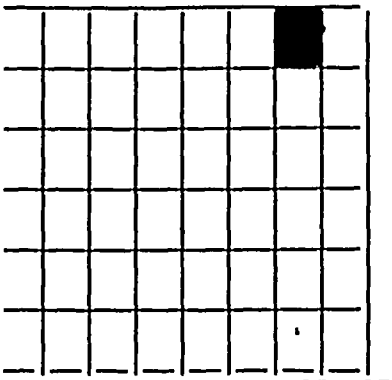
I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (Cont.)

2.0 852107 Breaker 101-10 or Breaker 101-13 Automatic Trip

Reflash: Yes

| TCN-12





2.1

Computer Point	Computer Printout	Source
a. ENSUC05	2RTX-XSR1A ACB 101-13 TRP	52-2ENSX10
TRIP SIGNALS ORIGINATE FROM:		
ENSUC17	EM SWGR ACB101-13 LO RLY	SEE 852139
ENSUC13	EM SWGR ACB101-13 LO RLY	SEE 852147
ENSIC01	RTS-XSRIAOC ACB 101-13	SEE 852148
ENSEC03	BUS 101 DEGRADED VOLT	SEE 852140
ENSEC01	BUS ENS*101 UNDV	SEE 852140
ENSBC25	LOAD SHED SIGNAL BUS101	27X3-2ENSX04
ENSBC24	DEGRADED BUS*101 UNDV	62Y-2ENSX06
ENSBC23	LOSS OF BUS101 VOLTAGE	62X-2ENSX05
ENSBC17	4KV EM BUS101 UNDER FREQ	SEE 852132
ENSBC05	FDR-XFMR ACB 101-13	52-2ENSX10
NNSUC22	4KV BUS E16 LO RLY 2 TRIP	SEE 852538
ENSUC09	EM SWGR ACB101-13 LO RLY	SEE 852131

2.1 Cont'd

Computer Point	Computer Printout	Source
b. ENSUC08	2AB5-X1ACB 101-10 TRIP	52-2ENSX11
TRIP SIGNALS ORIGINATE FROM:		
ENSUC18	EM SWGR ACB 101-10 LO RLY	SEE 852139
ENSUC14	EM SWGR ACB101-10 LO RLY	SEE 852147
ENSUC10	EM SWGR ACB101-10 LO RLY	SEE 852131
ENSIC04	XFMR ABS-X1 OC ACB101-10	SEE 852148
ENSBC25	LOAD SHED SIGNAL BUS101	27X3-2ENSX04
ENSBC24	DEGRADED BUS*101 UNDV	62Y-2ENSX06
ENSBC23	LOSS OF BUS 101 VOLTAGE	62X-2ENSX05
ENCBC17	4KV EM BUS101 UNDER FREQ	SEE 852132
ENSBC03	FDR TO SFMR ACB 101-10	52-2ENSX11
ENSEC01	BUS ENS*101 UNDV	SEE 852140
ENSEC03	BUS101 DEGRADED VOLT	SEE 852140
NNSUC28	4KV BUS E18 LO RLY 2 TRIP	SEE 852558

2.2 Automatic Response

a. Diesel Generator Start.

b. Load shed all but load center breakers.

c. Auto load sequence

d. Manual loading blocked for approx 1 min.

e. Separation of category II service water from category I.

2.3 Corrective Action

a. See N2-OP-71 Sect. H15 and H16 to transfer feeders to the emergency bus.

b. Place the emergency bus on offsite power.

c. Notify elect. maint. of the event.

d. See N2-OP-100A to return the diesel generator to stand-by after offsite power is restored.

NOTE: If computer point ENSBC40 alarms (DIV I LOCA SIGNAL), before the bus is restored to offsite power, trip breaker 101-1.

I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (Cont.)

3.0 852114 Load Center EJS*US1 Trouble

Reflash: Yes

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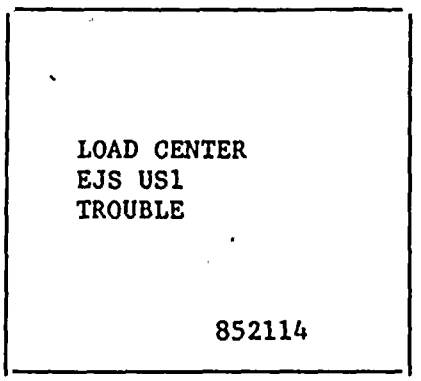
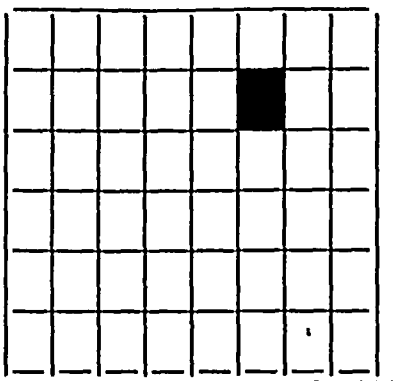




3.1	Computer Point	Computer Printout	Source
a.	EJSBC15	UV PROT US1 LOSS DC PWR	74-2EJSX08
b.	EJSUC09	2EJS US1 NORM BRKR EL FLT	52-2EJSX05 BKR overcurrent
c.	EJSUC10	2EJS US1 ALTN BRKR EL FLT	52-2EJSX06 BKR overcurrent
d.	LARBC03	Rx BLDG NORM LTG BKR OPEN	52-2LARN01 BKR Position

3.2 Automatic Response

a. None

b. Trips Breaker ACB 1-3B

c. Trips Breaker ACB 1-9B

d. De-energizes 2LAR-PNL200 (Rx Bldg Lighting) via BKR 5A.

3.3 Corrective Action

a. For loss of control power, check fuses in load center cubicle 1-3A, and breaker 4C at 2BYS*SWG002A, DC switchgear.

b. For breaker overcurrent trip, check annunciator 852146 for a branch breaker trip, and close in the other load center feeder breaker, at Control Room panel 852.

3.3 Corrective Action (Cont'd)

c. If both feeder breakers trip, send an operator to the west stand-by switchgear room.

1. Open all branch breakers on US1
2. Reset both feeder breakers
3. Close feeder breaker 1-3B
4. Close breaker 1-9B, if breaker 1-3B fails to close.
5. Close in branch breakers

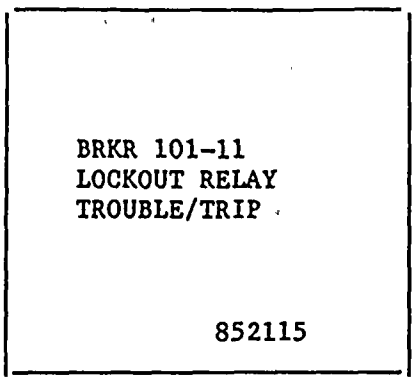
d. Notify elect. maint. of the event, and any branch breakers which are tripped, or fail-to-close.

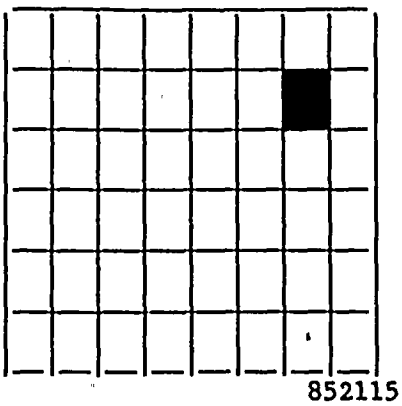
e. Determine cause of breaker opening. If cause is from Load Center Undervoltage, dispatch an operator, when voltage is restored, to reclose 2EJS*US1 BKR 5A to restore Rx Bldg Lighting. If cause is due to a LOCA Signal, the breaker may reclose after SGTS has initiated and has restored and is maintaining Rx Bldg. Δ pressure ≥ (-) .25" W.G. TCN-6

4.0 852115 Breaker 101-11 Lockout Relay Trouble/Trip

Reflash: Yes

TCN-12





4.1

	Computer Point	Computer Printout	Source
a.	ENSUC01	EM SWGR ACB 101-11 LO RLY	2NNS-SWG014 Phase or Ground overcurrent 50/51-2ENSA03 50G-2ENSA04
b.	ENSUC03	EM SWGR ACB 101-11 TRIP	52-2ENSX12 (also brings in ENSBC01)
	TRIP SIGNALS ORIGINATE FROM:		
	ENSBC25	LOAD SHED SIGNAL BUS 101	27X3-2ENSX04
	ENSUC30	DIV I LOCA SIGNAL	K110A
	ENSUC01	EM SWGR ACB 101-11 LO RLY	Phase overcurrent 50-2ENSA03
	ENSUC01	EM SWGR ACB 101-11 LO RLY	Ground overcurrent 50G-2ENSA04
c.	ENSUC23	BUS 101 STUB FDR GND FLT	50G-2ENSA08 backup Gnd OC

4.2 Automatic Response

a. None

b. None

c. Trips 101-13, and 101-10, both offsite feeder breakers. SEE 852139. Trips 101-N1 diesel Gen Neutral breaker. SEE 852127. Category II service water separates from Category I.

4.3 Corrective Action

a. Verify the stub bus breaker trip. Check computer point ENSBC01.

NOTE: If the offsite feeder breaker trips, the emergency bus will auto sequence loads and manual loading of the bus is blocked for approx. 1 min.

b. See section H2.0 to re-energize the stub bus after loss of offsite power.

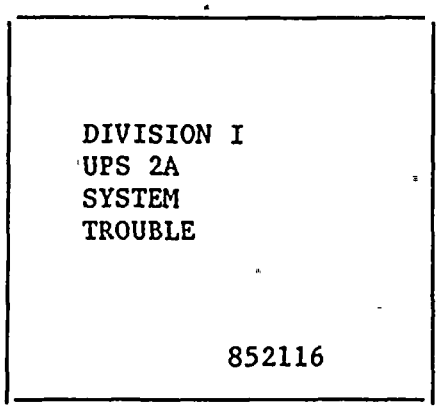
c. Reset lockouts on tripped breakers.

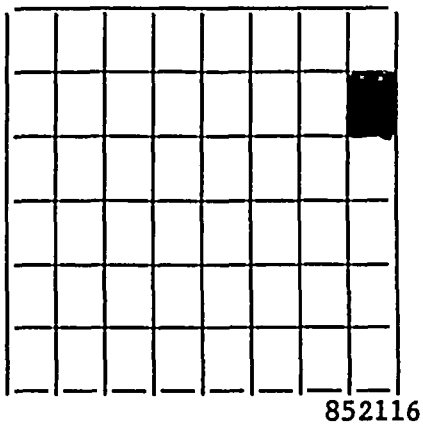
d. Notify elect. maint. of the event and any breakers which remain tripped.

I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (Cont.)

5.0 852116 Division I UPS 2A System Trouble

Reflash: No





5.1

Computer Point	Computer Printout	Source
VBABC03	UPS2A SYSTEM TROUBLE	UPS2A/A9-K51

NOTE: A9-K51 is initiated by any local alarm. This relay will stay de-energized as long as any local alarm exists. This annunciator will not reflash if another local alarm comes in.

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5.2 Automatic Response

a. UPS may realign to power the vital bus from either backup D.C., or maintenance supply dependent on the local alarm.

5.3 Corrective Action

a. Check the UPS output voltage on Control Room panel 852 meter labelled "Vital bus 2VBS*UPS2A 125VAC Output," or computer point VBSVA100.

b. Send an operator to record meter readings and status light indications at the UPS.

NOTE: Consult Tech. Spec. 3.8.3.1 if the UPS is on maintenance power or if the local alarm response indicates that the UPS is inoperable and the plant is in Mode 1, 2 or 3.

c. Notify electrical maintenance for repair or adjustments to the UPS.

TCN-13

d. See Section H of this procedure for operation of the UPS with the loss of a source, or sources.

e. Take corrective action as required per following Table:

(NCTS) Local Alarm Description - Corrective Action

Alarm	Description	Corrective Action
Synch Loss	1. Maintenance AC frequency is out of tolerance	a. Initiate a WR
	or	
	2. Maintenance AC is not present	a. Restore maint. AC (if fuse is blown in the maintenance AC supply regulator, initiate a WR)
	or	
	3. UPS inverter output frequency is out of tolerance (60Hz±3Hz)	a. Verify on Frequency meter
		b. If valid declare INOP and if the plant is in Mode 1, 2 or 3 refer to Tech. Spec. 3.8.3.1
		c. Initiate a WR

Alarm	Description	Corrective Action
Battery Drain/Charge	Current being drawn from batteries caused by:	
	1. Loss of normal AC to UPS	a. Restore normal AC
	or	
	2. Voltage on DC switchgear higher than UPS internal DC voltage	a. If the charger is on equalize, notify Electrical to check charger equalize voltage
		b. If the charger is not on equalize, initiate a WR
	NOTE: Refer to Tech. Specs. 3.8.2.1 or 3.8.2.2	
Rectifier AC Loss	Loss of normal AC to UPS	a. If CB-51 has tripped, initiate a WR
		b. If CB-51 is closed, restore upstream normal AC supply
Reverse Transfer	Static switch is in maintenance position	a. Declare the UPS INOP and if the plant is in Mode 1, 2 or 3 refer to Tech. Spec. 3.8.3.1
		b. If other alarms are present, correct the other alarms prior to restoring the UPS to normal AC power
		c. If all other alarms clear, verify UPS AC output voltage present on AC voltmeter, then push "Forward" static switch pushbutton
Fan Fail	One or more fans have stopped	a. Visually check, if possible, to determine which fan is off
		b. Initiate a WR
	NOTE: This alarm may be concurrent with a Blown Fuse Alarm	

TCN-13

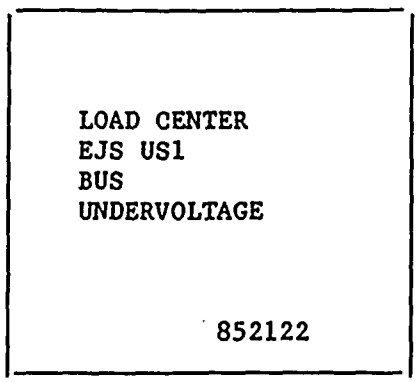
Alarm	Description	Corrective Action
Low Inverter Voltage	UPS inverter output voltage is 15% low (~103 Vac)	a. Verify on AC voltmeter b. If valid declare INOP and if the plant is in Mode 1, 2 or 3 refer to Tech Spec. 3.8.3.1
Inverter Over Temp	Unit overheating	a. Initiate a WR
Fuse Blown	Fuse within UPS blown	a. Initiate a WR to replace fuses NOTE: This alarm alone does not INOP the UPS. The operability determination must be made based on other local alarms (eg. "Low Battery", "Reverse Transfer", etc.)
Rectifier DC Grounded	UPS internal DC Bus grounded	a. Initiate a WR
Low DC Bus	UPS internal DC Bus voltage is low (DC Bus Low)	a. Initiate a WR for Repair/adjustment
Overload	UPS inverter supplying over 100% rating of unit (~165 Amps)	a. Check output ammeter i) If unit loaded, clear non-essential loads ii) If alarm false, initiate a WR
Low Battery	UPS-internal DC Bus voltage is below 110 volts (DC Bus Lo/Lo)	a. Place S-51, the DC voltmeter selector switch in "Battery" i) If battery voltage indicates ≤110 VDC declare the UPS INOP and if the plant is in Mode 1, 2 or 3 refer to Tech. Spec. 3.8.3.1 ii) If battery voltage indicates >110 VDC, notify Electrical Maintenance NOTE: With DC Bus below 105 VDC, CB-52 will trip

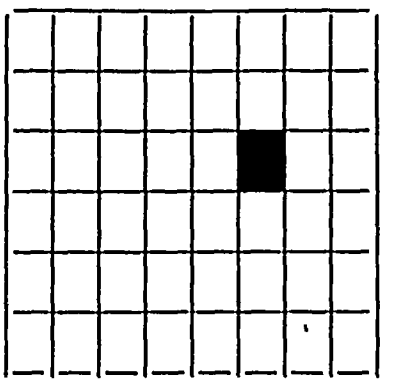
TCN-13

6.0 852122 Load Center EJS*US1 Bus Undervoltage

Reflash: No

TCN-12





6.1	Computer Point	Computer Printout	Source
	a. EJSEC01	LCUS1 NORM SPLY BRKR UV	Undervoltage Relays 27A-2EJSA11 AND 27B-2EJSA11 Setpoint: 400V for 3 sec.

6.2 Automatic Response

a. Trip Reactor Bldg Recirc. Fan A, 2HVR*VC413A. Breaker 1-4C.

b. Trip Control Bldg Chiller Compressor, 2HVK*CHL1A. Breaker 1-4D.

6.3 Corrective Action

a. Verify auto-start of redundant units per N2-OP-52 for HVR*UC413A/B, and N2-OP-53A for HVK*CHL1A/B.

b. Check the voltage on the Div I 4160V bus, 2ENS*SWG101.

c. Check the voltage on the Div I Load center, 2EJS*US1.

NOTE: Loss of offsite power for 3 sec. will also bring in this annunciator.

d. If the 4160 Div I bus is nominally 4160V, trip the load center incoming line breaker in service (bkr 1-3B, or 1-9B), and close the other feeder breaker (bkr 1-9B, or 1-3B).

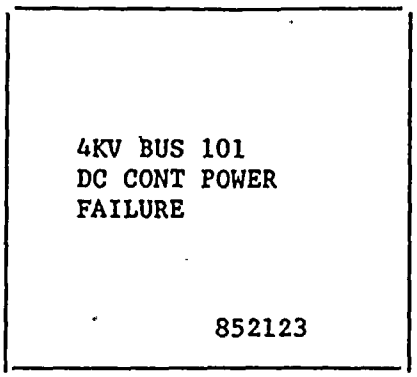
e. Notify elect. maint. of the event, and any tripped breakers.

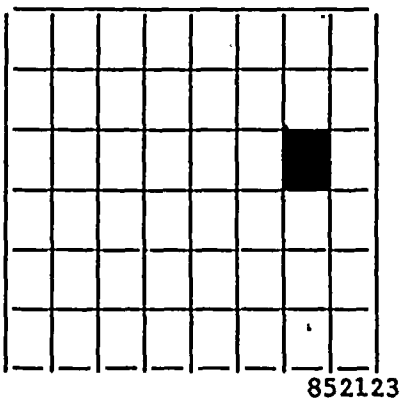
I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (Cont.)

7.0 852123 4KV BUS101 DC Control Power Failure

Reflash: Yes

TCN-12





7.1	Computer Point	Computer Printout	Source
	ENSBC11	125VDC CONT PWR DI BUS A	Loss of protective relaying power to trip 101-10,101-13, & 101-1 (offsite feeders, and Dies. Gen bkr) due to: phase overcurrent; Dies. Gen. gnd. overcurrent; bus gnd. overcurrent; incoming line XFMR neutral gnd. over-current. Emerg. SWGR DC bus A 74-2ENSX01
	ENSBC12	125VDC CONT PWR DI BUS B	Loss of protective relaying power to trip 101-10, 101-13, & 101-1 (offsite feeders, and. Dies. Gen. bkr) due to: phase overcurrent; Dies. Gen. gnd overcurrent; bus gnd overcurrent; incoming line XFMR neutral gnd over-overcurrent. Emer. SWGR DC bus B 74-2ENSX02.

7.1 (Cont'd)

Computer Point	Computer Printout	Source
ENSBC15	125VDC CONT PWR DI BUS B	Loss of protective relaying power to trip 101-10, 101-13, & 101-N1 (offsite feeders, and Dies. Gen neut. bkr) due to: Stub bus (SWG0014) gnd overcurrent; load center XFMR EJS*X1A phase overcurrent; load center XFMR EJS*X1B phase overcurrent. emer. SWGR DC bus B 74-2ENSX03.

3

7.2 Automatic Response

NONE

7.3 Corrective Action

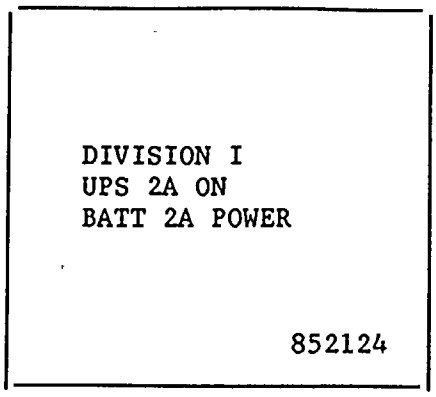
a. Send an operator to the Div I swgr to check the D.C. bus fuses in cubicle 101-2.

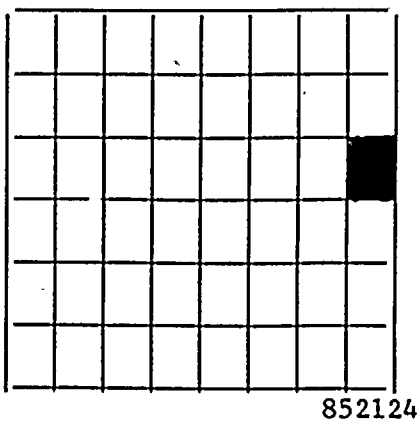
b. If both D.C. buses are alarming, check the D.C. switchgear 2BYS*SWG002A cubicle 2D.

c. Notify elect. maint. of the event, the relay number, and any tripped breakers.

8.0 852124 Division I UPS 2A On Battery 2A Power

Reflash: No





8.1

Computer Point	Computer Printout	Source
a. VBABC03	DIV I UPS2A ON BATT PWR	UPS2A/A9-K52

NOTE: UPS2A/A9-K52 is initiated by local alarm "Battery Drain/Charge".

8.2 Automatic Response

NONE

8.3 Corrective Action

a. Notify the SSS.

b. IF required by Tech Specs 3.8.2.1 or 3.8.2.2, place the second battery charger in service per OP-74 Sect H.4. TCN-13

c. Check the UPS output voltage on cont. rm. panel 852 "Vital Bus 2VBS*UPS2A 125VAC Output," or computer point VBSVA100.

d. Dispatch operator to UPS2A (in the Div I swgr room) to record parameters on front panel of UPS.

e. Check corrective action for annunciator 852116, local alarm "Battery Drain/Charge".

f. Check for tripped feeder, panel 2EJS*PNL100A bkr #7.

g. Check UPS front panel breaker #CB-51 is closed. TCN-13

h. Check the 125VDC switchgear for proper voltage and current. There should be no battery current if the charger is operating within its load range.

i. Refer to Section H of this procedure to align the UPS for Off Normal operation.

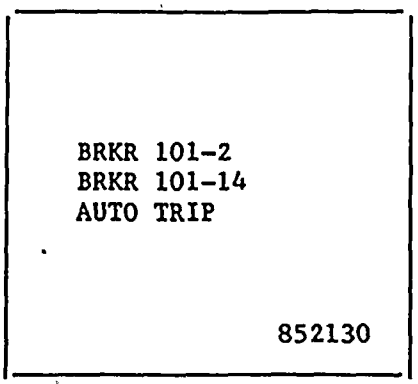
j. If necessary contact Electrical Maintenance to align, or repair UPS.

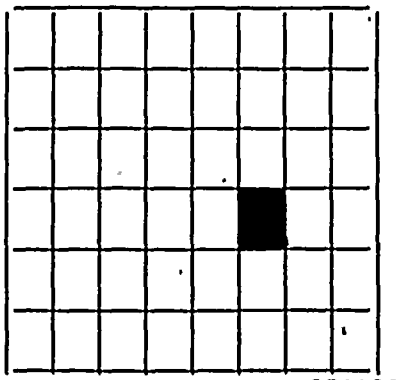
I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (Cont.)

9.0 852130 Breaker 101-2 or Breaker 101-14 Auto Trip

Reflash: Yes

TCN-12





9.1	Computer Point	Computer Printout	Source
	a. EJSUC05	XFMR1A BRKR 101-14 AUTO TRP	52-2EJSX03 4160V bkr to load center 2EJS*US1
	b. EJSUC06	XFMR1B BRKR 101-2 AUTO TRP	52-2EJSX04 4160V bkr to load center 2EJS*US1

9.2 Automatic Response

None

9.3 Corrective Action

a. At control room panel 852, close the alternate feeder breaker to load center 2EJS*US1.

This is:
load center breaker 1-9B if breaker 101-14 tripped, or
load center breaker 1-3B if breaker 101-2 tripped.

b. Notify elect. maint. of the event, and any breakers tripped.

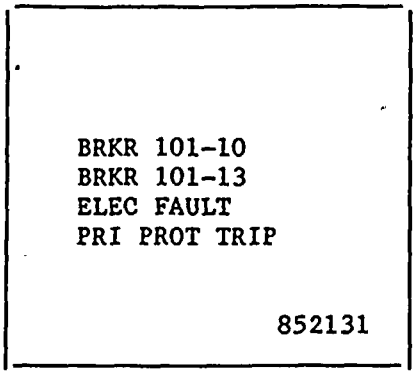
c. Refer to tech. specs. if unable to maintain feed to the load center.

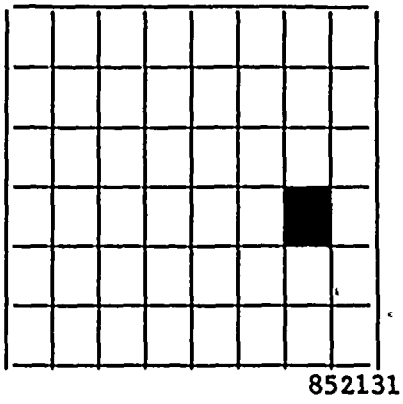
I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (Cont.)

10.0 852131 Breaker 101-10 or 101-13 Electrical Fault or Primary Protection Trip

Reflash: Yes

TCN-1 2





10.1

	Computer Point	Computer Printout	Source
a.	ENSUC09	EM SWGR ACB 101-13 LO RLY	50/51-2ENSA01 Emer. bus feeder overcurrent
b.	ENSUC10	EM SWGR ACB 101-10 LO RLY	50/51-2ENSA02 Emer. bus feeder overcurrent

10.2 Automatic Response

ENSUC09 Trips and locks out ACB101-13 (Normal bus feeder), locks out ACB101-10 (alternate bus feeder) and locks out auto closing of ACB 101-1 (Diesel Gen. Bkr.).

ENSUC10 Trips and locks out ACB101-10 (alternate bus feeder), locks out ACB101-13 (Normal bus feeder) and locks out auto closing of ACB 101-1 (Diesel Gen. Bkr.).

Both Category II service water separates from Category I.

10.3 Corrective Action

a. Restart the switchgear per Section E1.0. | 3

b. Notify elect. maint. of the trip and any breakers remaining tripped. | 3

c. See N2-OP-71 Section H15.0, or H16.0 to place the switchgear on alternate feed. | 3

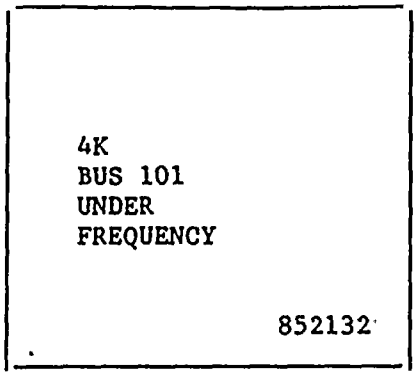
d. Refer to tech. specs. for possible LCO due to loss of Div I power. | 3

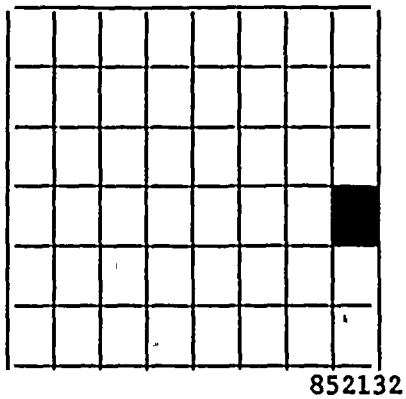
I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (Cont.)

11.0 852132 4KV BUS 101 Underfrequency

TCN-1 c

Reflash: No





11.1	Computer Point	Computer Printout	Source
	a. ENSBC17	4KV EM BUS 101 UNDER FREQ	81-2ENSA24 Mtr and relay cubicle at swgr.

11.2 Automatic Response

a. Trips ACB 101-10 and 101-13 (offsite feeder breakers).

b. Auto starts Diesel Generator 2EGS*EG1.

c. Load shed trips all loads except the load center.

d. Auto load sequence commences.

e. Category II service water separates from Category I.

f. Manual loading of the bus is blocked for aprox. 1 min.

11.3 Corrective Action

a. Verify auto station response.

b. Refer to N2-OP-71 Section H15.0 or H16.0 to place the bus on alternate offsite feed.

c. Notify elect. maint. of the trip.

d. Refer to tech. specs. for possible LCO.

I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (Cont.)

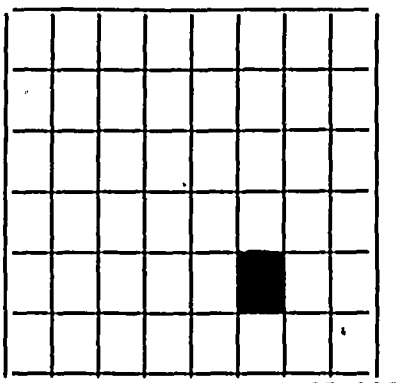
12.0 852138 Breaker 101-2 or 101-14 Lockout Relay Trip

Reflash: Yes

TCN-12

BRKR 101-2
BRKR 101-14
LOCKOUT RELAY
TRIP

852138



852138

12.1	Computer Point	Computer Printout	Source
	a. EJSUC01	EM LC XFMR1A LOCKOUT RLY	50G-2EJSA03 or 50/51-2EJSA02 Gnd or phase overcurrent on the 4160V side of load center transformer
	b. EJSUC02	EM LC XFMR1B LOCKOUT RLY	50G-2EJSA06 or 50/51-2EJSA05 Gnd or phase overcurrent on the 4160V side of load center transformer
	c. EJSUC13	EMLC XFMR1A FDR FAULT-BU	51-2EJSA01 backup overcurrent on the 4160V side of load center transformer
	d. EJSUC14	EMLC XFMR1B FDR FAULT-BU	51-2EJSA04 backup overcurrent on the 4160V side of load center transformer

12.2 Automatic Response 3

EJSUC01 Trips & Locks Out US1-3B and ACB101-14. Isolates the load center transformer.

EJSUC02 Trips & Locks Out US1-9B and ACB101-2. Isolates the load center transformer. 3

EJSUC13 Trips & Locks Out ACB 101-13 and 101-10 and prevents auto closing of ACB101-1. Diesel Gen. auto starts and the Div I 4160V bus remains de-energized. Loss of voltage load sheds the bus. Category II service water separates from Category I. 3

EJSUC14 Trips & Locks Out ACB-101-13 and 101-10 and prevents auto closing of ACB 101-1. Diesel Gen. auto starts and the Div I 4160V bus remains de-energized. Loss of voltage load sheds the bus. Category II service water separates from Category I. 3

12.3 Corrective Action

EJSUC01
EJSUC02

a. Verify the trips by checking computer points: EJSUC05 for 101-14 and EJSUC09 for US1-3B 3
OR
EJSUC06 for 101-2 and EJSUC10 for US1-9B

b. Close the alternate load center incoming line breaker, at control room panel 852. US1-3B, or US1-9B.

c. Notify elect. maint. of the trip, and any breakers remaining tripped.

NOTE: Refer to tech. specs. if unable to maintain feed to the load center.

NOTE: The load center powers MOV's associated with pumps which may remain running on the 4160V bus.

EJSUC13
EJSUC14

aa. Trip the 4160V breakers feeding the load center. Breaker 101-14, and 101-2.

bb. At control room panel 852, place the diesel generator breaker 101-1 control switch in pull-to-lock.

cc. At Div I switchgear, reset lockout relays: 86-2-2EGPX02 (101-1); 86C-2ENSX01 (101-N2); 86C-2ENSX02 (101-N2).

12.3 (Cont'd)

dd. Close the offsite feeder breaker to the Div I 4160V bus, breaker 101-10, or 101-13. 3

ee. Close the alternate 4160V breaker to the load center, breaker 101-14, or 101-2.

ff. Close the 600V incoming line breaker to the load center, breaker US1-3B, or US1-9B.

gg. At control room panel 852, remove the Div I diesel generator breaker (101-1) control switch from pull-to-lock.

hh. Close in selected loads on the Div I 4160V bus.

ii. Place the diesel generator in stand-by per N2-OP-100A.

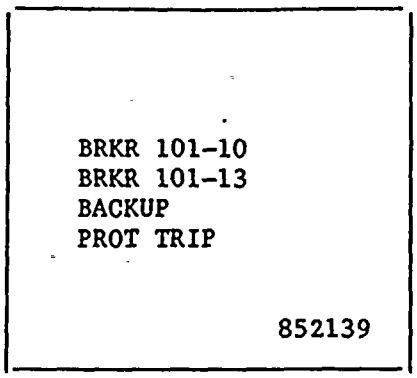
jj. Notify Electrical Maintenance of the trip, and any breakers remaining tripped.

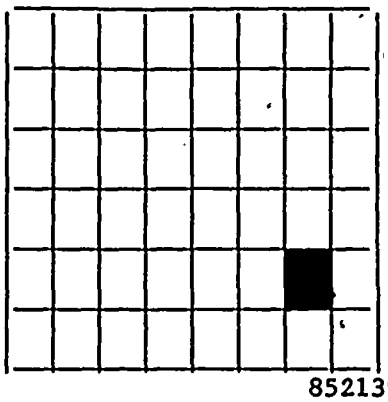
I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (Cont.)

13.0 852139 Breaker 101-10 or 101-13 Backup Protection Trip

Reflash: Yes

1 TCN-1 2





13.1	Computer Point	Computer Printout	Source
	a. ENSUC17	EM SWGR ACB 101-13 LO RLY	67N1-2ENSA05 Diesel Gen. gnd directional overcurrent
	b. ENSUC18	EM SWGR ACB 101-10 LO RLY	67N3-2ENSA05 Diesel Gen. gnd directional overcurrent

13.2 Automatic Response

ENSUC17 Trips and locks out ACB101-13
ENSUC18 Trips and locks out ACB101-10

a. Load shed trips all loads except loadcenter.

b. Div I diesel gen. auto starts.

c. Auto load sequence commences.

d. Category II service water separates from Category I.

13.3 Corrective Action

a. Verify the trip by checking computer point ENSUC08 for 101-10, or ENSUC05 for 101-13.

b. Trip breakers 101-1 and 101-N1.

c. Reset lockout relays 86C-2ENSX01, and 86C-2ENSX02, at switchgear 101-N2.

d. Close the offsite feeder breaker, 101-10, or 101-13.

e. Notify elect. maint. of the trip.

f. Refer to tech. specs. if unable to maintain feed to the Div I bus.

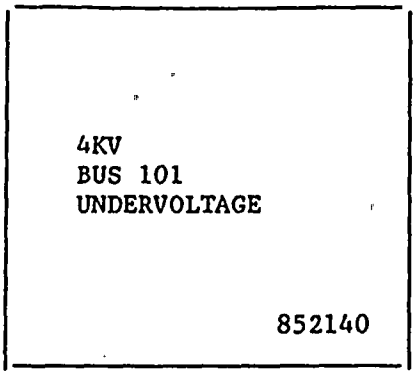
3

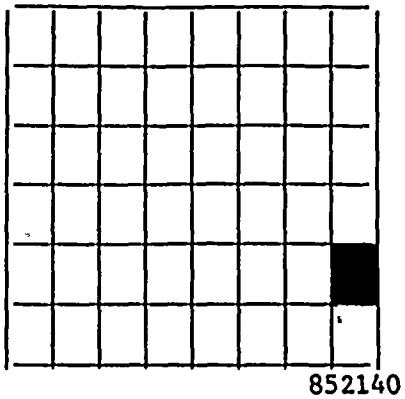
I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (Cont.)

14.0 852140 4KV Bus 101 Undervoltage

Reflash: Yes

TCN-12





14.1	Computer Point	Computer Printout	Source
	a. ENSEC01	BUS ENS 101 UNDV	27AA, AB, AC Phase to ground undervoltage relays.
	b. ENSEC03	BUS 101 DEGRADED VOLT	27BA, BB, BC Phase to ground undervoltage relays.

14.2 Automatic Response

a. For one device on either computer point, NONE.

b. For two devices on either computer point, loss of offsite power.

1. Offsite supply breaker ACB101-10 or 101-13 is tripped.
2. Emergency diesel generator EGS*EG1 starts.
3. Manual loading is blocked for approx. 1 min.
4. Load shed trips all loads except the load center.

5. Auto load sequence commences.

6. Category II service water separates from Category I.

14.3 Corrective Action

a. Refer to N2-OP-71 Section H15.0, or H16.0 to place the bus on alternate offsite power.

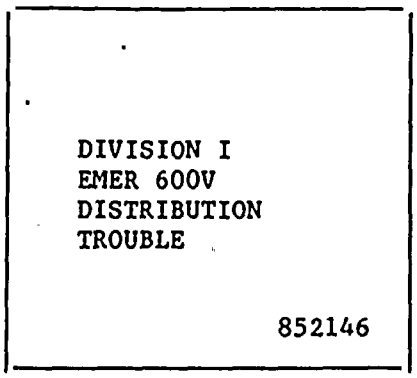
b. Notify elect. maint. of the trip.

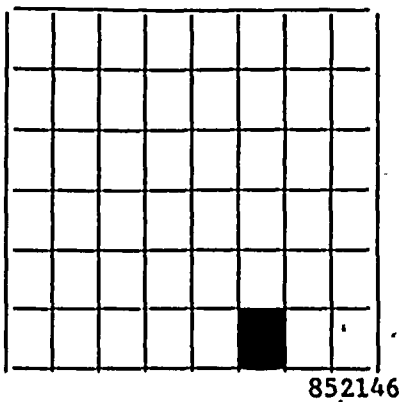
NOTE: Refer to tech. specs. for conditions associated with loss of offsite power.

15.0 852146 Division I emergency 600V distribution trouble

. Reflash: Yes

TCN-12





15.1

Computer Point	Computer Printout	Source
EJSBC19	LC US1 SPLY BRKR 1-3C	Breaker Overcurrent
EJSBC20	LC US1 SPLY BRKR 1-4B	Breaker Overcurrent
EJSBC21	LC US1 SPLY BRKR 1-5D	Breaker Overcurrent
EJSBC22	LC US1 SPLY BRKR 1-7D	Breaker Overcurrent
EJSBC23	LC US1 SPLY BRKR 1-8C	Breaker Overcurrent
EJSBC24	LC US1 SPLY BRKR 1-9C	Breaker Overcurrent
EJSBC31	LC US1 SPLY BRKR 1-6D	Breaker Overcurrent
EJSBC32	LC US1 SPLY BRKR 1-7C	Breaker Overcurrent

15.2 Automatic Response

Trip and lockout the switchgear breaker

15.3 Corrective Action

a. Verify the automatic response. At MCC's observe the voltmeter, for power distribution panels, check the load center breaker.

b. At MCC's trip the breaker shown in the "LOAD" column (incoming line breaker).

c. Remove the interlock key, and energize the MCC from the alternate feed breaker.

d. For power distribution panels:

1. Trip the panel main breaker.

2. Reset and close the load center breaker.

3. If the load center breaker stays closed, trip the panel branch breakers, and close the panel main breaker.

4. If the main breaker, and load center breaker remain closed, close in branch breakers.

e. Notify electrical maint. of the event, and any breakers tripped and/or unable to reclose.

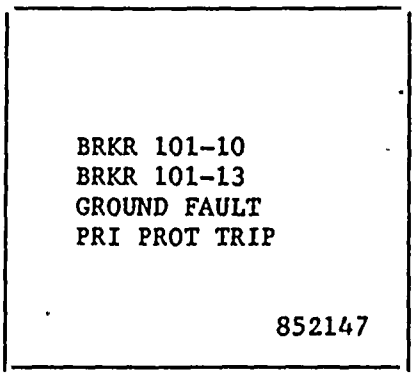
f. Refer to tech. specs. for possible LCO's due to loss of power to an emergency load.

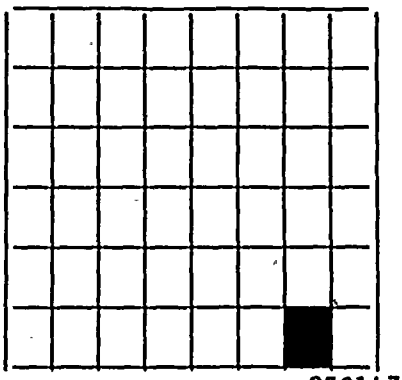
Computer Point	Load	Location	Alternate Feed
EJSBC19	2EHS*MCC102 Bus A Cub 1A	Aux Bay North EL 240	Tie breaker 13A
EJSBC20	2EHS*MCC101 Cub 1A	Screenwell Bldg	Breaker 10A
EJSBC21	2EHS*MCC103 Bus A Cub 1A	Cntl Bldg West St-by Swgr Rm	Tie breaker 16A
EJSBC22	2EHS*MCC103 Bus C Cub 27A	Cntl Bldg West St-by Swgr Rm	Tie breaker 16A
EJSBC23	2EHS*MCC102 Bus C Cub 22A	Aux Bay North EL 240	Tie breaker 13A
EJSBC24	2EHS*MCC101 Cub 10A	Screenwell Bldg	Breaker 1A
EJSBC31	2EJS*PNL100A	Cntl Bldg West St-by Swgr Rm	No alternate feed
EJSBC32	2LAC*PNL100A	Cntl Bldg West St-by Swgr Rm	No alternate feed

16.0 852147 Breaker 101-10 or Breaker 101-13 Ground Fault Primary Protection Trip

Reflash: Yes

| TCN-12





16.1	Computer Point	Computer Printout	Source
	a. ENSUC13	EM SWGR ACB 101-13 LO RLY	Switchgear 2NNS-SWG016 (16-2) Neutral directional overcurrent (67N2-2ENSA09) (load side) OR Switchgear 2ENS*SWG101 (101-13 Lineside) gnd overcurrent (50G-2ENSA32)
	b. ENSUC14	EM SWG ACB 101-10 LO RLY	Switchgear 2NNS-SWG018 (18-2 loadside) Neutral directional overcurrent (67N4-2ENSA10) OR Switchgear 2ENS*SWG101 Feeder (101-10 lineside) gnd overcurrent (50G-2ENSA33)

16.2 Automatic Response

ENSUC13 Trips and locks out ACB 101-13, and locks out ACB 101-10
ENSUC14 Trips and locks out ACB 101-10, and locks out ACB 101-13

a. Diesel generator 2EGS*EG1 Auto Starts.

b. Load shed trips all loads except the load center.

c. Diesel generator breaker (101-1) closes.

d. Load sequencing commences.

e. Manual loading of the bus is blocked for approx. 1 minute.

f. Category II service water separates from Category I.

16.3 Corrective Action

NOTE: Refer to tech. specs. for operating conditions associated with loss of offsite power.

a. Notify elect. maint. of the trip.

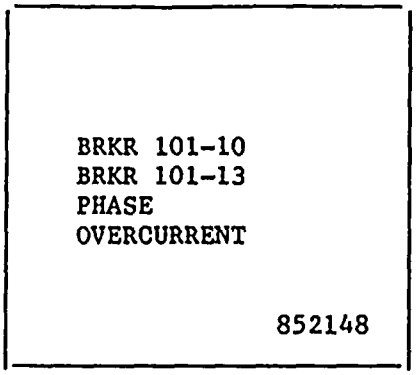
b. Refer to N2-OP-71 Section H15.0, or 16.0 to place the bus on alternate offsite feed.

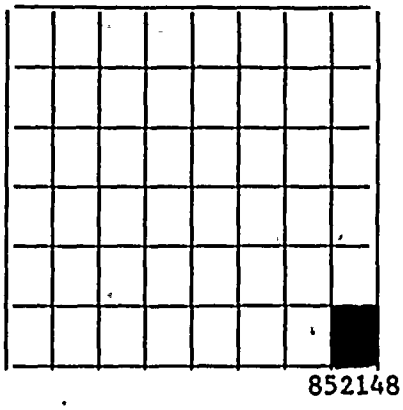
c. Reset the lockout relays: 86B-2ENSX01 (at switchgear 101-13), and 86B-2ENSX02 (at switchgear 101-10).

17.0 852148 Breaker 101-10 or 101-13 Phase Overcurrent

Reflash: Yes

TCN-12





17.1	Computer Point	Computer Printout	Source
	a. ENSIC01	RTX-XSR1A OC ACB 101-13	67-1-2ENSA25 Directional overcurrent interlock to stub bus
	b. ENSIC04	XFMR ABS-X1 OC ACB 101-10	67-2-2ENSA26 Directional overcurrent interlock to stub bus

17.2 Automatic Response

ENSIC01 Any one device trips ACB 101-13
ENSIC04 Any one device trips ACB 101-10

a. Load shed trips all loads except the load center.

b. Div I diesel generator auto starts.

c. Diesel generator breaker 101-1 closes on the bus.

d. Manual loading on the bus is blocked for approx. 1 minute.

e. Auto load sequence commences.

f. Category II service water separates from Category I.

17.3 Corrective Action

a. Verify the automatic response.

b. Sync the offsite breaker to the bus.

c. Open the diesel generator breaker, 101-1.

d. Notify elect. maint. of the trip, and of the device that caused the trip.

e. See N2-OP-100A to return the diesel generator to stand-by after offsite power is restored.

NOTE: See N2-OP-71 Section H15.0 or H16.0 to place the bus on alternate offsite feed.

NOTE: Refer to tech. specs. if unable to maintain offsite feed to the bus.

NOTE: Refer to Section H2.0 before closing the stub bus breaker.

I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (Cont.)

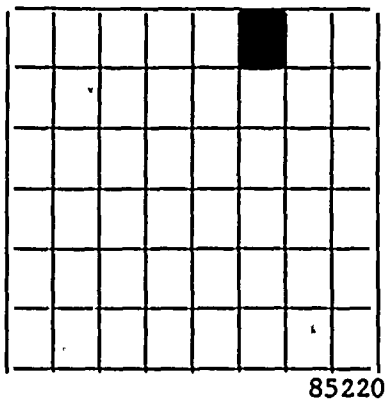
18.0 852206 Division II Load Center EJS System Inoperable

Reflash: No

TCN-12

DIVISION II
LOAD CENTER
EJS SYSTEM
INOPERABLE

852206



852206

18.1	Computer Point	Computer Printout	Source
	a. EJSBC16	DIV 2 LD CTR EJS SYS	1)EMER US3 NORM FEED ACB 3-3B
		AND	2)EMER US3 ALT FEED ACB 3-9B
		OR	3)EMER SWGR XFMR FDR ACB 103-1
		AND	4)EMER SWGR XFMR FDR ACB 103-13
		OR	5)EMER US3 MAN OUT OF SER

18.2 Corrective Action

a. Refer to the following INOP windows for response.

18.2 (Cont'd)

Window	Source	Automatic Action
1. EMER US3 NORM FEED ACB3-3B 2. EMER US3 ALT FEED ACB 3-9B	(74-2EJSY05) a)Loss of DC Control Power b)Control Room Fire disconnect c)Control Room switch PTL d)Breaker racked out (74-2EJSY06)	ANNUN. for any event in both inop windows

Corrective Action

a. For loss of 125VDC control power check fuses in cubicle 3-3A, and breaker 4C in 2BYS*SWG002B, D.C. switchgear.

b. For control room fire, return switch 2CESB20 to normal in control room fire disconnect panel 2CES*PNL416.

c. For control room panel 852 control switches in pull-to-lock, remove one, or both switches from pull-to-lock.

d. For breakers not in operate Position, rack in breaker 3-3B and/or 3-9B.

Window	Source	Automatic Action
3. EMER SWGR XFMR FDR ACB 103-1 4. EMER SWGR XFMR FDR ACB 103-13	(74-2EJSY03) a)Loss of DC Control Power b)Control Room Fire Disconnect c)Control Room Control switch PTL d)Breaker racked out (74-2EJSY04)	Annun. for any event in both inop windows

Corrective Action

a. For loss of 125VDC control power, check fuses in cubicle 103-13, and breaker 2D in 2BYS*SWG002B, D.C. switchgear.

b. For Control Room fire, return switches 2CESB15 and 2CESB16 to normal in Control Room Fire Disconnect Panel 2CES*PNL416.

c. For breakers not in operate position, rack in breaker 103-1 and/or 103-13.

d. For Control Room Panel 852 control switches in pull-to-lock, remove one switch, or both switches from pull-to-lock.

18.2 (Cont'd)

Window	Source	Automatic Action
5. EMER US3 MAN OUT OF SER	EMER US3 MAN OUT OF SER PUSHBUTTON	None

Corrective Action

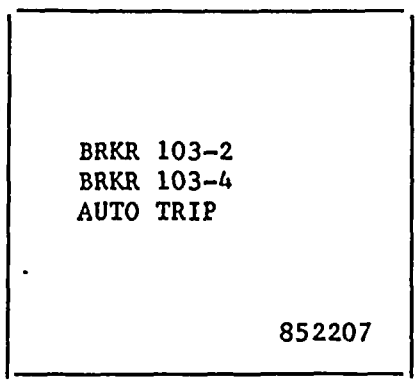
a. Restore the pushbutton to normal.

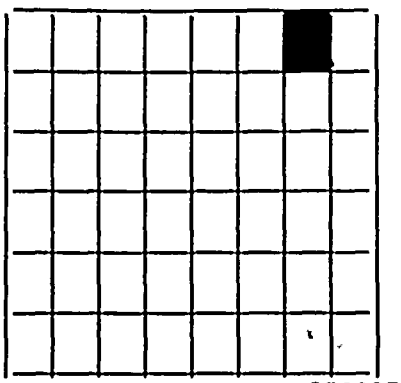
I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (Cont.)

19.0 852207 Breaker 103-2 or 103-4 Auto Trip

Reflash: Yes

TCN-12





19.1

	Computer Point	Computer Printout	Source
a.	ENSUC06	2ABS-XS1 ACB 103-2 TRIP	52-2ENSY11
	TRIP SIGNALS ORIGINATE FROM:		
	ENSBC04	FDR-XFMR ACB 103-2	52-2ENSY11
	ENSBC18	4KV EM BUS 103 UNDER FREQ	SEE 852232
	ENSBC33	LOSS OF BUS 103 VOLTAGE	62X-2ENSY05
	ENSBC34	DEGRADED BUS*103 UNDV	62Y-2ENSY06
	ENSBC35	LD SHED SIGNAL BUS 103	27X3-2ENSY04
	ENSEC02	BUS ENS*103 UNDV	SEE 852240
	ENSEC04	BUS 103 DEGRADED VOLT	SEE 852240
	ENSIC02	2ABS-X1 PH OC ACB 103-2	SEE 852248
	ENSUC12	EM SWGR ACB 103-2 LO RLY	SEE 852231
	ENSUC16	EM SWGR ACB 103-2 LO RLY	SEE 852247
	ENSUC20	EM SWGR ACB 103-2 LO RLY	SEE 852239
	NNSUC28	4KV BUS E18 LO RLY 2 TRIP	SEE 852558

19.1 (Cont'd)

	Computer Point	Computer Printout	Source
b.	ENSUC07	2RTX-XSR1B ACB 103-4 TRIP	52-2ENSY10
	TRIP SIGNALS ORIGINATE FROM:		
	ENSBC06	FDR XFMR ACB 103-4	52-2ENSY10
	ENSBC18	4KV EM BUS 103 UNDER FREQ	SEE 852232
	ENSBC33	LOSS OF BUS 103 VOLTAGE	62X-2ENSY05
	ENSBC34	DEGRADED BUS*103 UNDV	62Y-2ENSY06
	ENSBC35	LD SHED SIGNAL BUS 103	27X3-2ENSY04
	ENSEC02	BUS ENS*103 UNDV	SEE 852240
	ENSEC04	BUS 103 DEGRADED VOLT	SEE 852240
	ENSIC03	RTX-XSRIB PH OC ACB 103-4	SEE 852248
	ENSUC11	EM SWGR ACB 103-4 LO RLY	SEE 852231
	ENSUC15	EM SWGR ACB 103-4 LO RLY	SEE 852247
	ENSUC19	EM SWGR ACB 103-4 LO RLY	SEE 852239
	NNSUC25	4KV BUS E17 LO RLY2 TRIP	SEE 852548

19.2 Automatic Response

a. Diesel Generator start.

b. Load shed all but load center breakers.

c. Auto load sequence commences.

d. Manual loading blocked for approx. 1 min.

e. Category II service water separates from Category I.

19.3 Corrective Action

a. See N2-OP-71 Section H17 and H18 to transfer feeders to the emergency bus.

b. Place the emergency bus on offsite power.

c. Notify elect. maint. of the event.

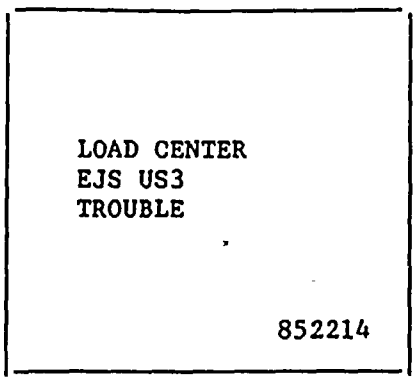
d. See N2-OP-100A to return the diesel generator to stand-by after offsite power is restored.

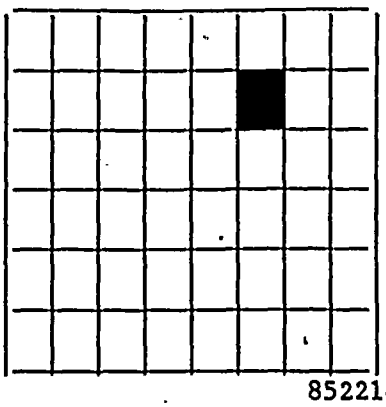
NOTE: If computer point ENSBC40 alarms (DIV 2 LOCA SIGNAL), before the bus is restored to offsite power, trip breaker 103-14.

20.0 852214 Load Center EJS*US3 Trouble

Reflash: Yes

TCN-12





20.1	Computer Point	Computer Printout	Source
	a. EJSBC18	UV PROT US3 LOSS DC PWR	74-2EJSY08
	b. EJSUC11	2EJS US3 NORM BRKR EL FLT	52-2EJSY05 Bkr overcurrent
	c. EJSUC12	2EJS US3 ALTN BRKR EL FLT	52-2EJSY06 Bkr overcurrent

20.2 Automatic Response

EJSBC18	None
EJSUC11	Trips breaker ACB3-3B
EJSUC12	Trips breaker ACB3-9B

20.3 Corrective Action

EJSBC18 For loss of control power, check fuses in load center cubicle 3-3A, and breaker 4C at 2BYS*SWG002B, DC switchgear.

EJSUC11 For breaker overcurrent trip, check annunciator 852246 for a
EJSUC12 branch breaker trip, and close in the other load center feeder breaker.

a. If both feeder breakers trip, send an operator to the east stand-by switchgear room.

1. Open all branch breakers on US3.

2. Reset both feeder breakers.

3. Close feeder breaker 3-3B.

4. Close breaker 3-9B, if breaker 3-3B fails to close.

5. Close in branch breakers.

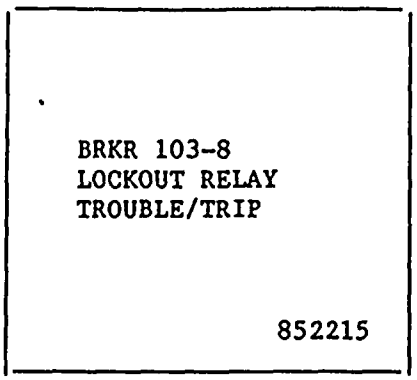
a. Notify elect. maint. of the event, and any branch breakers which are tripped, or fail-to-close.

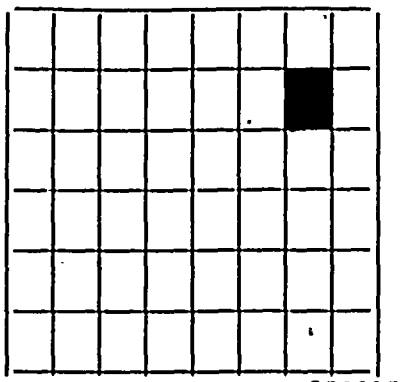
I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (Cont.)

21.0 852215 Breaker 103-8 Lockout Relay Trouble or Trip

Reflash: Yes

TCN-12





21.1	Computer Point	Computer Printout	Source
a.	ENSUC02	EM SWGR ACB 103-8 LO RLY	2NNS-SWG015 Phase or Ground overcurrent 50/51-2ENSB03 50G-2ENSB04
b.	ENSUC04	EM SWGR ACB 103-8 TRIP	52-2ENSX12 (also brings in ENSBC02)
	TRIP SIGNALS ORIGINATE FROM:		
	ENSBC35	LD SHED SIGNAL BUS 103	27X3-2ENSY04
	ENSBC40	DIV 2 LOCA SIGNAL	K-110B
c.	ENSUC24	BUS 103 STUB FDR GND RLT	Back-Up Ground overcurrent 50G-2ENSB08

21.2 Automatic Response

ENSUC02 None
ENSUC04 None
ENSUC24 a. Trips 103-4 and 103-2, both offsite feeder breakers, see 852239.

b. Trips 103-N1, Diesel Gen. Neutral breaker, see 852227.

c. Category II service water separates from Category I.

d. Load shed trips all loads except load center.

e. Auto start Diesel generator.

f. Auto load sequence commences.

g. Manual loading of the bus is blocked for approx. 1 minute.

21.3 Corrective Action

a. Verify the stub bus breaker trip. Check computer point ENSBC02.

b. See Section H2.0 to re-energize the stub bus after loss of offsite power.

c. Reset lockouts on tripped breakers.

d. Notify elect. maint. of the event and any breakers which remain tripped.

e. See N2-OP-100A to return the diesel gen. to stand-by after offsite power is restored.

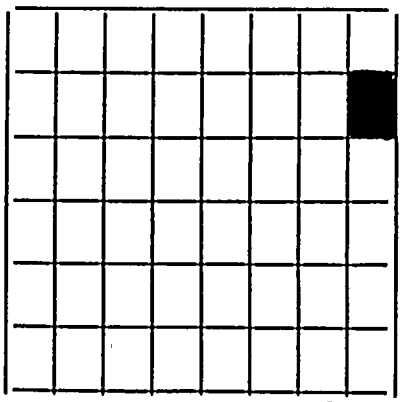
I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (Cont.)

22.0 852216 Division II UPS 2B System Trouble

Reflash: No

DIVISION II
UPS 2B
SYSTEM
TROUBLE

852216



852216

22.1	Computer Point	Computer Printout	Source
	a. VBABC04	UPS2B SYSTEM TROUBLE	UPS2B/A9-K51

NOTE: A9-K51 is initiated by any local UPS2B alarm. This relay will stay de-energized as long as any local alarm exists. This annunciator will not reflash if another local alarm comes in.

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22.2 Automatic Response

a. UPS may realign to power the vital bus from either backup D.C., or maintenance supply dependent on the local alarm.

22.3 Corrective Action

a. Check the UPS output voltage on Control Room panel 852 meter labelled "Vital bus 2VBS*UPS2B 125VAC Output," or computer point VBSVA101.

b. Send an operator to record meter readings and status light indications at the UPS.

NOTE: Consult Tech. Spec. 3.8.3.1 if the UPS is on maintenance power or if the local alarm response indicates that the UPS is inoperable and the plant is in Mode 1, 2 or 3.

TCN-13

c. Notify electrical maintenance for repair or adjustments to the UPS.

d. See Section H of this procedure for operation of the UPS with the loss of a source, or sources.

e. Take corrective action as required per following Table:

(NCTS) Local Alarm Description - Corrective Action

Alarm	Description	Corrective Action
Synch Loss	1. Maintenance AC frequency is out of tolerance	a. Initiate a WR
	or	
	2. Maintenance AC is not present	a. Restore maint. AC (if fuse is blown in the maintenance AC supply regulator, initiate a WR)
	or	
	3. UPS inverter output frequency is out of tolerance (60Hz±3Hz)	a. Verify on Frequency meter
		b. If valid declare INOP and if the plant is in Mode 1, 2 or 3 refer to Tech. Spec. 3.8.3.1
		c. Initiate a WR

Alarm	Description	Corrective Action
Battery Drain/Charge	Current being drawn from batteries caused by:	
	1. Loss of normal AC to UPS	a. Restore normal AC
	or	
	2. Voltage on DC switchgear higher than UPS internal DC voltage	a. If the charger is on equalize, notify Electrical to check charger equalize voltage
		b. If the charger is not on equalize, initiate a WR
	NOTE: Refer to Tech. Specs. 3.8.2.1 or 3.8.2.2	
Rectifier AC Loss	Loss of normal AC to UPS	a. If CB-51 has tripped, initiate a WR
		b. If CB-51 is closed, restore upstream normal AC supply
Reverse Transfer	Static switch is in maintenance position	a. Declare the UPS INOP and if the plant is in Mode 1, 2 or 3 refer to Tech. Spec. 3.8.3.1
		b. If other alarms are present, correct the other alarms prior to restoring the UPS to normal AC power
		c. If all other alarms clear, verify UPS AC output voltage present on AC voltmeter, then push "Forward" static switch pushbutton
Fan Fail	One or more fans have stopped	a. Visually check, if possible, to determine which fan is off
		b. Initiate a WR
	NOTE: This alarm may be concurrent with a Blown Fuse Alarm	

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Alarm	Description	Corrective Action
Low Inverter Voltage	UPS inverter output voltage is 15% low (~103 Vac)	a. Verify on AC voltmeter b. If valid declare INOP and if the plant is in Mode 1, 2 or 3 refer to Tech Spec. 3.8.3.1
Inverter Over Temp	Unit overheating	a. Initiate a WR
Fuse Blown	Fuse within UPS blown	a. Initiate a WR to replace fuses
	NOTE: This alarm alone does not INOP the UPS. The operability determination must be made based on other local alarms (eg. "Low Battery", "Reverse Transfer", etc.)	
Rectifier DC Grounded	UPS internal DC Bus grounded	a. Initiate a WR
Low DC Bus	UPS internal DC Bus voltage is low (DC Bus Low)	a. Initiate a WR for Repair/adjustment
Overload	UPS inverter supplying over 100% rating of unit (~165 Amps)	a. Check output ammeter i) If unit loaded, clear non-essential loads ii) If alarm false, initiate a WR
Low Battery	UPS-internal DC Bus voltage is below 110 volts (DC Bus Lo/Lo)	a. Place S-51, the DC voltmeter selector switch in "Battery" i) If battery voltage indicates ≤110 VDC declare the UPS INOP and if the plant is in Mode 1, 2 or 3 refer to Tech. Spec. 3.8.3.1 ii) If battery voltage indicates >110 VDC, notify Electrical Maintenance
	NOTE: With DC Bus below 105 VDC, CB-52 will trip	

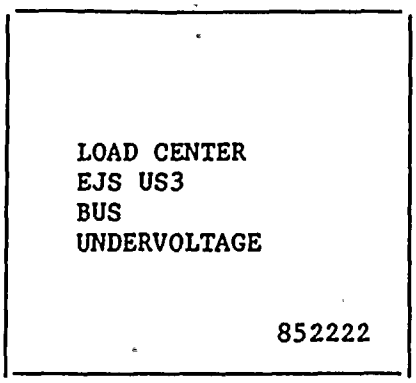
TCN 13

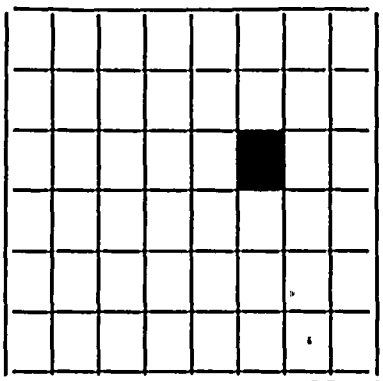
I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (Cont.)

23.0 852222 Load Center EJS*US3 Bus Undervoltage

Reflash: No

TCN-12





23.1	Computer Point	Computer Printout	Source
	a. EJSEC02	LD CTR US3 BUS UNDERVOLT	Undervoltage relays 27A-2EJSB11 and 27B-2EJSB11 Setpoint: 400V for 3 Sec.

23.2 Automatic Response

a. Trip Reactor Bldg. Recirc. Fan B, 2HVR*UC413B. Breaker 3-4C.

b. Trip Control Bldg. Chiller Compressor, 2HVK*CHL1B. Breaker 3-4D.

23.3 Corrective Action

a. Verify auto-start of redundant units per N2-OP-52 for HVR*UC413A/B, and N2-OP-53A for HVK*CHL1A/B.

b. Check the voltage on the DIV II 4160V bus 2ENS*SWG103.

c. Check the voltage on the DIV II load center, 2EJS*US3.

NOTE: Loss of offsite power for 3 sec. will also bring in this annunciator.

d. If the 4160 DIV II bus in nominally 4160V, trip the load center incoming line breaker inservice (bkr 3-3B, or 3-9B), and close the other feeder breaker (bkr 3-9B, or 3-3B).

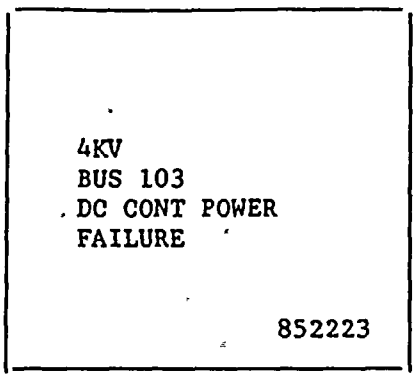
e. Notify elect. maint. of the event, and any tripped breakers.

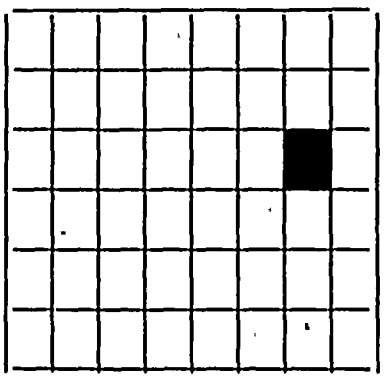
I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (Cont.)

24.0 852223 4KV Bus 103 DC Control Power Failure

Reflash: Yes

TCN-




852223

24.1	Computer Point	Computer Printout	Source
	a. ENSBC13	125 VDC CONT PWR DII BUS A	Loss of protective relaying power to trip 103-2, 103-4, & 103-14 (offsite feeders, and Dies. Gen. bkr) due to: phase overcurrent; Dies. Gen. gnd overcurrent; bus gnd overcurrent; incoming line XFMR neutral gnd overcurrent. emer. swgr DC bus A 74-2ENSY01
	ENSBC14	125VDC CONT PWR D II BUS B	Loss of protective relaying power to trip 103-2, 103-4, & 103-14 (offsite feeders, and Dies. Gen bkr) due to: phase overcurrent; Dies. Gen. gnd overcurrent; bus gnd. overcurrent; incoming line XFMR neutral gnd overcurrent. emer. swgr DC bus B 74-2ENSY02.

24.1 (Cont'd)

Computer Point	Computer Printout	Source
ENSBC16	125VDC CONT PWR D II BUS B	Loss of protective relaying power to trip 103-2, 103-4, & 103-N1 (offsite feeders, and Dies. Gen. neutral bkr) due to: Stub bus (SWG0015) gnd overcurrent; load center XFMR EJS*X3A phase overcurrent; load center XFMR EJS*X3B phase overcurrent. emer. swgr. D.C. bus B 74-2ENSY03

24.2 Automatic Response

NONE

24.3 Corrective Action

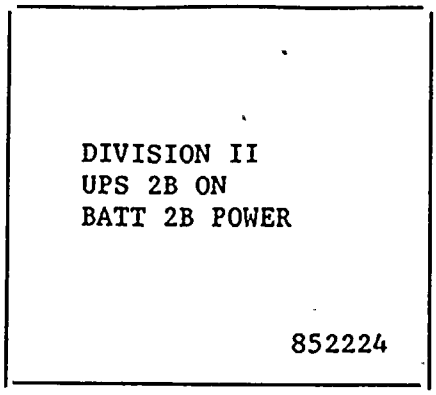
a. Send an operator to the DIV II swgr to check the D.C. fuses in cubicle 103-13.

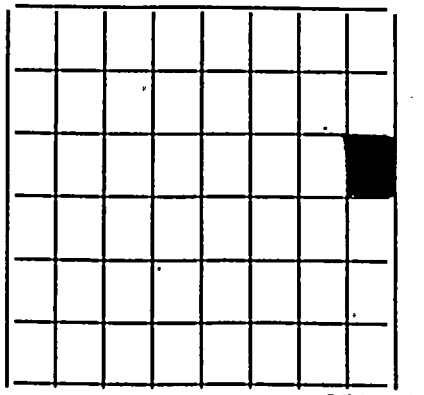
b. If both D.C. buses are alarming, check the D.C. switchgear 2BYS*SWG002B cubicle 2D.

c. Notify elect. maint. of the event, the relay number, and any tripped breakers.

25.0 852224 Division II UPS 2B On Battery 2B Power

Reflash: No





25.1

Computer Point	Computer Printout	Source
a. VBABC04	DIV 2 UPS2B ON BATT PWR	UPS2B/A9-K52

NOTE: UPS2B/A9-K52 is initiated by local alarm "Battery Drain/ Charge".

25.2 Automatic Response

NONE

25.3 Corrective Action

a. Notify SSS.

b. IF required by Tech Spec 3.8.2.1 or 3.8.2.2, place the second battery charger in service in accordance with N2-OP-74, Sect H.4. TCN- 1

c. Dispatch operator to 2UPS 2B (in the DIV II swgr room) to record indications on front panel of UPS.

d. Check the UPS output voltage on cont. rm. panel 852 "Vital Bus 2VBS*UPS2B 125VAC Output," or computer point VBSVA101.

e. Check corrective action for annunciator 852116 - local alarm "Battery Drain/Charge".

f. Check for tripped feeder, panel 2EJS*PNL300B bkr #7.

g. Check the UPS front panel breaker #CB-51 is closed. TCN-

h. Check the 125VDC switchgear for proper voltage and current. There should be no battery current if the charger is operating within its load range.

i. Refer to Section H of this procedure to align the UPS for Off Normal operation.

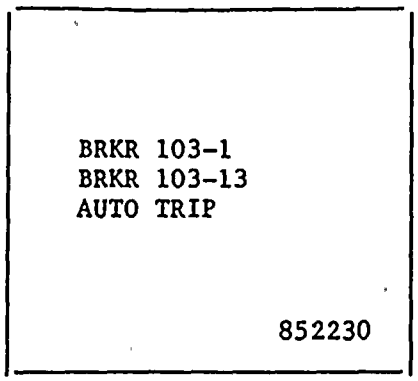
j. If necessary contact Electrical Maintenance to align or repair UPS.

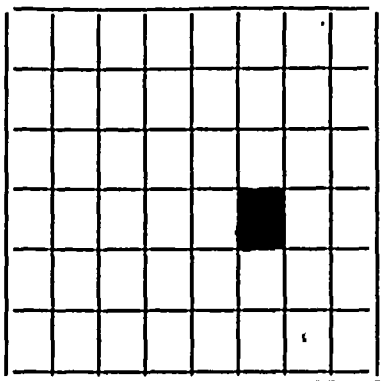
I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (Cont.)

26.0 852230 Breaker 103-1 or 103-13 Auto Trip

Reflash: Yes

TCN-12





26.1	Computer Point	Computer Printout	Source
a.	EJSUC07	EJSX3A ACB 103-1 AUTO TRIP	52-2EJSY03 4160V bkr to load center 2EJS*US3
b.	EJSUC08	EJSX3B ACB 103-13 AUTO TRIP	52-2EJSY04 4160V bkr to load center 2EJS*US3

26.2 Automatic Response

NONE

26.3 Corrective Action

a. At control room panel 852, close the alternate feeder breaker to load center 2EJS*US3.

This is:
load center breaker 3-9B, if breaker 103-1 tripped, or
load center breaker 3-3B if breaker 103-13 tripped.

b. Notify elect. maint. of the event, and any breakers tripped.

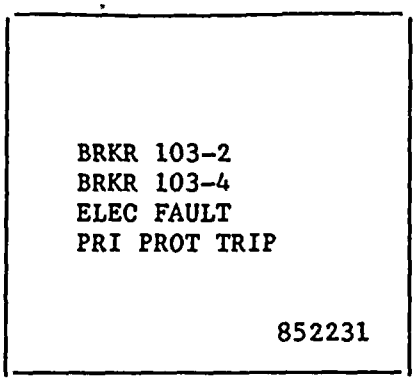
c. Refer to tech. specs. if unable to maintain feed to the load center.

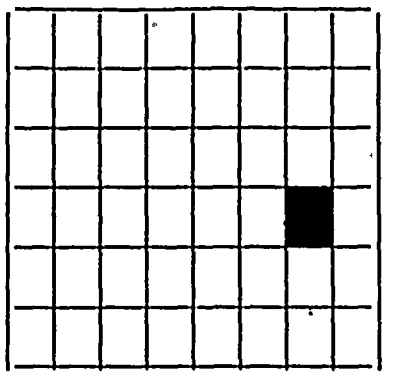
I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (Cont.)

27.0 852231 Breaker 103-2 or 103-4 Electrical Fault Or Primary Protection Trip

Reflash: Yes

| TCN-12





27.1	Computer Point	Computer Printout	Source
a.	ENSUC11	EM SWG ACB 103-4 LO RLY	50/51-2ENSB01 Emer. bus feeder overcurrent
b.	ENSUC12	EM SWGR ACB 103-2 LO RLY	50/51-2ENSB02 Emer. bus feeder overcurrent

27.2 Automatic Response

ENSUC11 Trips and locksout the normal offsite feeder breaker, 103-4; locksout the alternate offsite feeder breaker, 103-2; and locksout auto closing of the diesel generator breaker, 103-14.

ENSUC12 Trips and locksout the alternate offsite feeder breaker, 103-2; locksout the normal offsite feeder breaker, 103-4; locksout auto closing of the diesel generator breaker, 103-14.

a. Load shed trips all breakers except to the load center, 103-1, and 103-13.

b. Diesel generator auto starts.

27.3 Corrective Action

a. Restart the switchgear per Section E6.0.

b. Notify elect. maint. of the trip and any breakers remaining tripped.

c. See N2-OP-71 Section H17.0, or H18.0 to place the bus on alternate offsite feed.

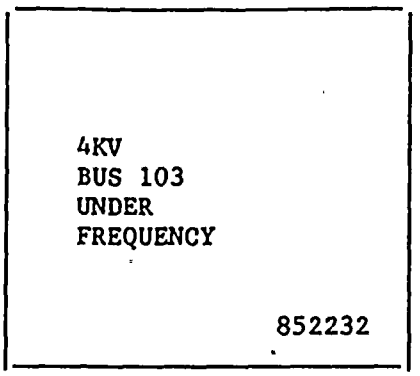
d. Refer to tech. specs. for possible LCO due to loss of DIV II power.

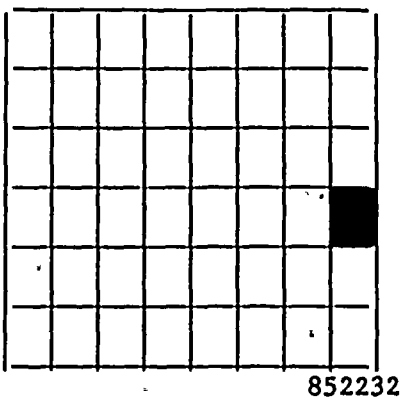
I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (Cont.)

28.0 852232 4KV Bus 103 Underfrequency

Reflash: No

| TCN-





28.1	Computer Point	Computer Printout	Source
	a. ENSBC18	4KV EM BUS 103 UNDER FREQ	81-2ENSB24 Mtr and relay cubicle at swgr.

28.2 Automatic Response

a. Trips ACB103-2 and 103-4 (offsite feeder breakers).

b. Auto start Diesel Generator 2EGS*EG3.

c. Load shed trips all loads except load center.

d. Manual loading of the bus is blocked for approx. 1 minute.

e. Auto load sequencing commences.

f. Category II service water separates from Category I.

28.3 Corrective Action

a. Verify auto station response.

b. Refer to N2-OP-71 Section H17.0, or H18.0 to place the bus on alternate offsite feed.

c. Notify elect. maint. of the trip.

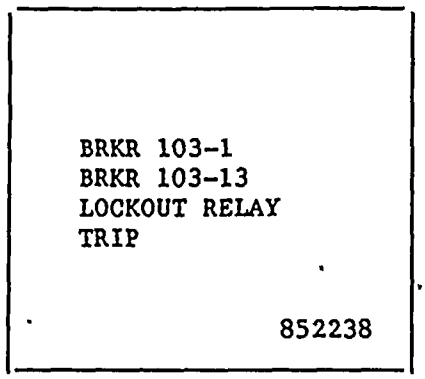
d. Refer to tech. specs. for possible LCO.

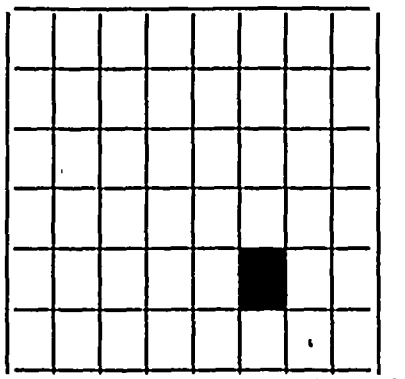
I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (Cont.)

29.0 852238 Breaker 103-1 Or 103-13 Lockout Relay Trip

Reflash: Yes

TCN-12




852238

29.1	Computer Point	Computer Printout	Source
	a. EJSUC03	XFMR 2EJSX3A ACB 103-1 LO	50G-2EJSB03 or 50/51-2EJSB02 Gnd or phase overcurrent on the 4160V side of load center transformer.
	b. EJSUC04	XFMR 2EJSX3B ACB 103-13 L	50G-2EJSB06 or 50/51-2EJSB05 Gnd or phase overcurrent on the 4160V side of load center transformer.
	c. EJSUC15	EM LC XFMR 3A FDR FAULT-BU	51-2EJSB01 Backup overcurrent on the 4160V side of load center transformer.
	d. EJSUC16	EM LC XFMR 3B FDR FAULT-BU	51-2EJSB04 Backup overcurrent on the 4160V side of load center transformer.

29.2 Automatic Response

EJSUC03 Trips & locks out ACB103-1 and US3-3B. Isolates the load center transformer.

EJSUC04 Trips & locks out ACB103-13 and US3-9B. Isolates the load center transformer.

EJSUC15 Trips & locks out ACB 103-2 and 103-4 and prevents auto closing of ACB 103-14. Loss of voltage load sheds the bus. Diesel gen. auto starts and the DIV II 4160V bus remains de-energized.

29.2 (Cont'd)

EJSUC16 Trips & locks out ACB 103-2 and 103-4 and prevents auto closing of ACB 103-14. Loss of voltage load sheds the bus. Diesel gen. auto starts and the DIV II 4160V bus remains de-energized.

29.3 Corrective Action

EJSUC03
EJSUC04

a. Verify the trips by checking computer points: EJSUC11 for US3-3B and EJSUC07 for 103-1
OR
EJSUC12 for US3-9B and EJSUC08 for 103-13

b. Close the alternate load center incoming line breaker, at control room panel 852, US3-3B or US3-9B.

c. Notify elect. maint. of the trip, and any breakers remaining tripped.

NOTE: Refer to tech. specs. if unable to maintain feed to the load center.

NOTE: The load center powers MOV's associated with pumps which may remain running on the 4160V bus.

EJSUC15
EJSUC16

aa. Trip the 4160V breakers feeding the load center. Breaker 103-1 and 103-13.

bb. At control room panel 852, place the diesel generator breaker 103-14 control switch in pull-to-lock.

cc. At DIV II switchgear, reset lockout relays: 86-2-2EGPY02 (103-14); 86C-2ENSY01 (103-N2); 86C-2ENSY02 (103-N2).

dd. Close the offsite feeder breaker to the DIV II 4160V bus, breaker 103-2, or 103-4.

ee. Close the alternate 4160V breaker to the load center, breaker 103-1, or 103-13.

ff. Close the 600V incoming line breaker to the load center, breaker US3-3B, or US3-9B.

gg. At control room panel 852, remove the DIV II diesel generator breaker 103-14 control switch from pull-to-lock.

hh. Close in selected loads on the DIV II 4160V bus.

ii. Place the diesel generator in stand-by per N2-OP-100A.

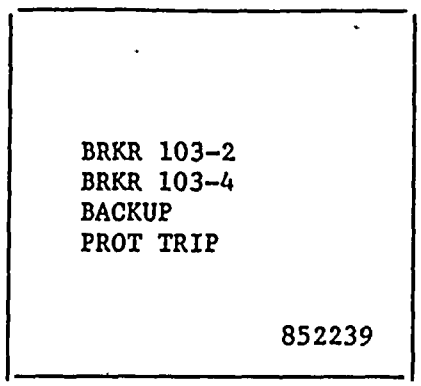
jj. Notify elect. maint. of the trip and any breakers remaining tripped.

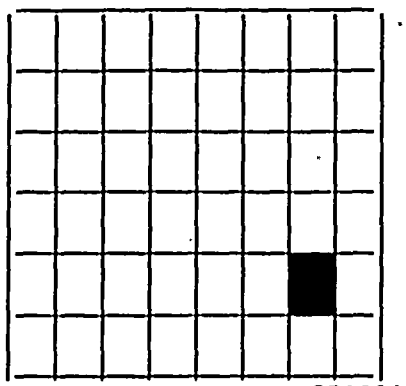
I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (Cont.)

30.0 852239 Breaker 103-2 Or 103-4 Backup Protection Trip

Reflash: Yes

TCN-12





30.1	Computer Point	Computer Printout	Source
a.	ENSUC19	EM SWGR ACB 103-4 LO RLY	67N5-2ENSB05 Diesel Gen. gnd overcurrent
b.	ENSUC20	EM SWGR ACB 10 LO RLY	67N7-2ENSB05 Diesel Gen. gnd overcurrent

30.2 Automatic Response

a. Trips & locks out ACB103-4.

b. Trips & locks out ACB103-2.

c. Category II service water separates from Category I.

30.3 Corrective Action

a. Verify auto station response by checking computer point ENSUC06 for 103-2, or ENSUC07 for 103-4.

b. Trip breakers 103-14, and 103-N1.

c. Reset lockout relays 86C-2ENSY01, and 86C-2ENSY02.

d. Close the offsite feeder breaker, 103-2, or 103-4.

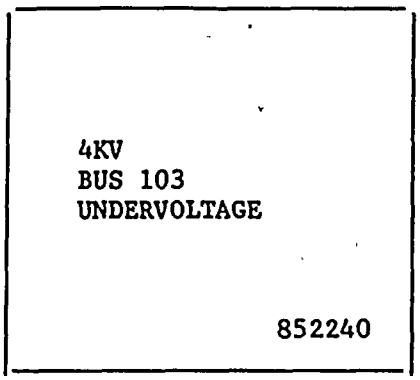
e. Notify elect. maint. of the trip.

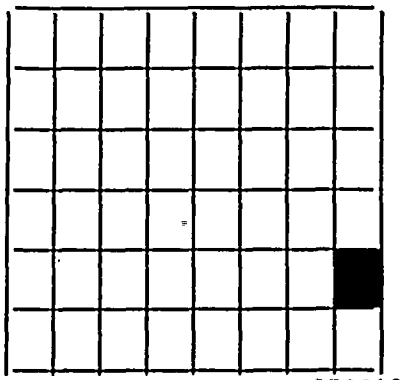
f. Refer to tech. specs. if unable to maintain feed to the DIV II bus.

I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (Cont.)

31.0 852240 4KV Bus 103 Undervoltage

Reflash: Yes





This annunciator will not alarm on bus 103 under or degraded voltage because knife switch TB-3-1593 in Panel 2CEC*PNL858D is open. 16366

31.1	Computer Point	Computer Printout	Source
a.	ENSEC02	BUS ENS 103 UNDV	27AA, AB, AC Phase to ground undervoltage relays
b.	ENSEC04	BUS 103 DEGRADED VOLT	27BA, BB, BC Phase to ground undervoltage relays

31.2 Automatic Response

a. For one device on either computer point, NONE.

b. For two devices on either computer point, loss of offsite power.

1. Offsite supply breaker ACB103-4 or 103-2 is tripped.
2. Emergency diesel generator EGS*EG3 starts.
3. Manual loading is blocked for approx. 1 minute.
4. Bus 2ENS*SWG103 is shed of all loads except load center 2EJS*US3.

5. Diesel generator breaker ACB101-1 closes, energizing load center 2EJS*US3.

6. Load sequence selection commences.

7. Category II service water separates from Category I.

31.3 Corrective Action

a. Refer to N2-OP-71 Section H17.0, or H18.0 to place the bus on alternate offsite power.

b. Notify elect. maint. of the trip.

NOTE: Refer to tech. specs. for conditions associated with loss of offsite power.

I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (Cont.)

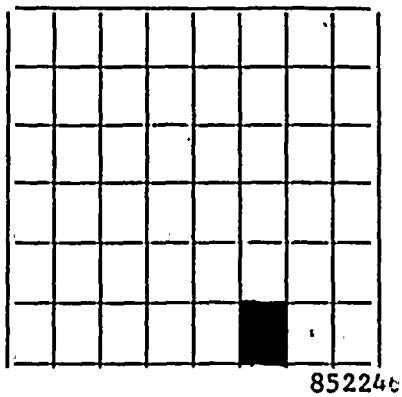
32.0 852246 Division II emergency 600V distribution trouble

Reflash: Yes

TCN-12

DIVISION II
EMER 600V
DISTRIBUTION
TROUBLE

852246



852246

32.1	Computer Point	Computer Printout	Source
	EJSBC25	LC US3 SPLY BRKR 3-3C	Breaker Overcurrent
	EJSBC26	LC US3 SPLY BRKR 3-4B	Breaker Overcurrent
	EJSBC27	LC US3 SPLY BRKR 3-5D	Breaker Overcurrent
	EJSBC28	LC US3 SPLY BRKR 3-7D	Breaker Overcurrent
	EJSBC29	LC US3 SPLY BRKR 3-8C	Breaker Overcurrent
	EJSBC30	LC US3 SPLY BRKR 3-9C	Breaker Overcurrent
	EJSBC33	LC US3 SPLY BRKR 3-6D	Breaker Overcurrent
	EJSBC34	LC US3 SPLY BRKR 3-7C	Breaker Overcurrent

32.2 Automatic Response

Trip and lockout the switchgear breaker.

32.3 Corrective Action

a. Verify the automatic response. At MCC's observe the voltmeter, for power distribution panels, check the load center breaker.

b. At MCC's, trip the breaker shown in the "LOAD" column (incoming line breaker).

c. Remove the interlock key, and energize the MCC from the alternate feed breaker.

d. For power distribution panels:

1. Trip the panel main breaker.

2. Reset and close the load center breaker.

3. If the load center breaker stays closed, trip the branch breakers in the power distribution panel, and close the panel main breaker.

4. If the main breaker, and load center breaker remain closed, close in branch breakers.

e. Notify electrical maint. of the event, and any breakers tripped and/or unable to reclose.

f. Refer to tech. specs. for possible LCO's due to loss of power to an emergency load.

Computer Point	Load	Location	Alternate Feed
EJSBC25	2EHS*MCC302 Bus B Cub 1A	Aux Bay South EL 240	Tie breaker 11A
EJSBC26	2EHS*MCC301 Cub 1A	Screenwell Bldg	Breaker 8A
EJSBC27	2EHS*MCC303 Bus B Cub 1A	Cntl Bldg East St-by Swgr Rm	Tie breaker 13A
EJSBC28	2EHS*MCC303 Bus D Cub 24A	Cntl Bldg East St-by Swgr Rm	Tie breaker 13A
EJSBC29	2EHS*MCC302 Bus D Cub 22A	Aux Bay South EL 240	Tie breaker 11A
EJSBC30	2EHS*MCC301 Cub 8A	Screenwell Bldg	Breaker 1A
EJSBC33	2EJS*PNL300B	Cntl Bldg East St-by Swgr Rm	No alternate feed
EJSBC34	2LAC*PNL300B	Cntl Bldg East St-by Swgr Rm	No alternate feed

I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (Cont.)

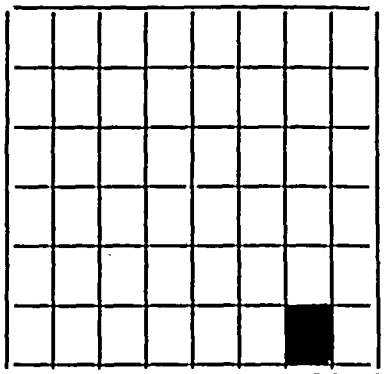
33.0 852247 Breaker 103-2 Or 103-4 Ground Fault Primary Protection Trip

Reflash: Yes

TCN-1 2

BRKR 103-2
BRKR 103-4
GROUND FAULT
PRI PROT TRIP

852247



852247

33.1	Computer Point	Computer Printout	Source
	a. ENSUC15	EM SWGR ACB 103-4 LO RLY	Switchgear 2NNS-SWG017 (17-2) Neutral directional overcurrent (67N6-2ENSB09) (Load Side) OR Switchgear 2ENS*103 (103-4) gnd overcurrent (50G-2ENSB32) Line Side
	b. ENSUC16	EM SWGR ACB 103-2 LO RLY	Switchgear 2NNS-SWG018 (18-2 Load Side) Neutral directional overcurrent (67N4-2ENSA10) OR Switchgear 2ENS*103 incoming line breaker (103-2 line side) gnd overcurrent (50G-2ENSB33)

33.2 Automatic Response

ENSUC15 Trip and lockout ACB103-4, and locksout ACB103-2
ENSUC16 Trip and lockout ACB103-2, and lockout ACB103-4.

a. Diesel generator 2EGS*EG3 Auto Starts

b. Load shed trips all loads except the load center.

c. Diesel generator breaker (103-14) closes.

d. Load sequencing commences.

e. Manual loading of the bus is blocked for approx. 1 minute.

f. Category II service water separates from Category I.

33.3 Corrective Action

NOTE: Refer to tech. specs. for operating conditions associated with loss of offsite power.

a. Notify elect. maint. of the trip.

b. Reset the lockout relays: 86B-2ENSY01 (at switchgear 103-4), and 86B-2ENSY02 (at switchgear 103-2)

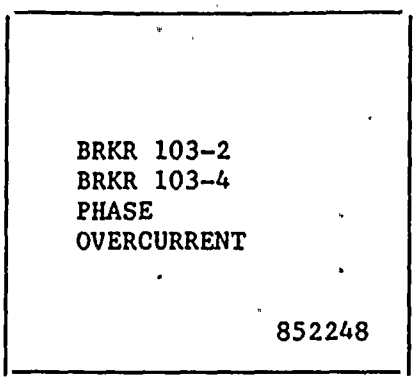
c. Refer to N2-OP-71 Section H17.0, or 18.0 to place the bus on alternate offsite feed.

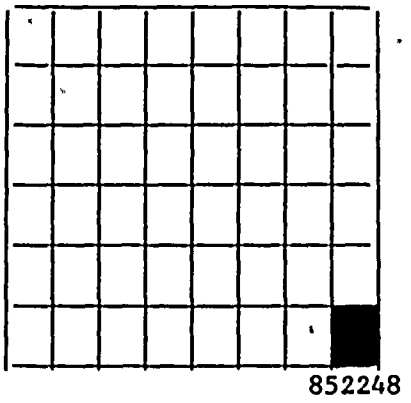
I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (Cont.)

34.0 852248 Breaker 103-2 Or 103-4 Phase Overcurrent

Reflash: Yes

TCN-12





34.1	Computer Point	Computer Printout	Source
	a. ENSIC02	2ABS-X1 PH OC ACB 103-2	67-2-2ENSB26 Directional overcurrent interlock to stub bus
	b. ENSIC03	RTX-XSR1B PH OC ACB 103-4	67-1-2ENSB25 Directional overcurrent interlock to stub bus

34.2 Automatic Response

ENSIC02 Any one device trips ACB 103-2
ENSIC03 Any one device trips ACB 103-4

a. Load shed trips all except load center breakers.

b. DIV II diesel generator auto starts.

c. Diesel generator breaker 103-14 closes on the bus.

d. Manual loading on the bus is blocked for approx. 1 minute.

e. Auto load sequence commences.

f. Category II service water separates from Category I.

34.3 Corrective Action

a. Verify the automatic response.

b. Sync the offsite breaker to the bus.

c. Open the diesel generator breaker 103-14.

d. Notify elect. maint. of the trip, and of the device causing the trip.

e. See N2-OP-100A to return the diesel generator to stand-by after offsite power is restored.

NOTE: See N2-OP-71 Section H17.0, or H18.0 to place the bus on alternate offsite feed.

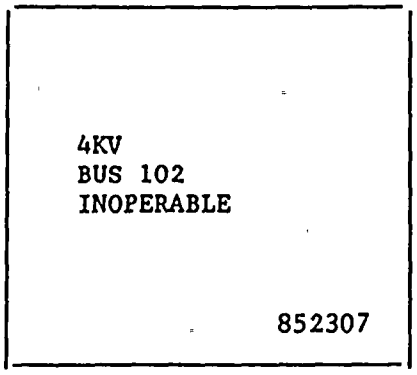
NOTE: Refer to tech. specs. if unable to maintain offsite feed to the bus.

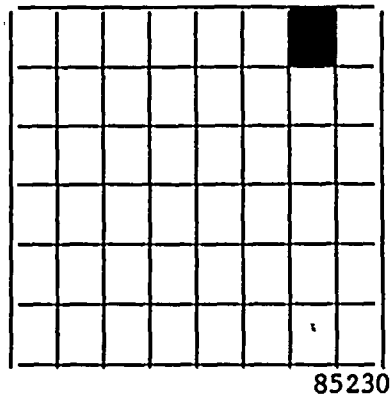
NOTE: Refer to Section H2.0 before closing the stub bus breaker.

35.0 852307 4KV Bus 102 Inoperable

Reflash: No

TCN-12





35.1	Computer Point	Computer Printout	Source
	a. ENSBC69	ENS DIV 3 BYPASS INOP	Both offsite breakers (102-4, an 102-5) and the diesel gen. breaker (102-1) loss of control power. 74-1 2ENSX15 (NORM SPLY BRKR NO.4 INOP) 74-1-2ENSY15 (RES SPLY BRKR NO.5 INOP) 74-2EGPC07 (DSL GEN BRKR NO.1 INOP) OR Both offsite breakers (102-4, and 102-5) loss of control power and K74L5 (DSL GEN 2EGS*EG2 BYPASS/INOP) OR Switch 43LS on 2ENS*SWG102 in the "ON" position

35.2 Corrective Action

a. Refer to the following INOP windows for response

b. Refer to plant tech. specs. for required action.

35.2 (Cont'd)

Window	Source	Automatic Action
NORM SPLY BRKR NO.4 INOP	74-1-2ENSX15	None

Corrective Action

See Annunciator 852319

Window	Source	Automatic Action
RES SPLY BRKR NO.5 INOP	74-1-2ENSY15	None

Corrective Action

See Annunciator 852319

Window	Source	Automatic Action
DSL GEN BRKR NO.1 INOP	74-2EGPC07	None

Corrective Action

See Annunciator 852319

Window	Source	Automatic Action
DSL GEN 2EGS*EG2 BYPASS/INOP	K-40 (Engine starting control circuit fuse failure) K-41 (Engine governor control circuit fuse failure) K-42 (Engine Safety shutdown control circuit fuse failure) K-27 (Engine fuel prime control circuit fuse failure) K-56 (Engine overspeed control circuit fuse failure	

35.2 (Cont'd)

Window	Source	Automatic Action
	74X-2HVPC09 Loss of control power to D.G. Bldg ventilation	See Annunciator 871405
	74-2EGFC04 Loss of control power to D.G. fuel transfer pumps	See Annunciator 852302
	74-2SWPN48 Loss of control power to D.G. service water circuits	See Annunciator 601101
	74-2EGAC05 Loss of control power to D.G. air start control circuit	See Annunciator 852301
	S-1 D.G. Panel control switch "DG in maint"	See Annunciator 852341

Corrective Action

a. Notify elect. maint. that engine control circuit fuse(s) is(are) open, or respond to the referenced annunciator.

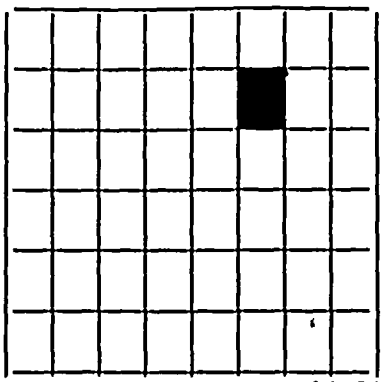
36.0 852314 Normal Supply Breaker 102-4 Auto Trip Or Fail To Close

Reflash: No

TCN-12

NORMAL SUPPLY
BRKR 102-4
AUTO TRIP/
FAIL TO CLOSE

852314



852314

36.1	Computer Point	Computer Printout	Source
	CSHUC01	4KV EM BUS 102 BRKR 102-4	Reserve Transformer 2RTX-XSR1A Tertiary (4KV) winding protection 86-3-2NNSX28 Bus Undervoltage 27X1-2ENSC10 Bus Underfrequency 94-2ENSC09 Phase Overcurrent 51-1, -2, -3-2ENSC01 (86NA-2ENSZ01) Ground Overcurrent 50GS-2ENSC02 (86NB-2ENSZ01) Aux. Transformer 2EJS*X2 Back up phase overcurrent 51B-1, -2, -3-2EJSC01 (94-2EJSX07,86NA-2ENSZ01) Directional overcurrent 67-2ENSC01 (62-1-2ENSZ01)

36.2 Automatic Response

a. HPCS diesel generator auto starts.

b. DIV III diesel generator breaker closes on the bus unless locked out by phase overcurrent, or backup phase overcurrent.

36.3 Corrective Action

a. Verify automatic response, by using computer point CSHBC09 for engine running, and CSHEC01 for diesel generator breaker closing, and clearing the undervoltage.

b. Refer to N2-OP-71 Section H13.0 to place the switchgear on alternate feed.

c. Notify elect. maint. of the trip.

I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (Cont.)

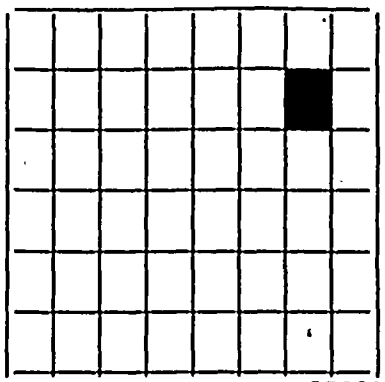
37.0 852315 Alternate Supply Breaker 102-5 Auto Trip Or Fail To Close

Reflash: No

| TCN-12

ALTN SUPPLY
BRKR 102-5
AUTO TRIP/
FAIL TO CLOSE

852315



852315

37.1	Computer Point	Computer Printout	Source
	CSHUC05	EM DSL G2 BRKR 102-5 TRIP	Bus Undervoltage 27X1-2ENSC10 Bus Underfrequency 94-2ENSC09 Phase Overcurrent 51-2ENSC03 (86NA-2ENSZ02) Aux Transformer 2EJS*X2 Backup overcurrent 94-2EJSX07 (86NA-2ENSZ02) Ground overcurrent 50GS-2ENSC04 (86NB-2ENSZ02) Directional overcurrent 67-2ENSC03 (62-1-2ENSZ02) Reserve Transformer 2RTX-XSR1B Tertiary (4KV) winding protection 86-3-2NNSY28

37.2 Automatic Response

a. HPCS diesel generator auto starts

b. Diesel generator (DIV III) breaker closes on the bus unless locked out by phase overcurrent, or backup overcurrent.

37.3 Corrective Action

a. Verify the automatic response by checking computerpoint CSHBC09, Emer. dsl. gen. running, and CSHEC01, bus undervoltage will clear.

b. Refer to N2-OP-71 Section H14.0 to place the bus on alternate offsite feed.

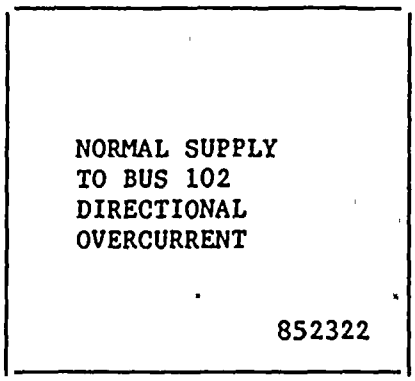
c. Notify elect. maint. of the trip.

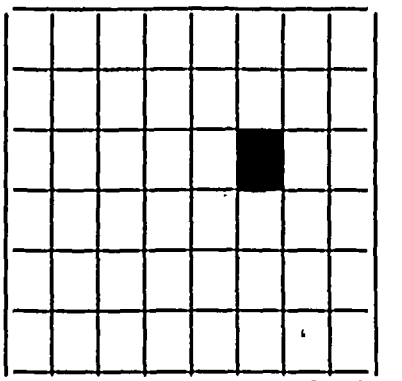
I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (Cont.)

38.0 852322 Normal Supply To Bus 102 Directional Overcurrent

Reflash: No

TCN-12





38.1	Computer Point	Computer Printout	Source
	a. CSHIC05	4KV NORM SPLY Bkr 4	67-2ENSC01

38.2 Automatic Response

a. Any one device will trip ACB102-4.

b. DIV III diesel generator auto starts.

c. Diesel generator breaker closes on the bus.

38.3 Corrective Action

a. Verify the automatic response by checking computer point CSHBC09, Emer. dsl. 2 running', and CSHEC01', bus undervoltage clears.

b. Refer to N2-OP-71 Section H13.0 to place the bus on alternate offsite feed.

c. Notify elect. maint. of the trip.

NOTE: Refer to tech. specs. if unable to maintain offsite feed to the bus.

I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (Cont.)

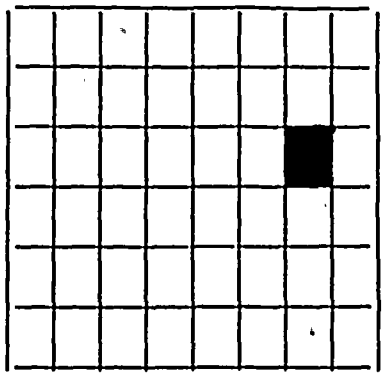
39.0 852323 Alternate Supply to Bus 102 Directional Overcurrent

Reflash: No

TCN-1

ALTN SUPPLY
TO BUS 102
DIRECTIONAL
OVERCURRENT

852323



852323

39.1	Computer Point	Computer Printout	Source
	a. CSHIC04	4KV RES SPLY BKR 5	67-2ENSC01

39.2 Automatic Response

a. Any one device will trips ACB102-5.

b. DIV III diesel generator auto starts.

c. Diesel generator breaker closes on the bus.

39.3 Corrective Action

a. Verify the automatic response by checking computer point CSHBC09, 'Emer. dsl. 2 running', and CSHEC01, 'bus undervoltage', clears.

b. Refer to N2-OP-71 Section H14.0 to place the bus on alternate offsite feed.

c. Notify elect. maint. of the trip.

NOTE: Refer to tech. specs. if unable to maintain offsite feed to the bus.

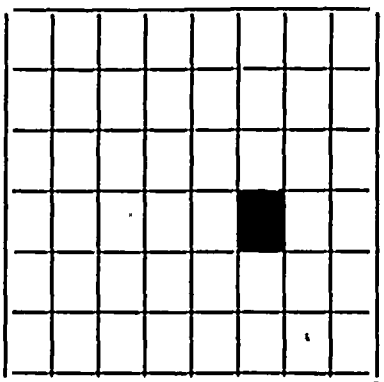
40.0 852330 Division III MCC 201 600V System Undervoltage

Reflash: No

TCN-12

DIVISION III
MCC 201
600V SYSTEM
UNDERVOLTAGE

852330



852330

40.1	Computer Point	Computer Printout	Source
	a. CSHEC03	EM DSL G2 600V SYS UNDV	27-2CSHN10 Undervoltage relay at the HPCS MCC

40.2 Automatic Response

NONE

40.3 Corrective Action

a. Dispatch operator to EHS*MCC201 to check the MCC voltmeter.

b. Notify elect. maint. of the condition.

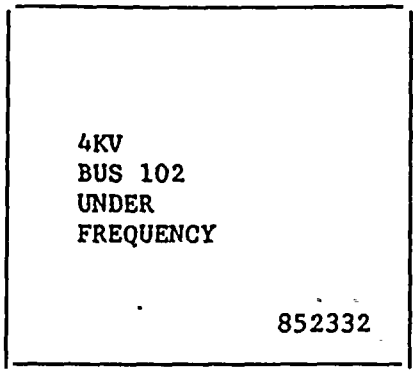
c. Check the voltage on the 4KV EMER BUS 102 at control room panel 852.

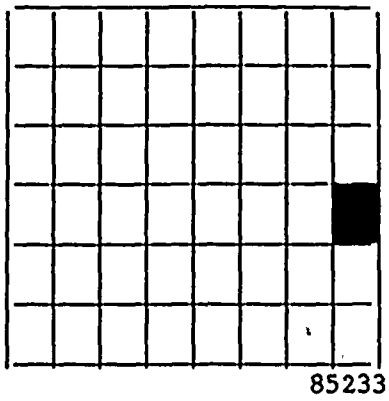
I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (Cont.)

41.0 852332 4KV Bus 102 Underfrequency

Reflash: No

TCN-1 2





41.1	Computer Point	Computer Printout	Source
	a. CSHEC02	4K EM BUS 102 UNDER FREQ	94UF 2ENSC09

41.2 Automatic Response

a. Trips offsite supply breaker ACB102-4, or 102-5.

b. HPCS diesel generator auto starts, and energizes the bus.

41.3 Corrective Action

a. Verify auto station response by checking computer point CSHBC09, and CSHEC01.

b. See N2-OP-71 Section H13.0, or H14.0 to place the bus on alternate offsite feed.

c. Notify elect. maint. of the trip.

d. Refer to tech. specs. if unable to maintain offsite feed to the bus.

I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (Cont.)

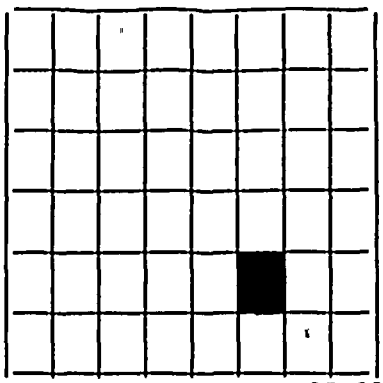
42.0 852338 Division III MCC 201 600V Feeder Breaker 102-3 Trip

Reflash: No

TCN-12

DIVISION III
MCC 201
600V FEEDER
BKR 102-3 TRIP

852338



852338

42.1	Computer Point	Computer Printout	Source
	a. CSHUC02	ED G2 600V XFMRX2 B102-3	50-51-2EJSC01 Phase overcurrent

42.2 Automatic Response

NONE

42.3 Corrective Action

a. Open all breakers on MCC2EHS*MCC201, and note all breakers which are tripped.

b. Restart the MCC, per Section E12.0.

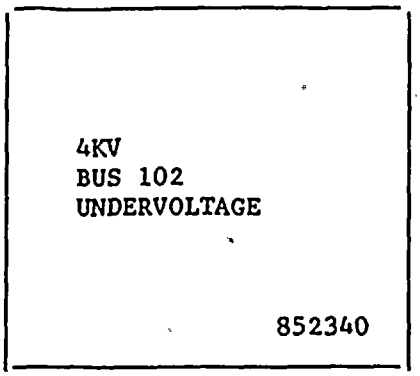
c. Notify elect. maint. of the trip, and any breakers remaining tripped.

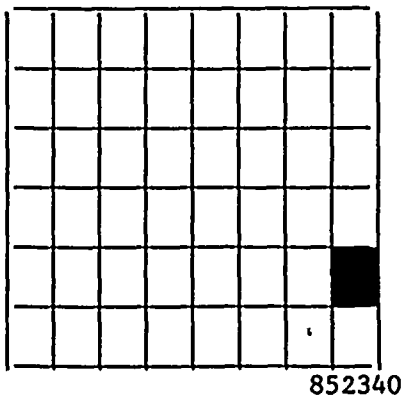
d. Refer to tech. specs. if unable to maintain feed to the MCC.

43.0 852340 4KV Bus 102 Undervoltage

Reflash: No

TCN-1 2





43.1	Computer Point	Computer Printout	Source
	a. CSHEC01	4KV EM BUS 102 UNDERVOLT	27X2-2CSHN10, 27X1-2CSHN10

43.2 Automatic Response

a. If 2 out of 3 undervoltage devices and/or 2 out of 3 degraded voltage devices actuate, the following response occurs:

1. Offsite supply breaker trips.

2. HPCS pump supply breaker ACB102-2 trips, or prevents closure until voltage is restored.

4. Emergency diesel generator EGS*EG2 starts.

5. Diesel generator breaker ACB102-1 auto closes.

43.3 Corrective Action

a. Verify automatic response by checking computer point CSHBC09, and CSHEC01.

b. Refer to N2-OP-71 Section H13.0, or H14.0 to place the bus on alternate offsite supply.

c. Notify elect. maint. of the trip.

d. Refer to tech. specs. if unable to maintain offsite feed to the bus.

TABLE II

SYSTEM POWER SUPPLY LINEUP

COMPONENT NO.	COMPONENT DESCRIPTION	POWER SUPPLY Bus Number	POWER SUPPLY Cubicle/ Breaker	NORMAL POSITION	ACTUAL POSITION	INITIALS/ DATE	REMARKS	
2NNS-SWG016	4.16kv Normal Feed to 2ENS*SWG101 (Div I) (incoming line breaker)	2ENS*SWG101	101-13	CLOSED			*	TC-9
2NNS-SWG014	4.16kv Feed to Bus 2NNS-SWG014 (stub bus)	2ENS-SWG101	101-11	OPEN			*	TC-9
2NNS-SWG018	4.16kv alt. Feed to 2ENS*SWG101 (incoming line breaker)	2ENS*SWG101	101-10	OPEN Breaker Fully Lowered			*	TC-9
2EGS*EG1	4.16kv Feed to 2ENS*SWG101 (emerg. generator 2EGS*EG1)	2ENS*SWG101	101-1	OPEN			*	TC-9
2EJS*X1B	4.16kv Feed to 4.16kv/600v Aux. Transformer 2EJS*X1B	2ENS*SWG101	101-2	CLOSED			*	TC-9
2EJS*X1A	4.16kv Feed to 4.16kv/600v Aux. Transformer 2EJS*X1A	2ENS*SWG101	101-14	CLOSED			*	TC-9
2ENS-RES101	Emerg. Diesel Generator 2EGS*EG1 Neutral Breaker	2ENS*SWG101	101-N1	CLOSED			*	TC-9
2EJS*X1A	600V Incoming Line Breaker	2EJS*US1	US1-3B	CLOSED			*	TC-9
2EJS*X1B	600V Incoming Line breaker (alternate)	2EJS*US1	US1-9B	OPEN			*	TC-9

*See Precaution D.5.0 TC-9

TABLE II

SYSTEM POWER SUPPLY LINEUP

COMPONENT NO.	COMPONENT DESCRIPTION	POWER SUPPLY Bus Number	– Cubicle/ Breaker	NORMAL POSITION	ACTUAL POSITION	INITIALS/ DATE	REMARKS
2EHS*MCC101	600v Feed to Motor Control Center	2EJS*US1	US1-4B	CLOSED			*
2EHS*MCC101	600v Feed to Motor Control Center	2EJS*US1	US1-9C	CLOSED			*
2EHS*MCC102 Bus A	600v Feed to Motor Control Center	2EJS*US1	US1-3C	CLOSED			*
2EHS*MCC102 Bus C	600v Feed to Motor Control Center	2EJS*US1	US1-8C	CLOSED			*
2EHS*MCC103 Bus A	600v Feed to Motor Control Center	2EJS*US1	US1-5D	CLOSED			*
2EHS*MCC103 Bus C	600v Feed to Motor Control Center	2EJS*US1	US1-7D	CLOSED			*
2EJS*PNL100A	600v Feed to Emerg. Dist. Panel 2EJS*PNL100A	2EJS*US1	US1-6D	CLOSED			*
2LAC*PNL100A	600v Feed to Emerg. Dist. Panel 2LAC*PNL100A	2EJS*US1	US1-7C	CLOSED			*
2NNS-SWG017	4.16kv Normal Feed to 2ENS*SWG103 Div II (incoming line breaker)	2ENS*SWG103	103-4	CLOSED			*

*See Precaution D.5.0

TABLE II

SYSTEM POWER SUPPLY LINEUP

COMPONENT NO.	COMPONENT DESCRIPTION	POWER SUPPLY Bus Number	POWER SUPPLY Cubicle/ Breaker	NORMAL POSITION	ACTUAL POSITION	INITIALS/ DATE	REMARKS	
2NNS-SWG015	4.16kv Feed to Bus 2NNS-SWG015 (stub bus)	2ENS*SWG103	103-8	OPEN			*	TCN -9
2NNS-SWG018	4.16kv Alt. Feed to 2ENS*SWG103 (incoming line breaker)	2ENS*SWG103	103-2	OPEN Breaker Fully Lowered			*	TCN -9
2EGS*EG3	4.16kv Feed to 2ENS*SWG103 (emerg. diesel generator)	2ENS*SWG103	103-14	OPEN			*	TCN -9
2EJS*X3A	4.16kv Feed to 4.16kv/600v Aux Transformer 2EJS*X3A	2ENS*SWG103	103-1	CLOSED			*	TCN -9
2EJS*X3B	4.16kv Feed to 4.16kv/600v Aux Transformer 2EJS*X3B	2ENS*SWG103	103-13	CLOSED			*	TCN -9
2ENS-RES103	Emerg. Diesel Generator 2EGS*EG3 Neutral Breaker	2ENS*SWG103	103-N1	CLOSED			*	TCN -9
2EJS*X3A	600v Incoming Line breaker	2EJS*US3	US3-3B	CLOSED			*	TCN -9
2EJS*X3B	600v Incoming Line breaker (alternate)	2EJS*US3	US3-9B	OPEN			*	TCN -9
2EHS*MCC301	600v Feed to Motor Control Center	2EJS*US3	US3-4B	CLOSED			*	TCN -9

*See Precaution D.5.0 TCN -9

TABLE II

SYSTEM POWER SUPPLY LINEUP

COMPONENT NO.	COMPONENT DESCRIPTION	POWER SUPPLY Bus Number	POWER SUPPLY Cubicle/ Breaker	NORMAL POSITION	ACTUAL POSITION	INITIALS/ DATE	REMARKS	
2EHS*MCC301	600v Feed to Motor Control Center	2EJS*US3	US3-9C	CLOSED			*	TCN -9
2EHS*MCC302 Bus B	600v Feed to Motor Control Center	2EJS*US3	US3-3C	CLOSED			*	TCN -9
2EHS*MCC302 Bus D	600v Feed to Motor Control Center	2EJS*US3	US3-8C	CLOSED			*	TCN -9
2EHS*MCC303 Bus B	600v Feed to Motor Control Center	2EJS*US3	US3-5D	CLOSED			*	TCN -9
2EHS*MCC303 Bus D	600v Feed to Motor Control Center	2EJS*US3	US3-7D	CLOSED			*	TCN -9
2EJS*PNL300B	600v Feed to Emerg. Dist. Panel 2EJS*PNL300B	2EJS*US3	US3-6D	CLOSED			*	TCN -9
2LAC*PNL300B	600v Feed to Emerg. Dist. Panel LAC*PNL300B	2EJS*US3	US3-7C	CLOSED			*	TCN -9
2NNS-SWG016	4.16kv Normal Feed to Emerg. Bus (Div III)	2ENS*SWG102	102-4	CLOSED			*	TCN -9
2NNS-SWG017	4.16kv Alt. Feed to Bus 2ENS*SWG102	2ENS*SWG102	102-5	OPEN Breaker ~~Fully~~ Removed ~~Lowered~~			*	TCN -9 mc 8/11/90 AD 8-19-90

*See Precaution D.5.0 TCN -9

TABLE II

SYSTEM POWER SUPPLY LINEUP

COMPONENT NO.	COMPONENT DESCRIPTION	POWER SUPPLY Bus Number	- Cubicle/ Breaker	NORMAL POSITION	ACTUAL POSITION	INITIALS/ DATE	REMARKS	
2EGS*EG2	4.16kv Feed to Bus (Diesel gen.)	2ENS*SWG102	102-1	OPEN			*	TC -9
2EJS*X2	4.16kv Feed to 4.16kv/600 Aux. Transformer	2ENS*SWG102	102-3	CLOSED			*	TC -9
2EJS*US1	Incoming line breaker	2EHS*MCC101	101-1A	CLOSED			*	TC -9
2EJS*US1	Incoming line breaker(alt.)	2EHS*MCC101	101-10A	OPEN			*	TC -9
2EJS*US1	Incoming line breaker	2EHS*MCC102	102-1A	CLOSED			*	TC -9
2EJS*US1	Incoming line breaker	2EHS*MCC102	102-22A	CLOSED			*	TC -
2EHS*MCC102 Bus A to C	Tie brkr	2EHS*MCC102	102-13A	OPEN			*	TC -9
2EJS*US1	Incoming line breaker	2EHS*MCC103	103-1A	CLOSED			*	TC -9
2EHS*MCC103 Bus A to C	Tie brkr	2EHS*MCC103	103-16A	OPEN			*	TC -9
2EJS*US1	Incoming line breaker	2EHS*MCC103	103-27A	CLOSED			*	TC -9
2EJS*US3	Incoming line breaker	2EHS*MCC301	301-1A	CLOSED			*	TC -9
2EJS*US3	Incoming line breaker(alt.)	2EHS*MCC301	301-8A	OPEN			*	TCN -9

*See Precaution D.5.0 TCN -9

TABLE II

SYSTEM POWER SUPPLY LINEUP

COMPONENT NO.	COMPONENT DESCRIPTION	POWER SUPPLY Bus Number	Cubicle/ Breaker	NORMAL POSITION	ACTUAL POSITION	INITIALS/ DATE	REMARKS
2EJS*US3	Incoming line breaker	2EHS*MCC302	302-1A	CLOSED			*
2EHS*MCC302 Bus B to D	Tie brkr	2EHS*MCC302	302-11A	OPEN			*
2EJS*US3	Incoming line breaker	2EHS*MCC302	302-22A	CLOSED			*
2EJS*US3	Incoming line breaker	2EHS*MCC303	303-1A	CLOSED			*
2EHS*MCC303 Bus B to D	Tie brkr	2EHS*MCC303	303-13A	OPEN			*
2EJS*US3	Incoming line breaker	2EHS*MCC303	303-24A	CLOSED			*
2LAC*PNL100A	600v Incoming Feed	LAC*PNL100A	Mn Brkr	CLOSED			
2VBA*UPS2A	Div I UPS Maint. Sply	2LAC*PNL100A	CKT 19	CLOSED			TCN-11
2EJS*PNL100A	600v Incoming Feed	EJS*PNL100A	Mn Brkr	CLOSED			
2VBA*UPS2A	Div I UPS AC Sply	2EJS*PNL100A	CKT 7	CLOSED			TCN-11
2VBA*UPS2A	Div I UPS DC Sply	2BYS*SWG002A	3C	CLOSED			

*See Precaution D.5.0

TABLE II

SYSTEM POWER SUPPLY LINEUP

COMPONENT NO.	COMPONENT DESCRIPTION	POWER SUPPLY Bus Number	Cubicle/ Breaker	NORMAL POSITION	ACTUAL POSITION	INITIALS/ DATE	REMARKS
2LAC*PNL300B	600v Incoming Feed	2LAC*PNL300B	Mn Brkr	CLOSED			
2VBA*UPS2B	Div II UPS Maint. Sply	2LAC*PNL300B	CKT 19	CLOSED			TCN-11
2EJS*PNL300B	600v Incoming Feed	2EJS*PNL300B	Mn Brkr	CLOSED			
2VBS*UPS2B	Div II UPS AC Sply	2EJS*PNL300B	CKT 7	CLOSED			TCN-11
2VBS*UPS2B	Div II UPS DC Sply	2BYS*SWG002B	3C	CLOSED			

NIAGARA MOHAWK | PROCEDURE CHANGE EVALUATION (PCE) | PCE No.

1. Initiation

Procedure No.	Rev. No.	Title
N2-OP-72	04	Standby and Emergency A.C. Distribution System

Describe Change: Amend valve lineup (See copy attached) to reflect that breaker for 2ENS*SWG102-5 should be removed to coincide with "cubicle only" description on 12177-EE-1012-4 electrical print and N2-OSP-LOG-W001

Reason for Change:

☐ NCTS No. _____ ☐ DER No. _____ ☐ Mod/SDC No. _____

☐ Other (Explain): See "Describe Change" above

2. Method of Change

☑ Immediate Change

Change Is: ☑ Permanent ☐ One Time Only

☐ Technical Change to TSR Procedure | ☑ NTSR Procedure OR Editorial Change

Pages Affected: 104

Initiator (Print & Initial): Michael Ennis M.E. | Date: 8/19/91

RPO App'l: (Both if Site) ☑ Accept ☐ Reject ☐ Redirect to Future

Date: 8/19/91 | Date:

Safety Review Req'd: ☐ Yes TSR or Temp Alteration ☑ No NTSR or Editorial

Interim Approval (Technical TSR Changes Only)

Add'l Technical Review: ☐ Accept ☐ Reject ☐ N/A | Date

SRO: ☐ Accept ☐ Reject | Date

SRO (Site Only): ☐ Accept ☐ Reject ☐ N/A | Date

Plant Manager (Technical TSR Changes Only)

Signature | Date

Signature (Site Only) | Date

☒ Future Change

Initiator (Print): James F. Emery

Mail Location	Phone	Date
Operations, Unit 2	x1237	8-19-91

Disposition

RPO Name: Alan DeGracia | PPU

☑ Redirect to IMMEDIATE Change (To RPO)
☐ Inactivate Procedure (To PPU)
☐ Future Revision or New Procedure (To PPU)
☐ Reject (To PPU)

PPU

RPO Approval: Alan DeGracia | Date: 8/19/91

Implementation

☐ Incorp'd Rev. _____, Proc No.: _____

☐ Cancel, ☐ Transfer to Proc. No.: _____

PPU Closeout | Date

9205070053

SM-5

SATELLITE MASTER COPY

NINE MILE POINT NUCLEAR STATION UNIT 2

OPERATING PROCEDURE

PROCEDURE NO. N2-OP-72

STANDBY AND EMERGENCY A.C. DISTRIBUTION SYSTEM

APPROVALS	SIGNATURES	DATE AND INITIALS REVISION 4	REVISION 5	REVISION 6
Operations Superintendent NMPNS Unit 2 R. G. Smith		12/14/88		
Station Superintendent NMPNS Unit 2 R. B. Abbott		12/13/88		
General Superintendent Nuclear Generation J. L. Willis		12/14/88		

Summary of Pages (Cont'd on Cover Sheet 2)

Revision 4 (Effective 12/14/88)

Pages	Date
ii-v,1,2,4-15,28,30,34,39, 43,46,47,49,51	May 1987
27	August 1987 (TCN-5)
32	October 1987 (TCN-6)
Periodic Review (12/19/90) No Changes	

NIAGARA MOHAWK POWER CORPORATION

THIS PROCEDURE NOT TO BE USED AFTER December 1992
SUBJECT TO PERIODIC REVIEW.

NINE MILE POINT NUCLEAR STATION UNIT #2

OPERATING PROCEDURE

PROCEDURE NO. N2-OP-72

STANDBY AND EMERGENCY A.C. DISTRIBUTION SYSTEM

Cover Sheet Continuation (page 2)

Summary of pages (Cont'd)

Pages	Date
53,55,57,59,60,62,64,66,71, 75,78,81,83,85,87,89,90,92,94	May 1988 (Reissue)
101-105	April 1990 (TCN-9)
3,106,107	November 1990 (TCN-10 and TCN-11)
26,29,31,33,37,38,41,42, 44,45,48,50,52,54,56,58,61, 63,65,69,70,73,74,76,77, 79,82,84,86,88,91,93, 95-100	January 1991 (TCN-12)
i,vi,16-25,25a,35,36,36a, 36b,40,67,68,68a,68b,72	May 1991 (TCN-13 and TCN-14)
80	August 1991 (PCE 16366)

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B	SYSTEM DESCRIPTION	1	
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	2.0 Load Center 2EJS*US1	5	
	3.0 Motor Control Ctr. 2EHS*MCC101	6	
	4.0 Motor Control Ctr. 2EHS*MCC102	7	
	5.0 Motor Control Ctr. 2EHS*MCC103	8	
	6.0 Div. II Bus 2ENS*SWG103	9	
	7.0 Load Center 2EJS*US3	10	
	8.0 Motor Control Ctr. 2EHS*MCC301	11	
	9.0 Motor Control Ctr. 2EHS*MCC302	12	
	10.0 Motor Control Ctr. 2EHS*MCC303	13	
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REFERENCES

1.0 FSAR

Section 8.0

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3.0 ELECTRICAL DIAGRAM

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LSK24-9.6A	4 KV Standby Station Service Typical Breaker Control
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ESK5EJS03	Feeder to XFMR 2EJS*X3A ACB 103-1
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ESK5ENS02	4.16 KV Emergency Switchgear ACB 101-11 Control

REFERENCES (Cont.)

ESK5ENS03	4.16 KV Emergency Switchgear ACB 103-8 Control
ESK5ENS05	ACB 101-10 Control
ESK5ENS07	ACB 103-2 Control
ESK5ENS08	Bus 2ENS*SWG101 Normal Supply ACB 101-13
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ESK5ENS13	4.16 KV Switchgear 2ENS*SWG101 Protection
ESK5ENS14	Bus 2ENS*SWG101 Undervoltage and Load Sequencing
ESK5ENS15	4.16 KV Switchgear 2ENS*SWG103 Protection
ESK5ENS16	4.16 KV Switchgear 2ENS*SWG103 Protection
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ESK5ENS18	Bus 2ENS*SWG103 Undervoltage and Load Sequencing
ESK5ENS19	4.16 KV Switchgear 2ENS*SWG101 Protection
ESK5ENS20	4.16 KV Switchgear 2ENS*SWG103 Protection
ESK5ENS21	Bus 2ENS*SWG101 Undervoltage and Load Sequencing
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ESK6EJS01	Unit Sub 2EJS*US1 Supply Breaker
ESK6EJS02	Unit Sub 2EJS*US1 Supply Breaker
ESK6EJS03	Unit Sub 2EJS*US3 Supply Breaker
ESK6EJS04	Unit Sub 2EJS*US3 Supply Breaker
ESK6EJS05	Bus 2EJS*US1 and 2EJS*US3 Undervoltage Protection
ESK7EGP01	Emergency Diesel Division I & II Computer Alarms
ESK7EJS01	Emergency Unit Sub Supply Breaker Inop Indication
ESK7EJS02	Emergency Switchgear Division I & II Computer Alarms
ESK7EJS03	Emergency Load Center Inop Division I & II
ESK7EJS04	600V Emergency Bus V and I Monitoring
ESK7EJS05	600V Emergency Bus V and I Monitoring
ESK7ENS01	4 KV Emergency Switchgear Inop Div. I & II
ESK7ENS02	4 KV Emergency Switchgear Division I & II Computer Alarms
ESK7ENS03	4 KV Emergency Switchgear Inop Division I & II
ESK7ENS04	4 KV Emergency Switchgear Inop Division I & II

REFERENCES (Cont.)

ESK7ENS05	4 KV Emergency Bus V and I Monitoring
ESK7ENS06	4 KV Emergency Bus V and I Monitoring
ESK7ENS07	4 KV HPCS Bus V and I Monitoring
ESK7ENS08	4 KV HPCS Bus V and I Monitoring
ESK8EGP01	Diesel Generator 2EGS*EG1 Relay and Metering
ESK8EGP02	Diesel Generator 2EGS*EG1 Relay and Metering
ESK8EGP03	Diesel Generator 2EGS*EG3 Relay and Metering
ESK8EGP04	Diesel Generator 2EGS*EG3 Relay and Metering
ESK8EGP05	Diesel Generator 2EGS*EG1 Protection
ESK8EGP06	Diesel Generator 2EGS*EG1 Protection
ESK8EGP07	Diesel Generator 2EGS*EG3 Protection
ESK8EGP08	Diesel Generator 2EGS*EG3 Protection
ESK8EGP09	Diesel Generator 2EGS*EG1 Relay and Metering
ESK8EGP10	Diesel Generator 2EGS*EG3 Relay and Metering
ESK8EGS01	Diesel Generator 2EGS*EG1 Control
ESK8EGS02	Diesel Generator 2EGS*EG3 Control
ESK8EJS01	Feeder to XFMR 2EJS*X1A & X1B Relay and Metering
ESK8EJS02	Feeder to XFMR 2EJS*X3A & X3B Relay and Metering
ESK8EJS03	600V Emergency Bus V and I Monitoring
ESK8EJS04	600V Emergency Bus V and I Monitoring
ESK8ENS01	4 KV Emergency Switchgear 2ENS*SWG101 Relay and Metering
ESK8ENS02	4 KV Emergency Switchgear 2ENS*SWG103 Relay and Metering
ESK8ENS03	4 KV Emergency Switchgear 2ENS*SWG101 Relay and Metering
ESK8ENS04	4 KV Emergency Switchgear 2ENS*SWG103 Relay and Metering
ESK8SYD01	Synchronizing Diesel Generators
ESK8SYD02	Synchronizing Diesel Generator Panels
ESK7VBS01	UPS2A/2B Current/Voltage to ERF Computer
ESK8VBS01	UPS2A/2B Current/Voltage to Opt. Isolators

3

REFERENCES (Cont.)

C. Electrical One Line Drawings

EE-1B	13.8 KV Main One Line - Reserve and Normal Station Service XFMR
EE-1C	Main One Line - Auxiliary XFMR Normal 4 KV & 600V
EE-1D	Main One Line - Emergency 4 KV & 600V System
EE-1Q	4.16 KV One Line - Emergency Bus 2ENS*SWG 101
EE-1R	4.16 KV One Line - Emergency Bus 2ENS*SWG 103
EE-1Z	600V One Line - Emergency Bus 2EJS*US1 & 2EJS*US3
EE-1AQ	600V One Line - 2EHS*MCC101 and 2EHS*MCC301
EE-1AR	600V One Line - 2EHS*MCC102
EE-1AT	600V One Line - 2EHS*MCC103
EE-1AU	600V One Line - 2EHS*MCC103
EE-1AV	600V One Line - 2EHS*MCC302
EE-1AW	600V One Line - 2ENS*MCC302
EE-1AX	600V One Line - 2EHS*MCC303
EE-1AY	600V One Line - 2EHS*MCC303
EE-1CA	600V One Line - Emergency and Vital Bus Power Distribution
EE-M01A	Plant Master One Line - Normal Power Distribution
EE-M01B	Plant Master One Line - Emergency Power Distribution
EE-M01C	Plant Master One Line - Normal 600V & 120V AC
EE-M01D	Plant Master One Line - Normal 600V & 120V AC
EE-M01E	Plant Master One Line - Emergency 600V & 120V AC
EE-M01F	Plant Master One Line - Emergency and Normal 125V & 24/48V DC
EE-M01G	Plant Master One Line - Normal 125V DC
EE-1CB	Emerg. 600V Panel 2LAC*PNL100A, 2LAC*PNL300B
EE-1CC	Emerg. 600V Panel 2EJS*PNL100A, 2EJS*PNL300B
EE-1CM	Emerg. 125V DC Switchgear 2BYS*SWG002A
EE-1CN	Emerg. 125V DC Switchgear 2BYS*SWG002B
EE-1P	4160V One Line Diagram Normal Bus 2NNS-SWG016, SWG017, SWG018

REFERENCES (Cont.)

D. GE Drawings and Diagrams

1. Logic Diagrams

828E156, (MPL E22-1040) HPCS Power Supply

2. Electrical Schematics

807E183TY (MPL E22-1070) HPCS Power Supply

3. Electrical One Line Drawings

731E302AF (MPL E22-1060) HPCS System

4.0 INSTRUCTION MANUAL

NMP2-E014T - AC and DC Panel Boards
NMP2-E015F - 4.16 KV Metal Clad Switchgear
NMP2-E015N - 600V AC Load Centers and 125V DC Switchgear, Grounding Disconnect Switch and 13.8 KV 1,000-MVA Class 1E Metal Clad Switchgear
NMP2-E015Q - 600V AC and 125V DC Motor Control Centers for Normal Duty and Standby Duty
NMP2-E031A - Standby Diesel Generator Systems
NMP2-P800A - NSSS Contract - GE
NMP2-E035A - Uninterruptible Power Supplies, Rev. 1 Including Add. 1 to 5

5.0 COMMITMENTS

Sequence Number	Commitment Number	Description
1	NCTS 502810-01	Clarify Response to Local Trouble Alarms for UPS2A and 2B

TCN- 1

STANDBY AND EMERGENCY A.C. DISTRIBUTION SYSTEM

A. TECHNICAL SPECIFICATIONS

1.0 Section 3/4.8 - Electrical Power Systems

1.1 3/4.8.1, 3/4.8.2 and 3/4.8.3 A.C. Sources, D.C. Sources and On-Site Power Distribution Systems

B. SYSTEM DESCRIPTION

1.0 System Purpose or Function

The purpose of the system is to provide reliable power to safety related loads and vital buses. Reliability is achieved by multiple sources; automatic switching; and electrical, and physical independence and separation. In an emergency, the system automatically isolates itself from all except safety related loads, automatically starts safety related loads, and automatically blocks manual loading activities until safety related loads are energized.

2.0 General Description

The emergency distribution system is divided among three color coded divisions. Equipment, cables, and raceways are identified with color coded markers. Division I is green, Division II is yellow, and Division III is purple. Equipment in Divisions I and II consist of one 4160V switch gear lineup, one unit substation (load center), three motor control centers, distribution panels, drytype transformers, and an uninterruptible power supply.

Division III equipments are, one 4160V switchgear lineup, a transformer, one motor control center, drytype transformers, and distribution panels. Division III is HPCS dedicated. Divisions I and III are normally supplied from reserve station service transformer A. Division II is normally supplied by reserve station service transformer B. Alternate offsite power source is the auxiliary boiler transformer for Division I and II. Division III alternate offsite power supply is from reserve station service transformer B. Each of the divisional buses is supplied by a diesel generator automatically, in the event of loss of, or sustained degraded voltage from the offsite power supply.

Load centers and Division I and II motor control centers have two feeders, and motor control centers use kirk-key interlocks. The key is captive unless the breaker is open, and the breaker cannot close without a key. For MCC's with a tie breaker, two keys are provided for the three breakers. For MCC's with no tie breaker, one key is provided for the two feeders. Uninterruptible power supplies are provided with three feeders, including a DC feed from divisional batteries.

B. SYSTEM DESCRIPTION (Cont'd)

3.0 Summary of Operation

3.1 The system is automatic, and self diagnostic after start-up, and operator action is not required for normal operation. Some of the operational features are discussed here even though operator participation in their evolution is blocked. 3

3.2 Stub Buses

Two normal station power buses may be connected to the Division I and II buses to power loads such as turning gear oil pump and lift pumps in the event of loss of offsite power, and loss of station power. These "stub" buses are separated automatically from emergency buses in the event of loss of coolant accident. This automatic separation can be prevented by operating a keylocked "LOCA BYPASS" switch on Control Room panel 852.

3.3 Load Shedding

In the event of loss of offsite power, or sustained degraded voltage, or a loss of coolant accident, the Division I and II emergency buses automatically separate from certain loads, and manual loading is blocked for approx. 1 minute. A loss of coolant accident causes separation of stub buses from the emergency buses. Loss of offsite power, or sustained degraded voltage (also offsite) causes all loads and feeders except load centers to separate from emergency buses. Loss of offsite power and sustained degraded offsite voltage trips occur when two out of three undervoltage, or degraded voltage relays operate, or two out of three test switches are operated, and a certain time delay elapses. Load shedding will not occur automatically for undervoltage or degraded voltage, if the bus is powered by the Diesel Gen. alone. Division III sheds no loads. Load shedding may be prevented by operating a keylocked switch on Control Room panel 852. Attempts to start a load while the bus is blocked will bring in a "Fail-to-Start" annunciator.

3.4 Load Sequencing

To maintain emergency bus voltage at an acceptable level, loads are applied to the bus sequentially, following load shedding. After a loss-of-offsite-power load shed, one service water pump is selected, and started. After a loss of coolant accident load shed, RHS and CSL pumps are started sequentially. Manual loading of the bus is blocked for approx. 1 min. following loss of power, and/or loss of coolant accident signals, and the timing sequence is such that loads will not be started simultaneously in any event.

B. SYSTEM DESCRIPTION (Cont'd)

3.5 Uninterruptible Power Supply

UPS provides divisional 120VAC loads from any of 3 sources, and transfers loads upon loss of a feeder by make-before-break static switching. Normal supplies are from divisional emergency distribution panels, maintenance supplies are from divisional emergency lighting panels, and divisional batteries provide DC. Upon loss of normal supply, the UPS transfers its loads to DC. Upon loss of normal and DC supplies, the UPS transfers its loads to its maintenance supply. Upon return of normal supply, the UPS will switch loads from DC to the normal supply. Once loads are transferred to maintenance supply, they must be manually returned to normal. TCN-11

C. OPERATING REQUIREMENTS

1.0 Prerequisites

1.1 Emergency D.C. Distribution system N2-OP-74A

1.2 HPCS 125V D.C. System N2-OP-74B

1.3 Standby Diesel Generators N2-OP-100A

1.4 HPCS Diesel Generator N2-OP-100B

1.5 Station Electrical Feed and 115 KV Switchyard N2-OP-70

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 fuses must be removed where applicable with the breaker in the "tripped" condition.

2.0 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.

3.0 Placing keylock switch 43LS (at the switchgear) in the ON position will prevent the undervoltage start of the emer. diesel.

4.0 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.

5.0 To meet seismic qualification requirements, ensure all 4160V switchgear cubicle doors are fully dogged down and all 600V switchgear/load center cubicle doors have thumb screws fully engaged.

E. START UP PROCEDURE

1.0 To place de-energized 4.16 KV emergency bus 2ENS*SWG101 in service from normal feed, reserve station service transformer 2RTX-XSR1A via 4.16 KV bus 2NNS-SWG016:

a. At panel 852, lockout emergency diesel generator 2EGS*EG1 output, breaker 101-1.

b. At panel 852, lockout feed to auxiliary transformer 2EJS*X1B (600V feed to emergency load center 2EJS*US1), breaker 101-2.

c. At panel 852, lockout 4.16 KV feed from 2NNS-SWG018 to emergency bus 2ENS*SWG101, breaker 101-10 (cubicle only).

d. At panel 852, lockout 4.16 KV feed to 4.16 KV bus 2NNS-SWG014, breaker 101-11.

e. At panel 852, lockout 4.16 KV feed from 2NNS-SWG016 to emergency bus 2ENS*SWG101, breaker 101-13.

f. At panel 852, lockout feed to auxiliary transformer 2EJS*X1A (600V feed to emergency load center 2EJS*US1), breaker 101-14.

g. At panel 601, lockout the following motor breakers:
Residual Heat Removal Pump A - 2RHS*P1A
Service Water Pump A - 2SWP*P1A
Service Water Pump C - 2SWP*P1C
Service Water Pump E - 2SWP*P1E
Low Pressure Core Spray Pump - 2CSL*P1

h. At panel 873, lockout the motor breaker for spent fuel cooling pump A - 2SFC*P1A

i. At panel 852, check closed 4.16 KV feed to emergency 2ENS*SWG101 and 2ENS*SWG102, breaker 16-2. Check voltage on bus 2NNS-SWG016 as nominally 4.16 KV (see OP 71).

j. At emergency bus 2ENS*SWG101, rack in normal feed to bus 2ENS*SWG101, breaker 101-13, as required. Check the following lockout relays reset to assure closing permissives satisfied:

Cubicle 101-10	86A-2ENSX02
	86B-2ENSX02
Cubicle 101-13	86A-2ENSX01
	86B-2ENSX01
Cubicle 101-N2	86C-2ENSX01
	86C-2ENSX02

k. At emergency bus 2ENS*SWG101 check fuses in place and potential transformer compartment 101-13 doors closed.

l. At panel 852, turn on synch switch across 4.16 KV bus 2NNS-SWG016 and emergency bus 2ENS*SWG101, Breaker 101-13.

m. At panel 852, Bus 2ENS*SWG101, close breaker 101-13, normal 4.16 KV feed from Bus 2NNS-SWG016. Check voltage on Bus 2ENS*SWG101 as nominally 4.16 KV.

NOTE: If a breaker is in the racked in position in cubicle 101-10 Breaker 101-13 will not close.

n. At panel 852, turn off synch switch across 4.16 KV bus 2NNS-SWG016 and emergency bus 2ENS*SWG101, breaker 101-13.

o. Lineup and place in service all loads off of emergency bus 2ENS*SWG101, as warranted by plant conditions, in accordance with their applicable operating procedures.

p. At panel 852 remove the diesel generator breaker control switch from pull-to-lock. 3

2.0 To energize 4.16 KV/600V auxiliary transformers 2EJS*X1A and 2EJS*X1B and place emergency load center 2EJS*US1 in service:

a. At panel 852, lockout emergency bus 2ENS*SWG101, 4.16 KV feed to auxiliary transformer 2EJS*X1A, breaker 101-14.

b. At panel 852, lockout emergency bus 2ENS*SWG101, 4.16 KV feed to auxiliary transformer 2EJS*X1B, breaker 101-2.

c. At panel 852, lockout 600V supply breaker from auxiliary transformer 2EJS*X1A, breaker 3B.

d. At panel 852, lockout 600V supply breaker from auxiliary transformer 2EJS*X1B, breaker 9B.

e. At panel 852, check voltage on emergency bus 2ENS*SWG101 as nominally 4.16 KV

f. At emergency bus 2ENS*SWG101, rack in supply breaker to auxiliary transformer 2EJS*X1A, breaker 101-14. Check lockout relay 86-2EJSX03 reset.

g. At emergency bus 2ENS*SWG101, rack in supply breaker to auxiliary transformer 2EJS*X1B, breaker 101-2. Check lockout relay 86-2EJSX04 reset.

h. At panel 852, close supply breaker to auxiliary transformer 2EJS*X1A, breaker 101-14.

i. At panel 852, close supply breaker to auxiliary transformer 2EJS*X1B, breaker 101-2.

j. At emergency load center 2EJS*US1, rack in 600V supply breaker from auxiliary transformer 2EJS*X1A, breaker 3B.

k. At emergency load center 2EJS*US1, rack in 600V supply breaker from auxiliary transformer 2EJS*X1B, breaker 9B.

l. At panel 852, close 600V supply breaker from auxiliary transformer 2EJS*X1A, breaker 3B. Check voltage on emergency load center 2EJS*US1 as nominally 600V.

NOTE: Auxiliary transformer 2EJS*X1B, 600V supply breaker to emergency load center 2EJS*US1, breaker 9B, will be the alternate feed.

3.0 To energize 600V emergency motor control center 2EHS*MCC101:

a. At emergency load center 2EJS*US1, check open supply breaker to 2EHS*MCC101, breaker 4B.

b. At emergency load center 2EJS*US1, check open supply breaker to 2EHS*MCC101, breaker 9C.

c. At 2EHS*MCC101, check open breaker 1A, 600V supply from emergency load center 2EJS*US1 (breaker 4B).

d. At 2EHS*MCC101, check open breaker 10A, 600V supply from emergency load center 2EJS*US1 (breaker 9C).

e. Check voltage on emergency load center 2EJS*US1 as nominally 600V.

f. At emergency load center 2EJS*US1, rack in supply breaker to 2EHS*MCC101, breaker 4B, as required.

g. At emergency load center 2EJS*US1, rack in supply breaker to 2EHS*MCC101, breaker 9C, as required.

h. At emergency load center 2EJS*US1, close supply breaker to 2EHS*MCC101, breaker 4B.

i. At emergency load center 2EJS*US1, close supply breaker to 2EHS*MCC101, breaker 9C.

j. At 2EHS*MCC101, close breaker 1A, 600V supply from emergency load center 2EJS*US1 (breaker 4B). Check voltage on 2EHS*MCC101 as nominally 600V.

NOTE 1: At 2EHS*MCC101, breaker 10A, the 600V supply from emergency load center 2EJS*US1 (breaker 9C), will be the alternate source.

NOTE 2: The motor control center supply breakers will be lined up utilizing the kirk-key control system.

4.0 To energize 600V Emergency Motor Control Center 2EHS*MCC102:

a. At emergency load center 2EJS*US1, check open supply breaker to 2EHS*MCC102, bus A, breaker 3C.

b. At emergency load center 2EJS*US1, check open supply breaker to 2EHS*MCC102, bus C, breaker 8C.

c. At 2EHS*MCC102, bus A, check open breaker 1A, 600V supply from emergency load center 2EJS*US1 (breaker 3C).

d. At 2EHS*MCC102, bus C, check open breaker 22A, 600V supply from emergency load center 2EJS*US1 (breaker 8C).

e. At 2EHS*MCC102, bus C, check open tie breaker 13A between bus A and bus C.

f. Check voltage on emergency load center 2EJS*US1 as nominally 600V.

g. At emergency load center 2EJS*US1, rack in supply breaker to 2EHS*MCC102, bus A, breaker 3C.

h. At emergency load center 2EJS*US1, rack in supply breaker to 2EHS*MCC102, bus C, breaker 8C.

CAUTION: Before closing supply breaker reverify Bus A to C tie breaker (13A) is open.

i. At emergency load center 2EJSS*US1, close supply breaker to 2EHS*MCC102, bus A, breaker 3C.

j. At emergency load center 2EJS*US1, close supply breaker to 2EHS*MCC102, bus C, breaker 8C.

k. At 2EHS*MCC102 bus A, close breaker 1A, 600V supply from emergency load center 2EJS*US1 (breaker 3C). Check voltage on 2EHS*MCC102 bus A as nominally 600V

l. At 2EHS*MCC102 bus C, close breaker 22A, 600V supply from emergency load center 2EJS*US1 (breaker 8C). Check voltage on 2EHS*MCC102 bus C as nominally 600V.

NOTE 1: At 2EHS*MCC102, tie breaker 13A will be the alternate source for either bus A or bus C.

NOTE 2: The motor control center supply breakers and tie breaker will be lined up utilizing the kirk-key control system.

5.0 To energize 600V emergency motor control center 2EHS*MCC103:

a. At emergency load center 2EJS*US1, check open supply breaker to 2EHS*MCC103, bus A, breaker 5D.

b. At emergency load center 2EJS*US1, check open supply breaker to 2EHS*MCC103, bus C, breaker 7D.

c. At 2EHS*MCC103, bus A, check open breaker 1A, 600V supply from emergency load center 2EJS*US1, (Breaker 5D).

d. At 2EHS*MCC103, bus C, check open breaker 27A, 600V supply from emergency load center 2EJS*US1 (breaker 7D).

e. At 2EHS*MCC103, bus C, check open tie breaker 16A between bus A and bus C.

f. Check voltage on emergency load center 2EJS*US1 as nominally 600V.

g. At emergency load center 2EJS*US1, rack in supply breaker to 2EHS*MCC103, bus A, breaker 5D.

h. At emergency load center 2EJS*US1, rack in supply breaker to 2EHS*MCC103, bus C, breaker 7D.

CAUTION: Before closing supply breaker, reverify Bus A to C tie breaker (16A) is open.

i. At emergency load center 2EJS*US1, close supply breaker to 2EHS*MCC103, bus A, breaker 5D.

j. At emergency load center 2EJS*US1, close supply breaker to 2EHS*MCC103, bus C, breaker 7D.

k. At 2EHS*MCC103, bus A, close breaker 1A, 600V supply from emergency load center 2EJS*US1 (breaker 5D). Check voltage on 2EHS*MCC103, bus A, as nominally 600V.

l. At 2EHS*MCC103, bus C, close breaker 27A, 600V supply from emergency load center 2EJS*US1 (breaker 7D). Check voltage on 2EHS*MCC103, bus C, as nominally 600V.

NOTE 1: At 2EHS*MCC103, tie breaker 16A will be the alternate source for either bus A or bus C.

NOTE 2: The motor control center supply breakers and tie breaker will be lined up utilizing the kirk-key control system.

6.0 To place de-energized 4.16 KV emergency bus 2ENS*SWG103 in service from normal feed, reserve station service transformer 2RTX-XSR1B via 4.16 KV bus 2NNS-SWG017:

a. At panel 852, lockout emergency diesel generator 2EGS*EG3 output, breaker 103-14.

b. At panel 852, lockout feed to auxiliary transformer 2EJS*X3B (600V feed to emergency load center 2EJS*US3), breaker 103-13.

c. At panel 852, lockout 4.16 KV feed from 2NNS-SWG018 to emergency bus 2ENS*SWG103, breaker 103-2 (cubicle only).

d. At panel 852, lockout 4.16 KV feed to 4.16 KV bus 2NNS-SWG015, breaker 103-8.

e. At panel 852, lockout 4.16 KV feed from 2NNS-SWG017 to emergency bus 2ENS*SWG103, breaker 103-4.

f. At panel 852, lockout feed to auxiliary transformer 2EJS*X3A (600V feed to emergency load center 2EJS*US3), breaker 103-1.

g. At panel 601, lockout the following motor breakers:

Residual Heat Removal Pump B - 2RHS*P1B
Residual Heat Removal Pump C - 2RHS*P1C
Service Water Pump B - 2SWP*P1B
Service Water Pump D - 2SWP*P1D
Service Water Pump F - 2SWP*P1F

h. At panel 875, lockout the motor breaker for spent fuel cooling pump B - 2SFC*P1B

i. At panel 852, check closed 4.16 KV feed to emergency 2ENS*SWG103 and 2ENS*SWG102, breaker 17-2. Check voltage on bus 2NNS-SWG017 as nominally 4.16 KV (see OP 71).

j. At emergency bus 2ENS*SWG103, rack in normal feed to bus 2ENS*SWG103 breaker 103-4, as required. Check the following lockout relays reset to assure closing permissives satisfied:

Cubicle 103-2	86A-2ENSY02
	86B-2ENSY02
Cubicle 103-4	86A-2ENSY01
	86B-2ENSY01
Cubicle 103-N2	86C-2ENSY01
	86C-2ENSY02

k. At emergency bus 2ENS*SWG103 check fuses in place and potential transformer compartment 103-4 doors closed.

l. At panel 852, turn on synch switch across 4.16 KV Bus 2NNS-SWG017 and emergency bus 2ENS*SWG103, Breaker 103-4.

m. At panel 852, Bus 2ENS*SWG103, close breaker 103-4, normal 4.16 KV feed from Bus 2NNS-SWG017. Check voltage on Bus 2ENS*SWG103 as nominally 4.16 KV.

n. At panel 852, turn off synch switch across 4.16 KV bus 2NNS-SWG017 and emergency bus 2ENS*SWG103, breaker 103-4.

o. Lineup and place in service all loads off of emergency bus 2ENS*SWG103, as warranted by plant conditions, in accordance with their applicable operating procedures.

p. At panel 852 remove the diesel generator breaker control switch from pull-to-lock. 3

7.0 To energize 4.16 KV/600V auxiliary transformers 2EJS*X3A and 2EJS*X3B and place emergency load center 2EJS*US3 in service:

a. At panel 852, lockout emergency bus 2ENS*SWG103, 4.16 KV feed to auxiliary transformer 2EJS*X3A, breaker 103-1.

b. At panel 852, lockout emergency bus 2ENS*SWG103, 4.16 KV feed to auxiliary transformer 2EJS*X3B, breaker 103-13.

c. At panel 852, lockout 600V supply breaker from auxiliary transformer 2EJS*X3A, breaker 3B.

d. At panel 852, lockout 600V supply breaker from auxiliary transformer 2EJS*X3B, breaker 9B.

e. At panel 852, check voltage on emergency bus 2ENS*SWG103 as nominally 4.16 KV

f. At emergency bus 2ENS*SWG103, rack in supply breaker to auxiliary transformer 2EJS*X3A, breaker 103-1. Check lockout relay 86-2EJSY03 reset.

g. At emergency bus 2ENS*SWG103, rack in supply breaker to auxiliary transformer 2EJS*X3B, breaker 103-13. Check lockout relay 86-2EJSY04 reset.

h. At panel 852, close supply breaker to auxiliary transformer 2EJS*X3A, breaker 103-1.

i. At panel 852, close supply breaker to auxiliary transformer 2EJS*X3B, breaker 103-13.

j. At emergency load center 2EJS*US3, rack in 600V supply breaker from auxiliary transformer 2EJS*X3A, breaker 3B.

k. At emergency load center 2EJS*US3, rack in 600V supply breaker from auxiliary transformer 2EJS*X3B, breaker 9B, as required.

l. At panel 852, close 600V supply breaker from auxiliary transformer 2EJS*X3A, breaker 3B. Check voltage on emergency load center 2EJS*US3 as nominally 600V.

NOTE: Auxiliary transformer 2EJS*X3B, 600V supply breaker to emergency load center 2EJS*US3, breaker 9B, will be the alternate feed.

8.0 To energize 600V emergency motor control center 2EHS*MCC301:

a. At emergency load center 2EJS*US3, check open supply breaker to 2EHS*MCC301, breaker 4B.

b. At emergency load center 2EJS*US3, check open supply breaker to 2EHS*MCC301, breaker 9C.

c. At 2EHS*MCC301, check open breaker 1A, 600V supply from emergency load center 2EJS*US3 (breaker 4B).

d. At 2EHS*MCC301, check open breaker 8A, 600V supply from emergency load center 2EJS*US3 (breaker 9C).

e. Check voltage on emergency load center 2EJS*US3 as nominally 600V.

f. At emergency load center 2EJS*US3, rack in supply breaker to 2EHS*MCC301, breaker 4B, as required.

g. At emergency load center 2EJS*US3, rack in supply breaker to 2EHS*MCC301, breaker 9C, as required.

h. At emergency load center 2EJS*US3, close supply breaker to 2EHS*MCC301, breaker 4B.

i. At emergency load center 2EJS*US3, close supply breaker to 2EHS*MCC301, breaker 9C.

j. At 2EHS*MCC301, close breaker 1A, 600V supply from emergency load center 2EJS*US3 (breaker 4B). Check voltage on 2EHS*MCC301 as nominally 600V.

NOTE 1: At 2EHS*MCC301, breaker 8A, the 600V supply from emergency load center 2EJS*US3 (breaker 9C), will be the alternate source.

NOTE 2: The motor control center supply breakers will be lined up utilizing the kirk-key control system.

9.0 To energize 600V Emergency Motor Control Center 2EHS*MCC302:

a. At emergency load center 2EJS*US3, check open supply breaker to 2EHS*MCC302, bus B, breaker 3C.

b. At emergency load center 2EJS*US3, check open supply breaker to 2EHS*MCC302, bus D, breaker 8C.

c. At 2EHS*MCC302, bus B, check open breaker 1A, 600V supply from emergency load center 2EJS*US3 (breaker 3C).

d. At 2EHS*MCC302, bus D, check open breaker 22A, 600V supply from emergency load center 2EJS*US3 (breaker 8C).

e. At 2EHS*MCC302, bus D, check open tie breaker 11A between bus B and bus D.

f. Check voltage on emergency load center 2EJS*US3 as nominally 600V.

g. At emergency load center 2EJS*US3, rack in supply breaker to 2EHS*MCC302, bus B, breaker 3C.

h. At emergency load center 2EJS*US3, rack in supply breaker to 2EHS*MCC302, bus D, breaker 8C.

CAUTION Before closing supply breaker, reverify Bus B to D tie breaker (11A) is open.

i. At emergency load center 2EJS*US3, close supply breaker to 2EHS*MCC302, bus B, breaker 3C.

j. At emergency load center 2EJS*US3, close supply breaker to 2EHS*MCC302, bus D, breaker 8C.

k. At 2EHS*MCC302 bus B, close breaker 1A, 600V supply from emergency load center 2EJS*US3 (breaker 3C). Check voltage on 2EHS*MCC302 bus B as nominally 600V

l. At 2EHS*MCC302 bus D, close breaker 22A, 600V supply from emergency load center 2EJS*US3 (breaker 8C). Check voltage on 2EHS*MCC302 bus D as nominally 600V.

NOTE 1: At 2EHS*MCC302, tie breaker 11A will be the alternate source for either bus B or bus D.

NOTE 2: The motor control center supply breakers and tie breaker will be lined up utilizing the kirk-key control system.

10.0 To energize 600V emergency motor control center 2EHS*MCC303:

a. At emergency load center 2EJS*US3, check open supply breaker to 2EHS*MCC303, bus B, breaker 5D.

b. At emergency load center 2EJS*US3, check open supply breaker to 2EHS*MCC303, bus D, breaker 7D.

c. At 2EHS*MCC303, bus B, check open breaker 1A, 600V supply from emergency load center 2EJS*US3, (Breaker 5D).

d. At 2EHS*MCC303, bus D, check open breaker 24A, 600V supply from emergency load center 2EJS*US3 (breaker 7D).

e. At 2EHS*MCC303, bus D, check open tie breaker 13A between bus B and bus D.

f. Check voltage on emergency load center 2EJS*US3 as nominally 600V.

g. At emergency load center 2EJS*US3, rack in supply breaker to 2EHS*MCC303, bus B, breaker 5D.

h. At emergency load center 2EJS*US3, rack in supply breaker to 2EHS*MCC303, bus D, breaker 7D.

CAUTION: Before closing supply breaker, reverify Bus B to D tie breaker (13A) is open.

i. At emergency load center 2EJS*US3, close supply breaker to 2EHS*MCC303, bus B, breaker 5D.

j. At emergency load center 2EJS*US3, close supply breaker to 2EHS*MCC303, bus D, breaker 7D.

k. At 2EHS*MCC303, bus B, close breaker 1A, 600V supply from emergency load center 2EJS*US3 (breaker 5D). Check voltage on 2EHS*MCC303, bus B, as nominally 600V.

l. At 2EHS*MCC303, bus D, close breaker 24A, 600V supply from emergency load center 2EJS*US3 (breaker 7D). Check voltage on 2EHS*MCC303, bus D, as nominally 600V.

NOTE 1: At 2EHS*MCC303, tie breaker 13A will be the alternate source for either bus B or bus D.

NOTE 2: The motor control center supply breakers and the tie breaker will be lined up utilizing the kirk-key control system.

11.0 To place de-energized 4.16 KV emergency bus 2ENS*SWG102 in service from normal feed, reserve station service transformer 2RTX-XSR1A, via 4.16 KV bus 2NNS-SWG016:

a. At panel 852, lockout emergency diesel generator 2EGS*EG2 output, breaker 102-1.

b. At panel 601, lockout the motor breaker for the high pressure core spray pump, 2CSH*P1.

c. At panel 852, lockout feed to auxiliary transformer 2EJS*X2 (600V feed to emergency motor control center 2EHS*MCC201), breaker 102-3.

d. At panel 852, lockout 4.16 KV feed from 2NNS-SWG016 to emergency bus 2ENS*SWG102, breaker 102-4.

e. At panel 852, lockout 4.16 KV feed from 2NNS-SWG017 to emergency bus 2ENS*SWG102, breaker 102-5.

f. At panel 852, check closed 4.16 KV feed to emergency buses 2ENS*SWG101 and 2ENS*SWG102, breaker 16-2. Check voltage on bus 2NNS-SWG016 as nominally 4.16 KV (see OP 71).

g. At emergency bus 2ENS*SWG 102, rack in normal feed to bus 2ENS*SWG102, breaker 102-4. Check the following lockout relays reset to assure closing permissives satisfied:

Breaker 102-4	86NA
	86NB
Breaker 102-5	86NA
	86NB

h. At emergency bus 2ENS*SWG102 check fuses in place and potential transformer compartment 102-1 doors closed.

i. At panel 852, turn on synch switch across 4.16 KV bus 2NNS-SWG016 and emergency bus 2ENS*SWG102, breaker 102-4.

j. At panel 852, bus 2ENS*SWG102, close breaker 102-4, normal 4.16 KV feed from bus 2NNS-SWG016. Check voltage on bus 2ENS*SWG102 as nominally 4.16 KV.

k. At panel 852, turn off synch switch across 4.16 KV bus 2NNS-SWG016 and emergency bus 2ENS*SWG102, breaker 102-4.

l. Line up and place in service all loads off of emergency bus 2ENS*SWG102, as warranted by plant conditions, in accordance with their applicable operating procedures.

m. At panel 852 remove the diesel generator control switch from pull-to-lock. | 3

12.0 To energize 4.16 KV/600V auxiliary transformer 2EJS*X2 and place emergency motor control center 2EHS*MCC201 in service:

a. At panel 852, lockout feed to auxiliary transformer 2EJS*X2 (600V feed to emergency motor control center 2EHS*MCC201) Breaker 102-3.

b. Check voltage on emergency bus 2ENS*SWG102, both locally and at panel 852, as nominally 4.16 KV.

c. At emergency bus 2ENS*SWG102, rack in supply breaker to auxiliary transformer 2EJS*X2 (600V feed to 2EHS*MCC201) breaker 102-3. Check lockout relay 86T on breaker 102-3 reset to assure closing permissive satisfied. | 3

d. Close breaker for meter and indicator light breaker 1B.

e. At panel 852, close supply breaker 102-3 to auxiliary transformer 2EJS*X2 (600V supply to 2EHS*MCC201). Check voltage on emergency motor control center 2EHS*MCC201 as nominally 600V

f. Line up and place in service all loads off of emergency motor control center 2ENS*MCC201, as warranted by plant conditions, in accordance with their applicable operating procedures.

13.0 To start standby diesel generators 2EGS*EG1, Division I or 2EGS *EG3, Division II and synchronize to emergency bus 2ENS*SWG101 or 2ENS*SWG103, refer to N2-OP-100A Section F. Normal Operation.

To shutdown the above diesel generators refer to N2-OP-100A Section G. Shutdown.

To start standby diesel generator 2EGS*EG2 (Division III [HPCS]) and synchronize it to bus 2ENS*SWG102, or to shutdown the above diesel generator, refer to N2-OP-100B Section F. Normal Operation or Section G. Shutdown.

14.0 This section contains the start-up procedure for energizing the 2VBA*UPS2A loads off its maintenance supply with 2VBA-UPS 2A totally de-energized.

a. Verify that the loads off 2VBS*PNL101A and 2VBS*PNL102A are in a safe condition in order to allow energization of 2VBS*PNL101A and 2VBS*PNL102A.

b. Verify all circuit breakers on 2VBA-UPS 2A are off.

c. Turn the manual switch to the "maintenance" position.

d. Place AC voltmeter select switch (S52) in the "Output" position.

e. Energize the maintenance feed to 2VBA-UPS2A by closing breaker 19 on 2LAC*PNL100A.

f. Close the maintenance input circuit breaker CB-1. This will energize the UPS maintenance internal regulator/transformer.

g. Close the static switch input breaker CB-2

h. Close the static switch output breaker CB53 and observe output to be 120 VAC nominal voltage.

i. Close the input power knife switch on 2VBS*PNL101A and 2VBS*PNL102A.

j. Close in the loads off panel 2VBS*PNL101A and 2VBS*PNL102A as desired.

k. Verify LED's (two each) are lit on regulator control card behind CB-2. If not F81 fuse or control card is bad. (This signifies the loss of maintenance supply regulation. Loads may continue to be supplied from maintenance power or transferred to a more reliable source IAW Sect H.15.0). TCN-13

15.0 This section contains the start-up procedure for energizing 2VBA*UPS2A:

a. Verify that the maintenance supply to 2VBA-UPS2A is in service by observing output voltage on the AC output voltmeter is 120 VAC nominal.

b. On 2VBA*UPS2A, check breaker CB-51, and CB-52 are open.

c. On 2EJS*PNL100A, close breaker 7.

d. On 2BYS*SWG002A check voltage is 130-140VDC.

e. On 2BYS*SWG002A, close breaker 3-C

f. On 2VBA*UPS2A, verify circuit breaker, CB-2, "Static Switch Input", breaker is closed. TCN-

g. On 2VBA*UPS2A, verify circuit breaker, CB-53, "Static Switch Output", breaker is closed. TCN-13

h. Place S-51 - the DC voltmeter selector switch, to the "Rectifier" position.

i. Place S-52 - the AC voltmeter selector switch, to the "Inverter" position.

j. Close the normal AC input power circuit breaker - CB-51.

k. Observe that the DC rectifier volts increases to 140V DC. The UPS inverter will then start with an audible increase in noise level.

l. Verify AC output voltage at 120V AC.

m. Verify that the static switch is in the "maintenance" position and, in approx. 15 seconds, the loss of synch light is out.

n. Push the lamp test pushbutton - all lamps will light and then go out when the button is released.

o. Check the following indications:

1. "Low Battery" lamp is lit (because CB-52 is open).

2. "Reverse Transfer" lamp is lit.

p. Place the DC voltmeter selector switch S-51 in the "Battery" position, then close circuit breaker CB-52, "Battery Input" breaker.

NOTE: This breaker will trip if the rectifier output is less than 100V AC.

q. Verify battery voltage between 133V - 140V DC.

r. Turn the manual switch to the "UPS" position. The load is now being supplied by maintenance power through the static switch.

s. Verify that the loss of synch light is out and then push the "Forward" static switch pushbutton. The static switch will now transfer the load to the inverter. TCN-13

NOTE: The "Reverse transfer" light will go out if lamp test button is pushed.

t. Load can be monitored on the AC output current ammeter.

u. Check that all alarm lights are out.

NOTE: Pushing the Lamp Test pushbutton will reset alarms.

16.0 This section contains the start-up procedure for energizing the 2VBA*UPS2B loads off its maintenance supply with 2VBA-UPS2B totally de-energized:

a. Verify that the loads off 2VBS*PNL301B and 2VBS*PNL302B are in a safe condition in order to allow energization of 2VBS*PNL301B and 2VBS*PNL302B.

b. Verify that all circuit breakers on 2VBA*UPS2B are open.

c. Turn the manual switch to the "maintenance" position.

d. Place the AC voltmeter select switch (S-52) in the "Output" position.

e. Energize the alternate feed to 2VBA*UPS2B by closing breaker 19 on 2LAC*PNL300B.

f. Close the maintenance input circuit breaker CB-1. This will energize the UPS maintenance internal regulator/transformer.

g. Close the Static Switch Input breaker, CB-2.

h. Close the Static Switch Output breaker, CB-53, and observe the output to be 120 VAC nominal.

i. Close the input power knife switch on 2VBS*PNL301B and 2VBS*PNL302B.

j. Close in the loads off panel 2VBS*PNL301B and 2VBS*PNL302B as desired.

k. Verify LED's (two each) are lit on regulator control card. If not, fuse F81 or control card is bad. (This signifies the loss of maintenance supply regulation. Loads may continue to be supplied from maintenance power or transferred to a more reliable source IAW Sect H.17.0). TCN-13

17.0 This section contains the start-up procedure for energizing 2VBA*UPS2B:

a. Verify that the maintenance supply to 2VBA*UPS2B is in service by observing output voltage on the AC output voltmeter is 120 VAC nominal.

b. On 2VBA*UPS2B; check breaker CB-51 and CB-52 are open.

c. On 2EJS*PNL300B, close breaker 7.

d. On 2BYS*SWG002B, check that voltage is 133-140V AC.

e. On 2BYS*SWG002B, close breaker 3-C.

f. On 2VBA-UPS2B, verify circuit breaker CB-2 - "Static Switch Input" breaker is closed.

g. On 2VBA-UPS2B, verify circuit breaker CB-53 - static switch "Output" breaker is closed.

h. Place S-51 - the DC voltmeter selector switch, to the "Rectifier" position.

i. Place S-52 - the AC voltmeter selector switch, to the "Inverter" position.

j. Close the AC input power circuit breaker - CB-51.

k. Observe that the DC rectifier volts increases to 140V DC. The UPS inverter will then start with an audible increase in noise level.

l. Verify AC output voltage at 120V AC.

m. Verify that the static switch is in the "maintenance" position and in approx. 15 seconds the loss of synch light is out.

n. Push the lamp test pushbutton - all lamps will light and then go out when the button is released.

o. Check the following indications:

1. "Low Battery" lamp is lit (because CB-52 is open).

2. "Reverse Transfer" lamp is lit.

p. Place the DC voltmeter selector switch S-51 in the "Battery" position, then close circuit breaker CB-52, "Battery Input" breaker.

NOTE: This breaker will trip if the rectifier output is less than 100V DC.

q. Verify battery voltage between 133-140V DC.

r. Turn the manual switch to the "UPS" position. The load is now being supplied by maintenance power through the static switch.

s. Verify that the loss of synch light is out and then push "Forward" Static Switch pushbutton. The static switch will now transfer the load to the inverter. TCN-13

NOTE: The "Reverse Transfer" light will go out if lamp test button is pushed.

t. Load can be monitored on the AC output current ammeter.

u. Check that all alarm lights are out.

NOTE: Pushing the lamp test pushbutton will reset alarms.

F. NORMAL OPERATION

1.0 During normal operation, the 4160V emergency buses 2ENS*SWG101 (Div I) and 2ENS*SWG102 (Div III) are energized from normal supply breakers 101-13 and 102-4, respectively, by reserve station transformer 2RTX-XSR1A. Power from the transformer to the associated supply breakers is supplied through the 4160V normal bus 2NNS-SWG016, breaker 16-2.

The 4160V emergency bus 2ENS*SWG103 (Div. II) is energized from normal supply breaker 103-4, by reserve station transformer 2RTX-XSR1B. Power from the transformer to the supply breaker is supplied through the 4160V normal bus 2NNS-SWG017, breaker 17-2.

The diesel generator output breakers 101-1, 103-14, 102-1 (Div. I, II, III, respectively) are open, and the diesels are in standby mode.

Breakers are lined up in accordance with Table II, to energize associated 4160V, 600V, and 120V power.

1.1 During all modes of operation on the 4.16 KV emergency buses 2ENS*SWG101, 2ENS*SWG102 and 2ENS*SWG103, the voltage should not be allowed to go below 4060 Volts.

1.2 The normal operation of 2VBA*UPS2A and 2VBA-UPS2B require little operator action. However, the individual UPS should be checked periodically for the following:

a. Ventilation filters clean.

b. Doors and panels secured.

c. AC output voltage 120V AC ± 2% (117.6 - 122.4V AC).

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G. SHUTDOWN PROCEDURE

1.0 Once established, this system will not be shut down as a unit. Shutdown will be the removal of one Division for maintenance purposes.

1.1 Once the UPS systems are put into service, they should not be shut down as a unit - this would de-energize the UPS loads. However, certain individual components of the UPS systems may be taken out of service for maintenance, etc. These procedures will be discussed under section H - "Off Normal" procedures.

H. OFF NORMAL PROCEDURE

1.0 To transfer emergency bus 2ENS*SWG101 feed from reserve station service transformer 2RTX-XSR1A to Aux. Boiler transformer 2ABS-X1, see OP-71 Section H.

To transfer emergency bus 2ENS*SWG102 feed from reserve station service transformer 2RTX-XSR1A to reserve station service transformer 2RTX-XSR1B see OP-71 section H.

NOTE: Prior to taking 2ENS*SWG102 out of service, place 43LS-2ENSC10 in the ON position. This switch is located on 2ENS*SWG102 cubicle 2 and will prevent the start of 2EGS*EG2 when 2ENS*SWG102 is de-energized.

To transfer emergency bus 2ENS*SWG103 feed from reserve station service transformer 2RTX-XSR1B to Aux. Boiler transformer 2ABS-X1 see OP-71, Section H.

2.0 To Re-energize 4160V/600V Stub buses, 2NNS-SWG014/2NJS-US5 or 2NNS-SWG015/2NJS-US6 following a loss of offsite power AND/OR a loss of coolant accident, proceed as follows:

2.1 2NNS-SWG014/2NJS-US5

a. Verify 2ENS*SWG101 energized.

b. Verify normal supply breaker to 2NNS-SWG014 (14-2) OPEN at P-852. Place its control switch in PTL.

c. Open feeder breakers to 2NJS-US5 (14-4 and 14-8).

d. If a loss of coolant accident signal is "SEALED IN" place the DIV I "LOCA SIGNAL BYPASS" switch to "ON" at P852.

e. Close breaker 101-11 at P852. (emergency feed to 2NNS-SWG014)

f. Close breaker 14-1 P852. (emergency feed from 2ENS*SWG101)

g. Close feeder breakers to 2NJS-US5. (14-4 and 14-8)

h. Verify 2NJS-US5 re-energized.

i. Restart the following equipment as required.

2. 1RDS-P1A (N2-OP-30)
2. 2CCP-P1C (N2-OP-13)
3. 2CCP-P3C (N2-OP-13)
4. 2IAS-C1A (N2-OP-19)
5. 2WCS-P1A (N2-OP-37)
6. 2BYS-CHGR1A1 (N2-OP-73A)
7. Turning gear oil pump

2.2 2NNS-SWG015/2NJS-US6

a. Verify 2ENS*SWG103 energized.

b. Verify normal supply breaker to 2NNS-SWG015 (15-3) OPEN at P-852. Place its control switch in PTL.

c. Open feeder breakers to 2NJS-US6 (15-1 and 15-7).

d. If a loss of coolant accident signal is "SEALED IN" place the DIV I "LOCA SIGNAL BYPASS" switch to "ON" at P852.

e. Close breaker 103-8 at P852. (emergency feed to 2NNS-SWG015)

f. Close breaker 15-8 at P852. (emergency feed from 2ENS*SWG103)

g. Close feeder breakers to 2NJS-US6. (15-1 and 15-7)

h. Verify 2NJS-US6 re-energized.

i. Restart the following equipment as required.

1. 2RDS-P1B (N2-OP-30)
2. 2CCP-P1B (N2-OP-13)
3. 2CCP-P3B (N2-OP-13)
4. 2IAS-C1B (N2-OP-19)
5. 2WCS-P1B (N2-OP-37)
6. 2BYS-CHGR1B1 (N2-OP-73A)
7. 2BYS-CHGR1C1 (N2-OP-73A)
8 MAIN TURBINE TURNING GEAR (N2-OP-22A)

3.0 Loss of normal AC feed to 2VBA*UPS2A or 2VBA*UPS2B:

NOTE 1: Upon loss of normal AC feed to UPS2A or 2B, the UPS automatically begins to draw power from the backup DC source - 125V DC batteries. In this condition the UPS is still operable in accordance with Tech Spec 3.8.3.1 and 3.8.3.2. As long as the battery voltage remains above the undervoltage level, The UPS can continue to operate off the batteries. Two battery chargers must be in service when a UPS is on its backup power source per T.S. 3.8.2.1, 3.8.2.2. (If the battery voltage falls to an undervoltage level, the UPS will automatically transfer to the maintenance AC source.) Upon loss of normal AC to the UPS, battery voltage should be monitored so that the 125V DC system is not compromised due to heavy loading from the UPS. It may be desirable to transfer load to the maintenance AC source if heavy UPS loading exists on the batteries. When the UPS is powered from the maintenance AC source and the plant is in Mode 1,2 or 3, action per T.S. 3.8.3.1 must be taken. TCN-13 TCN-13

NOTE 2: When normal AC power is restored to the UPS, the UPS will automatically "Bias Off" (stop drawing from) the batteries and the rectifier section of the UPS will automatically pick up the load. Local alarms should be reset by pushing "LAMP TEST."

a. Refer to N2-OP-74A Section C.2.0 and Section H.4.0.

3.1 Loss of normal AC power to 2VBA*UPS2A or 2VBA*UPS2B with added loss of DC:

When there is a loss of normal AC power to UPS2A or UPS2B combined with a loss of DC power (possibly caused by a DC undervoltage condition), the UPS will automatically transfer its load to the maintenance AC source. Once the UPS loads are operating from the maintenance source, it can operate indefinitely until normal and backup power is restored. When the UPS is powered from the maintenance AC source and the plant is in Mode 1,2 or 3, action per T.S. 3.8.3.1 must be taken. TCN-13

When normal and DC power is restored, the load can be manually retransferred back to the UPS as outlined in the start-up section, 15.0, and 17.0.

3.2 Loss of DC power to 2VBA*UPS2A or 2VBA*UPS2B without loss of normal AC power. An energized UPS operating on normal AC power can experience the loss of DC power with no effect on the UPS or its loads. Upon loss of DC power, a local "Low Battery" alarm will initiate with a subsequent "UPS System Trouble" alarm in the control room. With a loss of DC power to the UPS, the UPS is inoperable and action per Tech. Spec. 3.8.3.1 must be taken when the plant is in Mode 1, 2 or 3. TCN-13

3.3 Transfer of load from 2VBA*UPS2A or 2VBA*UPS2B to the maintenance source and shutdown of the UPS (output being supplied by maintenance source):

NOTE: This is only allowed in Modes 4,5, * per T.S. 3.8.3.2.

Initial Conditions -

a. UPS module supplying the critical load

b. The maintenance Regulator/Transformer is energized.

UPS Transfer and Shutdown -

a. Check "Loss of Synch" lamp is out

b. Push the "Reverse" Static Switch pushbutton TCN-13

c. Put switch S-52, "AC Voltmeter Select Switch" in the "Output" position

d. Verify output voltage to be nominally 120V and 60 Hz.

e. Turn off "Battery Input" circuit breaker CB-52

f. Turn off AC "Input Power" circuit breaker CB-51

g. Verify that DC rectifier and the inverter output volts drop to zero

h. Turn the manual switch to the "maintenance" position

i. Turn off "Static Switch Input" circuit breaker, CB-2. TCN-13

j. Turn off the "Static Switch Output" circuit breaker, CB-53.

k. Open and mark-up normal AC and DC input power circuit breaker at their respective switchgear as required

NOTE: Lethal voltages still exist inside of unit.

3.4 Removing the maintenance supply to 2VBA*UPS2A or 2VBA*UPS2B with the UPS supplying the critical load:

a. On the UPS, verify CB-51 closed

b. On the UPS, verify CB-52 closed

c. On the UPS, verify CB-53 closed

d. Verify UPS DC volts to be nominally 140V DC

e. Verify UPS AC output volts to be nominally 120V AC

f. Verify UPS frequency at nominal 60 Hz

g. Check all alarms clear

h. Verify manual switch S-5 is in the "UPS" position

i. Verify that the static switch inverter position lamp is lit. (The yellow mimic light above the "Forward" Static Switch pushbutton). TCN-13

j. Turn off "Static Switch Input" circuit breaker - CB-2

k. Turn off "Maintenance Input" circuit breaker CB-1

l. Open the maintenance supply circuit breaker on its respective switchgear as desired

NOTE: With the UPS and maintenance supply in this position, any UPS fault (trip) condition will result in the loss of load.

3.5 2VBA*UPS2A or 2VBA*UPS2B restart after a UPS failure trip/transfer to maintenance supply:

a. Verify that the critical load is being supplied by the maintenance supply.

1. "Reverse Transfer" lamp lit

2. Static switch maintenance position lamp lit

3. Output volt meter indicates 120V A.C.

b. Record all alarms and switch positions

c. Clear all alarms as necessary ("Reverse Transfer" will stay lit).

NOTE: If alarms do not clear report problem to Electrical Maintenance for repair.

d. Verify AC "Input Power" circuit breaker CB-51 closed

e. Place S-51, the DC Voltmeter Selector Switch, to the "Rectifier" position. TCN-13

f. Verify DC Rectifier volts greater than 120 VDC.

g. Place S-52, the AC Voltmeter Selector Switch, to the "Inverter" position.

h. Verify AC output voltage at 120 VAC.

i. Verify DC "Battery Input" circuit breaker CB-52 closed

j. Check UPS rectifier volts nominally 140V DC

k. Check inverter output volts and frequency to be nominally 120V AC and 60 Hz respectively

ℓ. Verify "Loss of Synch" lamp is out

m. Push the "Forward" Static Switch pushbutton TCN-13

n. Verify "Reverse Transfer" light goes out after pushing "LAMP TEST" pushbutton.

o. If the load transfers back to the maintenance, investigate the cause. If UPS shutdown is warranted, do so per section H, 3.3.

3.6 2VBA*UPS2A or 2VBA*UPS2B shutdown after failure with maintenance source feeding load

a. Record all alarms and switch positions

b. Follow section H, 3.3, Steps a-k.

4.0 Inadvertent Loss of Buss

NOTE: Loss of Buss may be indicated by any of the following: TCN-14

- 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.

4.1 OPERATOR ACTIONS

4.1.1 Take the necessary actions to place the Plant in a Safe Condition.

4.1.2 Refer to Operating Procedures as required.

4.1.3 Place all loads on affected Switchgear, Unit sub or Motor Control Center in the Pull-to-Lock position.

4.1.4 Place affected Feeder Breakers in the Pull-to-Lock position.

4.1.5 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 and Test as necessary.
- Refer to electrical diagrams and load lists as necessary to identify affected loads.

4.1.6 Refer to Technical Specifications for possible entry into LCO's.

4.1.7 Attempt to correct or isolate the cause of loss of buss.

TCN-14

* *

CAUTION

Trips or Lockouts should not be reset until the cause of the loss of buss has been determined and corrected.

* *

4.2 RESTORATION

4.2.1 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.

I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (Cont.)

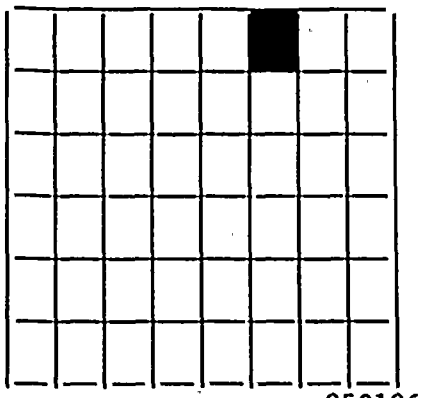
1.0 852106 Division I Load Center EJS System Inoperable

Reflash: No

ITCN-1

DIVISION I
LOAD CENTER
EJS SYSTEM
INOPERABLE

852106



852106

1.1	Computer Point	Computer Printout	Source
	a. EJSBC13	DIV 1 LD CTR EJS SYS	1) EMER SWGR XFMR FDR ACB 101-14 AND 2) EMER SWGR XFMR FDR ACB 101-2 OR 3) EMER US1 NORM FEED ACB 1-3B AND 4) EMER US1 ALT FEED ACB 1-9B OR 5) EMER US1 MAN OUT OF SER

1.2 Corrective Action

a. Refer to the following INOP windows for response.

TCN-5

Window	Source	Automatic Action
1. EMER SWGR XFMR FDR ACB 101-14	(74-2EJSX03) a) Loss of DC Control power b) Control Room Fire Disconnect c) Control Room control switch PTL d) Breaker racked out (74-2EJSX04)	Annun. for any event in both inop windows
2) EMER SWGR XFMR FDR ACB 101-2		

Corrective Action

a. For loss of 125VDC control power, check fuses in cubicle 101-2, and brkr 2D in 2BYS*SWG002A, DC switchgear.

b. For Control Room Fire, return switches 2CESA15 and 2CESA16 on Control Room Fire Disconnect Panel 2CES*PNL415 to NORMAL.

c. For breakers not in operate position, rack in breaker 101-14, and/or 101-2.

d. For Control Room panel 851 control switches in pull-to-lock, remove one switch, or both switches from pull-to-lock.

Window	Source	Automatic Action
3) EMER US1 NORM FEED ACB 1-3B	(74-2EJSX05) a) Loss of DC control power b) Control Room Fire Disconnect c) Control Room control switch PTL d) Breaker racked out (74-2EJSX06)	Annun. for any event in both inop windows
4) EMER US1 ALT FEED ACB 1-9B		

1.2 Cont'd Corrective Action

a. For loss of 125VDC control power check fuses in cubicle 1-3A, and brkr 4C in 2BYS*SWG002A, D.C. switchgear.

b. For Control Room fire, return switch 2CESA20 to normal in Control Room fire disconnect panel 2CES*PNL415.

c. For Control Room panel 852 control switches in pull-to-lock, remove one or both switches from pull-to-lock.

d. For breakers not in operate position, rack in breaker 1-3B and/or 1-9B.

Window	Source	Automatic Action
EMER US1 MAN OUT of SER	EMER US1 MAN OUT of SER Pushbutton	None

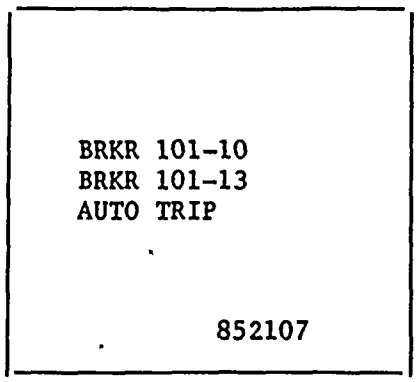
Corrective Action

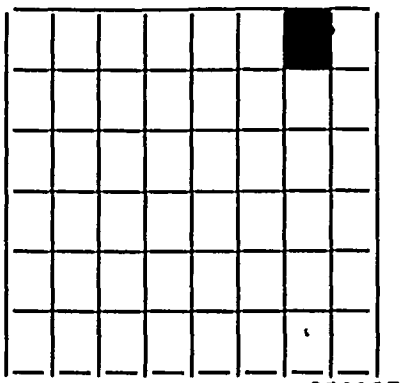
a. Restore the pushbutton to normal.

2.0 852107 Breaker 101-10 or Breaker 101-13 Automatic Trip

Reflash: Yes

TCN-12





2.1	Computer Point	Computer Printout	Source
a.	ENSUC05	2RTX-XSR1A ACB 101-13 TRP	52-2ENSX10
	TRIP SIGNALS ORIGINATE FROM:		
	ENSUC17	EM SWGR ACB101-13 LO RLY	SEE 852139
	ENSUC13	EM SWGR ACB101-13 LO RLY	SEE 852147
	ENSIC01	RTS-XSRIAOC ACB 101-13	SEE 852148
	ENSEC03	BUS 101 DEGRADED VOLT	SEE 852140
	ENSEC01	BUS ENS*101 UNDV	SEE 852140
	ENSBC25	LOAD SHED SIGNAL BUS101	27X3-2ENSX04
	ENSBC24	DEGRADED BUS*101 UNDV	62Y-2ENSX06
	ENSBC23	LOSS OF BUS101 VOLTAGE	62X-2ENSX05
	ENSBC17	4KV EM BUS101 UNDER FREQ	SEE 852132
	ENSBC05	FDR-XFMR ACB 101-13	52-2ENSX10
	NNSUC22	4KV BUS E16 LO RLY 2 TRIP	SEE 852538
	ENSUC09	EM SWGR ACB101-13 LO RLY	SEE 852131

2.1 Cont'd

Computer Point		Computer Printout	Source
b.	ENSUC08	2AB5-X1ACB 101-10 TRIP	52-2ENSX11
		TRIP SIGNALS ORIGINATE FROM:	
	ENSUC18	EM SWGR ACB 101-10 LO RLY	SEE 852139
	ENSUC14	EM SWGR ACB101-10 LO RLY	SEE 852147
	ENSUC10	EM SWGR ACB101-10 LO RLY	SEE 852131
	ENSIC04	XFMR ABS-X1 OC ACB101-10	SEE 852148
	ENSBC25	LOAD SHED SIGNAL BUS101	27X3-2ENSX04
	ENSBC24	DEGRADED BUS*101 UNDV	62Y-2ENSX06
	ENSBC23	LOSS OF BUS 101 VOLTAGE	62X-2ENSX05
	ENCBC17	4KV EM BUS101 UNDER FREQ	SEE 852132
	ENSBC03	FDR TO SFMR ACB 101-10	52-2ENSX11
	ENSEC01	BUS ENS*101 UNDV	SEE 852140
	ENSEC03	BUS101 DEGRADED VOLT	SEE 852140
	NNSUC28	4KV BUS E18 LO RLY 2 TRIP	SEE 852558

2.2 Automatic Response

a. Diesel Generator Start.

b. Load shed all but load center breakers.

c. Auto load sequence

d. Manual loading blocked for approx 1 min.

e. Separation of category II service water from category I.

2.3 Corrective Action

a. See N2-OP-71 Sect. H15 and H16 to transfer feeders to the emergency bus.

b. Place the emergency bus on offsite power.

c. Notify elect. maint. of the event.

d. See N2-OP-100A to return the diesel generator to stand-by after offsite power is restored.

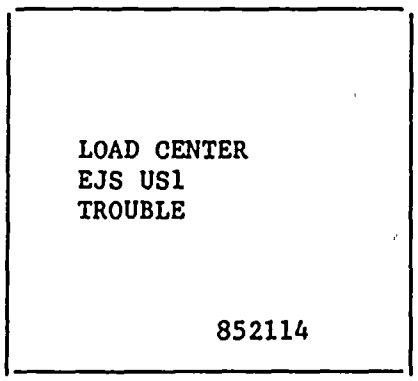
NOTE: If computer point ENSBC40 alarms (DIV I LOCA SIGNAL), before the bus is restored to offsite power, trip breaker 101-1.

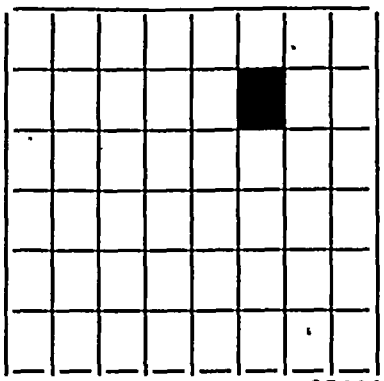
I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (Cont.)

3.0 852114 Load Center EJS*US1 Trouble

Reflash: Yes

TCN-12





3.1	Computer Point	Computer Printout	Source
a.	EJSBC15	UV PROT US1 LOSS DC PWR	74-2EJSX08
b.	EJSUC09	2EJS US1 NORM BRKR EL FLT	52-2EJSX05 BKR overcurrent
c.	EJSUC10	2EJS US1 ALTN BRKR EL FLT	52-2EJSX06 BKR overcurrent
d.	LARBC03	Rx BLDG NORM LTG BKR OPEN	52-2LARN01 BKR Position

3.2 Automatic Response

a. None

b. Trips Breaker ACB 1-3B

c. Trips Breaker ACB 1-9B

d. De-energizes 2LAR-PNL200 (Rx Bldg Lighting) via BKR 5A.

3.3 Corrective Action

a. For loss of control power, check fuses in load center cubicle 1-3A, and breaker 4C at 2BYS*SWG002A, DC switchgear.

b. For breaker overcurrent trip, check annunciator 852146 for a branch breaker trip, and close in the other load center feeder breaker, at Control Room panel 852.

3.3 Corrective Action (Cont'd)

c. If both feeder breakers trip, send an operator to the west stand-by switchgear room.

1. Open all branch breakers on US1
2. Reset both feeder breakers
3. Close feeder breaker 1-3B
4. Close breaker 1-9B, if breaker 1-3B fails to close.
5. Close in branch breakers

d. Notify elect. maint. of the event, and any branch breakers which are tripped, or fail-to-close.

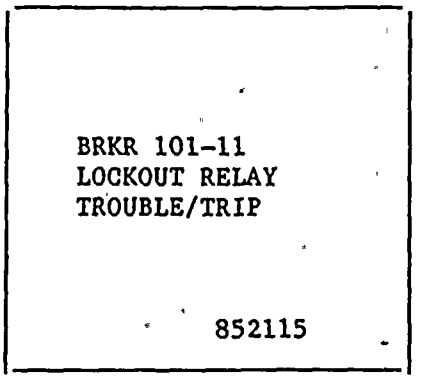
e. Determine cause of breaker opening. If cause is from Load Center Undervoltage, dispatch an operator, when voltage is restored, to reclose 2EJS*US1 BKR 5A to restore Rx Bldg Lighting. If cause is due to a LOCA Signal, the breaker may reclose after SGTS has initiated and has restored and is maintaining Rx Bldg. Δ pressure ≥ (-) .25" W.G. TCN-6

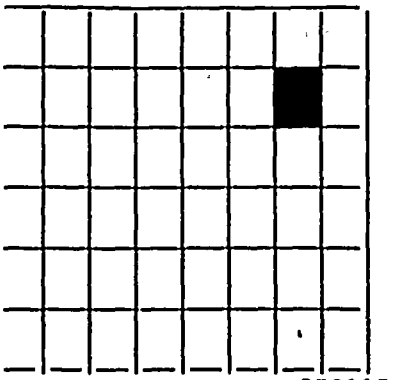
I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (Cont.)

4.0 852115 Breaker 101-11 Lockout Relay Trouble/Trip

Reflash: Yes

| TCN-1 2





4.1	Computer Point	Computer Printout	Source
a.	ENSUC01	EM SWGR ACB 101-11 LO RLY	2NNS-SWG014 Phase or Ground overcurrent 50/51-2ENSA03 50G-2ENSA04
b.	ENSUC03	EM SWGR ACB 101-11 TRIP	52-2ENSX12 (also brings in ENSBC01)
	TRIP SIGNALS ORIGINATE FROM:		
	ENSBC25	LOAD SHED SIGNAL BUS 101	27X3-2ENSX04
	ENSUC30	DIV I LOCA SIGNAL	K110A
	ENSUC01	EM SWGR ACB 101-11 LO RLY	Phase overcurrent 50-2ENSA03
	ENSUC01	EM SWGR ACB 101-11 LO RLY	Ground overcurrent 50G-2ENSA04
c.	ENSUC23	BUS 101 STUB FDR GND FLT	50G-2ENSA08 backup Gnd OC

4.2 Automatic Response

a. None

b. None

c. Trips 101-13, and 101-10, both offsite feeder breakers. SEE 852139. Trips 101-N1 diesel Gen Neutral breaker. SEE 852127. Category II service water separates from Category I.

4.3 Corrective Action

a. Verify the stub bus breaker trip. Check computer point ENSBC01.

NOTE: If the offsite feeder breaker trips, the emergency bus will auto sequence loads and manual loading of the bus is blocked for approx. 1 min.

b. See section H2.0 to re-energize the stub bus after loss of offsite power.

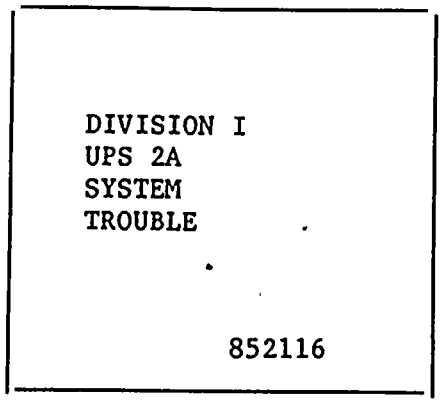
c. Reset lockouts on tripped breakers.

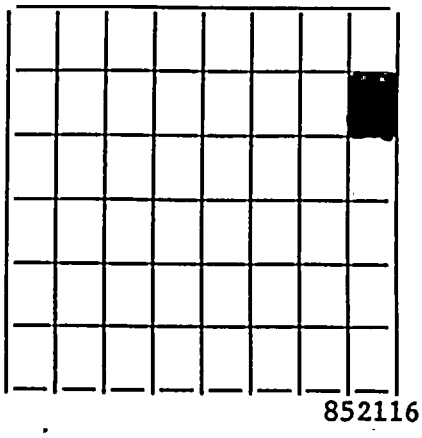
d. Notify elect. maint. of the event and any breakers which remain tripped.

I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (Cont.)

5.0 852116 Division I UPS 2A System Trouble

Reflash: No





5.1

Computer Point	Computer Printout	Source
VBABC03	UPS2A SYSTEM TROUBLE	UPS2A/A9-K51

NOTE: A9-K51 is initiated by any local alarm. This relay will stay de-energized as long as any local alarm exists. This annunciator will not reflash if another local alarm comes in.

TCN- 13

5.2 Automatic Response

a. UPS may realign to power the vital bus from either backup D.C., or maintenance supply dependent on the local alarm.

5.3 Corrective Action

a. Check the UPS output voltage on Control Room panel 852 meter labelled "Vital bus 2VBS*UPS2A 125VAC Output," or computer point VBSVA100.

b. Send an operator to record meter readings and status light indications at the UPS.

NOTE: Consult Tech. Spec. 3.8.3.1 if the UPS is on maintenance power or if the local alarm response indicates that the UPS is inoperable and the plant is in Mode 1, 2 or 3.

c. Notify electrical maintenance for repair or adjustments to the UPS.

TCN-13

d. See Section H of this procedure for operation of the UPS with the loss of a source, or sources.

e. Take corrective action as required per following Table:

(NCTS) Local Alarm Description - Corrective Action

Alarm	Description	Corrective Action
Synch Loss	1. Maintenance AC frequency is out of tolerance	a. Initiate a WR
	or	
	2. Maintenance AC is not present	a. Restore maint. AC (if fuse is blown in the maintenance AC supply regulator, initiate a WR)
	or	
	3. UPS inverter output frequency is out of tolerance (60Hz±3Hz)	a. Verify on Frequency meter
		b. If valid declare INOP and if the plant is in Mode 1, 2 or 3 refer to Tech. Spec. 3.8.3.1
		c. Initiate a WR

Alarm	Description	Corrective Action
Battery Drain/Charge	Current being drawn from batteries caused by:	
	1. Loss of normal AC to UPS	a. Restore normal AC
	or	
	2. Voltage on DC switchgear higher than UPS internal DC voltage	a. If the charger is on equalize, notify Electrical to check charger equalize voltage
		b. If the charger is not on equalize, initiate a WR
	NOTE: Refer to Tech. Specs. 3.8.2.1 or 3.8.2.2	
Rectifier AC Loss	Loss of normal AC to UPS	a. If CB-51 has tripped, initiate a WR
		b. If CB-51 is closed, restore upstream normal AC supply
Reverse Transfer	Static switch is in maintenance position	a. Declare the UPS INOP and if the plant is in Mode 1, 2 or 3 refer to Tech. Spec. 3.8.3.1
		b. If other alarms are present, correct the other alarms prior to restoring the UPS to normal AC power
		c. If all other alarms clear, verify UPS AC output voltage present on AC voltmeter, then push "Forward" static switch pushbutton
Fan Fail	One or more fans have stopped	a. Visually check, if possible, to determine which fan is off
		b. Initiate a WR
	NOTE: This alarm may be concurrent with a Blown Fuse Alarm	

TCN-13

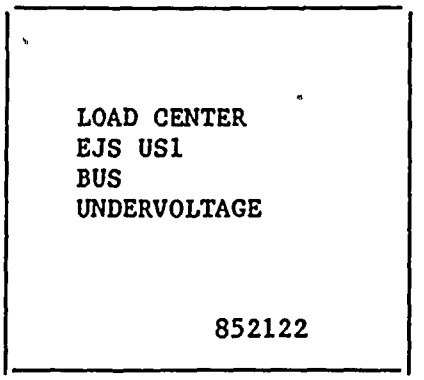
Alarm	Description	Corrective Action
Low Inverter Voltage	UPS inverter output voltage is 15% low (~103 Vac)	a. Verify on AC voltmeter b. If valid declare INOP and if the plant is in Mode 1, 2 or 3 refer to Tech Spec. 3.8.3.1
Inverter Over Temp	Unit overheating	a. Initiate a WR
Fuse Blown	Fuse within UPS blown	a. Initiate a WR to replace fuses NOTE: This alarm alone does not INOP the UPS. The operability determination must be made based on other local alarms (eg. "Low Battery", "Reverse Transfer", etc.)
Rectifier DC Grounded	UPS internal DC Bus grounded	a. Initiate a WR
Low DC Bus	UPS internal DC Bus voltage is low (DC Bus Low)	a. Initiate a WR for Repair/adjustment
Overload	UPS inverter supplying over 100% rating of unit (~165 Amps)	a. Check output ammeter i) If unit loaded, clear non-essential loads ii) If alarm false, initiate a WR
Low Battery	UPS-internal DC Bus voltage is below 110 volts (DC Bus Lo/Lo)	a. Place S-51, the DC voltmeter selector switch in "Battery" i) If battery voltage indicates ≤110 VDC declare the UPS INOP and if the plant is in Mode 1, 2 or 3 refer to Tech. Spec. 3.8.3.1 ii) If battery voltage indicates >110 VDC, notify Electrical Maintenance NOTE: With DC Bus below 105 VDC, CB-52 will trip

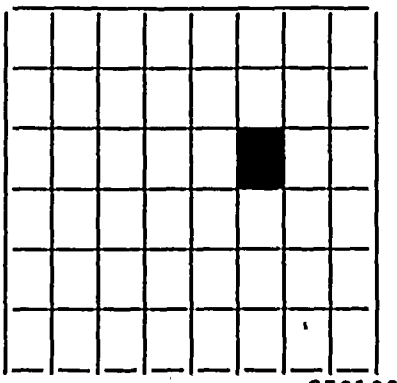
TCN-13

6.0 852122 Load Center EJS*US1 Bus Undervoltage

Reflash: No

TCN-12





6.1	Computer Point	Computer Printout	Source
	a. EJSEC01	LCUS1 NORM SPLY BRKR UV	Undervoltage Relays 27A-2EJSA11 AND 27B-2EJSA11 Setpoint: 400V for 3 sec.

6.2 Automatic Response

a. Trip Reactor Bldg Recirc. Fan A, 2HVR*VC413A. Breaker 1-4C.

b. Trip Control Bldg Chiller Compressor, 2HVK*CHL1A. Breaker 1-4D.

6.3 Corrective Action

a. Verify auto-start of redundant units per N2-OP-52 for HVR*UC413A/B, and N2-OP-53A for HVK*CHL1A/B.

b. Check the voltage on the Div I 4160V bus, 2ENS*SWG101.

c. Check the voltage on the Div I Load center, 2EJS*US1.

NOTE: Loss of offsite power for 3 sec. will also bring in this annunciator.

d. If the 4160 Div I bus is nominally 4160V, trip the load center incoming line breaker in service (bkr 1-3B, or 1-9B), and close the other feeder breaker (bkr 1-9B, or 1-3B).

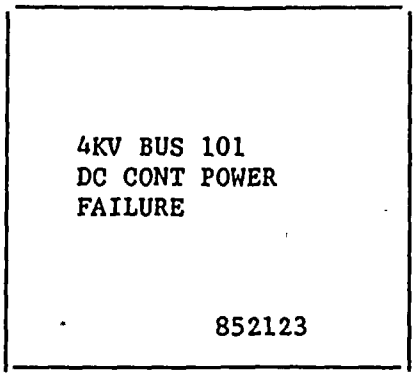
e. Notify elect. maint. of the event, and any tripped breakers.

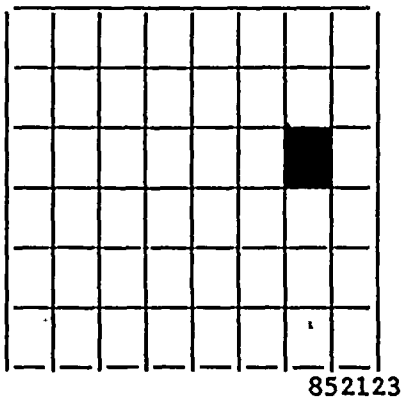
I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (Cont.)

7.0 852123 4KV BUS101 DC Control Power Failure

Reflash: Yes

TCN-12





7.1	Computer Point	Computer Printout	Source
	ENSBC11	125VDC CONT PWR DI BUS A	Loss of protective relaying power to trip 101-10,101-13, & 101-1 (offsite feeders, and Dies. Gen bkr) due to: phase overcurrent; Dies. Gen. gnd. overcurrent; bus gnd. overcurrent; incoming line XFMR neutral gnd. over-current. Emerg. SWGR DC bus A 74-2ENSX01
	ENSBC12	125VDC CONT PWR DI BUS B	Loss of protective relaying power to trip 101-10, 101-13, & 101-1 (offsite feeders, and. Dies. Gen. bkr) due to: phase overcurrent; Dies. Gen. gnd overcurrent; bus gnd overcurrent; incoming line XFMR neutral gnd over-overcurrent. Emer. SWGR DC bus B 74-2ENSX02.

7.1 (Cont'd)

Computer Point	Computer Printout	Source	
ENSBC15	125VDC CONT PWR DI BUS B	Loss of protective relaying power to trip 101-10, 101-13, & 101-N1 (offsite feeders, and Dies. Gen neut. bkr) due to: Stub bus (SWG0014) gnd overcurrent; load center XFMR EJS*X1A phase overcurrent; load center XFMR EJS*X1B phase overcurrent. emer. SWGR DC bus B 74-2ENSX03.	3

7.2 Automatic Response

NONE

7.3 Corrective Action

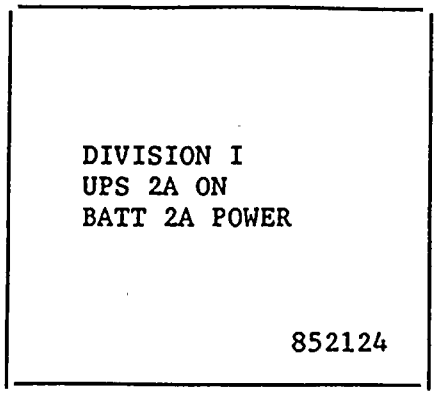
a. Send an operator to the Div I swgr to check the D.C. bus fuses in cubicle 101-2.

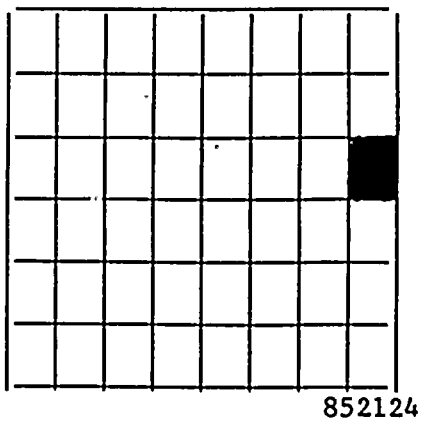
b. If both D.C. buses are alarming, check the D.C. switchgear 2BYS*SWG002A cubicle 2D.

c. Notify elect. maint. of the event, the relay number, and any tripped breakers.

8.0 852124 Division I UPS 2A On Battery 2A Power

Reflash: No





8.1

Computer Point	Computer Printout	Source
a. VBABC03	DIV I UPS2A ON BATT PWR	UPS2A/A9-K52

NOTE: UPS2A/A9-K52 is initiated by local alarm "Battery Drain/Charge".

8.2 Automatic Response

NONE

8.3 Corrective Action

a. Notify the SSS.

b. IF required by Tech Specs 3.8.2.1 or 3.8.2.2, place the second battery charger in service per OP-74 Sect H.4. TCN-13

c. Check the UPS output voltage on cont. rm. panel 852 "Vital Bus 2VBS*UPS2A 125VAC Output," or computer point VBSVA100.

d. Dispatch operator to UPS2A (in the Div I swgr room) to record parameters on front panel of UPS.

e. Check corrective action for annunciator 852116, local alarm "Battery Drain/Charge".

f. Check for tripped feeder, panel 2EJS*PNL100A bkr #7.

g. Check UPS front panel breaker #CB-51 is closed. TCN-13

h. Check the 125VDC switchgear for proper voltage and current. There should be no battery current if the charger is operating within its load range.

i. Refer to Section H of this procedure to align the UPS for Off Normal operation.

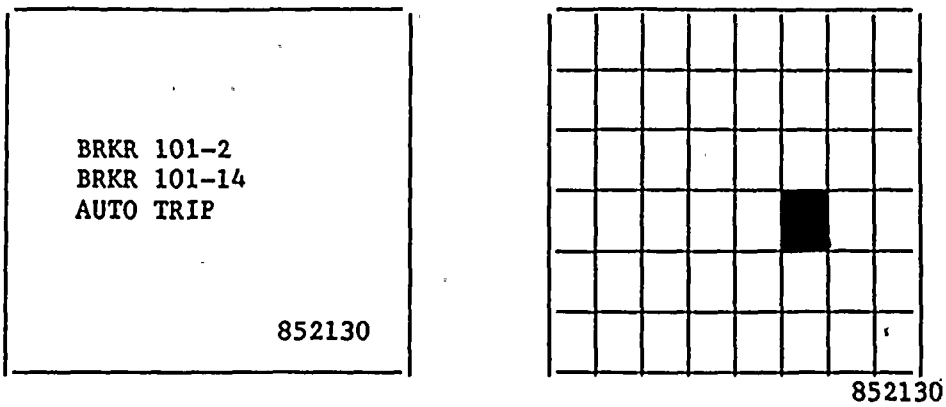
j. If necessary contact Electrical Maintenance to align, or repair UPS.

I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (Cont.)

9.0 852130 Breaker 101-2 or Breaker 101-14 Auto Trip

Reflash: Yes

TCN-12



9.1	Computer Point	Computer Printout	Source
	a. EJSUC05	XFMR1A BRKR 101-14 AUTO TRP	52-2EJSX03 4160V bkr to load center 2EJS*US1
	b. EJSUC06	XFMR1B BRKR 101-2 AUTO TRP	52-2EJSX04 4160V bkr to load center 2EJS*US1

9.2 Automatic Response

None

9.3 Corrective Action

a. At control room panel 852, close the alternate feeder breaker to load center 2EJS*US1.

This is:
load center breaker 1-9B if breaker 101-14 tripped, or
load center breaker 1-3B if breaker 101-2 tripped.

b. Notify elect. maint. of the event, and any breakers tripped.

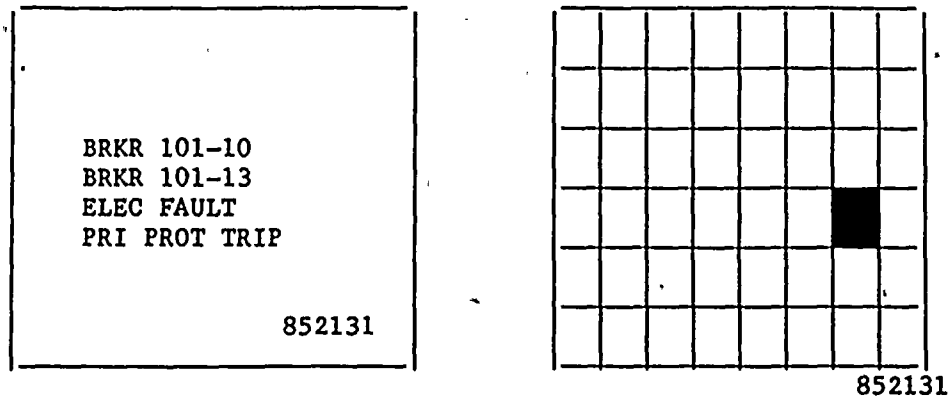
c. Refer to tech. specs. if unable to maintain feed to the load center.

I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (Cont.)

10.0 852131 Breaker 101-10 or 101-13 Electrical Fault or Primary Protection Trip

Reflash: Yes

TCN-1 2



10.1	Computer Point	Computer Printout	Source
	a. ENSUC09	EM SWGR ACB 101-13 LO RLY	50/51-2ENSA01 Emer. bus feeder overcurrent
	b. ENSUC10	EM SWGR ACB 101-10 LO RLY	50/51-2ENSA02 Emer. bus feeder overcurrent

10.2 Automatic Response

ENSUC09 Trips and locks out ACB101-13 (Normal bus feeder), locks out ACB101-10 (alternate bus feeder) and locks out auto closing of ACB 101-1 (Diesel Gen. Bkr.).

ENSUC10 Trips and locks out ACB101-10 (alternate bus feeder), locks out ACB101-13 (Normal bus feeder) and locks out auto closing of ACB 101-1 (Diesel Gen. Bkr.).

Both Category II service water separates from Category I.

10.3 Corrective Action

a. Restart the switchgear per Section E1.0. | 3

b. Notify elect. maint. of the trip and any breakers remaining tripped. | 3

c. See N2-OP-71 Section H15.0, or H16.0 to place the switchgear on alternate feed. | 3

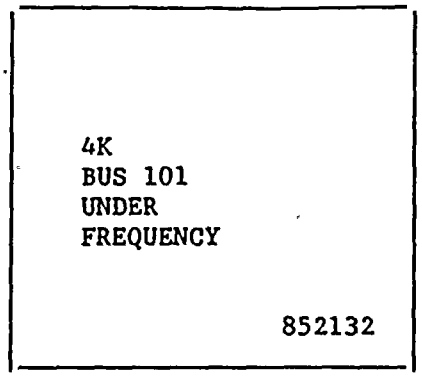
d. Refer to tech. specs. for possible LCO due to loss of Div I power. | 3

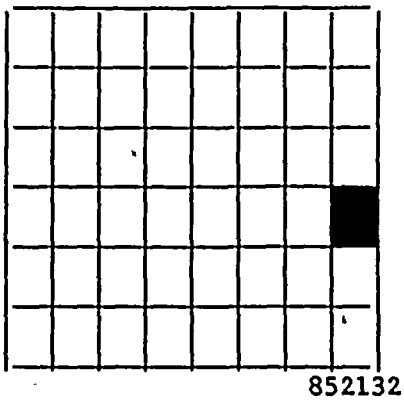
I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (Cont.)

11.0 852132 4KV BUS 101 Underfrequency

Reflash: No

TCN-1 c





11.1	Computer Point	Computer Printout	Source
	a. ENSBC17	4KV EM BUS 101 UNDER FREQ	81-2ENSA24 Mtr and relay cubicle at swgr.

11.2 Automatic Response

a. Trips ACB 101-10 and 101-13 (offsite feeder breakers).

b. Auto starts Diesel Generator 2EGS*EG1.

c. Load shed trips all loads except the load center.

d. Auto load sequence commences.

e. Category II service water separates from Category I.

f. Manual loading of the bus is blocked for aprox. 1 min.

11.3 Corrective Action

a. Verify auto station response.

b. Refer to N2-OP-71 Section H15.0 or H16.0 to place the bus on alternate offsite feed.

c. Notify elect. maint. of the trip.

d. Refer to tech. specs. for possible LCO.

I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (Cont.)

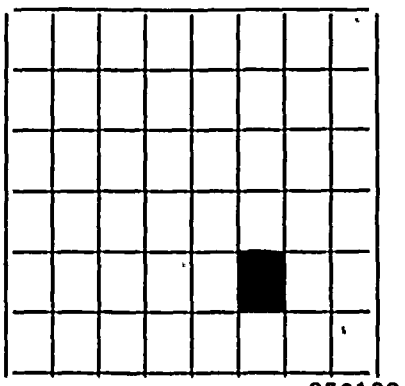
12.0 852138 Breaker 101-2 or 101-14 Lockout Relay Trip

Reflash: Yes

TCN-12

BRKR 101-2
BRKR 101-14
LOCKOUT RELAY
TRIP

852138



852138

12.1	Computer Point	Computer Printout	Source
a.	EJSUC01	EM LC XFMR1A LOCKOUT RLY	50G-2EJSA03 or 50/51-2EJSA02 Gnd or phase overcurrent on the 4160V side of load center transformer
b.	EJSUC02	EM LC XFMR1B LOCKOUT RLY	50G-2EJSA06 or 50/51-2EJSA05 Gnd or phase overcurrent on the 4160V side of load center transformer
c.	EJSUC13	EMLC XFMR1A FDR FAULT-BU	51-2EJSA01 backup overcurrent on the 4160V side of load center transformer
d.	EJSUC14	EMLC XFMR1B FDR FAULT-BU	51-2EJSA04 backup overcurrent on the 4160V side of load center transformer

12.2 Automatic Response

EJSUC01 Trips & Locks Out US1-3B and ACB101-14. Isolates the load center transformer. 3

EJSUC02 Trips & Locks Out US1-9B and ACB101-2. Isolates the load center transformer. 3

EJSUC13 Trips & Locks Out ACB 101-13 and 101-10 and prevents auto closing of ACB101-1. Diesel Gen. auto starts and the Div I 4160V bus remains de-energized. Loss of voltage load sheds the bus. Category II service water separates from Category I. 3

EJSUC14 Trips & Locks Out ACB-101-13 and 101-10 and prevents auto closing of ACB 101-1. Diesel Gen. auto starts and the Div I 4160V bus remains de-energized. Loss of voltage load, sheds the bus. Category II service water separates from Category I. 3

12.3 Corrective Action

EJSUC01
EJSUC02

a. Verify the trips by checking computer points: EJSUC05 for 101-14 and EJSUC09 for US1-3B 3
OR
EJSUC06 for 101-2 and EJSUC10 for US1-9B

b. Close the alternate load center incoming line breaker, at control room panel 852. US1-3B, or US1-9B.

c. Notify elect. maint. of the trip, and any breakers remaining tripped.

NOTE: Refer to tech. specs. if unable to maintain feed to the load center.

NOTE: The load center powers MOV's associated with pumps which may remain running on the 4160V bus.

EJSUC13
EJSUC14

aa. Trip the 4160V breakers feeding the load center. Breaker 101-14, and 101-2.

bb. At control room panel 852, place the diesel generator breaker 101-1 control switch in pull-to-lock.

cc. At Div I switchgear, reset lockout relays: 86-2-2EGPX02 (101-1); 86C-2ENSX01 (101-N2); 86C-2ENSX02 (101-N2).

12.3 (Cont'd)

dd. Close the offsite feeder breaker to the Div I 4160V bus, breaker 101-10, or 101-13. 3

ee. Close the alternate 4160V breaker to the load center, breaker 101-14, or 101-2.

ff. Close the 600V incoming line breaker to the load center, breaker US1-3B, or US1-9B.

gg. At control room panel 852, remove the Div I diesel generator breaker (101-1) control switch from pull-to-lock.

hh. Close in selected loads on the Div I 4160V bus.

ii. Place the diesel generator in stand-by per N2-OP-100A.

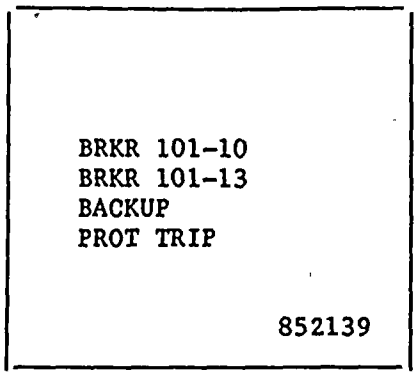
jj. Notify Electrical Maintenance of the trip, and any breakers remaining tripped.

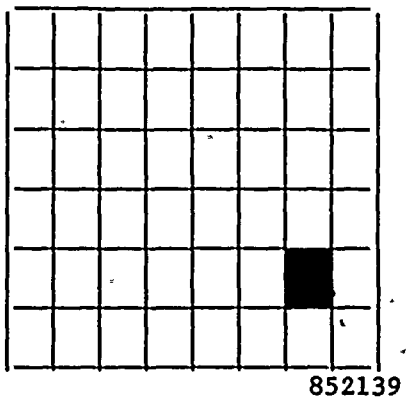
I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (Cont.)

13.0 852139 Breaker 101-10 or 101-13 Backup Protection Trip

Reflash: Yes

TCN-12





13.1	Computer Point	Computer Printout	Source
	a. ENSUC17	EM SWGR ACB 101-13 LO RLY	67N1-2ENSA05 Diesel Gen. gnd directional overcurrent
	b. ENSUC18	EM SWGR ACB 101-10 LO RLY	67N3-2ENSA05 Diesel Gen. gnd directional overcurrent

13.2 Automatic Response

ENSUC17 Trips and locks out ACB101-13
ENSUC18 Trips and locks out ACB101-10

a. Load shed trips all loads except loadcenter.

b. Div I diesel gen. auto starts.

c. Auto load sequence commences.

d. Category II service water separates from Category I.

13.3 Corrective Action

a. Verify the trip by checking computer point ENSUC08 for 101-10, or ENSUC05 for 101-13.

b. Trip breakers 101-1 and 101-N1.

c. Reset lockout relays 86C-2ENSX01, and 86C-2ENSX02, at switchgear 101-N2.

d. Close the offsite feeder breaker, 101-10, or 101-13.

e. Notify elect. maint. of the trip.

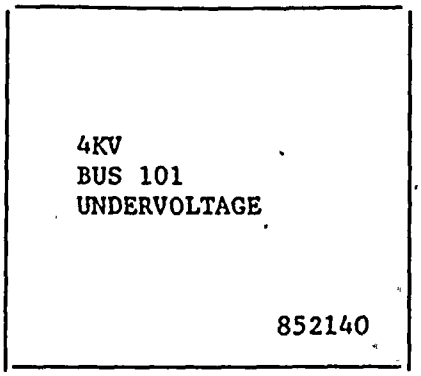
f. Refer to tech. specs. if unable to maintain feed to the Div I bus.

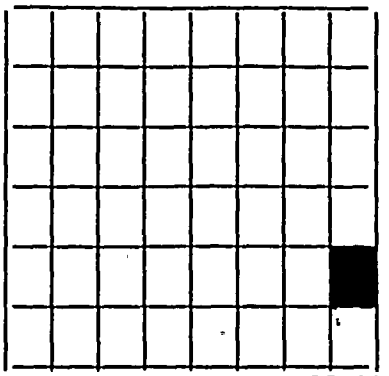
I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (Cont.)

14.0 852140 4KV Bus 101 Undervoltage

Reflash: Yes

TCN-12





14.1	Computer Point	Computer Printout	Source
	a. ENSEC01	BUS ENS 101 UNDV	27AA, AB, AC Phase to ground undervoltage relays.
	b. ENSEC03	BUS 101 DEGRADED VOLT	27BA, BB, BC Phase to ground undervoltage relays.

14.2 Automatic Response

a. For one device on either computer point, NONE.

b. For two devices on either computer point, loss of offsite power.

1. Offsite supply breaker ACB101-10 or 101-13 is tripped.

2. Emergency diesel generator EGS*EG1 starts.

3. Manual loading is blocked for approx. 1 min.

4. Load shed trips all loads except the load center.

5. Auto load sequence commences. 3

6. Category II service water separates from Category I.

14.3 Corrective Action

a. Refer to N2-OP-71 Section H15.0, or H16.0 to place the bus on alternate offsite power.

b. Notify elect. maint. of the trip.

NOTE: Refer to tech. specs. for conditions associated with loss of offsite power.

I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (Cont.)

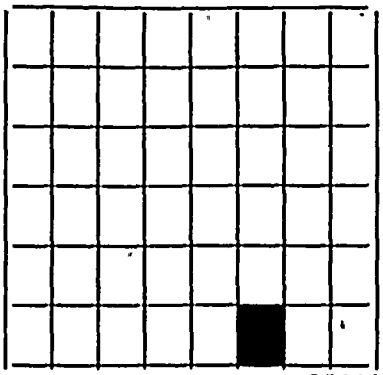
15.0 852146 Division I emergency 600V distribution trouble

Reflash: Yes

TCN-12

DIVISION I
EMER 600V
DISTRIBUTION
TROUBLE

852146



852146

15.1	Computer Point	Computer Printout	Source
	EJSBC19	LC US1 SPLY BRKR 1-3C	Breaker Overcurrent
	EJSBC20	LC US1 SPLY BRKR 1-4B	Breaker Overcurrent
	EJSBC21	LC US1 SPLY BRKR 1-5D	Breaker Overcurrent
	EJSBC22	LC US1 SPLY BRKR 1-7D	Breaker Overcurrent
	EJSBC23	LC US1 SPLY BRKR 1-8C	Breaker Overcurrent
	EJSBC24	LC US1 SPLY BRKR 1-9C	Breaker Overcurrent
	EJSBC31	LC US1 SPLY BRKR 1-6D	Breaker Overcurrent
	EJSBC32	LC US1 SPLY BRKR 1-7C	Breaker Overcurrent

15.2 Automatic Response

Trip and lockout the switchgear breaker

15.3 Corrective Action

a. Verify the automatic response. At MCC's observe the voltmeter, for power distribution panels, check the load center breaker.

b. At MCC's trip the breaker shown in the "LOAD" column (incoming line breaker).

c. Remove the interlock key, and energize the MCC from the alternate feed breaker.

d. For power distribution panels:

1. Trip the panel main breaker.

2. Reset and close the load center breaker.

3. If the load center breaker stays closed, trip the panel branch breakers, and close the panel main breaker.

4. If the main breaker, and load center breaker remain closed, close in branch breakers.

e. Notify electrical maint. of the event, and any breakers tripped and/or unable to reclose.

f. Refer to tech. specs. for possible LCO's due to loss of power to an emergency load.

Computer Point	Load	Location	Alternate Feed
EJSBC19	2EHS*MCC102 Bus A Cub 1A	Aux Bay North EL 240	Tie breaker 13A
EJSBC20	2EHS*MCC101 Cub 1A	Screenwell Bldg	Breaker 10A
EJSBC21	2EHS*MCC103 Bus A Cub 1A	Cntl Bldg West St-by Swgr Rm	Tie breaker 16A
EJSBC22	2EHS*MCC103 Bus C Cub 27A	Cntl Bldg West St-by Swgr Rm	Tie breaker 16A
EJSBC23	2EHS*MCC102 Bus C Cub 22A	Aux Bay North EL 240	Tie breaker 13A
EJSBC24	2EHS*MCC101 Cub 10A	Screenwell Bldg	Breaker 1A
EJSBC31	2EJS*PNL100A	Cntl Bldg West St-by Swgr Rm	No alternate feed
EJSBC32	2LAC*PNL100A	Cntl Bldg West St-by Swgr Rm	No alternate feed

I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (Cont.)

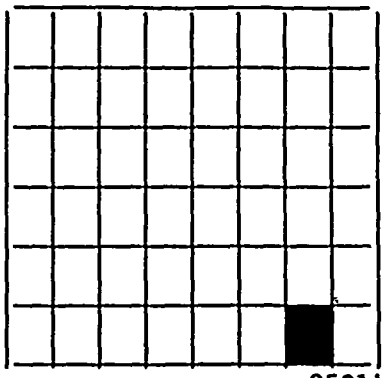
16.0 852147 Breaker 101-10 or Breaker 101-13 Ground Fault Primary Protection Trip

Reflash: Yes

| TCN-12

BRKR 101-10
BRKR 101-13
GROUND FAULT
PRI PROT TRIP

852147



852147

16.1	Computer Point	Computer Printout	Source
a.	ENSUC13	EM SWGR ACB 101-13 LO RLY	Switchgear 2NNS-SWG016 (16-2) Neutral directional overcurrent (67N2-2ENSA09) (load side) OR Switchgear 2ENS*SWG101 (101-13 Lineside) gnd overcurrent (50G-2ENSA32)
b.	ENSUC14	EM SWG ACB 101-10 LO RLY	Switchgear 2NNS-SWG018 (18-2 loadside) Neutral directional overcurrent (67N4-2ENSA10) OR Switchgear 2ENS*SWG101 Feeder (101-10 lineside) gnd overcurrent (50G-2ENSA33)

16.2 Automatic Response

ENSUC13 Trips and locks out ACB 101-13, and locks out ACB 101-10
ENSUC14 Trips and locks out ACB 101-10, and locks out ACB 101-13

a. Diesel generator 2EGS*EG1 Auto Starts.

b. Load shed trips all loads except the load center.

c. Diesel generator breaker (101-1) closes.

d. Load sequencing commences.

e. Manual loading of the bus is blocked for approx. 1 minute.

f. Category II service water separates from Category I.

16.3 Corrective Action

NOTE: Refer to tech. specs. for operating conditions associated with loss of offsite power.

a. Notify elect. maint. of the trip.

b. Refer to N2-OP-71 Section H15.0, or 16.0 to place the bus on alternate offsite feed.

c. Reset the lockout relays: 86B-2ENSX01 (at switchgear 101-13), and 86B-2ENSX02 (at switchgear 101-10).

I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (Cont.)

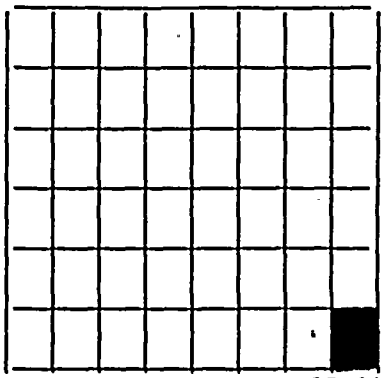
17.0 852148 Breaker 101-10 or 101-13 Phase Overcurrent

Reflash: Yes

TCN-1 2

BRKR 101-10
BRKR 101-13
PHASE
OVERCURRENT

852148



852148

17.1	Computer Point	Computer Printout	Source
	a. ENSIC01	RTX-XSR1A OC ACB 101-13	67-1-2ENSA25 Directional overcurrent interlock to stub bus
	b. ENSIC04	XFMR ABS-X1 OC ACB 101-10	67-2-2ENSA26 Directional overcurrent interlock to stub bus

17.2 Automatic Response

ENSIC01 Any one device trips ACB 101-13
ENSIC04 Any one device trips ACB 101-10

a. Load shed trips all loads except the load center.

b. Div I diesel generator auto starts.

c. Diesel generator breaker 101-1 closes on the bus.

d. Manual loading on the bus is blocked for approx. 1 minute.

e. Auto load sequence commences.

f. Category II service water separates from Category I.

17.3 Corrective Action

a. Verify the automatic response.

b. Sync the offsite breaker to the bus.

c. Open the diesel generator breaker, 101-1.

d. Notify elect. maint. of the trip, and of the device that caused the trip.

e. See N2-OP-100A to return the diesel generator to stand-by after offsite power is restored.

NOTE: See N2-OP-71 Section H15.0 or H16.0 to place the bus on alternate offsite feed.

NOTE: Refer to tech. specs. if unable to maintain offsite feed to the bus.

NOTE: Refer to Section H2.0 before closing the stub bus breaker.

I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (Cont.)

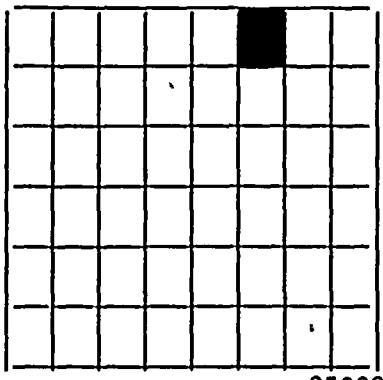
18.0 852206 Division II Load Center EJS System Inoperable

Reflash: No

| TCN-12

DIVISION II
LOAD CENTER
EJS SYSTEM
INOPERABLE

852206



852206

18.1	Computer Point	Computer Printout		Source
	a. EJSBC16	DIV 2 LD CTR EJS SYS		1)EMER US3 NORM FEED ACB 3-3B
			AND	2)EMER US3 ALT FEED ACB 3-9B
			OR	3)EMER SWGR XFMR FDR ACB 103-1
			AND	4)EMER SWGR XFMR FDR ACB 103-13
			OR	5)EMER US3 MAN OUT OF SER

18.2 Corrective Action

a. Refer to the following INOP windows for response.

18.2 (Cont'd)

Window	Source	Automatic Action
1. EMER US3 NORM FEED ACB3-3B	(74-2EJSY05) a)Loss of DC Control Power	ANNUN. for any event in both inop windows
2. EMER US3 ALT FEED ACB 3-9B	b)Control Room Fire disconnect c)Control Room switch PTL d)Breaker racked out (74-2EJSY06)	

Corrective Action

a. For loss of 125VDC control power check fuses in cubicle 3-3A, and breaker 4C in 2BYS*SWG002B, D.C. switchgear.

b. For control room fire, return switch 2CESB20 to normal in control room fire disconnect panel 2CES*PNL416.

c. For control room panel 852 control switches in pull-to-lock, remove one, or both switches from pull-to-lock.

d. For breakers not in operate Position, rack in breaker 3-3B and/or 3-9B.

Window	Source	Automatic Action
3. EMER SWGR XFMR FDR ACB 103-1	(74-2EJSY03) a)Loss of DC Control Power	Annun. for any event in both inop windows
4. EMER SWGR XFMR FDR ACB 103-13	b)Control Room Fire Disconnect c)Control Room Control switch PTL d)Breaker racked out (74-2EJSY04)	

Corrective Action

a. For loss of 125VDC control power, check fuses in cubicle 103-13, and breaker 2D in 2BYS*SWG002B, D.C. switchgear.

b. For Control Room fire, return switches 2CESB15 and 2CESB16 to normal in Control Room Fire Disconnect Panel 2CES*PNL416.

c. For breakers not in operate position, rack in breaker 103-1 and/or 103-13.

d. For Control Room Panel 852 control switches in pull-to-lock, remove one switch, or both switches from pull-to-lock.

18.2 (Cont'd)

Window	Source	Automatic Action
5. EMER US3 MAN OUT OF SER	EMER US3 MAN OUT OF SER PUSHBUTTON	None

Corrective Action

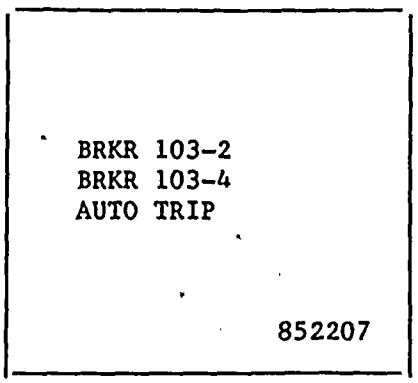
a. Restore the pushbutton to normal.

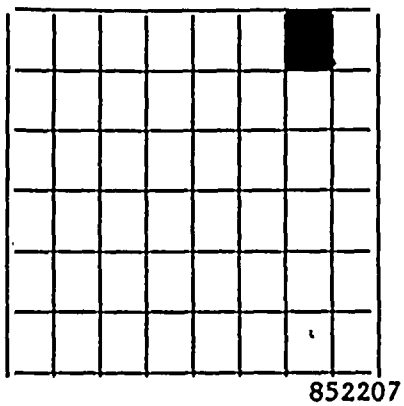
I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (Cont.)

19.0 852207 Breaker 103-2 or 103-4 Auto Trip

Reflash: Yes

| TCN-12





19.1	Computer Point	Computer Printout	Source
a.	ENSUC06	2ABS-XS1 ACB 103-2 TRIP	52-2ENSY11
	TRIP SIGNALS ORIGINATE FROM:		
	ENSBC04	FDR-XFMR ACB 103-2	52-2ENSY11
	ENSBC18	4KV EM BUS 103 UNDER FREQ	SEE 852232
	ENSBC33	LOSS OF BUS 103 VOLTAGE	62X-2ENSY05
	ENSBC34	DEGRADED BUS*103 UNDV	62Y-2ENSY06
	ENSBC35	LD SHED SIGNAL BUS 103	27X3-2ENSY04
	ENSEC02	BUS ENS*103 UNDV	SEE 852240
	ENSEC04	BUS 103 DEGRADED VOLT	SEE 852240
	ENSIC02	2ABS-X1 PH OC ACB 103-2	SEE 852248
	ENSUC12	EM SWGR ACB 103-2 LO RLY	SEE 852231
	ENSUC16	EM SWGR ACB 103-2 LO RLY	SEE 852247
	ENSUC20	EM SWGR ACB 103-2 LO RLY	SEE 852239
	NNSUC28	4KV BUS E18 LO RLY 2 TRIP	SEE 852558

19.1 (Cont'd)

Computer Point	Computer Printout	Source
b. ENSUC07	2RTX-XSR1B ACB 103-4 TRIP	52-2ENSY10
TRIP SIGNALS ORIGINATE FROM:		
ENSBC06	FDR XFMR ACB 103-4	52-2ENSY10
ENSBC18	4KV EM BUS 103 UNDER FREQ	SEE 852232
ENSBC33	LOSS OF BUS 103 VOLTAGE	62X-2ENSY05
ENSBC34	DEGRADED BUS*103 UNDV	62Y-2ENSY06
ENSBC35	LD SHED SIGNAL BUS 103	27X3-2ENSY04
ENSEC02	BUS ENS*103 UNDV	SEE 852240
ENSEC04	BUS 103 DEGRADED VOLT	SEE 852240
ENSIC03	RTX-XSRIB PH OC ACB 103-4	SEE 852248
ENSUC11	EM SWGR ACB 103-4 LO RLY	SEE 852231
ENSUC15	EM SWGR ACB 103-4 LO RLY	SEE 852247
ENSUC19	EM SWGR ACB 103-4 LO RLY	SEE 852239
NNSUC25	4KV BUS E17 LO RLY2 TRIP	SEE 852548

19.2 Automatic Response

a. Diesel Generator start.

b. Load shed all but load center breakers.

c. Auto load sequence commences.

d. Manual loading blocked for approx. 1 min.

e. Category II service water separates from Category I.

19.3 Corrective Action

a. See N2-OP-71 Section H17 and H18 to transfer feeders to the emergency bus.

b. Place the emergency bus on offsite power.

c. Notify elect. maint. of the event.

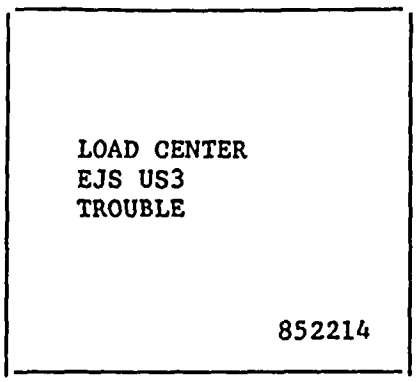
d. See N2-OP-100A to return the diesel generator to stand-by after offsite power is restored.

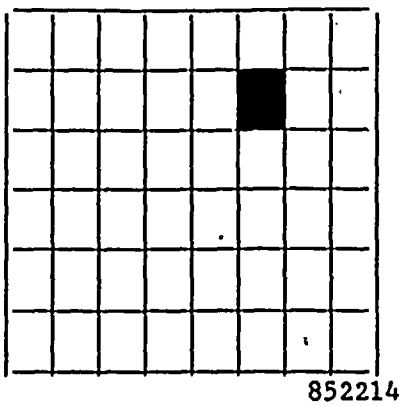
NOTE: If computer point ENSBC40 alarms (DIV 2 LOCA SIGNAL), before the bus is restored to offsite power, trip breaker 103-14.

20.0 852214 Load Center EJS*US3 Trouble

Reflash: Yes

TCN-1 2





20.1	Computer Point	Computer Printout	Source
	a. EJSBC18	UV PROT US3 LOSS DC PWR	74-2EJSY08
	b. EJSUC11	2EJS US3 NORM BRKR EL FLT	52-2EJSY05 Bkr overcurrent
	c. EJSUC12	2EJS US3 ALTN BRKR EL FLT	52-2EJSY06 Bkr overcurrent

20.2 Automatic Response

EJSBC18 None
EJSUC11 Trips breaker ACB3-3B
EJSUC12 Trips breaker ACB3-9B

20.3 Corrective Action

EJSBC18 For loss of control power, check fuses in load center cubicle 3-3A, and breaker 4C at 2BYS*SWG002B, DC switchgear.

EJSUC11 For breaker overcurrent trip, check annunciator 852246 for a
EJSUC12 branch breaker trip, and close in the other load center feeder breaker.

a. If both feeder breakers trip, send an operator to the east stand-by switchgear room.

1. Open all branch breakers on US3.

2. Reset both feeder breakers.

3. Close feeder breaker 3-3B.

4. Close breaker 3-9B, if breaker 3-3B fails to close.

5. Close in branch breakers.

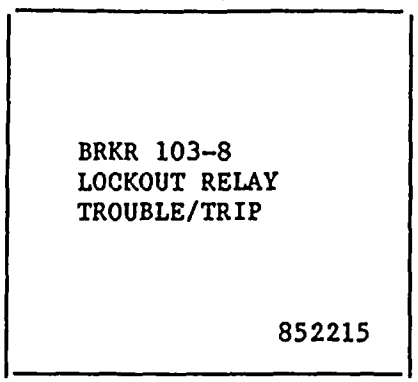
a. Notify elect. maint. of the event, and any branch breakers which are tripped, or fail-to-close.

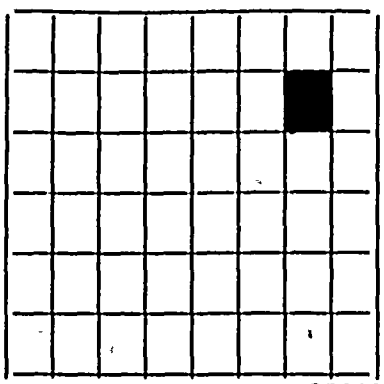
I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (Cont.)

21.0 852215 Breaker 103-8 Lockout Relay Trouble or Trip

Reflash: Yes

TCN-12





21.1	Computer Point	Computer Printout	Source
a.	ENSUC02	EM SWGR ACB 103-8 LO RLY	2NNS-SWG015 Phase or Ground overcurrent 50/51-2ENSB03 50G-2ENSB04
b.	ENSUC04	EM SWGR ACB 103-8 TRIP	52-2ENSX12 (also brings in ENSBC02)
	TRIP SIGNALS ORIGINATE FROM:		
	ENSBC35	LD SHED SIGNAL BUS 103	27X3-2ENSY04
	ENSBC40	DIV 2 LOCA SIGNAL	K-110B
c.	ENSUC24	BUS 103 STUB FDR GND RLT	Back-Up Ground overcurrent 50G-2ENSB08

21.2 Automatic Response

ENSUC02 None
ENSUC04 None
ENSUC24 a. Trips 103-4 and 103-2, both offsite feeder breakers, see 852239.

b. Trips 103-N1, Diesel Gen. Neutral breaker, see 852227.

c. Category II service water separates from Category I.

d. Load shed trips all loads except load center.

e. Auto start Diesel generator.

f. Auto load sequence commences.

g. Manual loading of the bus is blocked for approx. 1 minute.

21.3 Corrective Action

a. Verify the stub bus breaker trip. Check computer point ENSBC02.

b. See Section H2.0 to re-energize the stub bus after loss of offsite power.

c. Reset lockouts on tripped breakers.

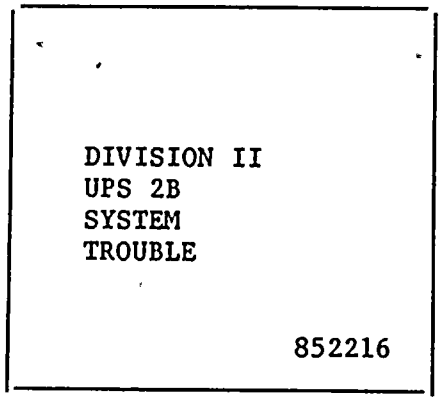
d. Notify elect. maint. of the event and any breakers which remain tripped.

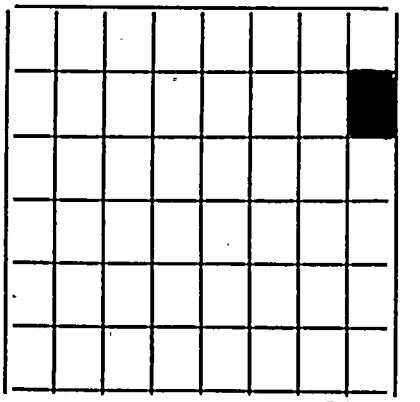
e. See N2-OP-100A to return the diesel gen. to stand-by after offsite power is restored.

I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (Cont.)

22.0 852216 Division II UPS 2B System Trouble

Reflash: No





22.1	Computer Point	Computer Printout	Source
	a. VBABC04	UPS2B SYSTEM TROUBLE	UPS2B/A9-K51

NOTE: A9-K51 is initiated by any local UPS2B alarm. This relay will stay de-energized as long as any local alarm exists. This annunciator will not reflash if another local alarm comes in.

TCN 13

22.2 Automatic Response

a. UPS may realign to power the vital bus from either backup D.C., or maintenance supply dependent on the local alarm.

22.3 Corrective Action

a. Check the UPS output voltage on Control Room panel 852 meter labelled "Vital bus 2VBS*UPS2B 125VAC Output," or computer point VBSVA101.

b. Send an operator to record meter readings and status light indications at the UPS.

NOTE: Consult Tech. Spec. 3.8.3.1 if the UPS is on maintenance power or if the local alarm response indicates that the UPS is inoperable and the plant is in Mode 1, 2 or 3.

TCN-13

c. Notify electrical maintenance for repair or adjustments to the UPS.

d. See Section H of this procedure for operation of the UPS with the loss of a source, or sources.

e. Take corrective action as required per following Table:

(NCTS) Local Alarm Description - Corrective Action

Alarm	Description	Corrective Action
Synch Loss	1. Maintenance AC frequency is out of tolerance	a. Initiate a WR
	or	
	2. Maintenance AC is not present	a. Restore maint. AC (if fuse is blown in the maintenance AC supply regulator, initiate a WR)
	or	
	3. UPS inverter output frequency is out of tolerance (60Hz±3Hz)	a. Verify on Frequency meter
		b. If valid declare INOP and if the plant is in Mode 1, 2 or 3 refer to Tech. Spec. 3.8.3.1
		c. Initiate a WR

Alarm	Description	Corrective Action
Battery Drain/Charge	Current being drawn from batteries caused by:	
	1. Loss of normal AC to UPS or	a. Restore normal AC
	2. Voltage on DC switchgear higher than UPS internal DC voltage	a. If the charger is on equalize, notify Electrical to check charger equalize voltage b. If the charger is not on equalize, initiate a WR
	NOTE: Refer to Tech. Specs. 3.8.2.1 or 3.8.2.2	
Rectifier AC Loss	Loss of normal AC to UPS	a. If CB-51 has tripped, initiate a WR b. If CB-51 is closed, restore upstream normal AC supply
Reverse Transfer	Static switch is in maintenance position	a. Declare the UPS INOP and if the plant is in Mode 1, 2 or 3 refer to Tech. Spec. 3.8.3.1 b. If other alarms are present, correct the other alarms prior to restoring the UPS to normal AC power c. If all other alarms clear, verify UPS AC output voltage present on AC voltmeter, then push "Forward" static switch pushbutton
Fan Fail	One or more fans have stopped	a. Visually check, if possible, to determine which fan is off b. Initiate a WR
	NOTE: This alarm may be concurrent with a Blown Fuse Alarm	

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Alarm	Description	Corrective Action
Low Inverter Voltage	UPS inverter output voltage is 15% low (~103 Vac)	a. Verify on AC voltmeter b. If valid declare INOP and if the plant is in Mode 1, 2 or 3 refer to Tech Spec. 3.8.3.1
Inverter Over Temp	Unit overheating	a. Initiate a WR
Fuse Blown	Fuse within UPS blown NOTE: This alarm alone does not INOP the UPS. The operability determination must be made based on other local alarms (eg. "Low Battery", "Reverse Transfer", etc.)	a. Initiate a WR to replace fuses
Rectifier DC Grounded	UPS internal DC Bus grounded	a. Initiate a WR
Low DC Bus	UPS internal DC Bus voltage is low (DC Bus Low)	a. Initiate a WR for Repair/adjustment
Overload	UPS inverter supplying over 100% rating of unit (~165 Amps)	a. Check output ammeter i) If unit loaded, clear non-essential loads ii) If alarm false, initiate a WR
Low Battery	UPS-internal DC Bus voltage is below 110 volts (DC Bus Lo/Lo) NOTE: With DC Bus below 105 VDC, CB-52 will trip	a. Place S-51, the DC voltmeter selector switch in "Battery" i) If battery voltage indicates ≤110 VDC declare the UPS INOP and if the plant is in Mode 1, 2 or 3 refer to Tech. Spec. 3.8.3.1 ii) If battery voltage indicates >110 VDC, notify Electrical Maintenance

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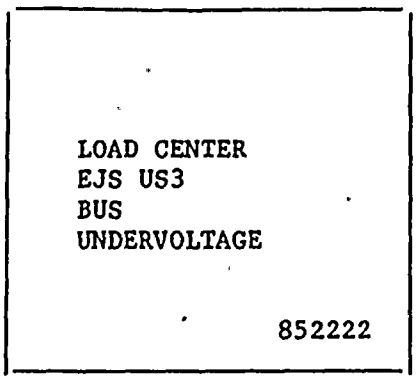
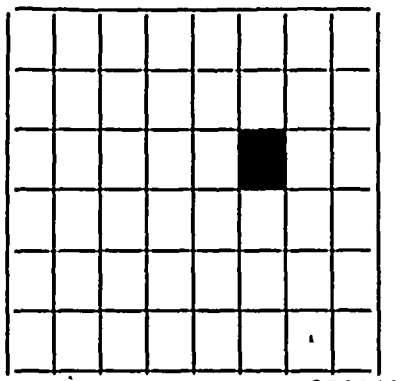
I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (Cont.)

23.0 852222 Load Center EJS*US3 Bus Undervoltage

Reflash: No

TCN-12





23.1	Computer Point	Computer Printout	Source
	a. EJSEC02	LD CTR US3 BUS UNDERVOLT	Undervoltage relays 27A-2EJSB11 and 27B-2EJSB11 Setpoint: 400V for 3 Sec.

23.2 Automatic Response

a. Trip Reactor Bldg. Recirc. Fan B, 2HVR*UC413B. Breaker 3-4C.

b. Trip Control Bldg. Chiller Compressor, 2HVK*CHL1B. Breaker 3-4D.

23.3 Corrective Action

a. Verify auto-start of redundant units per N2-OP-52 for HVR*UC413A/B, and N2-OP-53A for HVK*CHL1A/B.

b. Check the voltage on the DIV II 4160V bus 2ENS*SWG103.

c. Check the voltage on the DIV II load center, 2EJS*US3.

NOTE: Loss of offsite power for 3 sec. will also bring in this annunciator.

d. If the 4160 DIV II bus in nominally 4160V, trip the load center incoming line breaker inservice (bkr 3-3B, or 3-9B), and close the other feeder breaker (bkr 3-9B, or 3-3B).

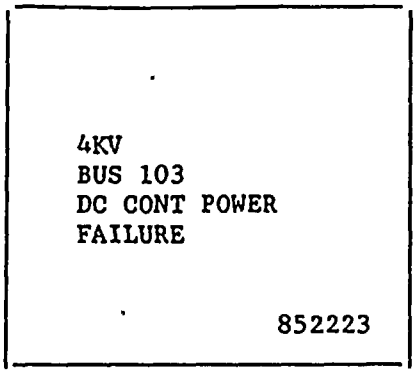
e. Notify elect. maint. of the event, and any tripped breakers.

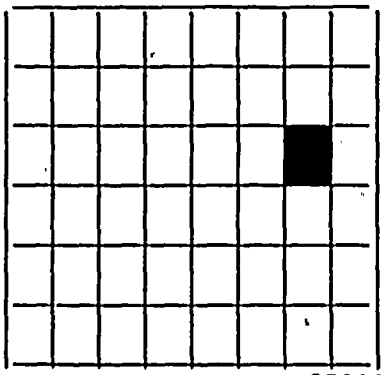
I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (Cont.)

24.0 852223 4KV Bus 103 DC Control Power Failure

Reflash: Yes

TCN-





24.1	Computer Point	Computer Printout	Source
a.	ENSBC13	125 VDC CONT PWR DII BUS A	Loss of protective relaying power to trip 103-2, 103-4, & 103-14 (offsite feeders, and Dies. Gen. bkr) due to: phase overcurrent; Dies. Gen. gnd overcurrent; bus gnd overcurrent; incoming line XFMR neutral gnd overcurrent. emer. swgr DC bus A 74-2ENSY01
	ENSBC14	125VDC CONT PWR D II BUS B	Loss of protective relaying power to trip 103-2, 103-4, & 103-14 (offsite feeders, and Dies. Gen bkr) due to: phase overcurrent; Dies. Gen. gnd overcurrent; bus gnd overcurrent; incoming line XFMR neutral gnd overcurrent. emer. swgr DC bus B 74-2ENSY02.

24.1 (Cont'd)

Computer Point	Computer Printout	Source
ENSBC16	125VDC CONT PWR D II BUS B	Loss of protective relaying power to trip 103-2, 103-4, & 103-N1 (offsite feeders, and Dies. Gen. neutral bkr) due to: Stub bus (SWG0015) gnd overcurrent; load center XFMR EJS*X3A phase overcurrent; load center XFMR EJS*X3B phase overcurrent. emer. swgr. D.C. bus B 74-2ENSY03

24.2 Automatic Response

NONE

24.3 Corrective Action

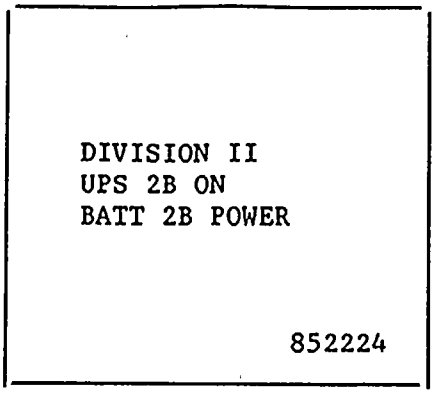
a. Send an operator to the DIV II swgr to check the D.C. fuses in cubicle 103-13.

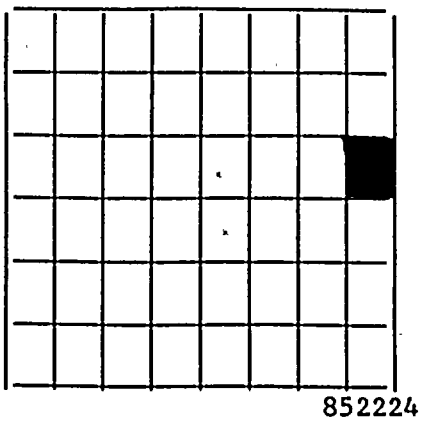
b. If both D.C. buses are alarming, check the D.C. switchgear 2BYS*SWG002B cubicle 2D.

c. Notify elect. maint. of the event, the relay number, and any tripped breakers.

25.0 852224 Division II UPS 2B On Battery 2B Power

Reflash: No





25.1

Computer Point	Computer Printout	Source
a. VBABC04	DIV 2 UPS2B ON BATT PWR	UPS2B/A9-K52

NOTE: UPS2B/A9-K52 is initiated by local alarm "Battery Drain/ Charge".

25.2 Automatic Response

NONE

25.3 Corrective Action

a. Notify SSS.

b. IF required by Tech Spec 3.8.2.1 or 3.8.2.2, place the second battery charger in service in accordance with N2-OP-74, Sect H.4. TCN-1

c. Dispatch operator to 2UPS 2B (in the DIV II swgr room) to record indications on front panel of UPS.

d. Check the UPS output voltage on cont. rm. panel 852 "Vital Bus 2VBS*UPS2B 125VAC Output," or computer point VBSVA101.

e. Check corrective action for annunciator 852116 - local alarm "Battery Drain/Charge".

f. Check for tripped feeder, panel 2EJS*PNL300B bkr #7.

g. Check the UPS front panel breaker #CB-51 is closed. TCN-

h. Check the 125VDC switchgear for proper voltage and current. There should be no battery current if the charger is operating within its load range.

i. Refer to Section H of this procedure to align the UPS for Off Normal operation.

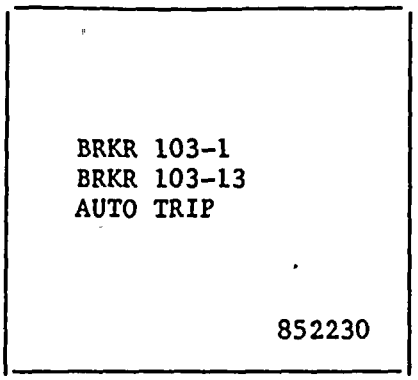
j. If necessary contact Electrical Maintenance to align or repair UPS.

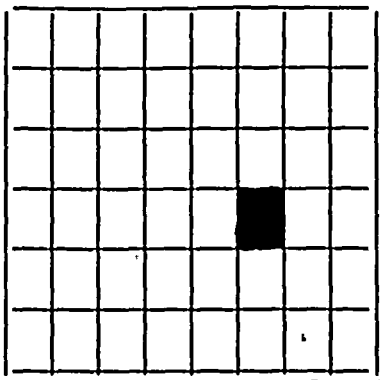
I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (Cont.)

26.0 852230 Breaker 103-1 or 103-13 Auto Trip

Reflash: Yes

TCN-12





26.1	Computer Point	Computer Printout	Source
	a. EJSUC07	EJSX3A ACB 103-1 AUTO TRIP	52-2EJSY03 4160V bkr to load center 2EJS*US3
	b. EJSUC08	EJSX3B ACB 103-13 AUTO TRIP	52-2EJSY04 4160V bkr to load center 2EJS*US3

26.2 Automatic Response

NONE

26.3 Corrective Action

a. At control room panel 852, close the alternate feeder breaker to load center 2EJS*US3.

This is:
load center breaker 3-9B, if breaker 103-1 tripped, or
load center breaker 3-3B if breaker 103-13 tripped.

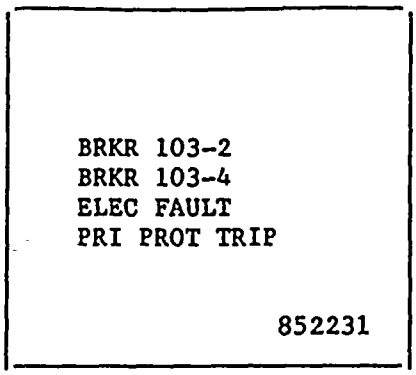
b. Notify elect. maint. of the event, and any breakers tripped.

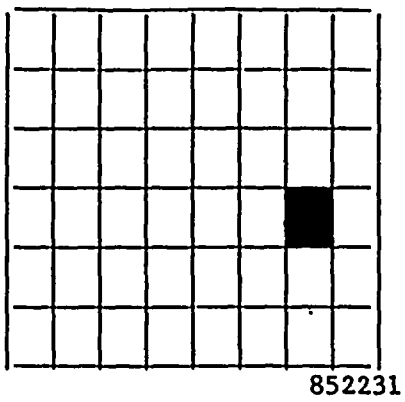
c. Refer to tech. specs. if unable to maintain feed to the load center.

27.0 852231 Breaker 103-2 or 103-4 Electrical Fault Or Primary Protection Trip

Reflash: Yes

TCN-12





27.1	Computer Point	Computer Printout	Source
	a. ENSUC11	EM SWG ACB 103-4 LO RLY	50/51-2ENSB01 Emer. bus feeder overcurrent
	b. ENSUC12	EM SWGR ACB 103-2 LO RLY	50/51-2ENSB02 Emer. bus feeder overcurrent

27.2 Automatic Response

ENSUC11 Trips and locksout the normal offsite feeder breaker, 103-4; locksout the alternate offsite feeder breaker, 103-2; and locksout auto closing of the diesel generator breaker, 103-14.

ENSUC12 Trips and locksout the alternate offsite feeder breaker, 103-2; locksout the normal offsite feeder breaker, 103-4; locksout auto closing of the diesel generator breaker, 103-14.

a. Load shed trips all breakers except to the load center, 103-1, and 103-13.

b. Diesel generator auto starts.

27.3 Corrective Action

a. Restart the switchgear per Section E6.0.

b. Notify elect. maint. of the trip and any breakers remaining tripped.

c. See N2-OP-71 Section H17.0, or H18.0 to place the bus on alternate offsite feed.

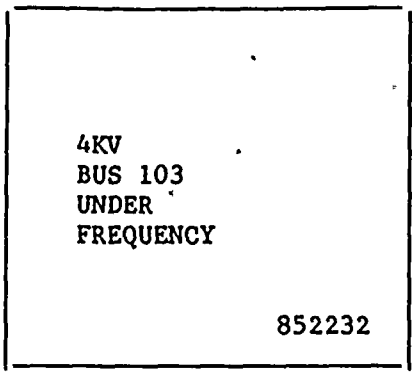
d. Refer to tech. specs. for possible LCO due to loss of DIV II power.

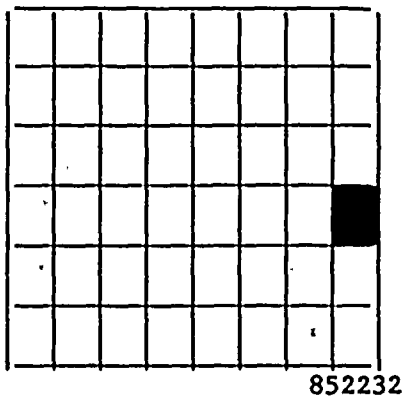
I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (Cont.)

28.0 852232 4KV Bus 103 Underfrequency

Reflash: No

TCN-1





28.1	Computer Point	Computer Printout	Source
	a. ENSBC18	4KV EM BUS 103 UNDER FREQ	81-2ENSB24 Mtr and relay cubicle at swgr.

28.2 Automatic Response

a. Trips ACB103-2 and 103-4 (offsite feeder breakers).

b. Auto start Diesel Generator 2EGS*EG3.

c. Load shed trips all loads except load center.

d. Manual loading of the bus is blocked for approx. 1 minute.

e. Auto load sequencing commences.

f. Category II service water separates from Category I.

28.3 Corrective Action

a. Verify auto station response.

b. Refer to N2-OP-71 Section H17.0, or H18.0 to place the bus on alternate offsite feed.

c. Notify elect. maint. of the trip.

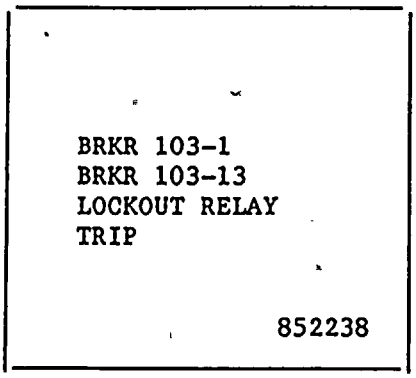
d. Refer to tech. specs. for possible LCO.

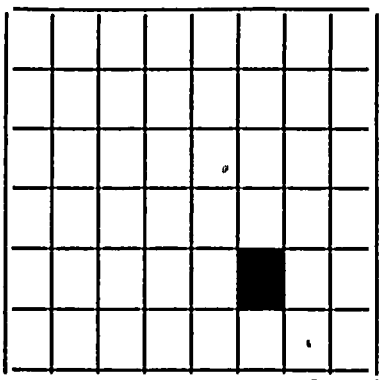
I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (Cont.)

29.0 852238 Breaker 103-1 Or 103-13 Lockout Relay Trip

Reflash: Yes

TCN-12





29.1	Computer Point	Computer Printout	Source
a.	EJSUC03	XFMR 2EJSX3A ACB 103-1 LO	50G-2EJSB03 or 50/51-2EJSB02 Gnd or phase overcurrent on the 4160V side of load center transformer.
b.	EJSUC04	XFMR 2EJSX3B ACB 103-13 L	50G-2EJSB06 or 50/51-2EJSB05 Gnd or phase overcurrent on the 4160V side of load center transformer.
c.	EJSUC15	EM LC XFMR 3A FDR FAULT-BU	51-2EJSB01 Backup overcurrent on the 4160V side of load center transformer.
d.	EJSUC16	EM LC XFMR 3B FDR FAULT-BU	51-2EJSB04 Backup overcurrent on the 4160V side of load center transformer.

29.2 Automatic Response

EJSUC03 Trips & locks out ACB103-1 and US3-3B. Isolates the load center transformer.

EJSUC04 Trips & locks out ACB103-13 and US3-9B. Isolates the load center transformer.

EJSUC15 Trips & locks out ACB 103-2 and 103-4 and prevents auto closing of ACB 103-14. Loss of voltage load sheds the bus. Diesel gen. auto starts and the DIV II 4160V bus remains de-energized.

29.2 (Cont'd)

EJSUC16 Trips & locks out ACB 103-2 and 103-4 and prevents auto closing of ACB 103-14. Loss of voltage load sheds the bus. Diesel gen. auto starts and the DIV II 4160V bus remains de-energized.

29.3 Corrective Action

EJSUC03
EJSUC04

a. Verify the trips by checking computer points: EJSUC11 for US3-3B and EJSUC07 for 103-1
OR
EJSUC12 for US3-9B and EJSUC08 for 103-13

b. Close the alternate load center incoming line breaker, at control room panel 852, US3-3B or US3-9B.

c. Notify elect. maint. of the trip, and any breakers remaining tripped.

NOTE: Refer to tech. specs. if unable to maintain feed to the load center.

NOTE: The load center powers MOV's associated with pumps which may remain running on the 4160V bus.

EJSUC15
EJSUC16

aa. Trip the 4160V breakers feeding the load center. Breaker 103-1 and 103-13.

bb. At control room panel 852, place the diesel generator breaker 103-14 control switch in pull-to-lock.

cc. At DIV II switchgear, reset lockout relays: 86-2-2EGPY02 (103-14); 86C-2ENSY01 (103-N2); 86C-2ENSY02 (103-N2).

dd. Close the offsite feeder breaker to the DIV II 4160V bus, breaker 103-2, or 103-4.

ee. Close the alternate 4160V breaker to the load center, breaker 103-1, or 103-13.

ff. Close the 600V incoming line breaker to the load center, breaker US3-3B, or US3-9B.

gg. At control room panel 852, remove the DIV II diesel generator breaker 103-14 control switch from pull-to-lock.

hh. Close in selected loads on the DIV II 4160V bus.

ii. Place the diesel generator in stand-by per N2-OP-100A.

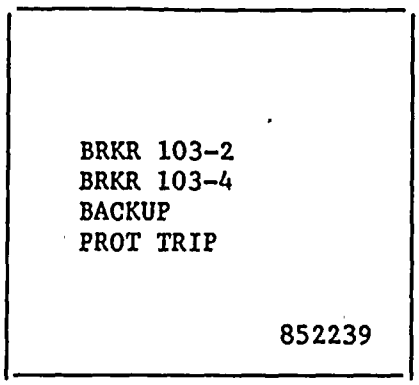
jj. Notify elect. maint. of the trip and any breakers remaining tripped.

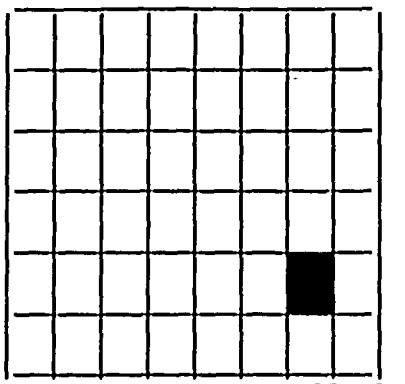
I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (Cont.)

30.0 852239 Breaker 103-2 Or 103-4 Backup Protection Trip

Reflash: Yes

TCN-12





30.1	Computer Point	Computer Printout	Source
	a. ENSUC19	EM SWGR ACB 103-4 LO RLY	67N5-2ENSB05 Diesel Gen. gnd overcurrent
	b. ENSUC20	EM SWGR ACB 10 LO RLY	67N7-2ENSB05 Diesel Gen. gnd overcurrent

30.2 Automatic Response

a. Trips & locks out ACB103-4.

b. Trips & locks out ACB103-2.

c. Category II service water separates from Category I.

30.3 Corrective Action

a. Verify auto station response by checking computer point ENSUC06 for 103-2, or ENSUC07 for 103-4.

b. Trip breakers 103-14, and 103-N1.

c. Reset lockout relays 86C-2ENSY01, and 86C-2ENSY02.

d. Close the offsite feeder breaker, 103-2, or 103-4.

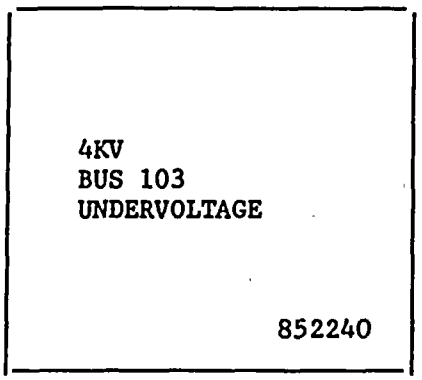
e. Notify elect. maint. of the trip.

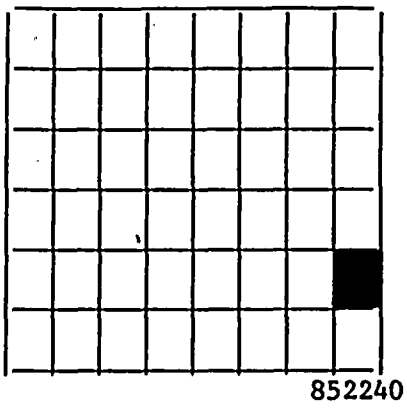
f. Refer to tech. specs. if unable to maintain feed to the DIV II bus.

I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (Cont.)

31.0 852240 4KV Bus 103 Undervoltage

Reflash: Yes





This annunciator will not alarm on bus 103 under or degraded voltage because knife switch TB-3-1593 in Panel 2CEC*PNL858D is open. 16366

31.1	Computer Point	Computer Printout	Source
a.	ENSEC02	BUS ENS 103 UNDV	27AA, AB, AC Phase to ground undervoltage relays
b.	ENSEC04	BUS 103 DEGRADED VOLT	27BA, BB, BC Phase to ground undervoltage relays

31.2 Automatic Response

a. For one device on either computer point, NONE.

b. For two devices on either computer point, loss of offsite power.

1. Offsite supply breaker ACB103-4 or 103-2 is tripped.
2. Emergency diesel generator EGS*EG3 starts.
3. Manual loading is blocked for approx. 1 minute.
4. Bus 2ENS*SWG103 is shed of all loads except load center 2EJS*US3.

5. Diesel generator breaker ACB101-1 closes, energizing load center 2EJS*US3.

6. Load sequence selection commences.

7. Category II service water separates from Category I.

31.3 Corrective Action

a. Refer to N2-OP-71 Section H17.0, or H18.0 to place the bus on alternate offsite power.

b. Notify elect. maint. of the trip.

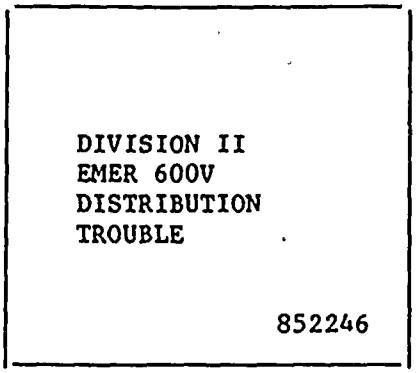
NOTE: Refer to tech. specs. for conditions associated with loss of offsite power.

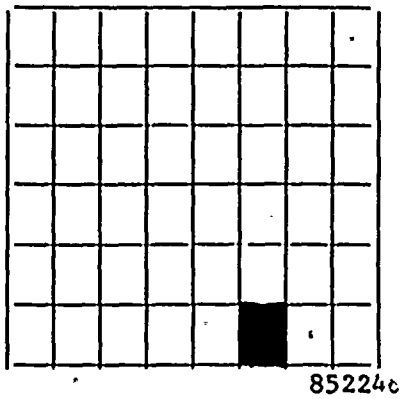
I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (Cont.)

32.0 852246 Division II emergency 600V distribution trouble

Reflash: Yes

TCN-12





32.1	Computer Point	Computer Printout	Source
	EJSBC25	LC US3 SPLY BRKR 3-3C	Breaker Overcurrent
	EJSBC26	LC US3 SPLY BRKR 3-4B	Breaker Overcurrent
	EJSBC27	LC US3 SPLY BRKR 3-5D	Breaker Overcurrent
	EJSBC28	LC US3 SPLY BRKR 3-7D	Breaker Overcurrent
	EJSBC29	LC US3 SPLY BRKR 3-8C	Breaker Overcurrent
	EJSBC30	LC US3 SPLY BRKR 3-9C	Breaker Overcurrent
	EJSBC33	LC US3 SPLY BRKR 3-6D	Breaker Overcurrent
	EJSBC34	LC US3 SPLY BRKR 3-7C	Breaker Overcurrent

32.2 Automatic Response

Trip and lockout the switchgear breaker.

32.3 Corrective Action

a. Verify the automatic response. At MCC's observe the voltmeter, for power distribution panels, check the load center breaker.

b. At MCC's, trip the breaker shown in the "LOAD" column (incoming line breaker).

c. Remove the interlock key, and energize the MCC from the alternate feed breaker.

d. For power distribution panels:

1. Trip the panel main breaker.

2. Reset and close the load center breaker.

3. If the load center breaker stays closed, trip the branch breakers in the power distribution panel, and close the panel main breaker.

4. If the main breaker, and load center breaker remain closed, close in branch breakers.

e. Notify electrical maint. of the event, and any breakers tripped and/or unable to reclose.

f. Refer to tech. specs. for possible LCO's due to loss of power to an emergency load.

Computer Point	Load	Location	Alternate Feed
EJSBC25	2EHS*MCC302 Bus B Cub 1A	Aux Bay South EL 240	Tie breaker 11A
EJSBC26	2EHS*MCC301 Cub 1A	Screenwell Bldg	Breaker 8A
EJSBC27	2EHS*MCC303 Bus B Cub 1A	Cntl Bldg East St-by Swgr Rm	Tie breaker 13A
EJSBC28	2EHS*MCC303 Bus D Cub 24A	Cntl Bldg East St-by Swgr Rm	Tie breaker 13A
EJSBC29	2EHS*MCC302 Bus D Cub 22A	Aux Bay South EL 240	Tie breaker 11A
EJSBC30	2EHS*MCC301 Cub 8A	Screenwell Bldg	Breaker 1A
EJSBC33	2EJS*PNL300B	Cntl Bldg East St-by Swgr Rm	No alternate feed
EJSBC34	2LAC*PNL300B	Cntl Bldg East St-by Swgr Rm	No alternate feed

I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (Cont.)

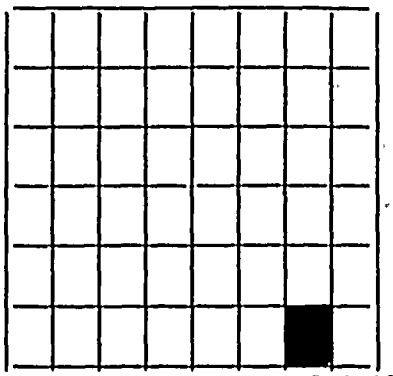
33.0 852247 Breaker 103-2 Or 103-4 Ground Fault Primary Protection Trip

Reflash: Yes

TCN-12

BRKR 103-2
BRKR 103-4
GROUND FAULT
PRI PROT TRIP

852247



852247

33.1	Computer Point	Computer Printout	Source
a.	ENSUC15	EM SWGR ACB 103-4 LO RLY	Switchgear 2NNS-SWG017 (17-2) Neutral directional overcurrent (67N6-2ENSB09) (Load Side) OR Switchgear 2ENS*103 (103-4) gnd overcurrent (50G-2ENSB32) Line Side
b.	ENSUC16	EM SWGR ACB 103-2 LO RLY	Switchgear 2NNS-SWG018 (18-2 Load Side) Neutral directional overcurrent (67N4-2ENSA10) OR Switchgear 2ENS*103 incoming line breaker (103-2 line side) gnd overcurrent (50G-2ENSB33)

33.2 Automatic Response

ENSUC15 Trip and lockout ACB103-4, and locksout ACB103-2
ENSUC16 Trip and lockout ACB103-2, and lockout ACB103-4.

a. Diesel generator 2EGS*EG3 Auto Starts

b. Load shed trips all loads except the load center.

c. Diesel generator breaker (103-14) closes.

d. Load sequencing commences.

e. Manual loading of the bus is blocked for approx. 1 minute.

f. Category II service water separates from Category I.

33.3 Corrective Action

NOTE: Refer to tech. specs. for operating conditions associated with loss of offsite power.

a. Notify elect. maint. of the trip.

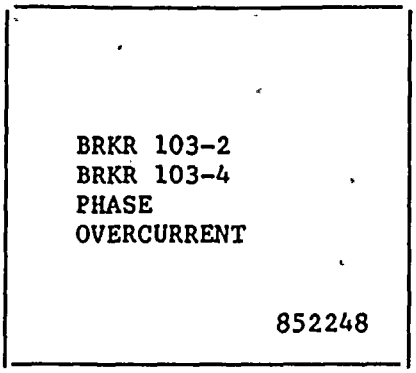
b. Reset the lockout relays: 86B-2ENSY01 (at switchgear 103-4), and 86B-2ENSY02 (at switchgear 103-2)

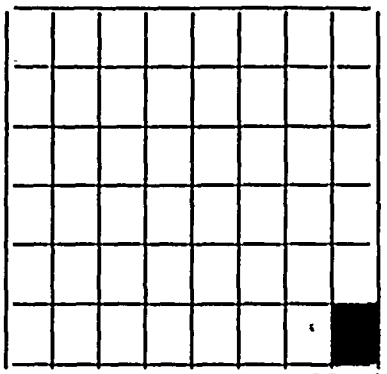
c. Refer to N2-OP-71 Section H17.0, or 18.0 to place the bus on alternate offsite feed.

34.0 852248 Breaker 103-2 Or 103-4 Phase Overcurrent

Reflash: Yes

TCN-12





34.1	Computer Point	Computer Printout	Source
	a. ENSIC02	2ABS-X1 PH OC ACB 103-2	67-2-2ENSB26 Directional overcurrent interlock to stub bus
	b. ENSIC03	RTX-XSR1B PH OC ACB 103-4	67-1-2ENSB25 Directional overcurrent interlock to stub bus

34.2 Automatic Response

ENSIC02 Any one device trips ACB 103-2
ENSIC03 Any one device trips ACB 103-4

a. Load shed trips all except load center breakers.

b. DIV II diesel generator auto starts.

c. Diesel generator breaker 103-14 closes on the bus.

d. Manual loading on the bus is blocked for approx. 1 minute.

e. Auto load sequence commences.

f. Category II service water separates from Category I.

34.3 Corrective Action

a. Verify the automatic response.

b. Sync the offsite breaker to the bus.

c. Open the diesel generator breaker 103-14.

d. Notify elect. maint. of the trip, and of the device causing the trip.

e. See N2-OP-100A to return the diesel generator to stand-by after offsite power is restored.

NOTE: See N2-OP-71 Section H17.0, or H18.0 to place the bus on alternate offsite feed.

NOTE: Refer to tech. specs. if unable to maintain offsite feed to the bus.

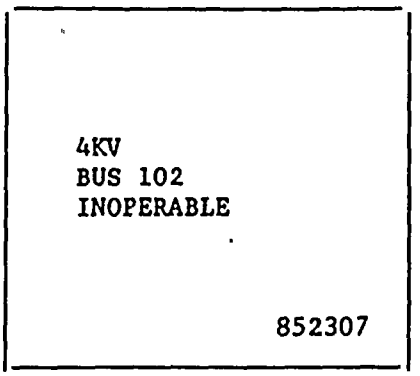
NOTE: Refer to Section H2.0 before closing the stub bus breaker.

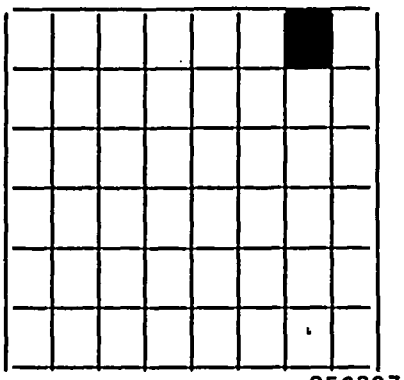
I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (Cont.)

35.0 852307 4KV Bus 102 Inoperable

Reflash: No

TCN-12





35.1	Computer Point	Computer Printout	Source
	a. ENSBC69	ENS DIV 3 BYPASS INOP	Both offsite breakers (102-4, an 102-5) and the diesel gen. breaker (102-1) loss of control power. 74-1 2ENSX15 (NORM SPLY BRKR NO.4 INOP) 74-1-2ENSY15 (RES SPLY BRKR NO.5 INOP) 74-2EGPC07 (DSL GEN BRKR NO.1 INOP) OR Both offsite breakers (102-4, and 102-5) loss of control power and K74L5 (DSL GEN 2EGS*EG2 BYPASS/INOP) OR Switch 43LS on 2ENS*SWG102 in the "ON" position

35.2 Corrective Action

a. Refer to the following INOP windows for response

b. Refer to plant tech. specs. for required action.

35.2 (Cont'd)

Window	Source	Automatic Action
NORM SPLY BRKR NO.4 INOP	74-1-2ENSX15	None

Corrective Action

See Annunciator 852319

Window	Source	Automatic Action
RES SPLY BRKR NO.5 INOP	74-1-2ENSY15	None

Corrective Action

See Annunciator 852319

Window	Source	Automatic Action
DSL GEN BRKR NO.1 INOP	74-2EGPC07	None

Corrective Action

See Annunciator 852319

Window	Source	Automatic Action
DSL GEN 2EGS*EG2 BYPASS/INOP	K-40 (Engine starting control circuit fuse failure) K-41 (Engine governor control circuit fuse failure) K-42 (Engine Safety shutdown control circuit fuse failure) K-27 (Engine fuel prime control circuit fuse failure) K-56 (Engine overspeed control circuit fuse failure	

35.2 (Cont'd)

Window	Source	Automatic Action
	74X-2HVPC09 Loss of control power to D.G. Bldg ventilation	See Annunciator 871405
	74-2EGFC04 Loss of control power to D.G. fuel transfer pumps	See Annunciator 852302
	74-2SWPN48 Loss of control power to D.G. service water circuits	See Annunciator 601101
	74-2EGAC05 Loss of control power to D.G. air start control circuit	See Annunciator 852301
	S-1 D.G. Panel control switch "DG in maint"	See Annunciator 852341

Corrective Action

a. Notify elect. maint. that engine control circuit fuse(s) is(are) open, or respond to the referenced annunciator.

I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (Cont.)

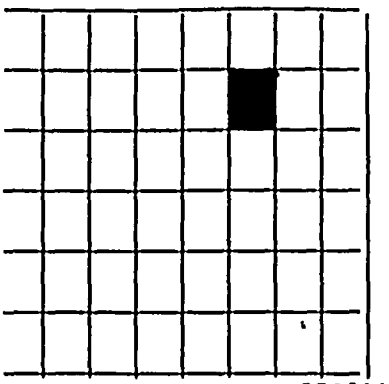
36.0 852314 Normal Supply Breaker 102-4 Auto Trip Or Fail To Close

Reflash: No

TCN-12

NORMAL SUPPLY
BRKR 102-4
AUTO TRIP/
FAIL TO CLOSE

852314



852314

36.1	Computer Point	Computer Printout	Source
	CSHUC01	4KV EM BUS 102 BRKR 102-4	Reserve Transformer 2RTX-XSR1A Tertiary (4KV) winding protection 86-3-2NNSX28 Bus Undervoltage 27X1-2ENSC10 Bus Underfrequency 94-2ENSC09 Phase Overcurrent 51-1, -2, -3-2ENSC01 (86NA-2ENSZ01) Ground Overcurrent 50GS-2ENSC02 (86NB-2ENSZ01) Aux. Transformer 2EJS*X2 Back up phase overcurrent 51B-1, -2, -3-2EJSC01 (94-2EJSX07,86NA-2ENSZ01) Directional overcurrent 67-2ENSC01 (62-1-2ENSZ01)

36.2 Automatic Response

a. HPCS diesel generator auto starts.

b. DIV III diesel generator breaker closes on the bus unless locked out by phase overcurrent, or backup phase overcurrent.

36.3 Corrective Action

a. Verify automatic response, by using computer point CSHBC09 for engine running, and CSHEC01 for diesel generator breaker closing, and clearing the undervoltage.

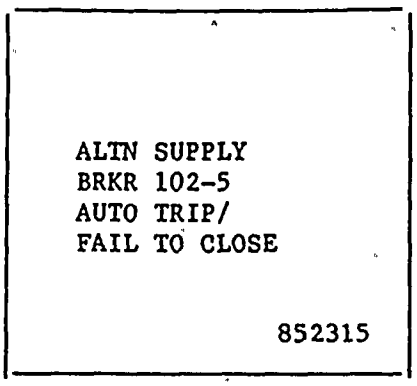
b. Refer to N2-OP-71 Section H13.0 to place the switchgear on alternate feed.

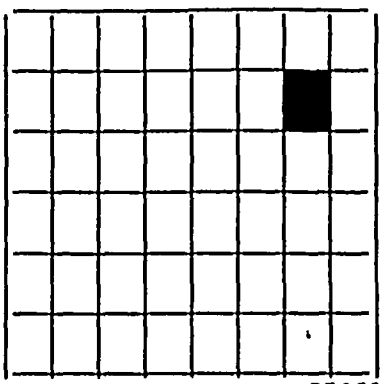
c. Notify elect. maint. of the trip.

37.0 852315 Alternate Supply Breaker 102-5 Auto Trip Or Fail To Close

Reflash: No

TCN-12





37.1	Computer Point	Computer Printout	Source
	CSHUC05	EM DSL G2 BRKR 102-5 TRIP	Bus Undervoltage 27X1-2ENSC10 Bus Underfrequency 94-2ENSC09 Phase Overcurrent 51-2ENSC03 (86NA-2ENSZ02) Aux Transformer 2EJS*X2 Backup overcurrent 94-2EJSX07 (86NA-2ENSZ02) Ground overcurrent 50GS-2ENSC04 (86NB-2ENSZ02) Directional overcurrent 67-2ENSC03 (62-1-2ENSZ02) Reserve Transformer 2RTX-XSR1B Tertiary (4KV) winding protection 86-3-2NNSY28

37.2 Automatic Response

a. HPCS diesel generator auto starts

b. Diesel generator (DIV III) breaker closes on the bus unless locked out by phase overcurrent, or backup overcurrent.

37.3 Corrective Action

a. Verify the automatic response by checking computerpoint CSHBC09, Emer. dsl. gen. running, and CSHEC01, bus undervoltage will clear.

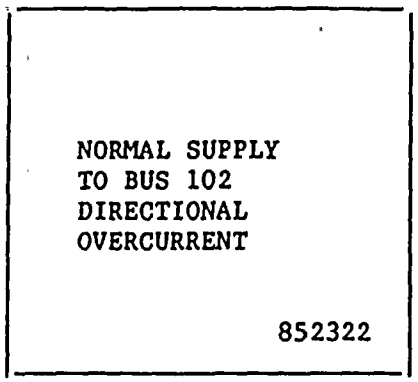
b. Refer to N2-OP-71 Section H14.0 to place the bus on alternate offsite feed.

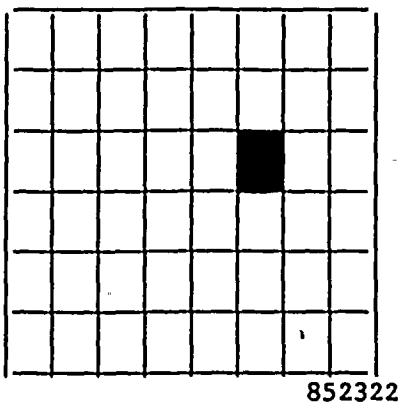
c. Notify elect. maint. of the trip.

38.0 852322 Normal Supply To Bus 102 Directional Overcurrent

Reflash: No

TCN-12





38.1	Computer Point	Computer Printout	Source
	a. CSHIC05	4KV NORM SPLY Bkr 4	67-2ENSC01

38.2 Automatic Response

a. Any one device will trip ACB102-4.

b. DIV III diesel generator auto starts.

c. Diesel generator breaker closes on the bus.

38.3 Corrective Action

a. Verify the automatic response by checking computer point CSHBC09, Emer. dsl. 2 running', and CSHEC01', bus undervoltage clears.

b. Refer to N2-OP-71 Section H13.0 to place the bus on alternate offsite feed.

c. Notify elect. maint. of the trip.

NOTE: Refer to tech. specs. if unable to maintain offsite feed to the bus.

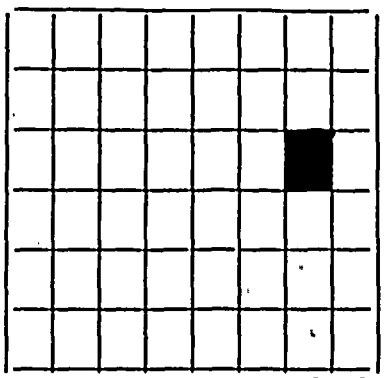
39.0 852323 Alternate Supply to Bus 102 Directional Overcurrent

Reflash: No

TCN-

ALTN SUPPLY
TO BUS 102
DIRECTIONAL
OVERCURRENT

852323



852323

39.1	Computer Point	Computer Printout	Source
	a. CSHIC04	4KV RES SPLY BKR 5	67-2ENSC01

39.2 Automatic Response

a. Any one device will trips ACB102-5.

b. DIV III diesel generator auto starts.

c. Diesel generator breaker closes on the bus.

39.3 Corrective Action

a. Verify the automatic response by checking computer point CSHBC09, 'Emer. dsl. 2 running', and CSHEC01, 'bus undervoltage', clears.

b. Refer to N2-OP-71 Section H14.0 to place the bus on alternate offsite feed.

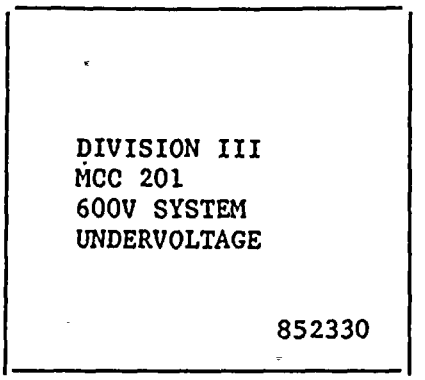
c. Notify elect. maint. of the trip.

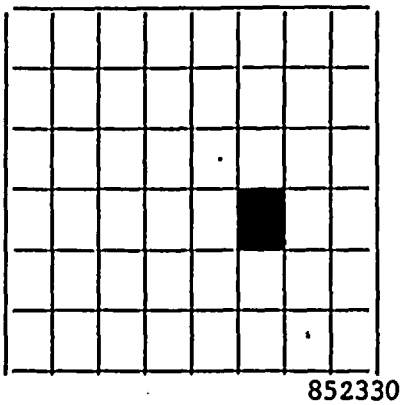
NOTE: Refer to tech. specs. if unable to maintain offsite feed to the bus.

40.0 852330 Division III MCC 201 600V System Undervoltage

Reflash: No

TCN-12





40.1	Computer Point	Computer Printout	Source
	a. CSHEC03	EM DSL G2 600V SYS UNDV	27-2CSHN10 Undervoltage relay at the HPCS MCC

40.2 Automatic Response

NONE

40.3 Corrective Action

a. Dispatch operator to EHS*MCC201 to check the MCC voltmeter.

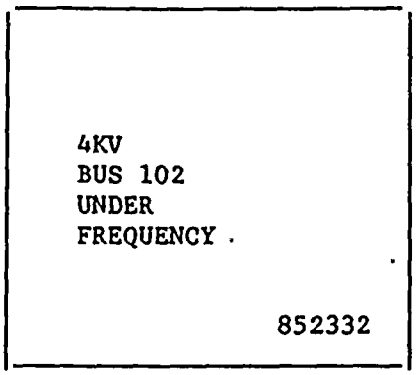
b. Notify elect. maint. of the condition.

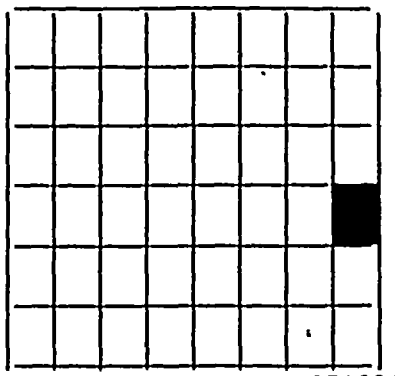
c. Check the voltage on the 4KV EMER BUS 102 at control room panel 852.

41.0 852332 4KV Bus 102 Underfrequency

Reflash: No

TCN-12





41.1	Computer Point	Computer Printout	Source
	a. CSHEC02	4K EM BUS 102 UNDER FREQ	94UF 2ENSC09

41.2 Automatic Response

a. Trips offsite supply breaker ACB102-4, or 102-5.

b. HPCS diesel generator auto starts, and energizes the bus.

41.3 Corrective Action

a. Verify auto station response by checking computer point CSHBC09, and CSHEC01.

b. See N2-OP-71 Section H13.0, or H14.0 to place the bus on alternate offsite feed.

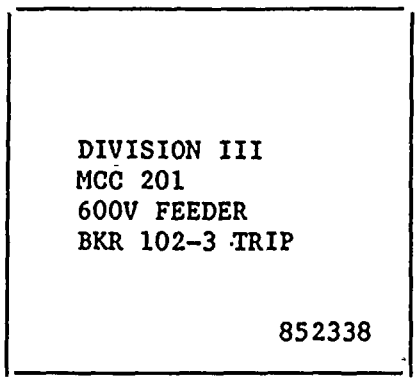
c. Notify elect. maint. of the trip.

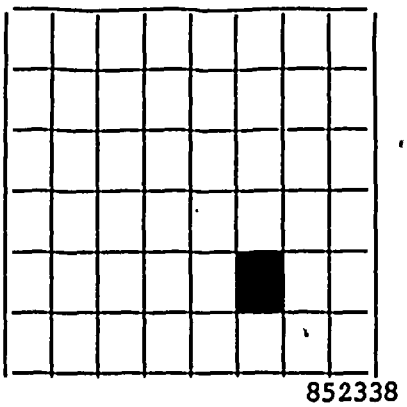
d. Refer to tech. specs. if unable to maintain offsite feed to the bus.

42.0 852338 Division III MCC 201 600V Feeder Breaker 102-3 Trip

Reflash: No

TCN-12





42.1	Computer Point	Computer Printout	Source
	a. CSHUC02	ED G2 600V XFMRX2 B102-3	50-51-2EJSC01 Phase overcurrent

42.2 Automatic Response

NONE

42.3 Corrective Action

a. Open all breakers on MCC2EHS*MCC201, and note all breakers which are tripped.

b. Restart the MCC, per Section E12.0.

c. Notify elect. maint. of the trip, and any breakers remaining tripped.

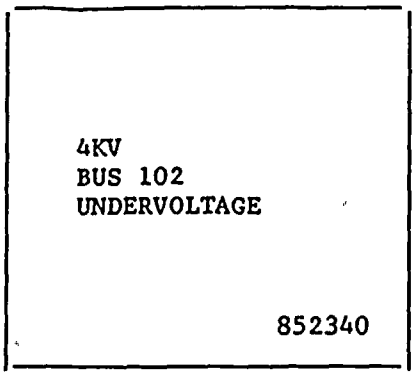
d. Refer to tech. specs. if unable to maintain feed to the MCC.

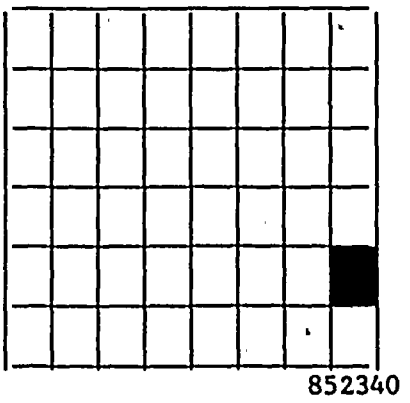
I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (Cont.)

43.0 852340 4KV Bus 102 Undervoltage

Reflash: No

TCN-12





43.1	Computer Point	Computer Printout	Source
	a. CSHEC01	4KV EM BUS 102 UNDERVOLT	27X2-2CSHN10, 27X1-2CSHN10

43.2 Automatic Response

a. If 2 out of 3 undervoltage devices and/or 2 out of 3 degraded voltage devices actuate, the following response occurs:

1. Offsite supply breaker trips.

2. HPCS pump supply breaker ACB102-2 trips, or prevents closure until voltage is restored.

4. Emergency diesel generator EGS*EG2 starts.

5. Diesel generator breaker ACB102-1 auto closes.

43.3 Corrective Action

a. Verify automatic response by checking computer point CSHBC09, and CSHEC01.

b. Refer to N2-OP-71 Section H13.0, or H14.0 to place the bus on alternate offsite supply.

c. Notify elect. maint. of the trip.

d. Refer to tech. specs. if unable to maintain offsite feed to the bus.

TABLE II

SYSTEM POWER SUPPLY LINEUP

COMPONENT NO.	COMPONENT DESCRIPTION	POWER SUPPLY Bus Number	- Cubicle/ Breaker	NORMAL POSITION	ACTUAL POSITION	INITIALS/ DATE	REMARKS	
2NNS-SWG016	4.16kv Normal Feed to 2ENS*SWG101 (Div I) (incoming line breaker)	2ENS*SWG101	101-13	CLOSED			*	TC-9
2NNS-SWG014	4.16kv Feed to Bus 2NNS-SWG014 (stub bus)	2ENS-SWG101	101-11	OPEN			*	TC-9
2NNS-SWG018	4.16kv alt. Feed to 2ENS*SWG101 (incoming line breaker)	2ENS*SWG101	101-10	OPEN Breaker Fully Lowered			*	TC-9
2EGS*EG1	4.16kv Feed to 2ENS*SWG101 (emerg. generator 2EGS*EG1)	2ENS*SWG101	101-1	OPEN			*	TC-9
2EJS*X1B	4.16kv Feed to 4.16kv/600v Aux. Transformer 2EJS*X1B	2ENS*SWG101	101-2	CLOSED			*	TC-9
2EJS*X1A	4.16kv Feed to 4.16kv/600v Aux. Transformer 2EJS*X1A	2ENS*SWG101	101-14	CLOSED			*	TC-9
2ENS-RES101	Emerg. Diesel Generator 2EGS*EG1 Neutral Breaker	2ENS*SWG101	101-N1	CLOSED			*	TC-9
2EJS*X1A	600V Incoming Line Breaker	2EJS*US1	US1-3B	CLOSED			*	TC-9
2EJS*X1B	600V Incoming Line breaker (alternate)	2EJS*US1	US1-9B	OPEN			*	TC-9

*See Precaution D.5.0 TC-9

TABLE II

SYSTEM POWER SUPPLY LINEUP

COMPONENT NO.	COMPONENT DESCRIPTION	POWER SUPPLY Bus Number	POWER SUPPLY Cubicle/ Breaker	NORMAL POSITION	ACTUAL POSITION	INITIALS/ DATE	REMARKS
2EHS*MCC101	600v Feed to Motor Control Center	2EJS*US1	US1-4B	CLOSED			*
2EHS*MCC101	600v Feed to Motor Control Center	2EJS*US1	US1-9C	CLOSED			*
2EHS*MCC102 Bus A	600v Feed to Motor Control Center	2EJS*US1	US1-3C	CLOSED			*
2EHS*MCC102 Bus C	600v Feed to Motor Control Center	2EJS*US1	US1-8C	CLOSED			*
2EHS*MCC103 Bus A	600v Feed to Motor Control Center	2EJS*US1	US1-5D	CLOSED			*
2EHS*MCC103 Bus C	600v Feed to Motor Control Center	2EJS*US1	US1-7D	CLOSED			*
2EJS*PNL100A	600v Feed to Emerg. Dist. Panel 2EJS*PNL100A	2EJS*US1	US1-6D	CLOSED			*
2LAC*PNL100A	600v Feed to Emerg. Dist. Panel 2LAC*PNL100A	2EJS*US1	US1-7C	CLOSED			*
2NNS-SWG017	4.16kv Normal Feed to 2ENS*SWG103 Div II (incoming line breaker)	2ENS*SWG103	103-4	CLOSED			*

*See Precaution D.5.0

TABLE II

SYSTEM POWER SUPPLY LINEUP

COMPONENT NO.	COMPONENT DESCRIPTION	POWER SUPPLY Bus Number	Cubicle/ Breaker	NORMAL POSITION	ACTUAL POSITION	INITIALS/ DATE	REMARKS	
2NNS-SWG015	4.16kv Feed to Bus 2NNS-SWG015 (stub bus)	2ENS*SWG103	103-8	OPEN			*	TCN -9
2NNS-SWG018	4.16kv Alt. Feed to 2ENS*SWG103 (incoming line breaker)	2ENS*SWG103	103-2	OPEN Breaker Fully Lowered			*	TCN -9
2EGS*EG3	4.16kv Feed to 2ENS*SWG103 (emerg. diesel generator)	2ENS*SWG103	103-14	OPEN			*	TCN -9
2EJS*X3A	4.16kv Feed to 4.16kv/600v Aux Transformer 2EJS*X3A	2ENS*SWG103	103-1	CLOSED			*	TCN -9
2EJS*X3B	4.16kv Feed to 4.16kv/600v Aux Transformer 2EJS*X3B	2ENS*SWG103	103-13	CLOSED			*	TCN -9
2ENS-RES103	Emerg. Diesel Generator 2EGS*EG3 Neutral Breaker	2ENS*SWG103	103-N1	CLOSED			*	TCN -9
2EJS*X3A	600v Incoming Line breaker	2EJS*US3	US3-3B	CLOSED			*	TCN -9
2EJS*X3B	600v Incoming Line breaker (alternate)	2EJS*US3	US3-9B	OPEN			*	TCN -9
2EHS*MCC301	600v Feed to Motor Control Center	2EJS*US3	US3-4B	CLOSED			*	TCN -9

*See Precaution D.5.0 TCN -9

TABLE II

SYSTEM POWER SUPPLY LINEUP

COMPONENT NO.	COMPONENT DESCRIPTION	POWER SUPPLY Bus Number	POWER SUPPLY Cubicle/ Breaker	NORMAL POSITION	ACTUAL POSITION	INITIALS/ DATE	REMARKS	
2EHS*MCC301	600v Feed to Motor Control Center	2EJS*US3	US3-9C	CLOSED			*	TCN -9
2EHS*MCC302 Bus B	600v Feed to Motor Control Center	2EJS*US3	US3-3C	CLOSED			*	TCN -9
2EHS*MCC302 Bus D	600v Feed to Motor Control Center	2EJS*US3	US3-8C	CLOSED			*	TCN -9
2EHS*MCC303 Bus B	600v Feed to Motor Control Center	2EJS*US3	US3-5D	CLOSED			*	TCN -9
2EHS*MCC303 Bus D	600v Feed to Motor Control Center	2EJS*US3	US3-7D	CLOSED			*	TCN -9
2EJS*PNL300B	600v Feed to Emerg. Dist. Panel 2EJS*PNL300B	2EJS*US3	US3-6D	CLOSED			*	TCN -9
2LAC*PNL300B	600v Feed to Emerg. Dist. Panel LAC*PNL300B	2EJS*US3	US3-7C	CLOSED			*	TCN -9
2NNS-SWG016	4.16kv Normal Feed to Emerg. Bus (Div III)	2ENS*SWG102	102-4	CLOSED			*	TCN -9
2NNS-SWG017	4.16kv Alt. Feed to Bus 2ENS*SWG102	2ENS*SWG102	102-5	OPEN Breaker ~~Fully~~ Removed ~~Lowered~~			*	TCN -9

*See Precaution D.5.0 TCN -9

TABLE II

SYSTEM POWER SUPPLY LINEUP

COMPONENT NO.	COMPONENT DESCRIPTION	POWER SUPPLY Bus Number	Cubicle/ Breaker	NORMAL POSITION	ACTUAL POSITION	INITIALS/ DATE	REMARKS	
2EGS*EG2	4.16kv Feed to Bus (Diesel gen.)	2ENS*SWG102	102-1	OPEN			*	TC -9
2EJS*X2	4.16kv Feed to 4.16kv/600 Aux. Transformer	2ENS*SWG102	102-3	CLOSED			*	TC -9
2EJS*US1	Incoming line breaker	2EHS*MCC101	101-1A	CLOSED			*	TC -9
2EJS*US1	Incoming line breaker(alt.)	2EHS*MCC101	101-10A	OPEN			*	TC -9
2EJS*US1	Incoming line breaker	2EHS*MCC102	102-1A	CLOSED			*	TC -9
2EJS*US1	Incoming line breaker	2EHS*MCC102	102-22A	CLOSED			*	TC -
2EHS*MCC102 Bus A to C	Tie brkr	2EHS*MCC102	102-13A	OPEN			*	TC -9
2EJS*US1	Incoming line breaker	2EHS*MCC103	103-1A	CLOSED			*	TC -9
2EHS*MCC103 Bus A to C	Tie brkr	2EHS*MCC103	103-16A	OPEN			*	TC -9
2EJS*US1	Incoming line breaker	2EHS*MCC103	103-27A	CLOSED			*	TC -9
2EJS*US3	Incoming line breaker	2EHS*MCC301	301-1A	CLOSED			*	TC -9
2EJS*US3	Incoming line breaker(alt.)	2EHS*MCC301	301-8A	OPEN			*	TCN -9

*See Precaution D.5.0 | TCN -9

TABLE II

SYSTEM POWER SUPPLY LINEUP

COMPONENT NO.	COMPONENT DESCRIPTION	POWER SUPPLY Bus Number	POWER SUPPLY Cubicle/ Breaker	NORMAL POSITION	ACTUAL POSITION	INITIALS/ DATE	REMARKS
2EJS*US3	Incoming line breaker	2EHS*MCC302	302-1A	CLOSED			*
2EHS*MCC302 Bus B to D	Tie brkr	2EHS*MCC302	302-11A	OPEN			*
2EJS*US3	Incoming line breaker	2EHS*MCC302	302-22A	CLOSED			*
2EJS*US3	Incoming line breaker	2EHS*MCC303	303-1A	CLOSED			*
2EHS*MCC303 Bus B to D	Tie brkr	2EHS*MCC303	303-13A	OPEN			*
2EJS*US3	Incoming line breaker	2EHS*MCC303	303-24A	CLOSED			*
2LAC*PNL100A	600v Incoming Feed	LAC*PNL100A	Mn Brkr	CLOSED			
2VBA*UPS2A	Div I UPS Maint. Sply	2LAC*PNL100A	CKT 19	CLOSED			TCN-11
2EJS*PNL100A	600v Incoming Feed	EJS*PNL100A	Mn Brkr	CLOSED			
2VBA*UPS2A	Div I UPS AC Sply	2EJS*PNL100A	CKT 7	CLOSED			TCN-11
2VBA*UPS2A	Div I UPS DC Sply	2BYS*SWG002A	3C	CLOSED			

*See Precaution D.5.0

TABLE II

SYSTEM POWER SUPPLY LINEUP

COMPONENT NO.	COMPONENT DESCRIPTION	POWER SUPPLY Bus Number	- Cubicle/ Breaker	NORMAL POSITION	ACTUAL POSITION	INITIALS/ DATE	REMARKS
2LAC*PNL300B	600v Incoming Feed	2LAC*PNL300B	Mn Brkr	CLOSED			
2VBA*UPS2B	Div II UPS Maint. Sply	2LAC*PNL300B	CKT 19	CLOSED			TCN-11
2EJS*PNL300B	600v Incoming Feed	2EJS*PNL300B	Mn Brkr	CLOSED			
2VBS*UPS2B	Div II UPS AC Sply	2EJS*PNL300B	CKT 7	CLOSED			TCN-11
2VBS*UPS2B	Div II UPS DC Sply	2BYS*SWG002B	3C	CLOSED			