QA CATEGORY 1

REVISION	1
RESPONSIBLE SECTION	PRA
SERIAL NUMBER	C2-517-1073-RE
PLANT (UNIT)	CY
PAGE 1 OF	11
REVISION PAGES	-
ATTACHMENT PAGES	-
APPENDIX PAGES	136
TOTAL PAGES	147
BLDG/SYS/COMP	SG/E08
NPRF DATE/CTP DATE	
QUALITY SOFTWARE USED	CAFTA 2.2c

TITLE: Evaluation on Existing Versus Proposed ABT Transfer Scheme on MCC 5 Reliability

METHOD OF REVIEW: In Accordance With NEO 3.06, Rev. 6

Prepared By: J.K. Rothert / J.K. Rothert
(Print/Signature)
Date: 04/26/94

Reviewed By: F.O. Cietek / Fred O. Cietek
(Print/Signature)
Date: 4/27/94

Approved By: E.A. Oswald / E.A. Oswald
(Print/Signature)
Date: 4/27/94

9405250176 940517
PDR ADOCK 05000213
P PDR

QA CATEGORY 1

REVISION	0
RESPONSIBLE SECTION	PRA
SERIAL NUMBER	C2-517-1073-RE
PLANT (UNIT) / SYSTEM	CY
PAGE 1 OF	7
BACKUP COMPLETE	10/06/93
DATE SENT TO NPRF	10/22/93
QUALITY SOFTWARE USED	CAFTA 2.2c

TITLE: EVALUATION OF EXISTING VERSUS PROPOSED ABT TRANSFER SCHEMES ON MCC-5 RELIABILITY

METHOD OF REVIEW: REVIEWED IN ACCORDANCE WITH NEO 5.06 REV. 5

REASON FOR REVISION: N/A

Prepared By: (Print/Signature) J.K.E ROTHERT / J.K.E Rothert
Date: 09/24/93

Reviewed By: (Print/Signature) FRED O CIETEK / Fred O Cietek
Date: 10/5/93

Approved By: (Print/Signature) DONALD A. DUCE / Donald A. Duce
Date: 10/6/93

CTP DATA BASE INPUTS

Calc. # C2-517-1073-RE Rev # 1

Vendor Calc # _____ Plant CY

Title Evaluation on Existing Versus Proposed ABT Tansfer Scheme on MCC 5 Reliability

CCN # _____ Superseded by: _____

QA (Y/N) Y PA # _____

Building	System	Component	Component ID
SG	EO8		

Ref. Calc.	Ref. Drawing

Computer Codes Used

CAFTA 2.2

Comments:

Calculation Checklist

Calculation Identifying Number C2-517-1073-RE Revision 1

	Initials
1. Preparation	
1.1 Section 6.1.2	
1.2 Section 6.1.3	
1.3 Section 6.1.4	
1.4 Section 6.4.6	
2. Verification	
2.1 Section 6.2.2.1	
2.2 Section 6.2.2.2	
2.3 Section 6.2.2.3	
2.4 Section 6.2.2.4	
2.5 Section 6.2.2.5	
2.6 Section 6.2.2.6	
2.7 Section 6.2.2.7	
2.8 Section 6.2.2.8	
2.9 Section 6.2.2.9	
2.10 Section 6.2.2.10	
2.11 Section 6.2.2.11	
2.12 Section 6.2.2.15	

	Initial & Date
3. Approval	
3.1 Section 6.3.1	4/27/94
3.2 Section 6.3.2	
3.3 Section 6.3.3	
3.4 Section 6.3.4	
3.5 Section 6.3.5	
3.6 Section 6.3.6	
4. Non-QA Applications	**Initial & Date**
4.1 Section 5.4 waived	
4.2 Section 6.1.4.7 waived	
4.3 Section 6.2 waived	

Basis for Waiver: _____

SUBJECT Evaluation of Existing Versus Proposed ABT Transfer Schemes on MCC-5 Reliability

BY J.K. Rothert DATE 04/08/94

CHKD. BY F.O. Cietek DATE 4/12/94

CALC. NO. C2-517-1073-PE REV. 1

SHEET NO. 4 OF 11

The following changes were made for this revision:

1) Incorporated CCN-1

2) Incorporated random failures associated with MCC 5 that are independent of the DG conditional starting.

Table of Contents

1.0 Purpose

The purpose of this analysis is to evaluate proposed design changes to the MCC-5 automatic bus transfer (ABT) 9C/11C scheme reliability. Recent failures of the ABT during testing (Reference 1) prompted this need to identify a more reliable ABT design for MCC-5.

2.0 Results

The proposed design was determined to have a significant impact upon increasing ABT 9C/11C reliability. This results in increased reliability of MCC-5 over the existing transfer scheme for loss of offsite power events. Previously MCC-5 reliability was dominated by ABT reclosure and transfer failures which resulted in a failure probability of MCC-5 to supply power of 5.9E-2.

The redesign decreases MCC-5 failure probability to supply power to 6.4E-3 primarily due to decreased dependence on the ABT. With this design, the dominant contributor to MCC-5 failure probability is the DGs, as expected. The failure of the DGs should be the limiting factor for MCC-5 reliability and ensuring the optimum design of the ABT for loss of offsite power events.

JCER Rev 1 Loc

Both cases model conditional probabilities of one DG starting before the other. MCC-5 failure probability is sensitive to variations in these conditional probabilities for the existing ABT transfer design scheme. The MCC-5 failure probability is not sensitive to variations in these conditional probabilities for the proposed design.

3.0 Description of Design Change

A detailed description of the proposed versus the existing design is provided in Appendix D (Reference 3).

The primary features of the proposed design are as follows:

9C will remain closed upon a loss of offsite power where previously it would open and then reclose (elimination of relay 62-5B and associated control logic). The ABT will then either remain on Bus 1-5 or transfer to Bus 1-6 depending on which bus becomes energized/available first.

JCER Rev. 1 Loc

The preferred power source selector switch has been

eliminated. Thus, transfers to an available non-preferred power source back to the preferred source, when it becomes available, no longer occur.

Fast transfers have been eliminated which could result in residual voltages remaining on the respective buses which could fail the ABT. All transfers for the proposed design have a 1 second delay for the 62-5A relay and a .75 second delay for the 62-6A relay.

4.0 Modeling and Assumptions

Two fault trees were developed for the purposes of this analysis. Appendix A.1, B.1, and C.1 contain the fault tree, basic event report and cutset report for the existing ABT 9C/11C scheme, respectively. Appendix A.2, B.2, and C.2 contain the fault tree, basic event report, and cutset report for the proposed ABT scheme, respectively.

The ABT transfer scheme was originally modeled as part of the AC Power Distribution System analysis for CY (Reference 2). This original ABT fault tree logic serves as the basis for the fault trees developed within this analysis for the existing and proposed ABT scheme.

The fault trees within Appendix A contain only those portions of the original fault tree that were affected by the modeling changes for this analysis. This is done to focus on the changes for this analysis. The remainder of the fault tree structure remains unchanged and is represented by transfer gates which preserves the remainder of the logic for the analysis.

For the existing ABT scheme this original fault tree was revised to take into consideration fast transfers from non-preferred to the preferred power supply and the conditional probability that DG-B starts first followed by DG-A.

The conditional probability of DG-A starting before DG-B for the existing ABT design was assumed to be 50/50 given a loss of offsite power event. This assumption was incorporated into the fault tree for the existing ABT scheme to take into consideration the requirement to fast transfer in certain cases.

The conditional probability of DG-A starting before DG-B for the proposed ABT design was assumed to be 50/50 (respectively) given a loss of offsite power event. The basis for this assumption is the limited start time data for the DGs (Appendix D.4).

For both cases ABT breaker 9C is assumed to be the selected breaker to normally supply MCC-5.

For both cases no operator recovery actions were credited for recovery of power to MCC-5.

For both cases certain failure mechanisms for some components were eliminated based upon more information on the physical characteristics of the design which would preclude that type of failure (i.e., certain mechanical contact pair failures, certain relay failure mechanisms, etc.).

Both fault trees assumed an eighteen month refueling cycle with full integrated testing of ABT 9C/11C during the refueling outage. It is understood that CY will go to a twenty four month refueling outage at some future date.

Based upon recent testing results and the associated failures of the existing ABT to fast transfer (Reference 1), a failure probability of 0.1/demand (basic event AB1BA911) was assumed. This value is assumed to be a conservative representation of the existing ABT 9C/11C components required for the fast transfer and is based upon the failure of the ABT during testing. This was done to expedite the analysis of the effect of the multiple fast transfers associated with a preferred and non-preferred power supply on the MCC-5 failure to supply power probability.

JZR Rev 1 FOC

For the proposed ABT scheme and assuming a total loss of offsite power, ABT breaker 9C will remain closed. Once a DG starts or the DGs start:

- if DG-A starts first and energizes Bus 1-5 before DG-B can energize Bus 1-6, MCC-5 remains supplied by Bus 1-5.

- if following a total LOSP, EDG 'B' energizes Bus 1-6 before EDG 'A' energizes Bus 1-5, ABT breaker 9C opens and ABT breaker 11C closes. If after ABT breaker 11C closes, EDG 'B' fails, ABT breaker 11C must re-open and ABT breaker 9C must close.

- if following a total LOSP, EDG 'B' energizes Bus 1-6 before EDG 'A' energizes Bus 1-5, ABT breaker 9C opens and ABT breaker 11C does not close, then ABT breaker 9C recloses once EDG 'A' energizes Bus 1-5.

- if following a total LOSP, EDG 'B' energizes Bus 1-6 before EDG 'A' energizes Bus 1-5, and ABT breaker 9C fails to open

JZR Rev 1 FOC

(remains closed) thus ABT breaker 11C will not close, then MCC-5 could become energized if EDG 'A' successfully energizes Bus 1-5 (Note - this is a failure of ABT breaker 9C which is credited with success).

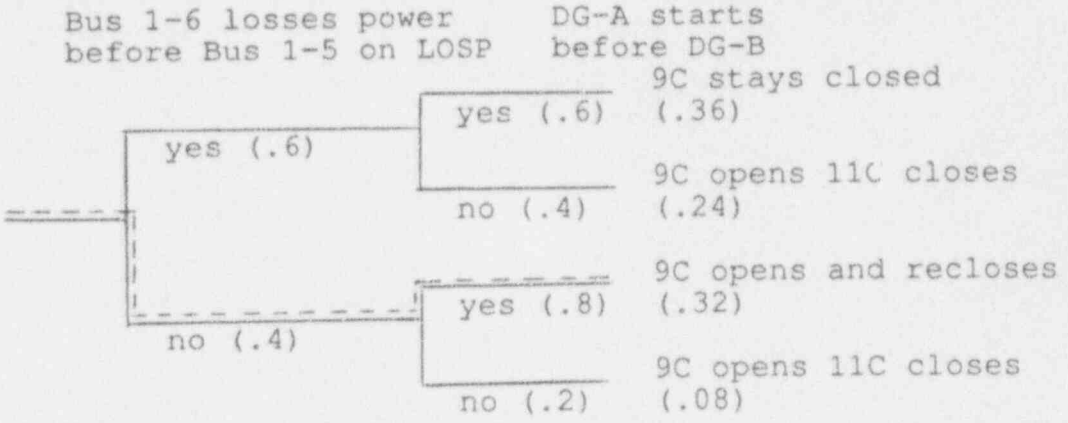
- (assuming initial alignment is to Bus 1-6) if following a partial loss of power on Bus 1-6, ABT breaker 11C opens and ABT breaker 9C does not close then ABT breaker 11C recloses once EDG 'B' energizes Bus 1-6.

- (assumes initial alignment is to Bus 1-5) if following a partial loss of power on Bus 1-5, ABT breaker 9C opens and ABT breaker 11C does not close then ABT breaker 9C recloses once EDG 'A' energizes Bus 1-5.

- if DG-B starts first and energizes Bus 1-6 before DG-A can energize Bus 1-5, ABT breaker 9C will open and breaker 11C will close to energize MCC-5 and remain in this alignment. The only way to re-transfer back to Bus 1-5 is if there is a loss of power on Bus 1-6 and Bus 1-5 is energized, or if operators took manual control to re-transfer.

IXR Rev 1 Foc

The basic event AB1BACCF models the potential failure of 9C to reclose which results in common mode failure that prevents 11C closure. Thus, both breakers are failed in the open position. A screening beta factor of .1 and a testing interval of refueling was assumed for this basic event. This basic event is conditional on the unique case where Bus 1-6 loses power 1-2 seconds after Bus 1-5 on a LOSP and Bus 1-5 becomes energized before Bus 1-6 (DG-A starts first followed by DG-B). This is represented by the following small event tree which favors proper function of the design and results in the conditional probability of 9C having to open/reclose 32% (AB1911CP) of the time for the event discussed above.



Assuming a loss of power only on Bus 1-5, ABT breaker 9C would open and breaker 11C would close to energize MCC-5 from Bus 1-6.

Assuming that both 9C and 11C fail closed and both Buses 1-5 and 1-6 are being supplied by the DGs no fault (phase miss-match) would be able to propagate and result in one or both of the DGs tripping. Voltage protection between MCC-5 and the DGs would have to fail. This coupled with both breakers failing closed would be a minimum three order cutset and an extremely low probability occurrence. Thus, this type of an event is not considered credible.

5.0 References

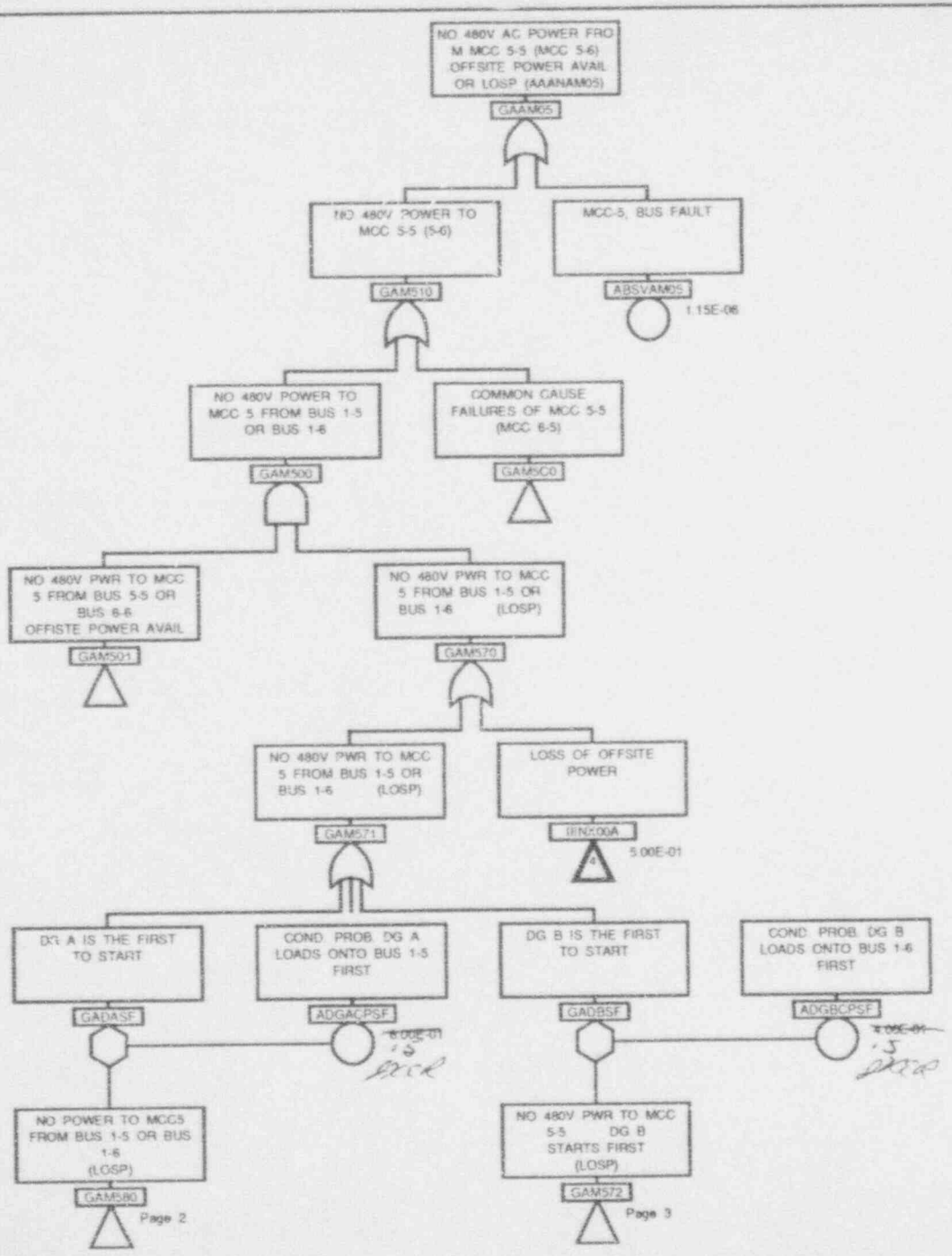
1. NRC Letter Docket No. 50-213, 'NRC Augmented Inspection Team Regarding Two Loss of Offsite Power Events and the Loss of Motor-Control-Center-5', Aug. 16, 1993.

2. NU Calc. File No. C2-517-587-RE, 'AC Power Distribution System (4160V and 480V)'.

3. NU Memo PSCY-93-199, 'CY EWR No. 93-MS104 "MCC-5 Automatic Bus Transfer (ABT) Re-Design', Aug. 30, 1993.

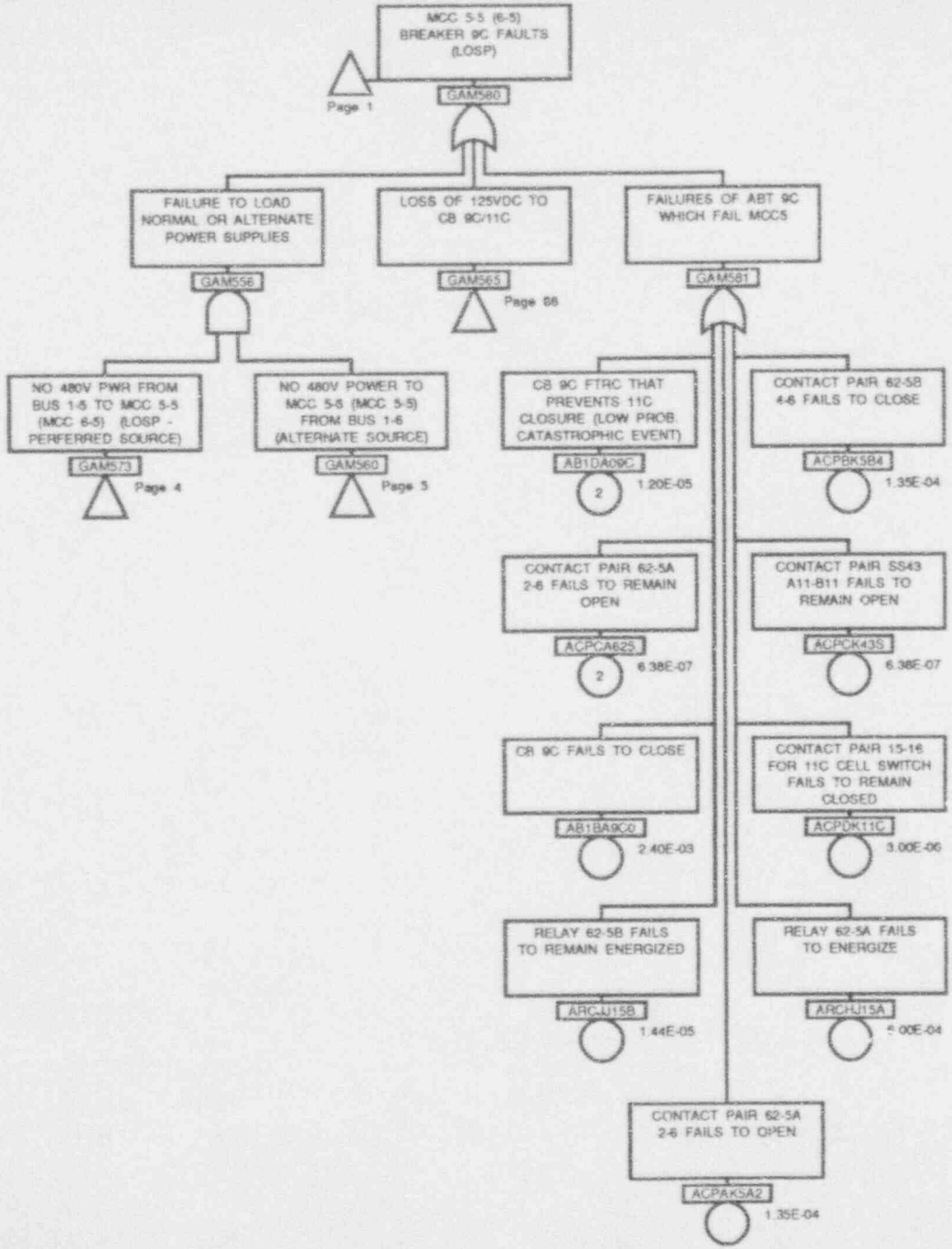
4. PDCR No. 1434, Rev. 1 (DRAFT), 'MCC-5 Automatic Bus Transfer Re-Design'.

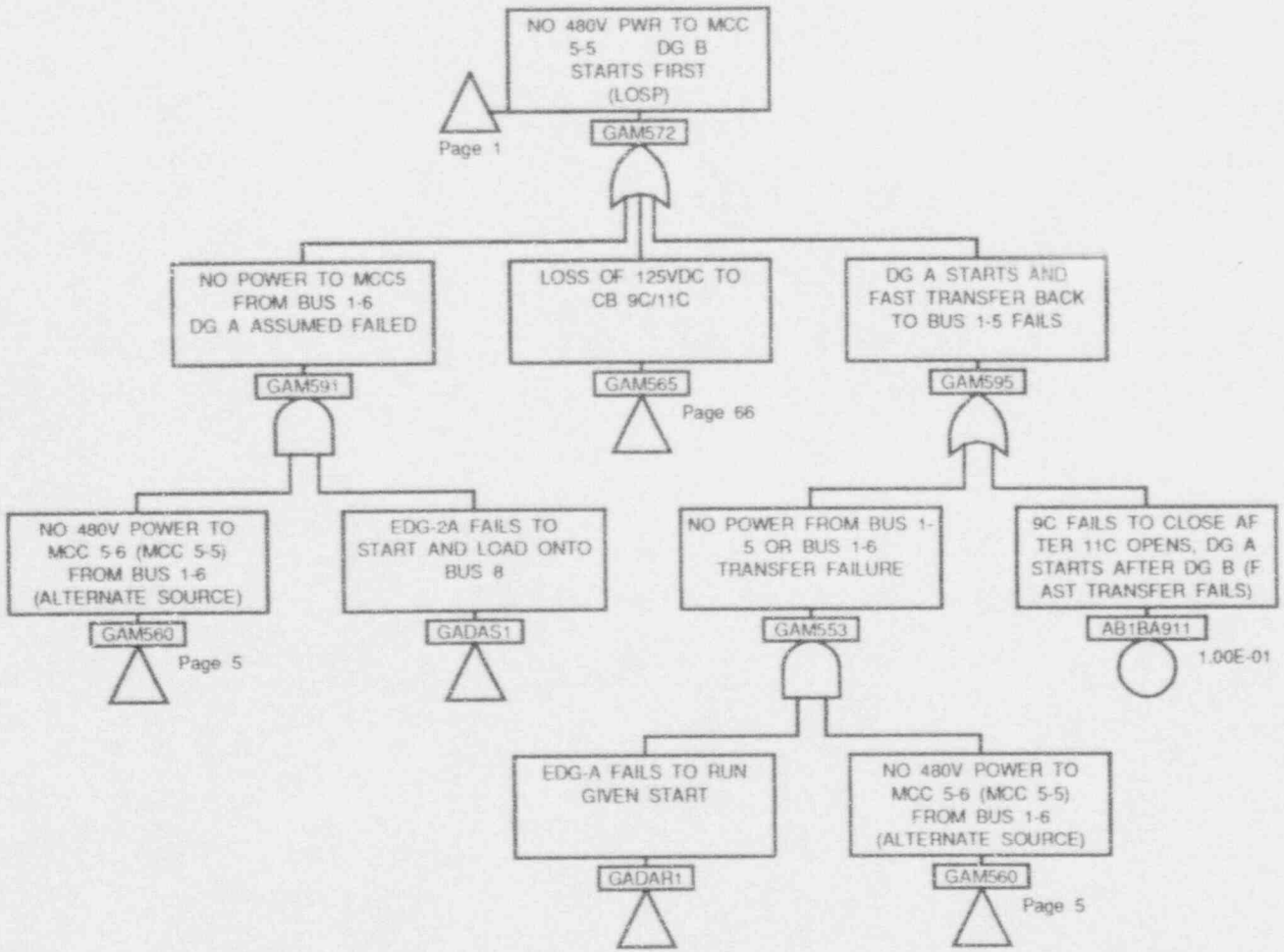
Appendix A

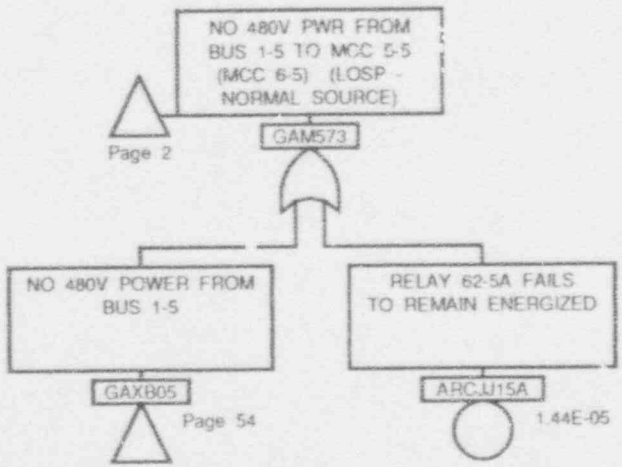


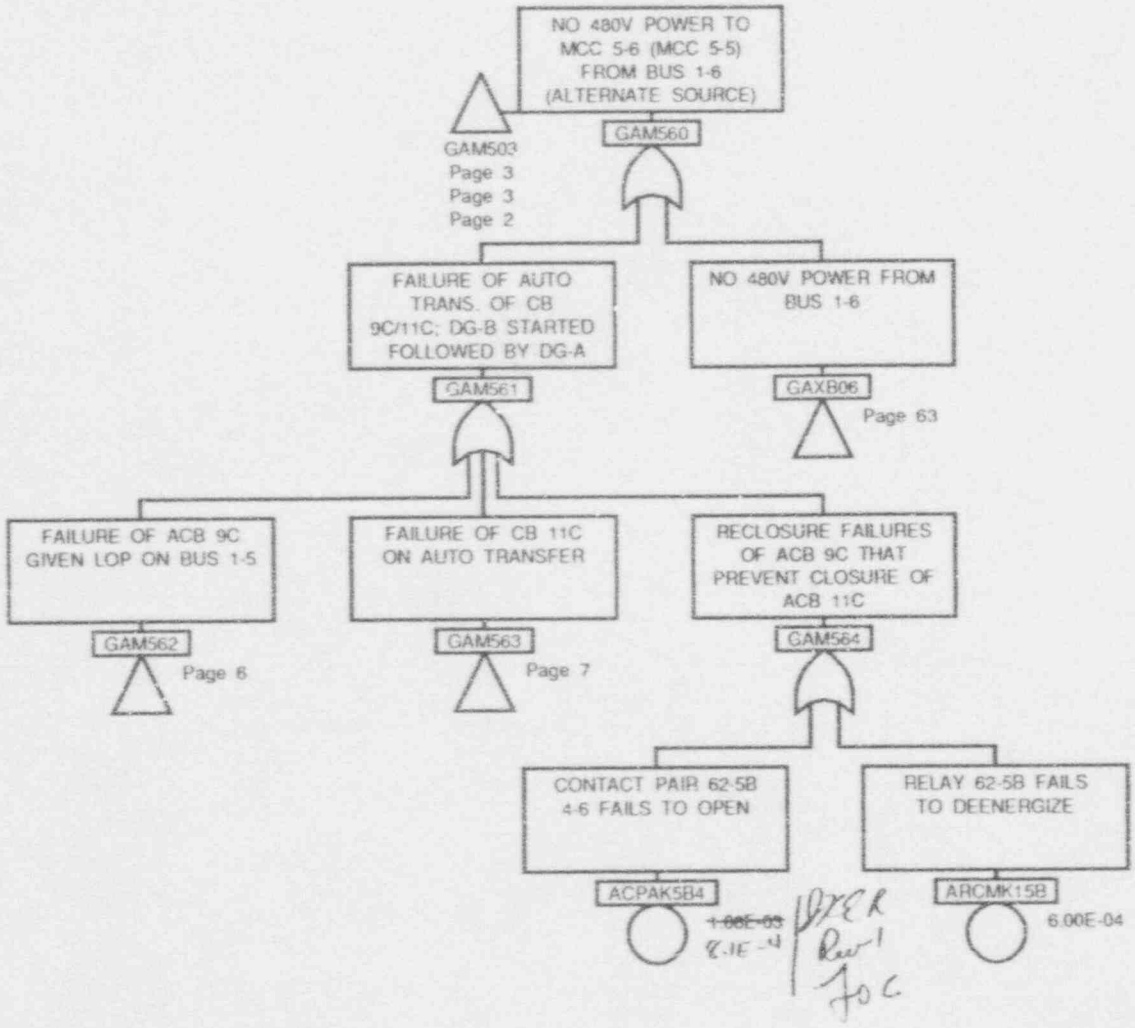
APPENDIX A.1 REV. 1

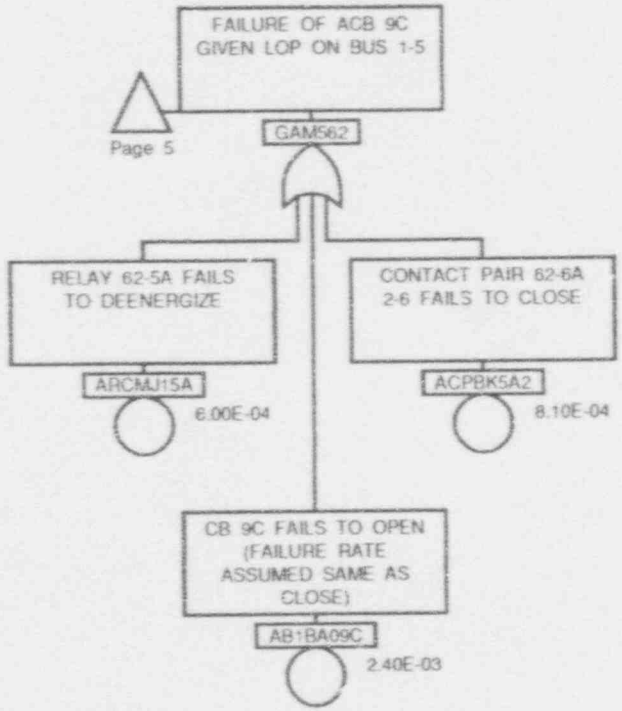
Existing ABT Transfer Scheme for MCC-5	.\FTREE\OLDABT.CAF	10-04-93	Page 1

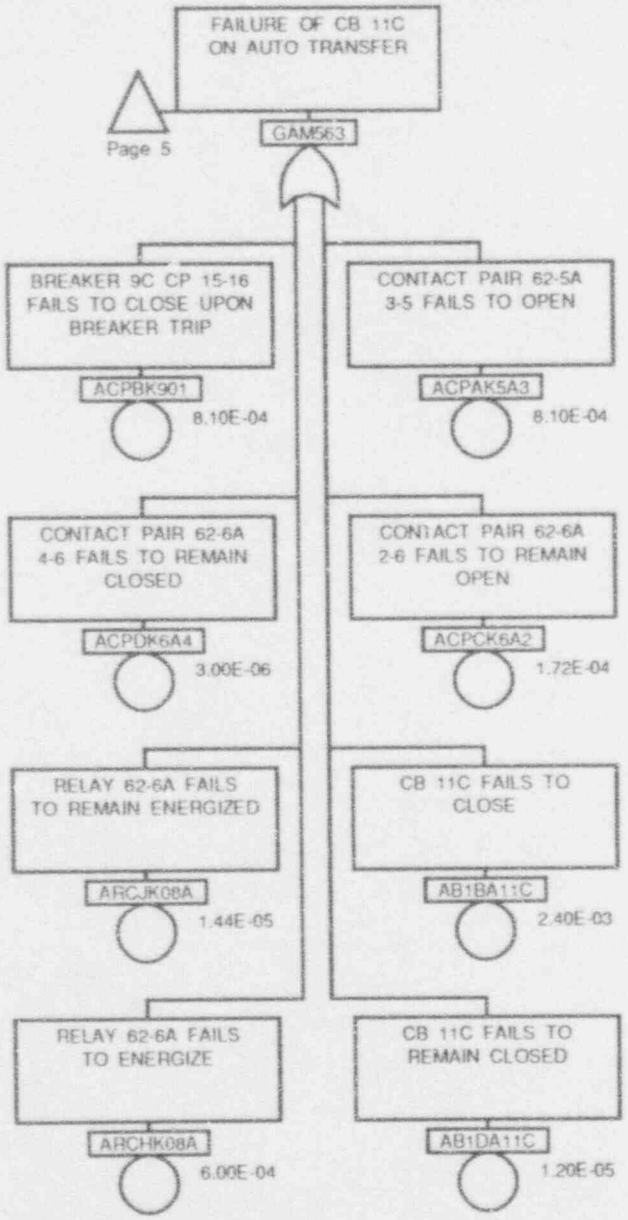

MCC 5-5 (6-5) BREAKER 9C FAULTS (LOSP)
GAM580
Page 1
FAILURE TO LOAD NORMAL OR ALTERNATE POWER SUPPLIES
GAM556
LOSS OF 125VDC TO CB 9C/11C
GAM565
Page 88
FAILURES OF ABT 9C WHICH FAIL MCC5
GAM581
NO 480V PWR FROM BUS 1-5 TO MCC 5-5 (MCC 6-5) (LOSP - PERFERRED SOURCE)
GAM573
Page 4
NO 480V POWER TO MCC 5-5 (MCC 5-5) FROM BUS 1-6 (ALTERNATE SOURCE)
GAM560
Page 3
CB 9C FTRC THAT PREVENTS 11C CLOSURE (LOW PROB CATASTROPHIC EVENT)
AB1DA09C
2
1.20E-05
CONTACT PAIR 62-5B 4-6 FAILS TO CLOSE
ACPBK5B4
1.35E-04
CONTACT PAIR 62-5A 2-6 FAILS TO REMAIN OPEN
ACPCA62S
2
6.38E-07
CONTACT PAIR SS43 A11-B11 FAILS TO REMAIN OPEN
ACPCK43S
6.38E-07
CB 9C FAILS TO CLOSE
AB1BA9C0
2.40E-03
CONTACT PAIR 15-16 FOR 11C CELL SWITCH FAILS TO REMAIN CLOSED
ACPDK11C
3.00E-06
RELAY 62-5B FAILS TO REMAIN ENERGIZED
ARCJJ15B
1.44E-05
RELAY 62-5A FAILS TO ENERGIZE
ARCHJ15A
4.00E-04
CONTACT PAIR 62-5A 2-6 FAILS TO OPEN
ACPAKSA2
1.35E-04

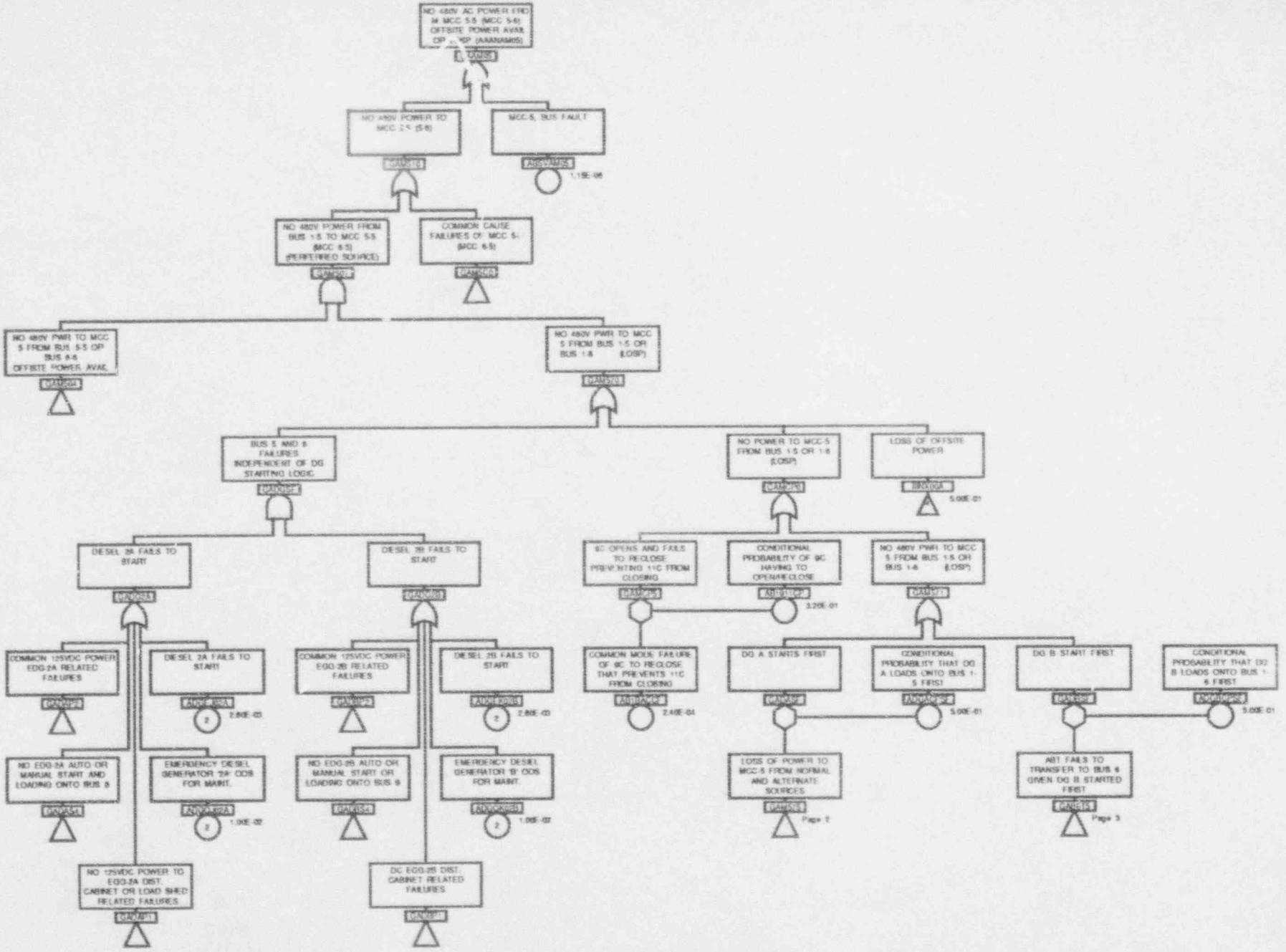

NO 480V PWR TO MCC 5-5 DG B STARTS FIRST (LOSP)
GAM572
Page 1
NO POWER TO MCC5 FROM BUS 1-6 DG A ASSUMED FAILED
GAM591
LOSS OF 125VDC TO CB 9C/11C
GAM565
Page 66
DG A STARTS AND FAST TRANSFER BACK TO BUS 1-5 FAILS
GAM595
NO 480V POWER TO MCC 5-6 (MCC 5-5) FROM BUS 1-6 (ALTERNATE SOURCE)
GAM560
Page 5
EDG-2A FAILS TO START AND LOAD ONTO BUS 8
GADAS1
NO POWER FROM BUS 1-5 OR BUS 1-6 TRANSFER FAILURE
GAM553
9C FAILS TO CLOSE AFTER 11C OPENS, DG A STARTS AFTER DG B (FAST TRANSFER FAILS)
AB1BA911
1.00E-01
EDG-A FAILS TO RUN GIVEN START
GADAR1
NO 480V POWER TO MCC 5-6 (MCC 5-5) FROM BUS 1-6 (ALTERNATE SOURCE)
GAM560
Page 5


NO 480V PWR FROM BUS 1-5 TO MCC 5-5 (MCC 6-5) (LOSP - NORMAL SOURCE)
GAM573
Page 2
NO 480V POWER FROM BUS 1-5
GAXB05
Page 54
RELAY 62-5A FAILS TO REMAIN ENERGIZED
ARC.U15A
1.44E-05


NO 480V POWER TO MCC 5-6 (MCC 5-5) FROM BUS 1-6 (ALTERNATE SOURCE)
GAM560
GAM503
Page 3
Page 3
Page 2
FAILURE OF AUTO TRANS. OF CB 9C/11C; DG-B STARTED FOLLOWED BY DG-A
GAM561
NO 480V POWER FROM BUS 1-6
GAXB06
Page 63
FAILURE OF ACB 9C GIVEN LOP ON BUS 1-5
GAM562
Page 6
FAILURE OF CB 11C ON AUTO TRANSFER
GAM563
Page 7
RECLOSURE FAILURES OF ACB 9C THAT PREVENT CLOSURE OF ACB 11C
GAM564
CONTACT PAIR 62-5B 4-6 FAILS TO OPEN
ACPAK5B4
~~1.00E-03~~
8.1E-4
RELAY 62-5B FAILS TO DEENERGIZE
ARCMK15B
6.00E-04
DTER
Rev 1
10C

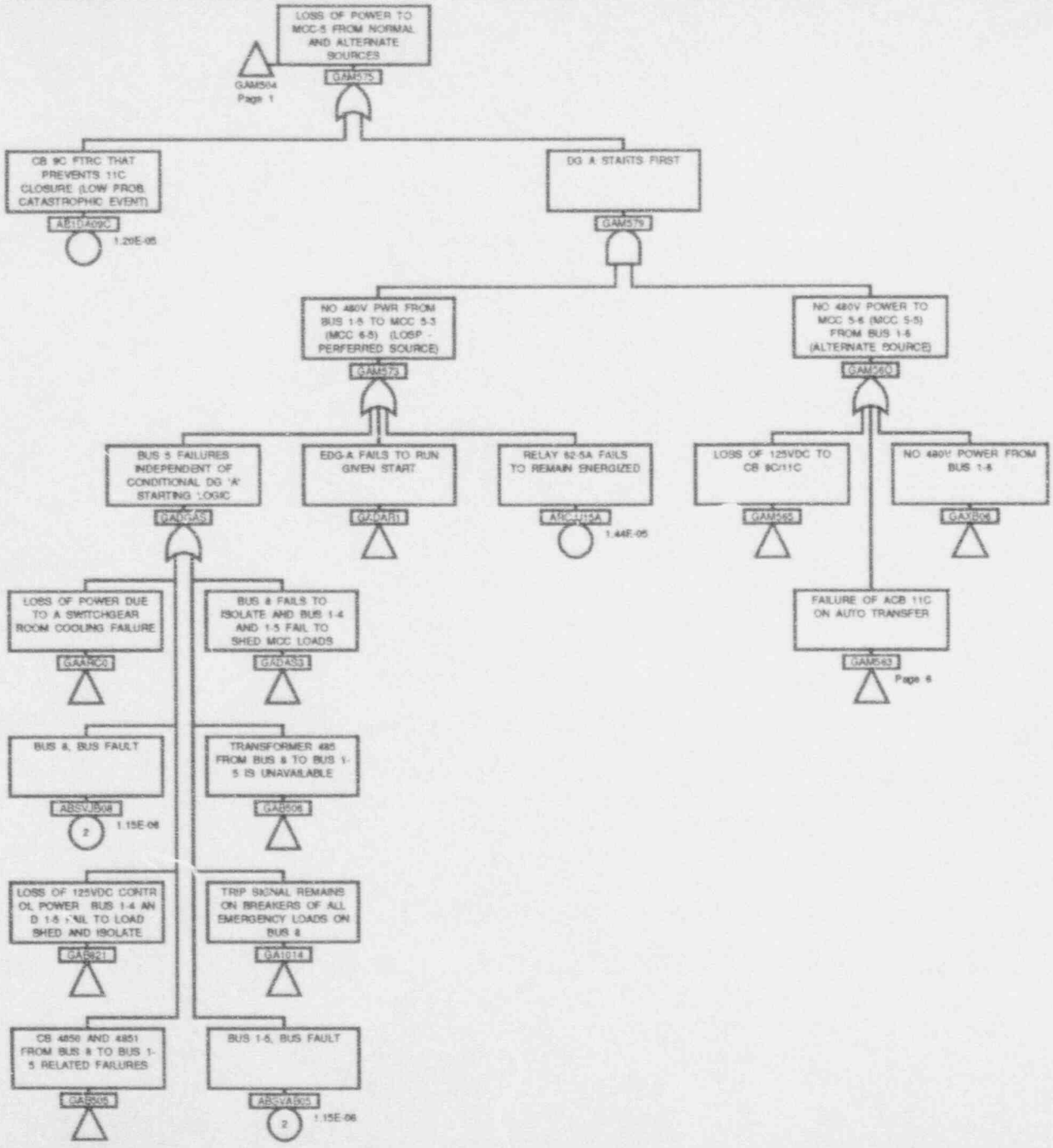

FAILURE OF ACB 9C
GIVEN LOP ON BUS 1-5
Page 5
GAMS62
RELAY 62-5A FAILS
TO DEENERGIZE
ARCMJ15A
6.00E-04
CONTACT PAIR 62-6A
2-6 FAILS TO CLOSE
ACPBK5A2
8.10E-04
CB 9C FAILS TO OPEN
(FAILURE RATE
ASSUMED SAME AS
CLOSE)
AB1BA09C
2.40E-03


FAILURE OF CB 11C
ON AUTO TRANSFER
GAM563
Page 5
BREAKER 9C CP 15-16
FAILS TO CLOSE UPON
BREAKER TRIP
ACPBK901
8.10E-04
CONTACT PAIR 62-5A
3-5 FAILS TO OPEN
ACPAK5A3
8.10E-04
CONTACT PAIR 62-6A
4-6 FAILS TO REMAIN
CLOSED
ACPDK6A4
3.00E-06
CONTACT PAIR 62-6A
2-6 FAILS TO REMAIN
OPEN
ACPCK6A2
1.72E-04
RELAY 62-6A FAILS
TO REMAIN ENERGIZED
ARCJK08A
1.44E-05
CB 11C FAILS TO
CLOSE
AB1BA11C
2.40E-03
RELAY 62-6A FAILS
TO ENERGIZE
ARCHK08A
6.00E-04
CB 11C FAILS TO
REMAIN CLOSED
AB1DA11C
1.20E-05

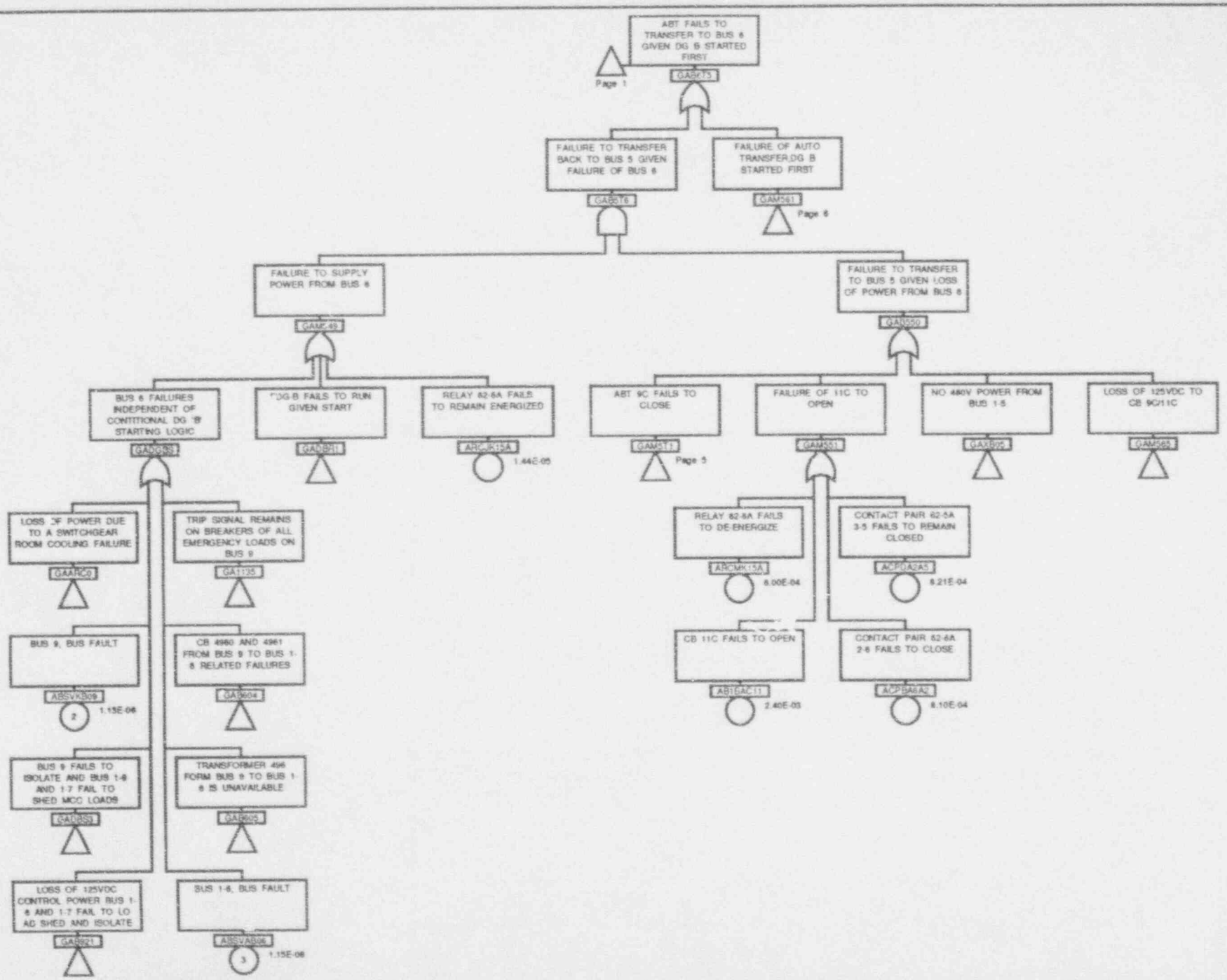


Proposed ABT Transfer Scheme for MCC-5	.\FTREE\NEWABT.CAF	4-26-94	Page 1

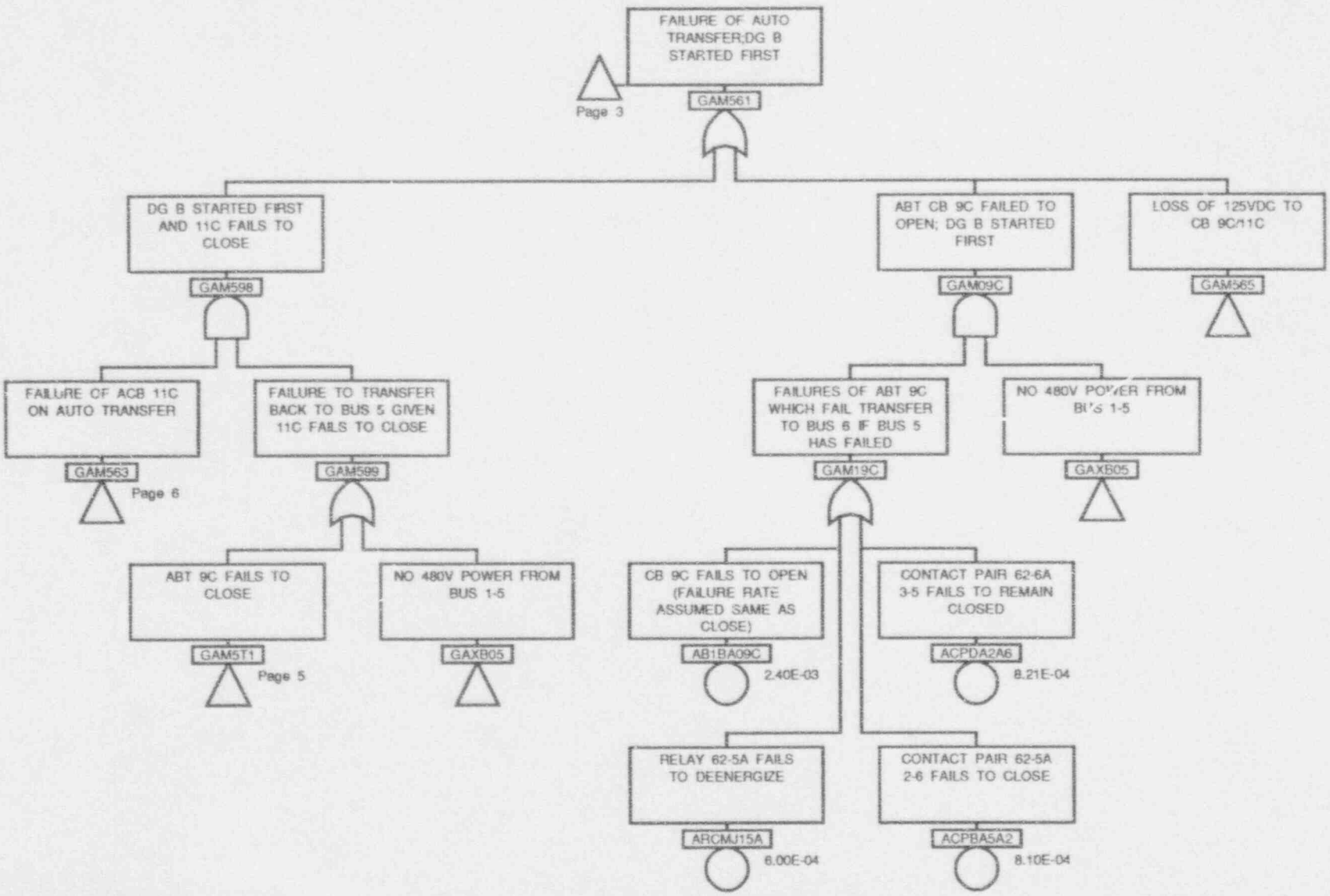
Appendix A.2 Rev. 1

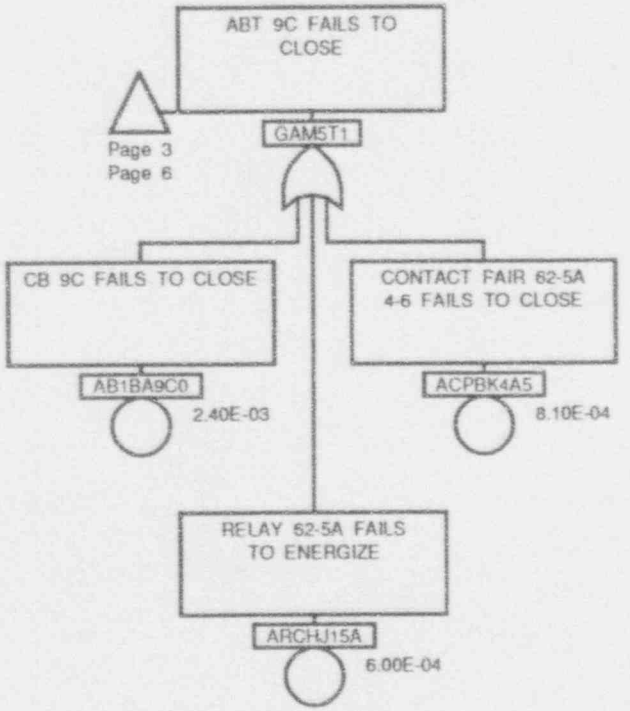


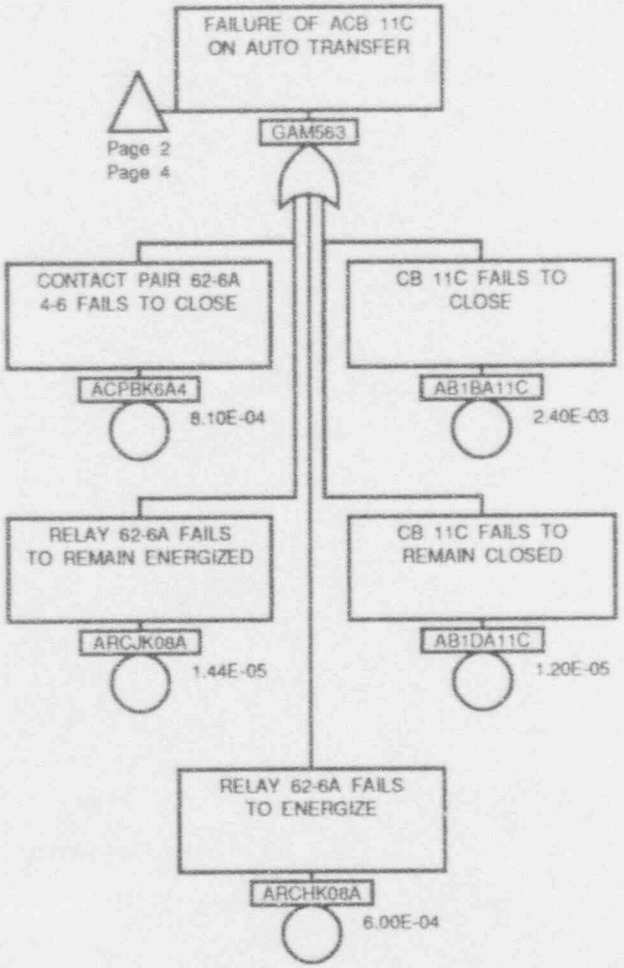
Proposed ABT Transfer Scheme for MCC-5	.\FTREE\NEWABT.CAF	4-26-94	Page 2



Proposed ABT Transfer Scheme for MCC-5	.\FTREE\NEWABT.CAF	4-26-94	Page 3


FAILURE OF AUTO TRANSFER;DG B STARTED FIRST
GAM561
Page 3
DG B STARTED FIRST AND 11C FAILS TO CLOSE
GAM598
ABT CB 9C FAILED TO OPEN; DG B STARTED FIRST
GAM09C
LOSS OF 125VDC TO CB 9C/11C
GAM565
FAILURE OF ACB 11C ON AUTO TRANSFER
GAM563
Page 6
FAILURE TO TRANSFER BACK TO BUS 5 GIVEN 11C FAILS TO CLOSE
GAM599
FAILURES OF ABT 9C WHICH FAIL TRANSFER TO BUS 6 IF BUS 5 HAS FAILED
GAM19C
NO 480V POWER FROM BUS 1-5
GAXB05
ABT 9C FAILS TO CLOSE
GAM5T1
Page 5
NO 480V POWER FROM BUS 1-5
GAXB05
CB 9C FAILS TO OPEN (FAILURE RATE ASSUMED SAME AS CLOSE)
AB1BA09C
2.40E-03
CONTACT PAIR 62-6A 3-5 FAILS TO REMAIN CLOSED
ACPDA2A6
8.21E-04
RELAY 62-5A FAILS TO DEENERGIZE
ARCMJ15A
6.00E-04
CONTACT PAIR 62-5A 2-6 FAILS TO CLOSE
ACPBA5A2
8.10E-04


ABT 9C FAILS TO CLOSE
GAM5T1
Page 3
Page 6
CB 9C FAILS TO CLOSE
AB1BA9C0
2.40E-03
CONTACT FAIR 62-5A 4-6 FAILS TO CLOSE
ACPBK4A5
8.10E-04
RELAY 62-5A FAILS TO ENERGIZE
ARCHJ15A
6.00E-04


FAILURE OF ACB 11C
ON AUTO TRANSFER
GAM563
Page 2
Page 4
CONTACT PAIR 62-6A
4-6 FAILS TO CLOSE
ACPBK6A4
8.10E-04
CB 11C FAILS TO
CLOSE
AB1BA11C
2.40E-03
RELAY 62-6A FAILS
TO REMAIN ENERGIZED
ARCJK08A
1.44E-05
CB 11C FAILS TO
REMAIN CLOSED
AB1DA11C
1.20E-05
RELAY 62-6A FAILS
TO ENERGIZE
ARCHK08A
6.00E-04

Appendix B

B.1 -------- OLDABT Basic Event Report
B.2 -------- NEWABT Basic Event Report

.\FTREE\OLDABT.CAF CAFTA Fault Tree Report 10-04-93 9:01 Page 1

Basic Event and Type Code Data:

	NAME	RATE	U	FACTOR	U	C	PROB	DESC
1	AB1BA09C	4.00E-4	N	6	N	1	2.40E-03	CB 9C FAILS TO OPEN (FAILURE RATE ASSUMED SAME AS CLOSE)
2	AB1BA11C	4.00E-4	N	6	N	1	2.40E-03	CB 11C FAILS TO CLOSE
3	AB1BA4T5	4.00E-4	N	6	N	1	2.40E-03	FAILURE OF TIE BREAKER 4T5 TO CLOSE
4	AB1BA841	4.00E-4	N	6	N	1	2.40E-03	CB 4841 FAILS TO OPEN (FAILURE ASSUMED SAME AS CLOSE) (UV OR LOSP)
5	AB1BA911	4.00E-4	N	1.0E-1			1.00E-01	9C FAILS TO CLOSE AFTER 11C OPENS, DG A STARTS AFTER DG B FAST TRANSFER
6	AB1BA971	4.00E-4	N	6	N	1	2.40E-03	CB 4971 FAILS TO OPEN (FAILURE ASSUMED SAME AS CLOSE) (UV OR LOSP)
7	AB1BA9C0	4.00E-4	N	6	N	1	2.40E-03	CB 9C FAILS TO CLOSE
8	AB1BAM23	4.00E-4	N	6	N	1	2.40E-03	CB 2C BETWEEN MCC 2-4, MCC 3-4 AND BUS 1-4 FAILS TO OPEN (FR SAME AS C
9	AB1BAM36	4.00E-4	N	6	N	1	2.40E-03	CB 17C BETWEEN MCC 3-7, MCC 6-7 AND BUS 1-7 FAILS TO OPEN (FR SAME AS C
10	AB1BAM44	4.00E-4	N	6	N	1	2.40E-03	CB 4C BETWEEN MCC 1-4, MCC 4-4 AND BUS 1-4 FAILS TO OPEN (FR SAME AS C
11	AB1BAM47	4.00E-4	N	6	N	1	2.40E-03	CB 16C BETWEEN MCC 4-7 MCC, 7-7 AND BUS 1-7 FAILS TO OPEN (FR SAME AS C
12	AB1BAM67	4.00E-4	N	6	N	1	2.40E-03	CB 14C BETWEEN MCC 6-6, MCC 7-6 AND BUS 1-6 FAILS TO OPEN (FR SAME AS C
13	AB1BAM68	4.00E-4	N	6	N	1	2.40E-03	CB 12D BETWEEN MCC 8-6 AND BUS 1-6 FAILS TO OPEN (FR SAME AS C
14	AB1BPM85	4.00E-4	N	6	N	1	2.40E-03	CB 8D BETWEEN MCC 8-5 AND BUS 1-5 FAILS TO OPEN (FR SAME AS C
15	AB1BXM25	4.00E-4	N	6	N	1	2.40E-03	CB 6C BETWEEN MCC 2-5, MCC 1-5 AND BUS 1-5 FAILS TO OPEN (FR SAME AS C
16	AB1DA09C	5.00E-7	H	1	D	1	1.20E-05	CB 9C FTRC THAT PREVENTS 11C CLOSURE (LOW PROB. CATASTROPHICEVENT)
17	AB1DA11C	5.00E-7	H	1	D	1	1.20E-05	CB 11C FAILS TO REMAIN CLOSED
18	AB1DA4T5	5.00E-7	H	1	D	1	1.20E-05	FAILURE OF TIE BREAKER 4T5 TO REMAIN CLOSED
19	AB1DAA02	5.00E-7	H	1	D	1	1.20E-05	MCC 5 BREAKER 2 FFL FAILS TO REMAIN CLOSED
20	AB1DAB02	5.00E-7	H	1	D	1	1.20E-05	MCC 5 BREAKER 8 RFL FAILS TO REMAIN CLOSED
21	AB1DAM13	5.00E-7	H	1	D	1	1.20E-05	BREAKER BETWEEN MCC 13-4 AND BUS 1-4 FAILS TO REMAIN CLOSED
22	AB1DAM66	5.00E-7	H	1	D	1	1.20E-05	BREAKER BETWEEN MCC 6-6 AND BUS 1-6 FAILS TO REMAIN CLOSED
23	AB1DAM76	5.00E-7	H	1	D	1	1.20E-05	COMMON BREAKER BETWEEN MCC 6-6, MCC 7-6 AND BUS 1-6 FAILS TO REMAIN CLOSE
24	AB1DCC56	5.00E-7	H	0.1	D	1	1.20E-06	CCF OF CB'S 4851 AND 4961 TO REMAIN CLOSED (SCREENING FA
25	AB1DJ102	5.00E-7	H	1	M	2	1.80E-04	LIGHTING PANEL LP-D1 CKT. #2 FAILS TO REMAIN CLOSED
26	AB1DJ110	5.00E-7	H	1	M	2	1.80E-04	LIGHTING PANEL LP-D1 CKT. #10 FAILS TO REMAIN CLOSED
27	AB1DJ851	5.00E-7	H	1	D	1	1.20E-05	FAILURE OF BREAKER 4851 TO REMAIN CLOSED
28	AB1DJA01	5.00E-7	H	1	M	2	1.80E-04	AC DIST. CABINET EMERG. GEN. 2A CKT. 3 FAILS TO REMAIN CLOSED
29	AB1DJD01	5.00E-7	H	1	M	2	1.80E-04	CB 1 EG FIELD FLASH FAILS TO REMAIN CLOSED
30	AB1DJD02	5.00E-7	H	1	M	2	1.80E-04	CB 2 GOVERNOR CONTROL FAILS TO REMAIN CLOSED
31	AB1DJD03	5.00E-7	H	1	M	2	1.80E-04	CB 3 ALTERNATE FAILS TO REMAIN CLOSED
32	AB1DJD04	5.00E-7	H	1	M	2	1.80E-04	CB 4 DIESEL STARTER 2A1 FAILS TO REMAIN CLOSED
33	AB1DJD05	5.00E-7	H	1	D	1	1.20E-05	CB 5 BUS 8 UV FAILS TO REMAIN CLOSED
34	AB1DJD06	5.00E-7	H	1	M	2	1.80E-04	CB 6 DIESEL STARTER 2A2 FAILS TO REMAIN CLOSED
35	AB1DK202	5.00E-7	H	1	D	1	1.20E-05	LIGHTING PANEL LP-D2 CKT. #2 FAILS TO REMAIN CLOSED
36	AB1DK210	5.00E-7	H	1	D	1	1.20E-05	LIGHTING PANEL LP-D2 CKT. #10 FAILS TO REMAIN CLOSED
37	AB1DK961	5.00E-7	H	1	D	1	1.20E-05	FAILURE OF BREAKER 4961 TO REMAIN CLOSED
38	AB1DKB01	5.00E-7	H	1	M	2	1.80E-04	AC DIST. CABINET EMERG. GEN. 2B CKT. 3 FAILS TO REMAIN CLOSED
39	AB1DKD01	5.00E-7	H	1	M	2	1.80E-04	CB 1 EG FIELD FLASH FAILS TO REMAIN CLOSED
40	AB1DKD02	5.00E-7	H	1	M	2	1.80E-04	CB 2 GOVERNOR CONTROL FAILS TO REMAIN CLOSED
41	AB1DKD03	5.00E-7	H	1	M	2	1.80E-04	CB 3 ALTERNATE FAILS TO REMAIN CLOSED
42	AB1DKD04	5.00E-7	H	1	M	2	1.80E-04	CB 4 DIESEL STARTER 2B1 FAILS TO REMAIN CLOSED
43	AB1DKD05	5.00E-7	H	1	D	1	1.20E-05	CB 5 BUS 9 UV FAILS TO REMAIN CLOSED
44	AB1DKD06	5.00E-7	H	1	M	2	1.80E-04	CB 6 DIESEL STARTER 2B2 FAILS TO REMAIN CLOSED
45	ABKAA2T8	1.58E-4	N	6	N	1	9.48E-04	BREAKER 2T8 FAILS TO OPEN
46	ABKAA3T9	1.58E-4	N	6	N	1	9.48E-04	BREAKER 3T9 FAILS TO OPEN
47	ABKAJ8T2	1.58E-4	N	6	N	1	9.48E-04	BREAKER 8T2 FAILS TO OPEN
48	ABKAK9T3	1.58E-4	N	6	N	1	9.48E-04	BREAKER 9T3 FAILS TO OPEN
49	ABKDA850	6.00E-7	H	1	D	1	1.44E-05	FAILURE OF BREAKER 4850 TO REMAIN CLOSED

Appendix B.1

Basic Event and Type Code Data:

	NAME	RATE	U	FACTOR	U	C	PROB	DESC
50	ABKDA960	6.00E-7	H	1	D	1	1.44E-05	FAILURE OF BREAKER 4960 TO REMAIN CLOSED
51	ABKDCC5S	6.00E-7	H	0.1	D	1	1.44E-06	CCF OF CB'S 4850 AND 4960 TO REMAIN CLOSED (SCREENING FA
52	ABSTJA02	3.83E-6	H	1	D	1	9.19E-05	FAULT ON LIGHTING PANEL LP-D1
53	ABSTJA03	3.83E-6	H	1	D	1	9.19E-05	FAULT ON AC DIST CABINET EMERG. GEN. 2A
54	ABSTKB02	3.83E-6	H	1	D	1	9.19E-05	FAULT ON LIGHTING PANEL LP-D2
55	ABSTKB03	3.83E-6	H	1	D	1	9.19E-05	FAULT ON AC DIST CABINET EMERG. GEN. 2B
56	ABSVAB04	4.80E-8	H	1	D	1	1.15E-06	BUS 1-4, BUS FAULT
57	ABSVAB05	4.80E-8	H	1	D	1	1.15E-06	BUS 1-5, BUS FAULT
58	ABSVAB06	4.80E-8	H	1	D	1	1.15E-06	BUS 1-6, BUS FAULT
59	ABSVAM05	4.80E-8	H	1	D	1	1.15E-06	MCC-5, BUS FAULT
60	ABSVAM13	4.80E-8	H	1	D	1	1.15E-06	MCC 13-4, BUS FAULT
61	ABSVAM66	4.80E-8	H	1	D	1	1.15E-06	MCC 6-6, BUS FAULT
62	ABSVCC56	4.80E-8	H	0.1	D	1	1.15E-07	CCF OF BUSES 1-5 AND 1-6 (SCREENING FA
63	ABSVCC89	4.80E-8	H	0.1	D	1	1.15E-07	CCF OF BUSES 8 AND 9 (SCREENING FA
64	ABSVJB08	4.80E-8	H	1	D	1	1.15E-06	BUS 8, BUS FAULT
65	ABSVKB09	4.80E-8	H	1	D	1	1.15E-06	BUS 9, BUS FAULT
66	ACPAI45T	1.35E-4	N	6	N	1	8.10E-04	CONTACT PAIR 1/BT4-5 A11-B11 FAILS TO OPEN
67	ACPAJA01	1.35E-4	N	1	N	1	1.35E-04	CONTACT PAIR 52MOC/EG2A M9-M10 FAILS TO OPEN
68	ACPAK5A2	1.35E-4	N	1	N	1	1.35E-04	CONTACT PAIR 62-5A 2-6 FAILS TO OPEN
69	ACPAK5A3	1.35E-4	N	6	N	1	8.10E-04	CONTACT PAIR 62-5A 3-5 FAILS TO OPEN
70	ACPAK5B4	1.35E-4	N	6	N	1	8.10E-04	CONTACT PAIR 62-5B 4-6 FAILS TO OPEN
71	ACPAKB01	1.35E-4	N	1	N	1	1.35E-04	CONTACT PAIR 52MOC/EG2B M9-M10 FAILS TO OPEN
72	ACPAX401	1.35E-4	N	6	N	1	8.10E-04	CONTACT PAIR 27-4 2-10 FAILS TO OPEN
73	ACPAX501	1.35E-4	N	6	N	1	8.10E-04	CONTACT PAIR 27-5 2-10 FAILS TO OPEN
74	ACPAX601	1.35E-4	N	6	N	1	8.10E-04	CONTACT PAIR 27-6 2-10 FAILS TO OPEN
75	ACPAX701	1.35E-4	N	6	N	1	8.10E-04	CONTACT PAIR 27-7 2-10 FAILS TO OPEN
76	ACPAXA02	1.35E-4	N	6	N	1	8.10E-04	40V CONTACT PAIR FAILS TO OPEN (FOLLOWING FIELD FLASH)
77	ACPAXB02	1.35E-4	N	1	N	1	1.35E-04	40V CONTACT PAIR FAILS TO OPEN (FOLLOWING FIELD FLASH)
78	ACPBI83C	1.35E-4	N	6	N	1	8.10E-04	CONTACT PAIR 27Y/1-8 3-3C FAIL TO CLOSE
79	ACPBI93C	1.35E-4	N	6	N	1	8.10E-04	CONTACT PAIR 27Y/1-9 3-3C FAIL TO CLOSE
80	ACPBIA13	1.35E-4	N	6	N	1	8.10E-04	CONTACT PAIR 27Y/1-8 6-6C FAILS TO CLOSE
81	ACPBIA14	1.35E-4	N	6	N	1	8.10E-04	CONTACT PAIR 59A/1-8 1-10 FAILS TO CLOSE
82	ACPBIA15	1.35E-4	N	68	N	1	9.18E-03	CONTACT PAIR 59B/1-8 1-10 FAILS TO CLOSE
83	ACPBIA16	1.35E-4	N	68	N	1	9.18E-03	CONTACT PAIR 1-EG2AA A1-B1 FAILS TO CLOSE
84	ACPBIA17	1.35E-4	N	68	N	1	9.18E-03	25 CVE 1 V1 BUS CONTACT PAIR FAILS TO CLOSE
85	ACPBIA18	1.35E-4	N	68	N	1	9.18E-03	CONTACT PAIR 25-EG2AA A5-B5 FAILS TO CLOSE
86	ACPBIA19	1.35E-4	N	68	N	1	9.18E-03	25 CVE 1 V1 LINE CONTACT PAIR FAILS TO CLOSE
87	ACPBIA20	1.35E-4	N	68	N	1	9.18E-03	CONTACT PAIR FSR1 J-K FAILS TO CLOSE
88	ACPBIA21	1.35E-4	N	1	N	1	1.35E-04	CONTACT PAIR FSR2 J-K FAILS TO CLOSE
89	ACPBIA22	1.35E-4	N	68	N	1	9.18E-03	CONTACT PAIR VSR1 E-F FAILS TO CLOSE
90	ACPBIA23	1.35E-4	N	68	N	1	9.18E-03	CONTACT PAIR SSP1 18-19 FAILS TO CLOSE
91	ACPBIA24	1.35E-4	N	1	N	1	1.35E-04	CONTACT PAIR VSR2 E-F FAILS TO CLOSE
92	ACPBIA25	1.35E-4	N	1	N	1	1.35E-04	CONTACT PAIR SSP2 18-19 FAILS TO CLOSE
93	ACPBIB13	1.35E-4	N	1	N	1	1.35E-04	CONTACT PAIR 27Y/1-9 6-6C FAILS TO CLOSE
94	ACPBIB14	1.35E-4	N	1	N	1	1.35E-04	CONTACT PAIR 59A/1-9 1-10 FAILS TO CLOSE
95	ACPBIB15	1.35E-4	N	6	N	1	8.10E-04	CONTACT PAIR 59B/1-9 1-10 FAILS TO CLOSE
96	ACPBIB16	1.35E-4	N	6	N	1	8.10E-04	CONTACT PAIR 1-EG2BA A1-B1 FAILS TO CLOSE
97	ACPBIB17	1.35E-4	N	6	N	1	8.10E-04	25 CVE 1 V1 BUS CONTACT PAIR FAILS TO CLOSE
98	ACPBIB18	1.35E-4	N	6	N	1	8.10E-04	CONTACT PAIR 25-EG2BA A5-B5 FAILS TO CLOSE

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Basic Event and Type Code Data:

	NAME	RATE	U	FACTOR	U	C	PROB	DESC
99	ACPBIB19	1.35E-4	N	6	N	1	8.10E-04	25 CVE 1 V1 LINE CONTACT PAIR FAILS TO CLOSE
100	ACPBIB22	1.35E-4	N	6	N	1	8.10E-04	CONTACT PAIR VSR1 E-F FAILS TO CLOSE
101	ACPBIB23	1.35E-4	N	6	N	1	8.10E-04	CONTACT PAIR SSP1 18-19 FAILS TO CLOSE
102	ACPBIB24	1.35E-4	N	1	N	1	1.35E-04	CONTACT PAIR VSR2 E-F FAILS TO CLOSE
103	ACPBIB25	1.35E-4	N	1	N	1	1.35E-04	CONTACT PAIR SSP2 18-19 FAILS TO CLOSE
104	ACPBIY85	1.35E-4	N	1	N	1	1.35E-04	CONTACT PAIR 27Y/1-8 5-5C FAIL TO CLOSE
105	ACPBJA02	1.35E-4	N	1	N	1	1.35E-04	CONTACT PAIR 27Y/1-8 1-1C FAILS TO CLOSE
106	ACPBJA03	1.35E-4	N	1	N	1	1.35E-04	CONTACT PAIR 27X/1-8 2-5 FAILS TO CLOSE
107	ACPBJA04	1.35E-4	N	1	N	1	1.35E-04	CONTACT PAIR 27AX/1-8 1-2 FAILS TO CLOSE
108	ACPBJA05	1.35E-4	N	1	N	1	1.35E-04	CONTACT PAIR 27A/1-8 2-10 FAILS TO CLOSE
109	ACPBJA06	1.35E-4	N	1	N	1	1.35E-04	CONTACT PAIR 27BX/1-8 3-4 FAILS TO CLOSE
110	ACPBJA07	1.35E-4	N	1	N	1	1.35E-04	CONTACT PAIR 27B/1-8 2-10 FAILS TO CLOSE
111	ACPBJA08	1.35E-4	N	1	N	1	1.35E-04	CONTACT PAIR 27CX/1-8 1-2 FAILS TO CLOSE
112	ACPBJA09	1.35E-4	N	1	N	1	1.35E-04	CONTACT PAIR 27C/1-8 2-10 FAILS TO CLOSE
113	ACPBJA10	1.35E-4	N	1	N	1	1.35E-04	CONTACT PAIR 27AX/1-8 3-4 FAILS TO CLOSE
114	ACPBJA11	1.35E-4	N	1	N	1	1.35E-04	CONTACT PAIR 27BX/1-8 1-2 FAILS TO CLOSE
115	ACPBJA12	1.35E-4	N	1	N	1	1.35E-04	CONTACT PAIR 27CX/1-8 3-4 FAILS TO CLOSE
116	ACPBK5A2	1.35E-4	N	6	N	1	8.10E-04	CONTACT PAIR 62-6A 2-6 FAILS TO CLOSE
117	ACPBK5B4	1.35E-4	N	1	N	1	1.35E-04	CONTACT PAIR 62-5B 4-6 FAILS TO CLOSE
118	ACPBK901	1.35E-4	N	6	N	1	8.10E-04	BREAKER 9C CP 15-16 FAILS TO CLOSE UPON BREAKER TRIP
119	ACPBKB02	1.35E-4	N	1	N	1	1.35E-04	CONTACT PAIR 27Y/1-9 1-1C FAILS TO CLOSE
120	ACPBKB03	1.35E-4	N	1	N	1	1.35E-04	CONTACT PAIR 27X/1-9 2-5 FAILS TO CLOSE
121	ACPBKB04	1.35E-4	N	1	N	1	1.35E-04	CONTACT PAIR 27AX/1-9 1-2 FAILS TO CLOSE
122	ACPBKB05	1.35E-4	N	1	N	1	1.35E-04	CONTACT PAIR 27A/1-9 2-10 FAILS TO CLOSE
123	ACPBKB06	1.35E-4	N	1	N	1	1.35E-04	CONTACT PAIR 27BX/1-9 3-4 FAILS TO CLOSE
124	ACPBKB07	1.35E-4	N	1	N	1	1.35E-04	CONTACT PAIR 27B/1-9 2-10 FAILS TO CLOSE
125	ACPBKB08	1.35E-4	N	1	N	1	1.35E-04	CONTACT PAIR 27CX/1-9 1-2 FAILS TO CLOSE
126	ACPBKB09	1.35E-4	N	1	N	1	1.35E-04	CONTACT PAIR 27C/1-9 2-10 FAILS TO CLOSE
127	ACPBKB10	1.35E-4	N	1	N	1	1.35E-04	CONTACT PAIR 27AX/1-9 3-4 FAILS TO CLOSE
128	ACPBKB11	1.35E-4	N	1	N	1	1.35E-04	CONTACT PAIR 27BX/1-9 1-2 FAILS TO CLOSE
129	ACPBKB12	1.35E-4	N	1	N	1	1.35E-04	CONTACT PAIR 27CX/1-9 3-4 FAILS TO CLOSE
130	ACPBX42C	1.35E-4	N	6	N	1	8.10E-04	CONTACT PAIR 27Y-4 2-2C FAILS TO CLOSE
131	ACPBX47C	1.35E-4	N	6	N	1	8.10E-04	CONTACT PAIR 27Y-4 7-7C FAILS TO CLOSE
132	ACPBX513	1.35E-4	N	6	N	1	8.10E-04	CONTACT PAIR 27X-5 9-13 FAILS TO CLOSE
133	ACPBX52C	1.35E-4	N	6	N	1	8.10E-04	CONTACT PAIR 27Y-5 2-2C FAILS TO CLOSE
134	ACPBX613	1.35E-4	N	6	N	1	8.10E-04	CONTACT PAIR 27X-6 9-13 FAILS TO CLOSE
135	ACPBX65C	1.35E-4	N	6	N	1	8.10E-04	CONTACT PAIR 27Y-6 5-5C FAILS TO CLOSE
136	ACPBX72C	1.35E-4	N	6	N	1	8.10E-04	CONTACT PAIR 27Y-7 2-2C FAILS TO CLOSE
137	ACPBX74C	1.35E-4	N	6	N	1	8.10E-04	CONTACT PAIR 27Y-7 4-4C FAILS TO CLOSE
138	ACPBX801	1.35E-4	N	6	N	1	8.10E-04	CONTACT PAIR 27Y2/1-8 1-7 FAIL TO CLOSE
139	ACPBX802	1.35E-4	N	6	N	1	8.10E-04	CONTACT PAIR 27Y2/1-8 3-6 FAIL TO CLOSE
140	ACPBX901	1.35E-4	N	6	N	1	8.10E-04	CONTACT PAIR 27Y2/1-9 1,7 FAIL TO CLOSE
141	ACPBX902	1.35E-4	N	6	N	1	8.10E-04	CONTACT PAIR 27Y2/1-9 3,6 FAIL TO CLOSE
142	ACPBXX41	1.35E-4	N	6	N	1	8.10E-04	CONTACT PAIR 27X-4 9-13 FAILS TO CLOSE
143	ACPBXX51	1.35E-4	N	6	N	1	8.10E-04	CONTACT PAIR 27X-5 9-13 FAILS TO CLOSE
144	ACPBXX61	1.35E-4	N	6	N	1	8.10E-04	CONTACT PAIR 27X-6 9-13 FAILS TO CLOSE
145	ACPBXX71	1.35E-4	N	6	N	1	8.10E-04	CONTACT PAIR 27X-7 9-13 FAILS TO CLOSE
146	ACPCA625	2.66E-8	H	1	D	1	6.38E-07	CONTACT PAIR 62-5A 2-6 FAILS TO REMAIN OPEN
147	ACPCA851	2.66E-8	H	1	D	2	3.19E-07	CONTACT PAIR 1/SS5 A11-B11 FAILS TO REMAIN OPEN

Basic Event and Type Code Data:

	NAME	RATE	U	FACTOR	U	C	PROB	DESC
148	ACPCI45V	2.66E-8	H	1	D	1	6.38E-07	CONTACT PAIR 1/BT4-5 A11-B11 FAILS TO REMAIN OPEN
149	ACPCI850	2.66E-8	H	1	D	2	3.19E-07	CONTACT PAIR 1/SS15 A11-B11 FAILS TO REMAIN OPEN
150	ACPCI960	2.66E-8	H	1	D	2	3.19E-07	CONTACT PAIR 1/SS16 A11-B11 FAILS TO REMAIN OPEN
151	ACPCI961	2.66E-8	H	1	D	2	3.19E-07	CONTACT PAIR 1/SS6 A11-B11 FAILS TO REMAIN OPEN
152	ACPCK43S	2.66E-8	H	1	D	1	6.38E-07	CONTACT PAIR SS43 A11-B11 FAILS TO REMAIN OPEN
153	ACPCK6A2	2.66E-8	H	18	M	2	1.72E-04	CONTACT PAIR 62-6A 2-6 FAILS TO REMAIN OPEN
154	ACPCX161	2.66E-8	H	1	D	1	6.38E-07	CONTACT PAIR 27X1-6 3-7 FAILS TO REMAIN OPEN
155	ACPCX601	2.66E-8	H	1	D	1	6.38E-07	CONTACT PAIR 27-6 2-10 FAILS TO REMAIN OPEN
156	ACPCXL91	2.66E-8	H	1	D	1	6.38E-07	CONTACT PAIR 94LS/1-9 9-10 FAILS TO REMAIN OPEN
157	ACPCXY61	2.66E-8	H	1	D	1	6.38E-07	CONTACT PAIR 27Y-6 5-5C FAILS TO REMAIN OPEN
158	ACPDIA05	1.25E-7	H	18	M	2	8.10E-04	CONTACT PAIR 1-EG2AA C12-D12 FAILS TO REMAIN CLOSED
159	ACPDIA06	1.25E-7	H	18	M	2	8.10E-04	CONTACT PAIR NFLDA A-C FAILS TO REMAIN CLOSED
160	ACPDIA07	1.25E-7	H	18	M	2	8.10E-04	CONTACT PAIR OTR L-M FAILS TO REMAIN CLOSED
161	ACPDIB05	1.25E-7	H	18	M	2	8.10E-04	CONTACT PAIR 1-EG2BA C12-D12 FAILS TO REMAIN CLOSED
162	ACPDIB06	1.25E-7	H	18	M	2	8.10E-04	CONTACT PAIR NFLDA A-C FAILS TO REMAIN CLOSED
163	ACPDIB07	1.25E-7	H	18	M	2	8.10E-04	CONTACT PAIR OTR L-M FAILS TO REMAIN CLOSED
164	ACPDJA02	1.25E-7	H	18	M	2	8.10E-04	AUX CONTACT PAIR 4/EG2A 14 FAILS TO REMAIN CLOSED
165	ACPDJA03	1.25E-7	H	18	M	2	8.10E-04	AUX CONTACT PAIR 27Y/1-8 17 FAILS TO REMAIN CLOSED
166	ACPDJA04	1.25E-7	H	18	M	2	8.10E-04	AUX CONTACT PAIR 27Y/1-8 18 FAILS TO REMAIN CLOSED
167	ACPDK11C	1.25E-7	H	1	D	1	3.00E-06	CONTACT PAIR 15-16 FOR 11C CELL SWITCH FAILS TO REMAIN CLOSED
168	ACPDK6A4	1.25E-7	H	1	D	1	3.00E-06	CONTACT PAIR 62-6A 4-6 FAILS TO REMAIN CLOSED
169	ACPDKB02	1.25E-7	H	18	M	2	8.10E-04	AUX CONTACT PAIR 4/EG2B 14 FAILS TO REMAIN CLOSED
170	ACPDKB03	1.25E-7	H	18	M	2	8.10E-04	AUX CONTACT PAIR 27Y/1-9 17 FAILS TO REMAIN CLOSED
171	ACPDKB04	1.25E-7	H	18	M	2	8.10E-04	AUX CONTACT PAIR 27Y/1-9 18 FAILS TO REMAIN CLOSED
172	ACVAJ64A	2.00E-4	N	1	N	1	2.00E-04	FAN F-64-1A EXHAUST DAMPER FAILS TO OPEN
173	ACVAK64B	2.00E-4	N	1	N	1	2.00E-04	FAN F-64-1B EXHAUST DAMPER FAILS TO OPEN
174	ADGACPSF			.5			5.00E-01	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST
175	ADGBCPSF			.5			5.00E-01	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST
176	ADGCCOOL			6.70E-04			6.70E-04	COMMON CAUSE FAILURE OR EDG ROOM COOLING
177	ADGECCAB	2.80E-3	N	0.038	N	1	1.06E-04	CCF OF EDG'S '2A' AND '2B' TO START
178	ADGEJ02A	2.80E-3	N	1	N	1	2.80E-03	DIESEL 2A FAILS TO START
179	ADGEK02B	2.80E-3	N	1	N	1	2.80E-03	DIESEL 2B FAILS TO START
180	ADGFCCAB	1.10E-3	H	0.068	D	1	1.80E-03	CCF OF EDG'S '2A' AND '2B' TO RUN
181	ADGFJ02A	1.10E-3	H	1	D	1	2.64E-02	EDG '2A' FAILS TO RUN GIVEN START
182	ADGFK02B	1.10E-3	H	1	D	1	2.64E-02	EDG '2B' FAILS TO RUN GIVEN START
183	ADGPZA01			0.013			1.30E-02	OPERATOR FAILS TO ATTEMPT DIESEL RECOVERY
184	ADGQJ02A	1.00E-2	N	1	N	1	1.00E-02	EMERGENCY DESIEL GENERATOR '2A' OOS FOR MAINT.
185	ADGQK02B	1.00E-2	N	1	N	1	1.00E-02	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.
186	AFNECCRA	6.00E-4	N	.1	N	1	6.00E-05	CCF OF SWGR ROOM 'A' INTAKE/EXHAUST FANS TO START AFTER LOSP (SCREENING
187	AFNEJ64A	6.00E-4	N	1	N	1	6.00E-04	FAN F-64-1A FAILS TO START
188	AFNEK64B	6.00E-4	N	1	N	1	6.00E-04	FAN F-64-1B FAILS TO START
189	AFNFA41A	1.00E-5	H	8	H	1	8.00E-05	'A' SWITCHGEAR ROOM EXHAUST FAN FAILS TO RUN
190	AFNFA61A	1.00E-5	H	8	H	1	8.00E-05	'A' SWITCHGEAR ROOM INTAKE FAN FAILS TO RUN
191	AFNFCCRA	1.00E-5	H	.8	H	1	8.00E-06	CCF SWGR 'A' ROOM INTAKE/EXHAUST FANS FAIL TO RUN (SCREENING V
192	AFNFJ64A	1.00E-5	H	1	D	1	2.40E-04	FAN F-64-1A FAILS TO RUN
193	AFNFK64B	1.00E-5	H	1	D	1	2.40E-04	FAN F-64-1B FAILS TO RUN
194	AMVAJ64A	4.00E-3	N	1	N	1	4.00E-03	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN
195	AMVAK64B	4.00E-3	N	1	N	1	4.00E-03	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN
196	AMVQJ64A	9.04E-4	N	1	N	1	9.04E-04	MOTOR OPERATED INTAKE DAMPER OOS FOR MAINT.

Basic Event and Type Code Data:

	NAME	RATE	U	FACTOR	U	C	PROB	DESC
197	AMVQK64B	9.04E-4	N	1	N	1	9.04E-04	MOTOR OPERATED INTAKE DAMPER OOS FOR MAINT.
198	ARCHJ15A	1.00E-4	N	6	N	1	6.00E-04	RELAY 62-5A FAILS TO ENERGIZE
199	ARCHJA03	1.00E-4	N	6	N	1	6.00E-04	RELAY 4/EG2A FAILS TO ENERGIZE
200	ARCHJA04	1.00E-4	N	6	N	1	6.00E-04	RELAY 27Y/1-8 FAILS TO ENERGIZE
201	ARCHJA05	1.00E-4	N	6	N	1	6.00E-04	RELAY 27X/1-8 FAILS TO ENERGIZE
202	ARCHJA06	1.00E-4	N	6	N	1	6.00E-04	RELAY 27AX/1-8 FAILS TO ENERGIZE
203	ARCHJA08	1.00E-4	N	6	N	1	6.00E-04	RELAY 27BX/1-8 FAILS TO ENERGIZE
204	ARCHJA10	1.00E-4	N	6	N	1	6.00E-04	RELAY 27CX/1-8 FAILS TO ENERGIZE
205	ARCHJA21	1.00E-4	N	6	N	1	6.00E-04	RELAY 27Y2/1-8 FAILS TO ENERGIZE
206	ARCHK08A	1.00E-4	N	6	N	1	6.00E-04	RELAY 62-6A FAILS TO ENERGIZE
207	ARCHKB03	1.00E-4	N	6	N	1	6.00E-04	RELAY 4/EG2B FAILS TO ENERGIZE
208	ARCHKB04	1.00E-4	N	6	N	1	6.00E-04	RELAY 27Y/1-9 FAILS TO ENERGIZE
209	ARCHKB05	1.00E-4	N	6	N	1	6.00E-04	RELAY 27X/1-9 FAILS TO ENERGIZE
210	ARCHKB06	1.00E-4	N	6	N	1	6.00E-04	RELAY 27AX/1-9 FAILS TO ENERGIZE
211	ARCHKB08	1.00E-4	N	6	N	1	6.00E-04	RELAY 27BX/1-9 FAILS TO ENERGIZE
212	ARCHKB10	1.00E-4	N	6	N	1	6.00E-04	RELAY 27CX/1-9 FAILS TO ENERGIZE
213	ARCHKB21	1.00E-4	N	6	N	1	6.00E-04	RELAY 27Y2/1-9 FAILS TO ENERGIZE
214	ARCHX7Y4	1.00E-4	N	6	N	1	6.00E-04	RELAY 27Y-4 FAILS TO ENERGIZE
215	ARCHX7Y5	1.00E-4	N	6	N	1	6.00E-04	RELAY 27Y-5 FAILS TO ENERGIZE
216	ARCHX7Y6	1.00E-4	N	6	N	1	6.00E-04	RELAY 27Y-6 FAILS TO ENERGIZE
217	ARCHX7Y7	1.00E-4	N	6	N	1	6.00E-04	RELAY 27Y-7 FAILS TO ENERGIZE
218	ARCHXA12	1.00E-4	N	1	N	1	1.00E-04	RELAY 40V FAILS TO ENERGIZE (FOLLOWING FIELD FLASH)
219	ARCHXA13	1.00E-4	N	1	N	1	1.00E-04	RELAY 59A/1-8 FAILS TO ENERGIZE
220	ARCHXA14	1.00E-4	N	68	N	1	6.80E-03	RELAY 59B/1-8 FAILS TO ENERGIZE
221	ARCHXA16	1.00E-4	N	68	N	1	6.80E-03	25 CVE 1 V1 LINE RELAY FAILS TO ENERGIZE
222	ARCHXA17	1.00E-4	N	68	N	1	6.80E-03	RELAY VSR1 FAILS TO ENERGIZE
223	ARCHXA18	1.00E-4	N	68	N	1	6.80E-03	RELAY SSP1 VS FAILS TO ENERGIZE
224	ARCHXA19	1.00E-4	N	1	N	1	1.00E-04	RELAY VSR2 FAILS TO ENERGIZE
225	ARCHXA20	1.00E-4	N	1	N	1	1.00E-04	RELAY SSP2 VS FAILS TO ENERGIZE
226	ARCHXA23	1.00E-4	N	1	N	1	1.00E-04	RELAY FSR1 FAILS TO ENERGIZE (EDG-2A)
227	ARCHXA24	1.00E-4	N	1	N	1	1.00E-04	RELAY FSR2 FAILS TO ENERGIZE (EDG-2A)
228	ARCHXB12	1.00E-4	N	1	N	1	1.00E-04	RELAY 40V FAILS TO ENERGIZE (FOLLOWING FIELD FLASH)
229	ARCHXB13	1.00E-4	N	1	N	1	1.00E-04	RELAY 59A/1-9 FAILS TO ENERGIZE
230	ARCHXB14	1.00E-4	N	68	N	1	6.80E-03	RELAY 59B/1-9 FAILS TO ENERGIZE
231	ARCHXB16	1.00E-4	N	68	N	1	6.80E-03	25 CVE 1 V1 LINE RELAY FAILS TO ENERGIZE
232	ARCHXB17	1.00E-4	N	68	N	1	6.80E-03	RELAY VSR1 FAILS TO ENERGIZE
233	ARCHXB18	1.00E-4	N	68	N	1	6.80E-03	RELAY SSP1 VS FAILS TO ENERGIZE
234	ARCHXB19	1.00E-4	N	1	N	1	1.00E-04	RELAY VSR2 FAILS TO ENERGIZE
235	ARCHXB20	1.00E-4	N	1	N	1	1.00E-04	RELAY SSP2 VS FAILS TO ENERGIZE
236	ARCJJ15A	6.00E-7	H	1	D	1	1.44E-05	RELAY 62-5A FAILS TO REMAIN ENERGIZED
237	ARCJJ15B	6.00E-7	H	1	D	1	1.44E-05	RELAY 62-5B FAILS TO REMAIN ENERGIZED
238	ARCJK08A	6.00E-7	H	1	D	1	1.44E-05	RELAY 62-6A FAILS TO REMAIN ENERGIZED
239	ARCJX276	6.00E-7	H	1	D	1	1.44E-05	RELAY 27-6 FAILS TO REMAIN ENERGIZED
240	ARCMJ15A	1.00E-4	N	6	N	1	6.00E-04	RELAY 62-5A FAILS TO DEENERGIZE
241	ARCMJA01	1.00E-4	N	6	N	1	6.00E-04	RELAY 27Y1/1-8 FAILS TO DEENERGIZE
242	ARCMK15B	1.00E-4	N	6	N	1	6.00E-04	RELAY 62-5B FAILS TO DEENERGIZE
243	ARCMKB01	1.00E-4	N	6	N	1	6.00E-04	RELAY 27Y1/1-9 FAILS TO DEENERGIZE
244	ARCMX274	1.00E-4	N	6	N	1	6.00E-04	RELAY 27-4 FAILS TO DE-ENERGIZE
245	ARCMX275	1.00E-4	N	6	N	1	6.00E-04	RELAY 27-5 FAILS TO DE-ENERGIZE

Basic Event and Type Code Data:

	NAME	RATE	U	FACTOR	U	C	PROB	DESC
246	ARCMX276	1.00E-4	N	6	N	1	6.00E-04	RELAY 27-6 FAILS TO DE-ENERGIZE
247	ARCMX277	1.00E-4	N	6	N	1	6.00E-04	RELAY 27-7 FAILS TO DE-ENERGIZE
248	ARCMX7X4	1.00E-4	N	6	N	1	6.00E-04	RELAY 27X-4 FAILS TO DEENERGIZE
249	ARCMX7X5	1.00E-4	N	6	N	1	6.00E-04	RELAY 27X-5 FAILS TO DE-ENERGIZE
250	ARCMX7X6	1.00E-4	N	6	N	1	6.00E-04	RELAY 27X-6 FAILS TO DE-ENERGIZE
251	ARCMX7X7	1.00E-4	N	6	N	1	6.00E-04	RELAY 27X-7 FAILS TO DE-ENERGIZE
252	ARCMXA07	1.00E-4	N	1	N	1	1.00E-04	RELAY 27A/1-8 FAILS TO DEENERGIZE
253	ARCMXA09	1.00E-4	N	1	N	1	1.00E-04	RELAY 27B/1-8 FAILS TO DEENERGIZE
254	ARCMXA11	1.00E-4	N	1	N	1	1.00E-04	RELAY 27C/1-8 FAILS TO DEENERGIZE
255	ARCMXA15	1.00E-4	N	6	N	1	6.00E-04	25 CVE 1 V1 BUS RELAY FAILS TO DEENERGIZE
256	ARCMXB07	1.00E-4	N	1	N	1	1.00E-04	RELAY 27A/1-9 FAILS TO DEENERGIZE
257	ARCMXB09	1.00E-4	N	1	N	1	1.00E-04	RELAY 27B/1-9 FAILS TO DEENERGIZE
258	ARCMXB11	1.00E-4	N	1	N	1	1.00E-04	RELAY 27C/1-9 FAILS TO DEENERGIZE
259	ARCMXB15	1.00E-4	N	6	N	1	6.00E-04	25 CVE 1 V1 BUS RELAY FAILS TO DEENERGIZE
260	ASWGJA01	2.66E-5	N	1	N	1	2.66E-05	SWITCH 1-EG2AA FAILS TO OPERATE
261	ASWGJA02	2.66E-5	N	1	N	1	2.66E-05	SWITCH 25-EG2AA FAILS TO OPERATE
262	ASWGJA11	2.66E-5	N	1	N	1	2.66E-05	EDG '2A' START PUSHBUTTON FAILS TO OPERATE
263	ASWGJA12	2.66E-5	N	1	N	1	2.66E-05	EDG '2A' FIELD FLASH PUSHBUTTON FAILS TO OPERATE
264	ASWGKB01	2.66E-5	N	1	N	1	2.66E-05	SWITCH 1-EG2BA FAILS TO OPERATE
265	ASWGKB02	2.66E-5	N	1	N	1	2.66E-05	SWITCH 25-EG2BA FAILS TO OPERATE
266	ASWGKB11	2.66E-5	N	1	N	1	2.66E-05	EDG '2B' START PUSHBUTTON FAILS TO OPERATE
267	ASWGKB12	2.66E-5	N	1	N	1	2.66E-05	EDG '2B' FIELD FLASH PUSHBUTTON FAILS TO OPERATE
268	AT1QJA01	2.20E-6	N	1	N	1	2.20E-06	480-120/240V TRANSFORMER FEEDING LP-D1 OOS FOR MAINT.
269	AT1QKB01	2.20E-6	N	1	N	1	2.20E-06	480-120/240V TRANSFORMER FEEDING LP-D2 OOS FOR MAINT.
270	AT1TJA01	8.00E-7	H	1	D	1	1.92E-05	TRANSFORMER FEEDING LP-D1 FAILS
271	AT1TKB01	8.00E-7	H	1	D	1	1.92E-05	TRANSFORMER FEEDING LP-D2 FAILS
272	ATRQJ485	2.21E-4	N	1	N	1	2.21E-04	4160/480V TRANSFORMER (485) OOS FOR MAINT.
273	ATRQK496	2.21E-4	N	1	N	1	2.21E-04	4160/480V TRANSFORMER (496) OOS FOR MAINT.
274	ATRTCC56	7.00E-7	H	0.1	D	1	1.68E-06	CCF OF TRANSFORMERS 485 AND 496 (SCREENING FA
275	ATRTJ485	7.00E-7	H	1	D	1	1.68E-05	4160/480V TRANSFORMER (485) FAILS TO OPERATE
276	ATRTK496	7.00E-7	H	1	D	1	1.68E-05	4160/480V TRANSFORMER (496) FAILS TO OPERATE
277	DB1DA016	5.00E-7	H	1	D	1	1.20E-05	BREAKER BETWEEN 125VDC BUS BX (CKT 16) AND PANEL B FAILS TO REMAIN CLOSE
278	DB1DA018	5.00E-7	H	1	D	1	1.20E-05	BREAKER BETWEEN 125VDC BUS A (CKT 18) AND PANEL A FAILS TO REMAIN CLOSED
279	DB1DA022	5.00E-7	H	1	D	1	1.20E-05	BREAKER BETWEEN 125VDC BUS A (CKT 22) AND CAB. EGG2A FAILS TO REMAIN CLO
280	DB1DAA07	5.00E-7	H	1	D	1	1.20E-05	CB 7 OFF OF DC BUS A FAILS TO REMAIN CLOSED
281	DB1DAA14	5.00E-7	H	1	D	1	1.20E-05	BREAKER OFF 125VDC DIST. PANEL A (CKT A14) FAILS TO REMAIN CLOSED
282	DB1DAA15	5.00E-7	H	1	D	1	1.20E-05	CB 15 OFF OF DC BUS A FAILS TO REMAIN CLOSED
283	DB1DAA17	5.00E-7	H	1	D	1	1.20E-05	CB 17 OFF OF DC BUS A FAILS TO REMAIN CLOSED
284	DB1DAA19	5.00E-7	H	1	D	1	1.20E-05	CB 19 OFF OF DC BUS A FAILS TO REMAIN CLOSED
285	DB1DAB08	5.00E-7	H	1	D	1	1.20E-05	CB 8 OFF OF DC BUS BX FAILS TO REMAIN CLOSED
286	DB1DAB12	5.00E-7	H	1	D	1	1.20E-05	CB 12 OFF OF DC BUS BX FAILS TO REMAIN CLOSED
287	DB1DAB13	5.00E-7	H	1	D	1	1.20E-05	CB 13 OFF OF DC BUS BX FAILS TO REMAIN CLOSED
288	DB1DAB14	5.00E-7	H	1	D	1	1.20E-05	BREAKER OFF 125VDC DIST. PANEL B (CKT B14) FAILS TO REMAIN CLOSED
289	DB1DAX08	5.00E-7	H	1	D	1	1.20E-05	CB 8 OFF OF DC BUS BX FAILS TO REMAIN CLOSED
290	DB1DAX13	5.00E-7	H	1	D	1	1.20E-05	CB 13 OFF OF DC BUS BX FAILS TO REMAIN CLOSED
291	DB1DB010	5.00E-7	H	1	D	1	1.20E-05	BREAKER BETWEEN 125VDC BUS B (CKT 10) AND CAB. EGG2B FAILS TO REMAIN CLOS
292	DB1DBB06	5.00E-7	H	1	D	1	1.20E-05	CB 6 OFF OF DC BUS B FAILS TO REMAIN CLOSED
293	DBSTI00A	3.83E-6	H	1	D	1	9.19E-05	LOCAL FAULTS ON 125VDC DISTRIBUTION PANEL A
294	DBSTI00B	3.83E-6	H	1	D	1	9.19E-05	LOCAL FAULTS ON 125VDC DISTRIBUTION PANEL B

Basic Event and Type Code Data:

	NAME	RATE	U	FACTOR	U	C	PROB	DESC
295	DBSTJE2A	3.83E-6	H	1	D	1	9.19E-05	LOCAL FAULTS ON 125VDC DISTRIBUTION CABINET EGG2A
296	DBSTKE2B	3.83E-6	H	1	D	1	9.19E-05	LOCAL FAULTS ON 125VDC DISTRIBUTION CABINET EGG2B
297	WAVAC290	2.00E-3	N	6.8E-2	N	1	1.36E-04	CCF OF SW-FCV-129 & 130 TO OPEN
298	WAVAJ129	2.00E-3	N	1	N	1	2.00E-03	SW-FCV-129 FAILS TO OPEN
299	WAVAK130	2.00E-3	N	1	N	1	2.00E-03	SW-FCV-130 FAILS TO OPEN

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Basic Event and Type Code Data:

	NAME	RATE	U	FACTOR	U	C	PROB	DESC
1	AARCLLB4			1.000E+00			1.00E+00	'A' SWITCHGEAR ROOM COOLING NORMAL POWER LOGIC LOOP, BUS 1-4
2	AARCLLB5			0			0.00E+00	'A' SWITCHGEAR ROOM COOLING POWER LOGIC LOOP, BUS 1-5
3	AARCLLB6			0			0.00E+00	'A' SWITCHGEAR ROOM COOLING CONTROL POWER LOGIC LOOP, BUS 1-6
4	AB1911CP			0.32			3.20E-01	CONDITIONAL PROBABILITY OF 9C HAVING TO OPEN/RECLOSE
5	AB1BA09C	4.00E-4	N	6	N	1	2.40E-03	CB 9C FAILS TO OPEN (FAILURE RATE ASSUMED SAME AS CLOSE)
6	AB1BA11C	4.00E-4	N	6	N	1	2.40E-03	CB 11C FAILS TO CLOSE
7	AB1BA4T5	4.00E-4	N	6	N	1	2.40E-03	FAILURE OF TIE BREAKER 4T5 TO CLOSE
8	AB1BA841	4.00E-4	N	6	N	1	2.40E-03	CB 4841 FAILS TO OPEN (FAILURE ASSUMED SAME AS CLOSE) (UV OR LOSP)
9	AB1BA971	4.00E-4	N	6	N	1	2.40E-03	CB 4971 FAILS TO OPEN (FAILURE ASSUMED SAME AS CLOSE) (UV OR LOSP)
10	AB1BA9C0	4.00E-4	N	6	N	1	2.40E-03	CB 9C FAILS TO CLOSE
11	AB1BAC11	4.00E-4	N	6		1	2.40E-03	CB 11C FAILS TO OPEN
12	AB1BACCF	4.00E-4	N	2.4E-04			2.40E-04	COMMON MODE FAILURE OF 9C TO RECLOSE THAT PREVENTS 11C FROM CLOSING
13	AB1BAM23	4.00E-4	N	6	N	1	2.40E-03	CB 2C BETWEEN MCC 2-4, MCC 3-4 AND BUS 1-4 FAILS TO OPEN (FR SAME AS C
14	AB1BAM36	4.00E-4	N	6	N	1	2.40E-03	CB 17C BETWEEN MCC 3-7, MCC 6-7 AND BUS 1-7 FAILS TO OPEN (FR SAME AS C
15	AB1BAM44	4.00E-4	N	6	N	1	2.40E-03	CB 4C BETWEEN MCC 1-4, MCC 4-4 AND BUS 1-4 FAILS TO OPEN (FR SAME AS C
16	AB1BAM47	4.00E-4	N	6	N	1	2.40E-03	CB 16C BETWEEN MCC 4-7 MCC, 7-7 AND BUS 1-7 FAILS TO OPEN (FR SAME AS C
17	AB1BAM67	4.00E-4	N	6	N	1	2.40E-03	CB 14C BETWEEN MCC 6-6, MCC 7-6 AND BUS 1-6 FAILS TO OPEN (FR SAME AS C
18	AB1BAM68	4.00E-4	N	6	N	1	2.40E-03	CB 12D BETWEEN MCC 8-6 AND BUS 1-6 FAILS TO OPEN (FR SAME AS C
19	AB1BPM85	4.00E-4	N	6	N	1	2.40E-03	CB 8D BETWEEN MCC 8-5 AND BUS 1-5 FAILS TO OPEN (FR SAME AS C
20	AB1BXM25	4.00E-4	N	6	N	1	2.40E-03	CB 6C BETWEEN MCC 2-5, MCC 1-5 AND BUS 1-5 FAILS TO OPEN (FR SAME AS C
21	AB1DA09C	5.00E-7	H	1	D	1	1.20E-05	CB 9C FTRC THAT PREVENTS 11C CLOSURE (LOW PROB. CATASTROPHIC EVENT)
22	AB1DA11C	5.00E-7	H	1	D	1	1.20E-05	CB 11C FAILS TO REMAIN CLOSED
23	AB1DA4T5	5.00E-7	H	1	D	1	1.20E-05	FAILURE OF TIE BREAKER 4T5 TO REMAIN CLOSED
24	AB1DAA02	5.00E-7	H	1	D	1	1.20E-05	MCC 5 BREAKER 2 FFL FAILS TO REMAIN CLOSED
25	AB1DAB02	5.00E-7	H	1	D	1	1.20E-05	MCC 5 BREAKER 8 RFL FAILS TO REMAIN CLOSED
26	AB1DAM13	5.00E-7	H	1	D	1	1.20E-05	BREAKER BETWEEN MCC 13-4 AND BUS 1-4 FAILS TO REMAIN CLOSED
27	AB1DAM66	5.00E-7	H	1	D	1	1.20E-05	BREAKER BETWEEN MCC 6-6 AND BUS 1-6 FAILS TO REMAIN CLOSED
28	AB1DAM76	5.00E-7	H	1	D	1	1.20E-05	COMMON BREAKER BETWEEN MCC 6-6, MCC 7-6 AND BUS 1-6 FAILS TO REMAIN CLOSE
29	AB1DCC56	5.00E-7	H	0.1	D	1	1.20E-06	CCF OF CB'S 4851 AND 4961 TO REMAIN CLOSED (SCREENING FA
30	AB1DJ102	5.00E-7	H	1	M	2	1.80E-04	LIGHTING PANEL LP-D1 CKT. #2 FAILS TO REMAIN CLOSED
31	AB1DJ110	5.00E-7	H	1	M	2	1.80E-04	LIGHTING PANEL LP-D1 CKT. #10 FAILS TO REMAIN CLOSED
32	AB1DJ851	5.00E-7	H	1	D	1	1.20E-05	FAILURE OF BREAKER 4851 TO REMAIN CLOSED
33	AB1DJA01	5.00E-7	H	1	M	2	1.80E-04	AC DIST. CABINET EMERG. GEN. 2A CKT. 3 FAILS TO REMAIN CLOSED
34	AB1DJD01	5.00E-7	H	1	M	2	1.80E-04	CB 1 EG FIELD FLASH FAILS TO REMAIN CLOSED
35	AB1DJD02	5.00E-7	H	1	M	2	1.80E-04	CB 2 GOVERNOR CONTROL FAILS TO REMAIN CLOSED
36	AB1DJD03	5.00E-7	H	1	M	2	1.80E-04	CB 3 ALTERNATE FAILS TO REMAIN CLOSED
37	AB1DJD04	5.00E-7	H	1	M	2	1.80E-04	CB 4 DIESEL STARTER 2A1 FAILS TO REMAIN CLOSED
38	AB1DJD05	5.00E-7	H	1	D	1	1.20E-05	CB 5 BUS 8 UV FAILS TO REMAIN CLOSED
39	AB1DJD06	5.00E-7	H	1	M	2	1.80E-04	CB 6 DIESEL STARTER 2A2 FAILS TO REMAIN CLOSED
40	AB1DK202	5.00E-7	H	1	D	1	1.20E-05	LIGHTING PANEL LP-D2 CKT. #2 FAILS TO REMAIN CLOSED
41	AB1DK210	5.00E-7	H	1	D	1	1.20E-05	LIGHTING PANEL LP-D2 CKT. #10 FAILS TO REMAIN CLOSED
42	AB1DK961	5.00E-7	H	1	D	1	1.20E-05	FAILURE OF BREAKER 4961 TO REMAIN CLOSED
43	AB1DKB01	5.00E-7	H	1	M	2	1.80E-04	AC DIST. CABINET EMERG. GEN. 2B CKT. 3 FAILS TO REMAIN CLOSED
44	AB1DKD01	5.00E-7	H	1	M	2	1.80E-04	CB 1 EG FIELD FLASH FAILS TO REMAIN CLOSED
45	AB1DKD02	5.00E-7	H	1	M	2	1.80E-04	CB 2 GOVERNOR CONTROL FAILS TO REMAIN CLOSED
46	AB1DKD03	5.00E-7	H	1	M	2	1.80E-04	CB 3 ALTERNATE FAILS TO REMAIN CLOSED
47	AB1DKD04	5.00E-7	H	1	M	2	1.80E-04	CB 4 DIESEL STARTER 2B1 FAILS TO REMAIN CLOSED
48	AB1DKD05	5.00E-7	H	1	D	1	1.20E-05	CB 5 BUS 9 UV FAILS TO REMAIN CLOSED
49	AB1DKD06	5.00E-7	H	1	M	2	1.80E-04	CB 6 DIESEL STARTER 2B2 FAILS TO REMAIN CLOSED

Appendix B.2 Rev. 1

Basic Event and Type Code Data:

	NAME	RATE	U	FACTOR	U	C	PROB	DESC
50	ABKAA2T8	1.58E-4	N	6	N	1	9.48E-04	BREAKER 2T8 FAILS TO OPEN
51	ABKAA3T9	1.58E-4	N	6	N	1	9.48E-04	BREAKER 3T9 FAILS TO OPEN
52	ABKAJ8T2	1.58E-4	N	6	N	1	9.48E-04	BREAKER 8T2 FAILS TO OPEN
53	ABKAK9T3	1.58E-4	N	6	N	1	9.48E-04	BREAKER 9T3 FAILS TO OPEN
54	ABKDA2T8	6.00E-7	H	1	D	1	1.44E-05	BREAKER 2T8 FAILS TO REMAIN CLOSED
55	ABKDA3T9	6.00E-7	H	1	D	1	1.44E-05	BREAKER 3T9 FAILS TO REMAIN CLOSED
56	ABKDA850	6.00E-7	H	1	D	1	1.44E-05	FAILURE OF BREAKER 4850 TO REMAIN CLOSED
57	ABKDA960	6.00E-7	H	1	D	1	1.44E-05	FAILURE OF BREAKER 4960 TO REMAIN CLOSED
58	ABKDCC56	6.00E-7	H	0.1	D	1	1.44E-06	CCF OF CB'S 4850 AND 4960 TO REMAIN CLOSED (SCREENING FA
59	ABKDJ8T2	6.00E-7	H	1	D	1	1.44E-05	BREAKER 8T2 FAILS TO REMAIN CLOSED
60	ABKDK9T3	6.00E-7	H	1	D	1	1.44E-05	BREAKER 9T3 FAILS TO REMAIN CLOSED
61	ABKDX389	6.00E-7	H	1	D	1	1.44E-05	SWITCHYARD BREAKER 3891 FAILS TO REMAIN CLOSED
62	ABKDX399	6.00E-7	H	1	D	1	1.44E-05	SWITCHYARD BREAKER 3991 FAILS TO REMAIN CLOSED
63	ABSTJA02	3.83E-6	H	1	D	1	9.19E-05	FAULT ON LIGHTING PANEL LP-D1
64	ABSTJA03	3.83E-6	H	1	D	1	9.19E-05	FAULT ON AC DIST CABINET EMERG. GEN. 2A
65	ABSTKB02	3.83E-6	H	1	D	1	9.19E-05	FAULT ON LIGHTING PANEL LP-D2
66	ABSTKB03	3.83E-6	H	1	D	1	9.19E-05	FAULT ON AC DIST CABINET EMERG. GEN. 2B
67	ABSVAB02	4.80E-8	H	1	D	1	1.15E-06	BUS 1-2, BUS FAULT
68	ABSVAB03	4.80E-8	H	1	D	1	1.15E-06	BUS 1-3, BUS FAULT
69	ABSVAB04	4.80E-8	H	1	D	1	1.15E-06	BUS 1-4, BUS FAULT
70	ABSVAB05	4.80E-8	H	1	D	1	1.15E-06	BUS 1-5, BUS FAULT
71	ABSVAB06	4.80E-8	H	1	D	1	1.15E-06	BUS 1-6, BUS FAULT
72	ABSVAM05	4.80E-8	H	1	D	1	1.15E-06	MCC-5, BUS FAULT
73	ABSVAM13	4.80E-8	H	1	D	1	1.15E-06	MCC 13-4, BUS FAULT
74	ABSVAM66	4.80E-8	H	1	D	1	1.15E-06	MCC 6-6, BUS FAULT
75	ABSVCC56	4.80E-8	H	0.1	D	1	1.15E-07	CCF OF BUSES 1-5 AND 1-6 (SCREENING FA
76	ABSVCC89	4.80E-8	H	0.1	D	1	1.15E-07	CCF OF BUSES 8 AND 9 (SCREENING FA
77	ABSVJB08	4.80E-8	H	1	D	1	1.15E-06	BUS 8, BUS FAULT
78	ABSVKB09	4.80E-8	H	1	D	1	1.15E-06	BUS 9, BUS FAULT
79	ACPAI45T	1.35E-4	N	6	N	1	8.10E-04	CONTACT PAIR 1/BT4-5 A11-B11 FAILS TO OPEN
80	ACPAJA01	1.35E-4	N	1	N	1	1.35E-04	CONTACT PAIR 52MOC/EG2A M9-M10 FAILS TO OPEN
81	ACPAKB01	1.35E-4	N	1	N	1	1.35E-04	CONTACT PAIR 52MOC/EG2B M9-M10 FAILS TO OPEN
82	ACPAX401	1.35E-4	N	6	N	1	8.10E-04	CONTACT PAIR 27-4 2-10 FAILS TO OPEN
83	ACPAX501	1.35E-4	N	6	N	1	8.10E-04	CONTACT PAIR 27-5 2-10 FAILS TO OPEN
84	ACPAX601	1.35E-4	N	6	N	1	8.10E-04	CONTACT PAIR 27-6 2-10 FAILS TO OPEN
85	ACPAX701	1.35E-4	N	6	N	1	8.10E-04	CONTACT PAIR 27-7 2-10 FAILS TO OPEN
86	ACPAXA02	1.35E-4	N	6	N	1	8.10E-04	40V CONTACT PAIR FAILS TO OPEN (FOLLOWING FIELD FLASH)
87	ACPAXB02	1.35E-4	N	6	N	1	8.10E-04	40V CONTACT PAIR FAILS TO OPEN (FOLLOWING FIELD FLASH)
88	ACPBA5A2	1.35E-4	N	6		1	8.10E-04	CONTACT PAIR 62-5A 2-6 FAILS TO CLOSE
89	ACPBA6A2	1.35E-4	N	6		1	8.10E-04	CONTACT PAIR 62-6A 2-6 FAILS TO CLOSE
90	ACPBI83C	1.35E-4	N	6	N	1	8.10E-04	CONTACT PAIR 27Y/1-8 3-3C FAIL TO CLOSE
91	ACPBI93C	1.35E-4	N	6	N	1	8.10E-04	CONTACT PAIR 27Y/1-9 3-3C FAIL TO CLOSE
92	ACPBIA13	1.35E-4	N	6	N	1	8.10E-04	CONTACT PAIR 27Y/1-8 6-6C FAILS TO CLOSE
93	ACPBIA14	1.35E-4	N	6	N	1	8.10E-04	CONTACT PAIR 59A/1-8 1-10 FAILS TO CLOSE
94	ACPBIA15	1.35E-4	N	68	N	1	9.18E-03	CONTACT PAIR 59B/1-8 1-10 FAILS TO CLOSE
95	ACPBIA16	1.35E-4	N	68	N	1	9.18E-03	CONTACT PAIR 1-EG2AA A1-B1 FAILS TO CLOSE
96	ACPBIA17	1.35E-4	N	68	N	1	9.18E-03	25 CVE 1 V1 BUS CONTACT PAIR FAILS TO CLOSE
97	ACPBIA18	1.35E-4	N	68	N	1	9.18E-03	CONTACT PAIR 25-EG2AA A5-B5 FAILS TO CLOSE
98	ACPBIA19	1.35E-4	N	68	N	1	9.18E-03	25 CVE 1 V1 LINE CONTACT PAIR FAILS TO CLOSE

Basic Event and Type Code Data:

	NAME	RATE	U	FACTOR	U	C	PROB	DESC
99	ACPBIA20	1.35E-4	N	68	N	1	9.18E-03	CONTACT PAIR FSR1 J-K FAILS TO CLOSE
100	ACPBIA21	1.35E-4	N	1	N	1	1.35E-04	CONTACT PAIR FSR2 J-K FAILS TO CLOSE
101	ACPBIA22	1.35E-4	N	68	N	1	9.18E-03	CONTACT PAIR VSR1 E-F FAILS TO CLOSE
102	ACPBIA23	1.35E-4	N	68	N	1	9.18E-03	CONTACT PAIR SSP1 18-19 FAILS TO CLOSE
103	ACPBIA24	1.35E-4	N	1	N	1	1.35E-04	CONTACT PAIR VSR2 E-F FAILS TO CLOSE
104	ACPBIA25	1.35E-4	N	1	N	1	1.35E-04	CONTACT PAIR SSP2 18-19 FAILS TO CLOSE
105	ACPBIB13	1.35E-4	N	6	N	1	8.10E-04	CONTACT PAIR 27Y/1-9 6-6C FAILS TO CLOSE
106	ACPBIB14	1.35E-4	N	6	N	1	8.10E-04	CONTACT PAIR 59A/1-9 1-10 FAILS TO CLOSE
107	ACPBIB15	1.35E-4	N	68	N	1	9.18E-03	CONTACT PAIR 59B/1-9 1-10 FAILS TO CLOSE
108	ACPBIB16	1.35E-4	N	6	N	1	8.10E-04	CONTACT PAIR 1-EG2BA A1-B1 FAILS TO CLOSE
109	ACPBIB17	1.35E-4	N	6	N	1	8.10E-04	25 CVE 1 V1 BUS CONTACT PAIR FAILS TO CLOSE
110	ACPBIB18	1.35E-4	N	6	N	1	8.10E-04	CONTACT PAIR 25-EG2BA A5-B5 FAILS TO CLOSE
111	ACPBIB19	1.35E-4	N	6	N	1	8.10E-04	25 CVE 1 V1 LINE CONTACT PAIR FAILS TO CLOSE
112	ACPBIB22	1.35E-4	N	68	N	1	9.18E-03	CONTACT PAIR VSR1 E-F FAILS TO CLOSE
113	ACPBIB23	1.35E-4	N	69	N	1	9.18E-03	CONTACT PAIR SSP1 18-19 FAILS TO CLOSE
114	ACPBIB24	1.35E-4	N	1	N	1	1.35E-04	CONTACT PAIR VSR2 E-F FAILS TO CLOSE
115	ACPBIB25	1.35E-4	N	1	N	1	1.35E-04	CONTACT PAIR SSP2 18-19 FAILS TO CLOSE
116	ACPBIY85	1.35E-4	N	1	N	1	1.35E-04	CONTACT PAIR 27Y/1-8 5-5C FAIL TO CLOSE
117	ACPBJA02	1.35E-4	N	1	N	1	1.35E-04	CONTACT PAIR 27Y/1-8 1-1C FAILS TO CLOSE
118	ACPBJA03	1.35E-4	N	1	N	1	1.35E-04	CONTACT PAIR 27X/1-8 2-5 FAILS TO CLOSE
119	ACPBJA04	1.35E-4	N	1	N	1	1.35E-04	CONTACT PAIR 27AX/1-8 1-2 FAILS TO CLOSE
120	ACPBJA05	1.35E-4	N	1	N	1	1.35E-04	CONTACT PAIR 27A/1-8 2-10 FAILS TO CLOSE
121	ACPBJA06	1.35E-4	N	1	N	1	1.35E-04	CONTACT PAIR 27BX/1-8 3-4 FAILS TO CLOSE
122	ACPBJA07	1.35E-4	N	1	N	1	1.35E-04	CONTACT PAIR 27B/1-8 2-10 FAILS TO CLOSE
123	ACPBJA08	1.35E-4	N	1	N	1	1.35E-04	CONTACT PAIR 27CX/1-8 1-2 FAILS TO CLOSE
124	ACPBJA09	1.35E-4	N	1	N	1	1.35E-04	CONTACT PAIR 27C/1-8 2-10 FAILS TO CLOSE
125	ACPBJA10	1.35E-4	N	1	N	1	1.35E-04	CONTACT PAIR 27AX/1-8 3-4 FAILS TO CLOSE
126	ACPBJA11	1.35E-4	N	1	N	1	1.35E-04	CONTACT PAIR 27BX/1-8 1-2 FAILS TO CLOSE
127	ACPBJA12	1.35E-4	N	1	N	1	1.35E-04	CONTACT PAIR 27CX/1-8 3-4 FAILS TO CLOSE
128	ACPBK4A5	1.35E-4	N	6		1	8.10E-04	CONTACT PAIR 62-5A 4-6 FAILS TO CLOSE
129	ACPBK6A4	1.35E-4	N	6		1	8.10E-04	CONTACT PAIR 62-6A 4-6 FAILS TO CLOSE
130	ACPBKB02	1.35E-4	N	1	N	1	1.35E-04	CONTACT PAIR 27Y/1-9 1-1C FAILS TO CLOSE
131	ACPBKB03	1.35E-4	N	1	N	1	1.35E-04	CONTACT PAIR 27X/1-9 2-5 FAILS TO CLOSE
132	ACPBKB04	1.35E-4	N	1	N	1	1.35E-04	CONTACT PAIR 27AX/1-9 1-2 FAILS TO CLOSE
133	ACPBKB05	1.35E-4	N	1	N	1	1.35E-04	CONTACT PAIR 27A/1-9 2-10 FAILS TO CLOSE
134	ACPBKB06	1.35E-4	N	1	N	1	1.35E-04	CONTACT PAIR 27BX/1-9 3-4 FAILS TO CLOSE
135	ACPBKB07	1.35E-4	N	1	N	1	1.35E-04	CONTACT PAIR 27B/1-9 2-10 FAILS TO CLOSE
136	ACPBKB08	1.35E-4	N	1	N	1	1.35E-04	CONTACT PAIR 27CX/1-9 1-2 FAILS TO CLOSE
137	ACPBKB09	1.35E-4	N	1	N	1	1.35E-04	CONTACT PAIR 27C/1-9 2-10 FAILS TO CLOSE
138	ACPBKB10	1.35E-4	N	1	N	1	1.35E-04	CONTACT PAIR 27AX/1-9 3-4 FAILS TO CLOSE
139	ACPBKB11	1.35E-4	N	1	N	1	1.35E-04	CONTACT PAIR 27BX/1-9 1-2 FAILS TO CLOSE
140	ACPBKB12	1.35E-4	N	1	N	1	1.35E-04	CONTACT PAIR 27CX/1-9 3-4 FAILS TO CLOSE
141	ACPBX42C	1.35E-4	N	6	N	1	8.10E-04	CONTACT PAIR 27Y-4 2-2C FAILS TO CLOSE
142	ACPBX47C	1.35E-4	N	6	N	1	8.10E-04	CONTACT PAIR 27Y-4 7-7C FAILS TO CLOSE
143	ACPBX513	1.35E-4	N	6	N	1	8.10E-04	CONTACT PAIR 27X-5 9-13 FAILS TO CLOSE
144	ACPBX52C	1.35E-4	N	6	N	1	8.10E-04	CONTACT PAIR 27Y-5 2-2C FAILS TO CLOSE
145	ACPBX613	1.35E-4	N	6	N	1	8.10E-04	CONTACT PAIR 27X-6 9-13 FAILS TO CLOSE
146	ACPBX65C	1.35E-4	N	6	N	1	8.10E-04	CONTACT PAIR 27Y-6 5-5C FAILS TO CLOSE
147	ACPBX72C	1.35E-4	N	6	N	1	8.10E-04	CONTACT PAIR 27Y-7 2-2C FAILS TO CLOSE

Basic Event and Type Code Data:

	NAME	RATE	U	FACTOR	U	C	PROB	DESC
148	ACPBX74C	1.35E-4	N	6	N	1	8.10E-04	CONTACT PAIR 27Y-7 4-4C FAILS TO CLOSE
149	ACPBX801	1.35E-4	N	6	N	1	8.10E-04	CONTACT PAIR 27Y2/1-8 1-7 FAIL TO CLOSE
150	ACPBX802	1.35E-4	N	6	N	1	8.10E-04	CONTACT PAIR 27Y2/1-8 3-6 FAIL TO CLOSE
151	ACPBX901	1.35E-4	N	6	N	1	8.10E-04	CONTACT PAIR 27Y2/1-9 1,7 FAIL TO CLOSE
152	ACPBX902	1.35E-4	N	6	N	1	8.10E-04	CONTACT PAIR 27Y2/1-9 3,6 FAIL TO CLOSE
153	ACPBXX41	1.35E-4	N	6	N	1	8.10E-04	CONTACT PAIR 27X-4 9-13 FAILS TO CLOSE
154	ACPBXX51	1.35E-4	N	6	N	1	8.10E-04	CONTACT PAIR 27X-5 9-13 FAILS TO CLOSE
155	ACPBXX61	1.35E-4	N	6	N	1	8.10E-04	CONTACT PAIR 27X-6 9-13 FAILS TO CLOSE
156	ACPBXX71	1.35E-4	N	6	N	1	8.10E-04	CONTACT PAIR 27X-7 9-13 FAILS TO CLOSE
157	ACPCA851	2.66E-8	H	1	D	2	3.19E-07	CONTACT PAIR 1/SS5 A11-B11 FAILS TO REMAIN OPEN
158	ACPCI45V	2.66E-8	H	1	D	1	6.38E-07	CONTACT PAIR 1/BT4-5 A11-B11 FAILS TO REMAIN OPEN
159	ACPCI850	2.66E-8	H	1	D	2	3.19E-07	CONTACT PAIR 1/SS15 A11-B11 FAILS TO REMAIN OPEN
160	ACPCI960	2.66E-8	H	1	D	2	3.19E-07	CONTACT PAIR 1/SS16 A11-B11 FAILS TO REMAIN OPEN
161	ACPCI961	2.66E-8	H	1	D	2	3.19E-07	CONTACT PAIR 1/SS6 A11-B11 FAILS TO REMAIN OPEN
162	ACPCX161	2.66E-8	H	1	D	1	6.38E-07	CONTACT PAIR 27X1-6 3-7 FAILS TO REMAIN OPEN
163	ACPCX601	2.66E-8	H	1	D	1	6.38E-07	CONTACT PAIR 27-6 2-10 FAILS TO REMAIN OPEN
164	ACPCX801	2.66E-8	H	1	D	1	6.38E-07	CONTACT PAIR 27Y2/1-8 1-7 FAIL TO REMAIN OPEN
165	ACPCX802	2.66E-8	H	1	D	1	6.38E-07	CONTACT PAIR 27Y2/1-8 3-6 FAIL TO REMAIN OPEN
166	ACPCX803	2.66E-8	H	1	D	1	6.38E-07	CONTACT PAIR 86 3-6 FAIL TO REMAIN OPEN
167	ACPCX804	2.66E-8	H	1	D	1	6.38E-07	CONTACT PAIR 87X 5-6 FAILS TO REMAIN OPEN
168	ACPCX901	2.66E-8	H	1	D	1	6.38E-07	CONTACT PAIR 27Y2/1-9 1,7 FAIL TO REMAIN OPEN
169	ACPCX902	2.66E-8	H	1	D	1	6.38E-07	CONTACT PAIR 27Y2/1-9 3-6 FAIL TO REMAIN OPEN
170	ACPCX903	2.66E-8	H	1	D	1	6.38E-07	CONTACT PAIR 87X 5-6 FAIL TO REMAIN OPEN
171	ACPCX904	2.66E-8	H	1	D	1	6.38E-07	CONTACT PAIR 86 3-6 FAIL TO REMAIN OPEN
172	ACPCXL91	2.66E-8	H	1	D	1	6.38E-07	CONTACT PAIR 94LS/1-9 9-10 FAILS TO REMAIN OPEN
173	ACPCXY61	2.66E-8	H	1	D	1	6.38E-07	CONTACT PAIR 27Y-6 5-5C FAILS TO REMAIN OPEN
174	ACPDA2A5	1.25E-7	H	1.5	Y	2	8.21E-04	CONTACT PAIR 62-5A 3-5 FAILS TO REMAIN CLOSED
175	ACPDA2A6	1.25E-7	H	1.5	Y	2	8.21E-04	CONTACT PAIR 62-6A 3-5 FAILS TO REMAIN CLOSED
176	ACPDIA05	1.25E-7	H	18	M	2	8.10E-04	CONTACT PAIR 1-EG2AA C12-D12 FAILS TO REMAIN CLOSED
177	ACPDIA06	1.25E-7	H	18	M	2	8.10E-04	CONTACT PAIR NFLDA A-C FAILS TO REMAIN CLOSED
178	ACPDIA07	1.25E-7	H	18	M	2	8.10E-04	CONTACT PAIR OTR L-M FAILS TO REMAIN CLOSED
179	ACPDIB05	1.25E-7	H	18	M	2	8.10E-04	CONTACT PAIR 1-EG2BA C12-D12 FAILS TO REMAIN CLOSED
180	ACPDIB06	1.25E-7	H	18	M	2	8.10E-04	CONTACT PAIR NFLDA A-C FAILS TO REMAIN CLOSED
181	ACPDIB07	1.25E-7	H	18	M	2	8.10E-04	CONTACT PAIR OTR L-M FAILS TO REMAIN CLOSED
182	ACPDJA02	1.25E-7	H	18	M	2	8.10E-04	AUX CONTACT PAIR 4/EG2A 14 FAILS TO REMAIN CLOSED
183	ACPDJA03	1.25E-7	H	18	M	2	8.10E-04	AUX CONTACT PAIR 27Y/1-8 17 FAILS TO REMAIN CLOSED
184	ACPDJA04	1.25E-7	H	18	M	2	8.10E-04	AUX CONTACT PAIR 27Y/1-8 18 FAILS TO REMAIN CLOSED
185	ACPDKB02	1.25E-7	H	18	M	2	8.10E-04	AUX CONTACT PAIR 4/EG2B 14 FAILS TO REMAIN CLOSED
186	ACPDKB03	1.25E-7	H	18	M	2	8.10E-04	AUX CONTACT PAIR 27Y/1-9 17 FAILS TO REMAIN CLOSED
187	ACPDKB04	1.25E-7	H	18	M	2	8.10E-04	AUX CONTACT PAIR 27Y/1-9 18 FAILS TO REMAIN CLOSED
188	ACVAJ64A	2.00E-4	N	1	N	1	2.00E-04	EDG A ROOM INTAKE DAMPER FAILS TO OPEN
189	ACVAK64B	2.00E-4	N	1	N	1	2.00E-04	EDG A ROOM INTAKE DAMPER FAILS TO OPEN
190	ADGACPSF			0.5			5.00E-01	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST
191	ADGBCPSF			0.5			5.00E-01	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST
192	ADGCCOOL			6.70E-04			6.70E-04	COMMON CAUSE FAILURE OR EDG ROOM COOLING
193	ADGECCAB	2.80E-3	N	0.038	N	1	1.06E-04	CCF OF EDG'S '2A' AND '2B' TO START
194	ADGEJ02A	2.80E-3	N	1	N	1	2.80E-03	DIESEL 2A FAILS TO START
195	ADGEK02B	2.80E-3	N	1	N	1	2.80E-03	DIESEL 2B FAILS TO START
196	ADGFCCAB	1.10E-3	H	0.068	D	1	1.80E-03	CCF OF EDG'S '2A' AND '2B' TO RUN

Basic Event and Type Code Data:

	NAME	RATE	U	FACTOR	U	C	PROB	DESC
197	ADGFJ02A	1.10E-3	H	1	D	1	2.64E-02	EDG '2A' FAILS TO RUN GIVEN START
198	ADGFK02B	1.10E-3	H	1	D	1	2.64E-02	EDG '2B' FAILS TO RUN GIVEN START
199	ADGPZA01			0.013			1.30E-02	OPERATOR FAILS TO ATTEMPT DIESEL RECOVERY
200	ADGQJ02A	1.00E-2	N	1	N	1	1.00E-02	EMERGENCY DIESEL GENERATOR '2A' OOS FOR MAINT.
201	ADGQK02B	1.00E-2	N	1	N	1	1.00E-02	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.
202	AFNECCRA	6.00E-4	N	.1	N	1	6.00E-05	CCF OF SWGR ROOM 'A' INTAKE/EXHAUST FANS TO START AFTER LOSP (SCREENING
203	AFNEJ64A	6.00E-4	N	1	N	1	6.00E-04	FAN F-64-1A FAILS TO START
204	AFNEK64B	6.00E-4	N	1	N	1	6.00E-04	FAN F-64-1B FAILS TO START
205	AFNFA41A	1.00E-5	H	8	H	1	8.00E-05	'A' SWITCHGEAR ROOM EXHAUST FAN FAILS TO RUN
206	AFNFA61A	1.00E-5	H	8	H	1	8.00E-05	'A' SWITCHGEAR ROOM INTAKE FAN FAILS TO RUN
207	AFNFCCRA	1.00E-5	H	.8	H	1	8.00E-06	CCF SWGR 'A' ROOM INTAKE/EXHAUST FANS FAIL TO RUN (SCREENING V
208	AFNFJ64A	1.00E-5	H	1	D	1	2.40E-04	FAN F-64-1A FAILS TO RUN
209	AFNFK64B	1.00E-5	H	1	D	1	2.40E-04	FAN F-64-1B FAILS TO RUN
210	AMC110LL			0			0.00E+00	LOGIC LOOP WITH MCC-11 AND AC EGG-2B PANEL
211	AMCC50LL			0			0.00E+00	LOGIC LOOP WITH MCC-5 AND EGG-2A PANEL
212	AMVAJ64A	4.00E-3	N	1	N	1	4.00E-03	FAN F-64-1A MOTOR OPERATED EXHAUST DAMPER FAILS TO OPEN
213	AMVAK64B	4.00E-3	N	1	N	1	4.00E-03	FAN F-64-1B MOTOR OPERATED EXHAUST DAMPER FAILS TO OPEN
214	AMVQJ64A	9.04E-4	N	1	N	1	9.04E-04	FAN F-64-1A MOTOR OPERATED EXHAUST DAMPER OOS FOR MAINT.
215	AMVQK64B	9.04E-4	N	1	N	1	9.04E-04	FAN F-64-1B MOTOR OPERATED EXHAUST DAMPER OOS FOR MAINT.
216	ARCHJ15A	1.00E-4	N	6	N	1	6.00E-04	RELAY 62-5A FAILS TO ENERGIZE
217	ARCHJA03	1.00E-4	N	6	N	1	6.00E-04	RELAY 4/EG2A FAILS TO ENERGIZE
218	ARCHJA04	1.00E-4	N	6	N	1	6.00E-04	RELAY 27Y/1-8 FAILS TO ENERGIZE
219	ARCHJA05	1.00E-4	N	6	N	1	6.00E-04	RELAY 27X/1-8 FAILS TO ENERGIZE
220	ARCHJA06	1.00E-4	N	6	N	1	6.00E-04	RELAY 27AX/1-8 FAILS TO ENERGIZE
221	ARCHJA08	1.00E-4	N	6	N	1	6.00E-04	RELAY 27BX/1-8 FAILS TO ENERGIZE
222	ARCHJA10	1.00E-4	N	6	N	1	6.00E-04	RELAY 27CX/1-8 FAILS TO ENERGIZE
223	ARCHJA21	1.00E-4	N	6	N	1	6.00E-04	RELAY 27Y2/1-8 FAILS TO ENERGIZE
224	ARCHK08A	1.00E-4	N	6		1	6.00E-04	RELAY 62-6A FAILS TO ENERGIZE
225	ARCHKB03	1.00E-4	N	6	N	1	6.00E-04	RELAY 4/EG2B FAILS TO ENERGIZE
226	ARCHKB04	1.00E-4	N	6	N	1	6.00E-04	RELAY 27Y/1-9 FAILS TO ENERGIZE
227	ARCHKB05	1.00E-4	N	6	N	1	6.00E-04	RELAY 27X/1-9 FAILS TO ENERGIZE
228	ARCHKB06	1.00E-4	N	6	N	1	6.00E-04	RELAY 27AX/1-9 FAILS TO ENERGIZE
229	ARCHKB08	1.00E-4	N	6	N	1	6.00E-04	RELAY 27BX/1-9 FAILS TO ENERGIZE
230	ARCHKB10	1.00E-4	N	6	N	1	6.00E-04	RELAY 27CX/1-9 FAILS TO ENERGIZE
231	ARCHKB21	1.00E-4	N	6	N	1	6.00E-04	RELAY 27Y2/1-9 FAILS TO ENERGIZE
232	ARCHX7Y4	1.00E-4	N	6	N	1	6.00E-04	RELAY 27Y-4 FAILS TO ENERGIZE
233	ARCHX7Y5	1.00E-4	N	6	N	1	6.00E-04	RELAY 27Y-5 FAILS TO ENERGIZE
234	ARCHX7Y6	1.00E-4	N	6	N	1	6.00E-04	RELAY 27Y-6 FAILS TO ENERGIZE
235	ARCHX7Y7	1.00E-4	N	6	N	1	6.00E-04	RELAY 27Y-7 FAILS TO ENERGIZE
236	ARCHXA12	1.00E-4	N	1	N	1	1.00E-04	RELAY 40V FAILS TO ENERGIZE (FOLLOWING FIELD FLASH)
237	ARCHXA13	1.00E-4	N	1	N	1	1.00E-04	RELAY 59A/1-8 FAILS TO ENERGIZE
238	ARCHXA14	1.00E-4	N	68	N	1	6.80E-03	RELAY 59B/1-8 FAILS TO ENERGIZE
239	ARCHXA16	1.00E-4	N	68	N	1	6.80E-03	25 CVE 1 V1 LINE RELAY FAILS TO ENERGIZE
240	ARCHXA17	1.00E-4	N	68	N	1	6.80E-03	RELAY VSR1 FAILS TO ENERGIZE
241	ARCHXA18	1.00E-4	N	68	N	1	6.80E-03	RELAY SSP1 VS FAILS TO ENERGIZE
242	ARCHXA19	1.00E-4	N	1	N	1	1.00E-04	RELAY VSR2 FAILS TO ENERGIZE
243	ARCHXA20	1.00E-4	N	1	N	1	1.00E-04	RELAY SSP2 VS FAILS TO ENERGIZE
244	ARCHXA23	1.00E-4	N	1	N	1	1.00E-04	RELAY FSR1 FAILS TO ENERGIZE (EDG-2A)
245	ARCHXA24	1.00E-4	N	1	N	1	1.00E-04	RELAY FSR2 FAILS TO ENERGIZE (EDG-2A)

Basic Event and Type Code Data:

	NAME	RATE	U	FACTOR	U	C	PROB	DESC
246	ARCHXB12	1.00E-4	N	1	N	1	1.00E-04	RELAY 40V FAILS TO ENERGIZE (FOLLOWING FIELD FLASH)
247	ARCHXB13	1.00E-4	N	1	N	1	1.00E-04	RELAY 59A/1-9 FAILS TO ENERGIZE
248	ARCHXB14	1.00E-4	N	68	N	1	6.80E-03	RELAY 59B/1-9 FAILS TO ENERGIZE
249	ARCHXB16	1.00E-4	N	68	N	1	6.80E-03	25 CVE 1 V1 LINE RELAY FAILS TO ENERGIZE
250	ARCHXB17	1.00E-4	N	68	N	1	6.80E-03	RELAY VSR1 FAILS TO ENERGIZE
251	ARCHXB18	1.00E-4	N	68	N	1	6.80E-03	RELAY SSP1 VS FAILS TO ENERGIZE
252	ARCHXB19	1.00E-4	N	1	N	1	1.00E-04	RELAY VSR2 FAILS TO ENERGIZE
253	ARCHXB20	1.00E-4	N	1	N	1	1.00E-04	RELAY SSP2 VS FAILS TO ENERGIZE
254	ARCJJ15A	6.00E-7	H	1	D	1	1.44E-05	RELAY 62-5A FAILS TO REMAIN ENERGIZED
255	ARCJK08A	6.00E-7	H	1	D	1	1.44E-05	RELAY 62-6A FAILS TO REMAIN ENERGIZED
256	ARCJK15A	6.00E-7	H	24		1	1.44E-05	RELAY 62-6A FAILS TO REMAIN ENERGIZED
257	ARCJX276	6.00E-7	H	1	D	1	1.44E-05	RELAY 27-6 FAILS TO REMAIN ENERGIZED
258	ARCMJ15A	1.00E-4	N	6	N	1	6.00E-04	RELAY 62-5A FAILS TO DEENERGIZE
259	ARCMJA01	1.00E-4	N	6	N	1	6.00E-04	RELAY 27Y1/1-8 FAILS TO DEENERGIZE
260	ARCMK15A	1.00E-4	N	6		1	6.00E-04	RELAY 62-6A FAILS TO DE-ENERGIZE
261	ARCMKB01	1.00E-4	N	6	N	1	6.00E-04	RELAY 27Y1/1-9 FAILS TO DEENERGIZE
262	ARCMX274	1.00E-4	N	6	N	1	6.00E-04	RELAY 27-4 FAILS TO DE-ENERGIZE
263	ARCMX275	1.00E-4	N	6	N	1	6.00E-04	RELAY 27-5 FAILS TO DE-ENERGIZE
264	ARCMX276	1.00E-4	N	6	N	1	6.00E-04	RELAY 27-6 FAILS TO DE-ENERGIZE
265	ARCMX277	1.00E-4	N	6	N	1	6.00E-04	RELAY 27-7 FAILS TO DE-ENERGIZE
266	ARCMX7X4	1.00E-4	N	6	N	1	6.00E-04	RELAY 27X-4 FAILS TO DEENERGIZE
267	ARCMX7X5	1.00E-4	N	6	N	1	6.00E-04	RELAY 27X-5 FAILS TO DE-ENERGIZE
268	ARCMX7X6	1.00E-4	N	6	N	1	6.00E-04	RELAY 27X-6 FAILS TO DE-ENERGIZE
269	ARCMX7X7	1.00E-4	N	6	N	1	6.00E-04	RELAY 27X-7 FAILS TO DE-ENERGIZE
270	ARCMXA07	1.00E-4	N	1	N	1	1.00E-04	RELAY 27A/1-8 FAILS TO DEENERGIZE
271	ARCMXA09	1.00E-4	N	1	N	1	1.00E-04	RELAY 27B/1-8 FAILS TO DEENERGIZE
272	ARCMXA11	1.00E-4	N	1	N	1	1.00E-04	RELAY 27C/1-8 FAILS TO DEENERGIZE
273	ARCMXA15	1.00E-4	N	6	N	1	6.00E-04	25 CVE 1 V1 BUS RELAY FAILS TO DEENERGIZE
274	ARCMXB07	1.00E-4	N	1	N	1	1.00E-04	RELAY 27A/1-9 FAILS TO DEENERGIZE
275	ARCMXB09	1.00E-4	N	1	N	1	1.00E-04	RELAY 27B/1-9 FAILS TO DEENERGIZE
276	ARCMXB11	1.00E-4	N	1	N	1	1.00E-04	RELAY 27C/1-9 FAILS TO DEENERGIZE
277	ARCMXB15	1.00E-4	N	6	N	1	6.00E-04	25 CVE 1 V1 BUS RELAY FAILS TO DEENERGIZE
278	ASWGJA01	2.66E-5	N	1	N	1	2.66E-05	SWITCH 1-EG2AA FAILS TO OPERATE
279	ASWGJA02	2.66E-5	N	1	N	1	2.66E-05	SWITCH 25-EG2AA FAILS TO OPERATE
280	ASWGJA11	2.66E-5	N	1	N	1	2.66E-05	EDG '2A' START PUSHBUTTON FAILS TO OPERATE
281	ASWGJA12	2.66E-5	N	1	N	1	2.66E-05	EDG '2A' FIELD FLASH PUSHBUTTON FAILS TO OPERATE
282	ASWGKB01	2.66E-5	N	1	N	1	2.66E-05	SWITCH 1-EG2BA FAILS TO OPERATE
283	ASWGKB02	2.66E-5	N	1	N	1	2.66E-05	SWITCH 25-EG2BA FAILS TO OPERATE
284	ASWGKB11	2.66E-5	N	1	N	1	2.66E-05	EDG '2B' START PUSHBUTTON FAILS TO OPERATE
285	ASWGKB12	2.66E-5	N	1	N	1	2.66E-05	EDG '2B' FIELD FLASH PUSHBUTTON FAILS TO OPERATE
286	AT1QJA01	2.20E-6	N	1	N	1	2.20E-06	480-120/240V TRANSFORMER FEEDING LP-D1 OOS FOR MAINT.
287	AT1QKL01	2.20E-6	N	1	N	1	2.20E-06	480-120/240V TRANSFORMER FEEDING LP-D2 OOS FOR MAINT.
288	AT1TJA01	8.00E-7	H	1	D	1	1.92E-05	TRANSFORMER FEEDING LP-D1 FAILS
289	AT1TKB01	8.00E-7	H	1	D	1	1.92E-05	TRANSFORMER FEEDING LP-D2 FAILS
290	ATRQJ485	2.21E-4	N	1	N	1	2.21E-04	4160/480V TRANSFORMER (485) OOS FOR MAINT.
291	ATRQK496	2.21E-4	N	1	N	1	2.21E-04	4160/480V TRANSFORMER (496) OOS FOR MAINT.
292	ATRTCC56	7.00E-7	H	0.1	D	1	1.68E-06	CCF OF TRANSFORMERS 485 AND 496 (SCREENING FA
293	ATRTJ485	7.00E-7	H	1	D	1	1.68E-05	4160/480V TRANSFORMER (485) FAILS TO OPERATE
294	ATRTK496	7.00E-7	H	1	D	1	1.68E-05	4160/480V TRANSFORMER (496) FAILS TO OPERATE

Basic Event and Type Code Data:

	NAME	RATE	U	FACTOR	U	C	PROB	DESC
295	ATRTX389	7.00E-7	H	1	D	1	1.68E-05	SWITCHYARD TRANSFORMER 389 FAILS TO OPERATE
296	ATRTX399	7.00E-7	H	1	D	1	1.68E-05	SWITCHYARD TRANSFORMER 399 FAILS TO OPERATE
297	DB1DA016	5.00E-7	H	1	D	1	1.20E-05	BREAKER BETWEEN 125VDC BUS BX (CKT 16) AND PANEL B FAILS TO REMAIN CLOSE
298	DB1DA018	5.00E-7	H	1	D	1	1.20E-05	BREAKER BETWEEN 125VDC BUS A (CKT 18) AND PANEL A FAILS TO REMAIN CLOSED
299	DB1DA022	5.00E-7	H	1	D	1	1.20E-05	BREAKER BETWEEN 125VDC BUS A (CKT 22) AND CAB. EGG2A FAILS TO REMAIN CLO
300	DB1DAA07	5.00E-7	H	1	D	1	1.20E-05	CB 7 OFF OF DC BUS A FAILS TO REMAIN CLOSED
301	DB1DAA14	5.00E-7	H	1	D	1	1.20E-05	BREAKER OFF 125VDC DIST. PANEL A (CKT A14) FAILS TO REMAIN CLOSED
302	DB1DAA15	5.00E-7	H	1	D	1	1.20E-05	CB 15 OFF OF DC BUS A FAILS TO REMAIN CLOSED
303	DB1DAA17	5.00E-7	H	1	D	1	1.20E-05	CB 17 OFF OF DC BUS A FAILS TO REMAIN CLOSED
304	DB1DAA19	5.00E-7	H	1	D	1	1.20E-05	CB 19 OFF OF DC BUS A FAILS TO REMAIN CLOSED
305	DB1DAB08	5.00E-7	H	1	D	1	1.20E-05	CB 8 OFF OF DC BUS BX FAILS TO REMAIN CLOSED
306	DB1DAB12	5.00E-7	H	1	D	1	1.20E-05	CB 12 OFF OF DC BUS BX FAILS TO REMAIN CLOSED
307	DB1DAB13	5.00E-7	H	1	D	1	1.20E-05	CB 13 OFF OF DC BUS BX FAILS TO REMAIN CLOSED
308	DB1DAB14	5.00E-7	H	1	D	1	1.20E-05	BREAKER OFF 125VDC DIST. PANEL B (CKT B14) FAILS TO REMAIN CLOSED
309	DB1DAX08	5.00E-7	H	1	D	1	1.20E-05	CB 8 OFF OF DC BUS BX FAILS TO REMAIN CLOSED
310	DB1DAX13	5.00E-7	H	1	D	1	1.20E-05	CB 13 OFF OF DC BUS BX FAILS TO REMAIN CLOSED
311	DB1DB010	5.00E-7	H	1	D	1	1.20E-05	BREAKER BETWEEN 125VDC BUS B (CKT 10) AND CAB. EGG2B FAILS TO REMAIN CLOS
312	DB1DBB06	5.00E-7	H	1	D	1	1.20E-05	CB 6 OFF OF DC BUS B FAILS TO REMAIN CLOSED
313	DBSTI00A	3.83E-6	H	1	D	1	9.19E-05	LOCAL FAULTS ON 125VDC DISTRIBUTION PANEL A
314	DBSTI00B	3.83E-6	H	1	D	1	9.19E-05	LOCAL FAULTS ON 125VDC DISTRIBUTION PANEL B
315	DBSTJE2A	3.83E-6	H	1	D	1	9.19E-05	LOCAL FAULTS ON 125VDC DISTRIBUTION CABINET EGG2A
316	DBSTKE2B	3.83E-6	H	1	D	1	9.19E-05	LOCAL FAULTS ON 125VDC DISTRIBUTION CABINET EGG2B
317	DDDNA00A			5.0E-1			5.00E-01	NO DC POWER FROM 125V DC BUS A
318	DDDNA0BX			5.0E-1			5.00E-01	NO DC POWER FROM 125VDC BUS BX
319	DDDNB00B			5.0E-1			5.00E-01	NO DC POWER FROM 125V DC BUS B
320	IIINX00A			0.5			5.00E-01	LOSS OF OFFSITE POWER
321	IIINXXXX			2.47E-4			2.47E-04	OFFSITE POWER AVAILABLE
322	WAVAC290	2.00E-3	N	6.8E-2	N	1	1.36E-04	CCF OF SW-FCV-129 & 130 TO OPEN
323	WAVAJ129	2.00E-3	N	1	N	1	2.00E-03	SW-FCV-129 FAILS TO OPEN
324	WAVAK130	2.00E-3	N	1	N	1	2.00E-03	SW-FCV-130 FAILS TO OPEN
325	WWWNL0AB			9.75E-5			9.75E-05	LOSS OF SERVICE WATER COOLING

Appendix C

C.1 ------- OLDABT Cutset Report
C.2 ------- NEWABT Cutset Report

.\CUTSET\OLDABT.CUT CUTSET REPORT 10-04-93 8:57 Page 1
Filter: 'ACTIVE'

MODULE/EVENT NAME	DESCRIPTION		RATE	EXPOSURE	B.E. PROB.	MOD./CS. PROB.
1) GAAM05	<module>					*5.87E-02
1) AB1BA911	9C FAILS TO CLOSE AFTER 11C OPENS, DG A STARTS AFTER DG B	FAST T		1.0E-1	1.00E-01	5.00E-02
ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
2) ADGFCCAB	CCF OF EDG'S '2A' AND '2B' TO RUN		1.10E-3	0.068	1.80E-03	1.80E-03
3) AB1BA9C0	CB 9C FAILS TO CLOSE		4.00E-4	6	2.40E-03	1.20E-03
ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
4) ADGCCOOL	COMMON CAUSE FAILURE OR EDG ROOM COOLING			6.70E-04	6.70E-04	6.70E-04
5) ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	3.48E-04
ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
6) ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	3.00E-04
ARCHJ15A	RELAY 62-5A FAILS TO ENERGIZE		1.00E-4	6	6.00E-04	
7) ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	3.48E-04
ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
8) ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	1.32E-04
ADGFJ02A	EDG '2A' FAILS TO PUN GIVEN START		1.10E-3	1	2.64E-02	
ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
9) ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	1.32E-04
ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
ADGQJ02A	EMERGENCY DESIEL GENERATOR '2A' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
10) WAVAC290	CCF OF SW-FCV-129 & 130 TO OPEN		2.00E-3	6.8E-2	1.36E-04	1.36E-04
11) ADGECCAB	CCF OF EDG'S '2A' AND '2B' TO START		2.80E-3	0.038	1.06E-04	1.06E-04
12) ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	1.32E-04
ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
13) ACPBK5B4	CONTACT PAIR 62-5B 4-6 FAILS TO CLOSE		1.35E-4	1	1.35E-04	6.75E-05
ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
14) ACPAK5A2	CONTACT PAIR 62-5A 2-6 FAILS TO OPEN		1.35E-4	1	1.35E-04	6.75E-05
ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
15) ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	5.28E-05
ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
AMVAJ64A	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
16) ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	5.28E-05
ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
AMVAK64B	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
~~17) ADGACPSF~~	~~COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST~~			~~.5~~	~~5.00E-01~~	~~5.00E-05~~
ADGQJ02A	EMERGENCY DESIEL GENERATOR '2A' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
18) ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	3.70E-05
ADGEJ02A	DIESEL 2A FAILS TO START		2.80E-3	1	2.80E-03	
ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
19) ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	3.70E-05
ADGEK02B	DIESEL 2B FAILS TO START		2.80E-3	1	2.80E-03	
ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
20) ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	5.28E-05
ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
AMVAJ64A	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
21) ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	5.28E-05
ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	

Appendix C.1

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	MODULE/EVENT NAME	DESCRIPTION		RATE	EXPOSURE	B.E. PROB.	MOD./CS. PROB.
	AMVAK64B	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
22)	AB1BAM44	CB 4C BETWEEN MCC 1-4, MCC 4-4 AND BUS 1-4 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	3.17E-05
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
23)	AB1BA11C	CB 11C FAILS TO CLOSE		4.00E-4	6	2.40E-03	3.17E-05
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
24)	AB1BAM47	CB 16C BETWEEN MCC 4-7 MCC, 7-7 AND BUS 1-7 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	3.17E-05
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
25)	AB1BAM36	CB 17C BETWEEN MCC 3-7, MCC 6-7 AND BUS 1-7 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	3.17E-05
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
26)	AB1BA841	CB 4841 FAILS TO OPEN (FAILURE ASSUMED SAME AS CLOSE)	(UV CR	4.00E-4	6	2.40E-03	3.17E-05
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
27)	AB1BAM68	CB 12D BETWEEN MCC 8-6 AND BUS 1-6 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	3.17E-05
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
28)	AB1BAM23	CB 2C BETWEEN MCC 2-4, MCC 3-4 AND BUS 1-4 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	3.17E-05
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
29)	AB1BA971	CB 4971 FAILS TO OPEN (FAILURE ASSUMED SAME AS CLOSE)	(UV OR	4.00E-4	6	2.40E-03	3.17E-05
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
30)	AB1BXM25	CB 6C BETWEEN MCC 2-5, MCC 1-5 AND BUS 1-5 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	3.17E-05
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
31)	AB1BPM85	CB 8D BETWEEN MCC 8-5 AND BUS 1-5 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	3.17E-05
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
32)	AB1BA09C	CB 9C FAILS TO OPEN (FAILURE RATE ASSUMED SAME AS CLOSE)		4.00E-4	6	2.40E-03	3.17E-05
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
33)	AB1BAM67	CB 14C BETWEEN MCC 6-6, MCC 7-6 AND BUS 1-6 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	3.17E-05
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
34)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	3.00E-05
	AFNECCRA	CCF OF SWGR ROOM 'A' INTAKE/EXHAUST FANS TO START AFTER LOSP	(SCR	6.00E-4	.1	6.00E-05	
35)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	2.64E-05
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
	WAVAK130	SW-FCV-130 FAILS TO OPEN		2.00E-3	1	2.00E-03	
36)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	2.64E-05
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
	WAVAJ129	SW-FCV-129 FAILS TO OPEN		2.00E-3	1	2.00E-03	
37)	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	3.70E-05
	ADGEK02B	DIESEL 2B FAILS TO START		2.80E-3	1	2.80E-03	
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
38)	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	3.70E-05
	ADGEJ02A	DIESEL 2A FAILS TO START		2.80E-3	1	2.80E-03	

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	MODULE/EVENT NAME	DESCRIPTION		RATE	EXPOSURE	B.E. PROB.	MOD./CS. PROB.
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
39)	AB1BA11C	CB 11C FAILS TO CLOSE		4.00E-4	6	2.40E-03	3.17E-05
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
40)	AB1BXM25	CB 6C BETWEEN MCC 2-5, MCC 1-5 AND BUS 1-5 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	3.17E-05
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
41)	AB1BAM67	CB 14C BETWEEN MCC 6-6, MCC 7-6 AND BUS 1-6 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	3.17E-05
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
42)	AB1BPM85	CB 8D BETWEEN MCC 8-5 AND BUS 1-5 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	3.17E-05
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
43)	AB1BAM68	CB 12D BETWEEN MCC 8-6 AND BUS 1-6 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	3.17E-05
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
44)	AB1BAM47	CB 16C BETWEEN MCC 4-7 MCC, 7-7 AND BUS 1-7 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	3.17E-05
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
45)	AB1BA09C	CB 9C FAILS TO OPEN (FAILURE RATE ASSUMED SAME AS CLOSE)		4.00E-4	6	2.40E-03	3.17E-05
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
46)	AB1BAM44	CB 4C BETWEEN MCC 1-4, MCC 4-4 AND BUS 1-4 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	3.17E-05
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
47)	AB1BA971	CB 4971 FAILS TO OPEN (FAILURE ASSUMED SAME AS CLOSE)	(UV OR	4.00E-4	6	2.40E-03	3.17E-05
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
48)	AB1BA841	CB 4841 FAILS TO OPEN (FAILURE ASSUMED SAME AS CLOSE)	(UV OR	4.00E-4	6	2.40E-03	3.17E-05
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
49)	AB1BAM36	CB 17C BETWEEN MCC 3-7, MCC 6-7 AND BUS 1-7 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	3.17E-05
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
50)	AB1BAM23	CB 2C BETWEEN MCC 2-4, MCC 3-4 AND BUS 1-4 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	3.17E-05
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
51)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	2.00E-05
	ADGQJ02A	EMERGENCY DESIEL GENERATOR '2A' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
	AMVAK64B	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
52)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	2.00E-05
	ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
	AMVAJ64A	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
53)	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	2.64E-05
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
	WAVAJ129	SW-FCV-129 FAILS TO OPEN		2.00E-3	1	2.00E-03	
54)	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	2.64E-05
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
	WAVAK130	SW-FCV-130 FAILS TO OPEN		2.00E-3	1	2.00E-03	
55)	ACPAK5B4	CONTACT PAIR 62-5B 4-6 FAILS TO OPEN		1.35E-4	8	1.08E-03	1.43E-05

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	MODULE/EVENT NAME	DESCRIPTION		RATE	EXPOSURE	B.E. PROB.	MOD./CS. PROB.
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
'56)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	1.40E-05
	ADGEJ02A	DIESEL 2A FAILS TO START		2.80E-3	1	2.80E-03	
	ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
57)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	1.40E-05
	ADGEK02B	DIESEL 2B FAILS TO START		2.80E-3	1	2.80E-03	
	ADGQJ02A	EMERGENCY DESIEL GENERATOR '2A' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
58)	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	2.00E-05
	ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
	AMVAJ64A	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
59)	AB1BA841	CB 4841 FAILS TO OPEN (FAILURE ASSUMED SAME AS CLOSE)	(UV OR	4.00E-4	6	2.40E-03	1.20E-05
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
	ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
60)	AB1BAM23	CB 2C BETWEEN MCC 2-4, MCC 3-4 AND BUS 1-4 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	1.20E-05
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
	ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
61)	AB1BAM67	CB 14C BETWEEN MCC 6-6, MCC 7-6 AND BUS 1-6 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	1.20E-05
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
	ADGQJ02A	EMERGENCY DESIEL GENERATOR '2A' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
62)	AB1PA971	CB 4971 FAILS TO OPEN (FAILURE ASSUMED SAME AS CLOSE)	(UV OR	4.00E-4	6	2.40E-03	1.20E-05
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
	ADGQJ02A	EMERGENCY DESIEL GENERATOR '2A' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
63)	AB1BAM68	CB 12D BETWEEN MCC 8-6 AND BUS 1-6 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	1.20E-05
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
	ADGQJ02A	EMERGENCY DESIEL GENERATOR '2A' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
64)	AB1BAM36	CB 17C BETWEEN MCC 3-7, MCC 6-7 AND BUS 1-7 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	1.20E-05
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
	ADGQJ02A	EMERGENCY DESIEL GENERATOR '2A' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
65)	AB1BA09C	CB 9C FAILS TO OPEN (FAILURE RATE ASSUMED SAME AS CLOSE)		4.00E-4	6	2.40E-03	1.20E-05
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
	ADGQJ02A	EMERGENCY DESIEL GENERATOR '2A' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
66)	AB1BPM85	CB 8D BETWEEN MCC 8-5 AND BUS 1-5 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	1.20E-05
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
	ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
67)	AB1BXM25	CB 6C BETWEEN MCC 2-5, MCC 1-5 AND BUS 1-5 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	1.20E-05
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
	ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
68)	AB1BA11C	CB 11C FAILS TO CLOSE		4.00E-4	6	2.40E-03	1.20E-05
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
	ADGQJ02A	EMERGENCY DESIEL GENERATOR '2A' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
69)	AB1BAM47	CB 16C BETWEEN MCC 4-7 MCC, 7-7 AND BUS 1-7 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	1.20E-05
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
	ADGQJ02A	EMERGENCY DESIEL GENERATOR '2A' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
'0)	AB1BAM44	CB 4C BETWEEN MCC 1-4, MCC 4-4 AND BUS 1-4 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	1.20E-05
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
	ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
71)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	1.19E-05
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
	AMVQK64B	MOTOR OPERATED INTAKE DAMPER OOS FOR MAINT.		9.04E-4	1	9.04E-04	

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	MODULE/EVENT NAME	DESCRIPTION	RATE	EXPOSURE	B.E. PROB.	MOD./CS. PROB.
72)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	1.19E-05
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
	AMVQJ64A	MOTOR OPERATED INTAKE DAMPER OOS FOR MAINT.	9.04E-4	1	9.04E-04	
73)	ACPBI93C	CONTACT PAIR 27Y/1-9 3-3C FAIL TO CLOSE	1.35E-4	6	8.10E-04	1.07E-05
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
74)	ACPAX601	CONTACT PAIR 27-6 2-10 FAILS TO OPEN	1.35E-4	6	8.10E-04	1.07E-05
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
75)	ACPBX65C	CONTACT PAIR 27Y-6 5-5C FAILS TO CLOSE	1.35E-4	6	8.10E-04	1.07E-05
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
76)	ACPAX701	CONTACT PAIR 27-7 2-10 FAILS TO OPEN	1.35E-4	6	8.10E-04	1.07E-05
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
77)	ACPAK5A3	CONTACT PAIR 62-5A 3-5 FAILS TO OPEN	1.35E-4	6	8.10E-04	1.07E-05
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
78)	ACPDJA03	AUX CONTACT PAIR 27Y/1-8 17 FAILS TO REMAIN CLOSED	1.25E-7	18	8.10E-04	1.07E-05
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
79)	ACPBX47C	CONTACT PAIR 27Y-4 7-7C FAILS TO CLOSE	1.35E-4	6	8.10E-04	1.07E-05
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
80)	ACPBX72C	CONTACT PAIR 27Y-7 2-2C FAILS TO CLOSE	1.35E-4	6	8.10E-04	1.07E-05
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
81)	ACPBI83C	CONTACT PAIR 27Y/1-8 3-3C FAIL TO CLOSE	1.35E-4	6	8.10E-04	1.07E-05
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
82)	ACPBX513	CONTACT PAIR 27X-5 9-13 FAILS TO CLOSE	1.35E-4	6	8.10E-04	1.07E-05
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
83)	ACPBXX61	CONTACT PAIR 27X-6 9-13 FAILS TO CLOSE	1.35E-4	6	8.10E-04	1.07E-05
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
84)	ACPBX42C	CONTACT PAIR 27Y-4 2-2C FAILS TO CLOSE	1.35E-4	6	8.10E-04	1.07E-05
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
85)	ACPAX401	CONTACT PAIR 27-4 2-10 FAILS TO OPEN	1.35E-4	6	8.10E-04	1.07E-05
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
86)	ACPBXX51	CONTACT PAIR 27X-5 9-13 FAILS TO CLOSE	1.35E-4	6	8.10E-04	1.07E-05
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
87)	ACPDKB03	AUX CONTACT PAIR 27Y/1-9 17 FAILS TO REMAIN CLOSED	1.25E-7	18	8.10E-04	1.07E-05
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
88)	ACPBK901	BREAKER 9C CP 15-16 FAILS TO CLOSE UPON BREAKER TRIP	1.35E-4	6	8.10E-04	1.07E-05
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	

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	MODULE/EVENT NAME	DESCRIPTION		RATE	EXPOSURE	B.E. PROB.	MOD./CS. PROB.
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
89)	ACPBX613	CONTACT PAIR 27X-6 9-13 FAILS TO CLOSE		1.35E-4	6	8.10E-04	1.07E-05
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
90)	ACPBXX71	CONTACT PAIR 27X-7 9-13 FAILS TO CLOSE		1.35E-4	6	8.10E-04	1.07E-05
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
91)	ACPDJA04	AUX CONTACT PAIR 27Y/1-8 18 FAILS TO REMAIN CLOSED		1.25E-7	18	8.10E-04	1.07E-05
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
92)	ACPDKB04	AUX CONTACT PAIR 27Y/1-9 18 FAILS TO REMAIN CLOSED		1.25E-7	18	8.10E-04	1.07E-05
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
93)	ACPBX52C	CONTACT PAIR 27Y-5 2-2C FAILS TO CLOSE		1.35E-4	6	8.10E-04	1.07E-05
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
94)	ACPBK5A2	CONTACT PAIR 62-6A 2-6 FAILS TO CLOSE		1.35E-4	6	8.10E-04	1.07E-05
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
95)	ACPBX74C	CONTACT PAIR 27Y-7 4-4C FAILS TO CLOSE		1.35E-4	6	8.10E-04	1.07E-05
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
96)	ACPBXX41	CONTACT PAIR 27X-4 9-13 FAILS TO CLOSE		1.35E-4	6	8.10E-04	1.07E-05
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
97)	ACPAX501	CONTACT PAIR 27-5 2-10 FAILS TO OPEN		1.35E-4	6	8.10E-04	1.07E-05
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
98)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	1.00E-05
	ADGQJ02A	EMERGENCY DESIEL GENERATOR '2A' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
	WAVAK130	SW-FCV-130 FAILS TO OPEN		2.00E-3	1	2.00E-03	
99)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	1.00E-05
	ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
	WAVAJ129	SW-FCV-129 FAILS TO OPEN		2.00E-3	1	2.00E-03	
100)	ACPAK5B4	CONTACT PAIR 62-5B 4-6 FAILS TO OPEN		1.35E-4	8	1.08E-03	1.43E-05
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
101)	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	1.40E-05
	ADGEJ02A	DIESEL 2A FAILS TO START		2.80E-3	1	2.80E-03	
	ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
102)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	8.00E-06
	AMVAJ64A	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
	AMVAK64B	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
103)	AB1BAM23	CB 2C BETWEEN MCC 2-4, MCC 3-4 AND BUS 1-4 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	1.20E-05
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
104)	AB1BPM85	CB 8D BETWEEN MCC 8-5 AND BUS 1-5 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	1.20E-05
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
105)	AB1BXM25	CB 6C BETWEEN MCC 2-5, MCC 1-5 AND BUS 1-5 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	1.20E-05

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	MODULE/EVENT NAME	DESCRIPTION		RATE	EXPOSURE	B.E. PROB.	MOD./CS. PROB.
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
106)	AB1BA841	CB 4841 FAILS TO OPEN (FAILURE ASSUMED SAME AS CLOSE)	(UV OR	4.00E-4	6	2.40E-03	1.20E-05
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
107)	AB1BAM44	CB 4C BETWEEN MCC 1-4, MCC 4-4 AND BUS 1-4 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	1.20E-05
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
108)	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	1.19E-05
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
	AMVQK64B	MOTOR OPERATED INTAKE DAMPER OOS FOR MAINT.		9.04E-4	1	9.04E-04	
109)	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	1.19E-05
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
	AMVQJ64A	MOTOR OPERATED INTAKE DAMPER OOS FOR MAINT.		9.04E-4	1	9.04E-04	
110)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	7.92E-06
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
	ARCHX7Y4	RELAY 27Y-4 FAILS TO ENERGIZE		1.00E-4	6	6.00E-04	
111)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	7.92E-06
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
	ARCHX7Y6	RELAY 27Y-6 FAILS TO ENERGIZE		1.00E-4	6	6.00E-04	
112)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	7.92E-06
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
	ARCHKB04	RELAY 27Y/1-9 FAILS TO ENERGIZE		1.00E-4	6	6.00E-04	
113)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	7.92E-06
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
	ARCMX276	RELAY 27-6 FAILS TO DE-ENERGIZE		1.00E-4	6	6.00E-04	
114)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	7.92E-06
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
	AFNEK64B	FAN F-64-1B FAILS TO START		6.00E-4	1	6.00E-04	
115)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	7.92E-06
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
	ARCHJA04	RELAY 27Y/1-8 FAILS TO ENERGIZE		1.00E-4	6	6.00E-04	
116)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	7.92E-06
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
	ARCMX7X4	RELAY 27X-4 FAILS TO DEENERGIZE		1.00E-4	6	6.00E-04	
117)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	7.92E-06
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
	ARCHKB21	RELAY 27Y2/1-9 FAILS TO ENERGIZE		1.00E-4	6	6.00E-04	
118)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	7.92E-06
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
	ARCHKB05	RELAY 27X/1-9 FAILS TO ENERGIZE		1.00E-4	6	6.00E-04	
119)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	7.92E-06
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
	ARCMX7X5	RELAY 27X-5 FAILS TO DE-ENERGIZE		1.00E-4	6	6.00E-04	
120)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	7.92E-06
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
	ARCMX277	RELAY 27-7 FAILS TO DE-ENERGIZE		1.00E-4	6	6.00E-04	
121)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	7.92E-06
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
	ARCHJA05	RELAY 27X/1-8 FAILS TO ENERGIZE		1.00E-4	6	6.00E-04	

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MODULE/EVENT NAME	DESCRIPTION	RATE	EXPOSURE	B.E. PROB.	MOD./CS. PROB.
			.5	5.00E-01	7.92E-06
122) ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST	1.10E-3	1	2.64E-02	
ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	6.00E-4	1	6.00E-04	
AFNEJ64A	FAN F-64-1A FAILS TO START		.5	5.00E-01	7.92E-06
123) ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST	1.10E-3	1	2.64E-02	
ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.00E-4	6	6.00E-04	
ARCMKB01	RELAY 27Y1/1-9 FAILS TO DEENERGIZE		.5	5.00E-01	7.92E-06
124) ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST	1.10E-3	1	2.64E-02	
ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.00E-4	6	6.00E-04	
ARCHX7Y7	RELAY 27Y-7 FAILS TO ENERGIZE		.5	5.00E-01	7.92E-06
125) ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST	1.10E-3	1	2.64E-02	
ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.00E-4	6	6.00E-04	
ARCMX274	RELAY 27-4 FAILS TO DE-ENERGIZE		.5	5.00E-01	7.92E-06
126) ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST	1.10E-3	1	2.64E-02	
ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.00E-4	6	6.00E-04	
ARCMJA01	RELAY 27Y1/1-8 FAILS TO DEENERGIZE		.5	5.00E-01	7.92E-06
127) ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST	1.10E-3	1	2.64E-02	
ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.00E-4	6	6.00E-04	
ARCMX7X6	RELAY 27X-6 FAILS TO DE-ENERGIZE		.5	5.00E-01	7.92E-06
128) ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST	1.10E-3	1	2.64E-02	
ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.00E-4	6	6.00E-04	
ARCMX275	RELAY 27-5 FAILS TO DE-ENERGIZE		.5	5.00E-01	7.92E-06
129) ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST	1.10E-3	1	2.64E-02	
ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.00E-4	6	6.00E-04	
ARCMX7X7	RELAY 27X-7 FAILS TO DE-ENERGIZE		.5	5.00E-01	7.92E-06
130) ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST	1.10E-3	1	2.64E-02	
ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.00E-4	6	6.00E-04	
ARCHX7Y5	RELAY 27Y-5 FAILS TO ENERGIZE		.5	5.00E-01	7.92E-06
131) ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST	1.10E-3	1	2.64E-02	
ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.00E-4	6	6.00E-04	
ARCHK08A	RELAY 62-6A FAILS TO ENERGIZE		.5	5.00E-01	7.92E-06
132) ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST	1.10E-3	1	2.64E-02	
ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.00E-4	6	6.00E-04	
ARCMJ15A	RELAY 62-5A FAILS TO DEENERGIZE		.5	5.00E-01	7.92E-06
133) ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST	1.10E-3	1	2.64E-02	
ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.00E-4	6	6.00E-04	
ARCHJA21	RELAY 27Y2/1-8 FAILS TO ENERGIZE		.5	5.00E-01	7.92E-06
134) ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST	1.10E-3	1	2.64E-02	
ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.00E-4	6	6.00E-04	
ARCMK15B	RELAY 62-5B FAILS TO DEENERGIZE		.5	5.00E-01	7.20E-06
135) ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST	6.00E-7	1	1.44E-05	
ARCJJ15B	RELAY 62-5B FAILS TO REMAIN ENERGIZED	1.35E-4	6	8.10E-04	1.07E-05
136) ACPBXX51	CONTACT PAIR 27X-5 9-13 FAILS TO CLOSE		.5	5.00E-01	
ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST	1.10E-3	1	2.64E-02	
ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.35E-4	6	8.10E-04	1.07E-05
137) ACPAX601	CONTACT PAIR 27-6 2-10 FAILS TO OPEN		.5	5.00E-01	
ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST	1.10E-3	1	2.64E-02	
ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.35E-4	6	8.10E-04	1.07E-05
138) ACPAX401	CONTACT PAIR 27-4 2-10 FAILS TO OPEN		.5	5.00E-01	
ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST	1.10E-3	1	2.64E-02	
ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START				

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MODULE/EVENT NAME	DESCRIPTION	RATE	EXPOSURE	B.E. PROB.	MOD./CS. PROB.
139) ACPBI93C	CONTACT PAIR 27Y/1-9 3-3C FAIL TO CLOSE	1.35E-4	6	8.10E-04	1.07E-05
ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST		.5	5.00E-01	
ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
140) ACPDJA04	AUX CONTACT PAIR 27Y/1-8 18 FAILS TO REMAIN CLOSED	1.25E-7	18	8.10E-04	1.07E-05
ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST		.5	5.00E-01	
ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
141) ACPBX42C	CONTACT PAIR 27Y-4 2-2C FAILS TO CLOSE	1.35E-4	6	8.10E-04	1.07E-05
ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST		.5	5.00E-01	
ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
142) ACPBXX71	CONTACT PAIR 27X-7 9-13 FAILS TO CLOSE	1.35E-4	6	8.10E-04	1.07E-05
ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST		.5	5.00E-01	
ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
143) ACPAX701	CONTACT PAIR 27-7 2-10 FAILS TO OPEN	1.35E-4	6	8.10E-04	1.07E-05
ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST		.5	5.00E-01	
ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
144) ACPDKB04	AUX CONTACT PAIR 27Y/1-9 18 FAILS TO REMAIN CLOSED	1.25E-7	18	8.10E-04	1.07E-05
ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST		.5	5.00E-01	
ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
145) ACPDJA03	AUX CONTACT PAIR 27Y/1-8 17 FAILS TO REMAIN CLOSED	1.25E-7	18	8.10E-04	1.07E-05
ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST		.5	5.00E-01	
ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
146) ACPBK5A2	CONTACT PAIR 62-6A 2-6 FAILS TO CLOSE	1.35E-4	6	8.10E-04	1.07E-05
ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST		.5	5.00E-01	
ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
147) ACPBX47C	CONTACT PAIR 27Y-4 7-7C FAILS TO CLOSE	1.35E-4	6	8.10E-04	1.07E-05
ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST		.5	5.00E-01	
ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
148) ACPBX65C	CONTACT PAIR 27Y-6 5-5C FAILS TO CLOSE	1.35E-4	6	8.10E-04	1.07E-05
ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST		.5	5.00E-01	
ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
149) ACPBI83C	CONTACT PAIR 27Y/1-8 3-3C FAIL TO CLOSE	1.35E-4	6	8.10E-04	1.07E-05
ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST		.5	5.00E-01	
ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
150) ACPBX901	BREAKER 9C CP 15-16 FAILS TO CLOSE UPON BREAKER TRIP	1.35E-4	6	8.10E-04	1.07E-05
ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST		.5	5.00E-01	
ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
151) ACPAX501	CONTACT PAIR 27-5 2-10 FAILS TO OPEN	1.35E-4	6	8.10E-04	1.07E-05
ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST		.5	5.00E-01	
ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
152) ACPBX52C	CONTACT PAIR 27Y-5 2-2C FAILS TO CLOSE	1.35E-4	6	8.10E-04	1.07E-05
ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST		.5	5.00E-01	
ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
153) ACPAK5A3	CONTACT PAIR 62-5A 3-5 FAILS TO OPEN	1.35E-4	6	8.10E-04	1.07E-05
ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST		.5	5.00E-01	
ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
154) ACPBX513	CONTACT PAIR 27X-5 9-13 FAILS TO CLOSE	1.35E-4	6	8.10E-04	1.07E-05
ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST		.5	5.00E-01	
ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
155) ACPDKB03	AUX CONTACT PAIR 27Y/1-9 17 FAILS TO REMAIN CLOSED	1.25E-7	18	8.10E-04	1.07E-05
ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST		.5	5.00E-01	

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	MODULE/EVENT NAME	DESCRIPTION	RATE	EXPOSURE	B.E. PROB.	MOD./CS. PROB.
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
156)	ACPBX74C	CONTACT PAIR 27Y-7 4-4C FAILS TO CLOSE	1.35E-4	6	8.10E-04	1.07E-05
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST		.5	5.00E-01	
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
157)	ACPBXX61	CONTACT PAIR 27X-6 9-13 FAILS TO CLOSE	1.35E-4	6	8.10E-04	1.07E-05
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST		.5	5.00E-01	
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
158)	ACPBX72C	CONTACT PAIR 27Y-7 2-2C FAILS TO CLOSE	1.35E-4	6	8.10E-04	1.07E-05
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST		.5	5.00E-01	
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
159)	ACPBX613	CONTACT PAIR 27X-6 9-13 FAILS TO CLOSE	1.35E-4	6	8.10E-04	1.07E-05
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST		.5	5.00E-01	
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
160)	ACPBXX41	CONTACT PAIR 27X-4 9-13 FAILS TO CLOSE	1.35E-4	6	8.10E-04	1.07E-05
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST		.5	5.00E-01	
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
161)	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST		.5	5.00E-01	1.00E-05
	ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.	1.00E-2	1	1.00E-02	
	WAVAJ129	SW-FCV-129 FAILS TO OPEN	2.00E-3	1	2.00E-03	
162)	AB1DA09C	CB 9C FTRC THAT PREVENTS 11C CLOSURE (LOW PROB. CATASTROPHICEVENT)	5.00E-7	1	1.20E-05	6.00E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
163)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	6.00E-06
	DB1DAA19	CB 19 OFF OF DC BUS A FAILS TO REMAIN CLOSED	5.00E-7	1	1.20E-05	
164)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	6.00E-06
	DB1DAB08	CB 8 OFF OF DC BUS BX FAILS TO REMAIN CLOSED	5.00E-7	1	1.20E-05	
165)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	5.60E-06
	ADGEJ02A	DIESEL 2A FAILS TO START	2.80E-3	1	2.80E-03	
	AMVAK64B	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN	4.00E-3	1	4.00E-03	
166)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	5.60E-06
	ADGEK02B	DIESEL 2B FAILS TO START	2.80E-3	1	2.80E-03	
	AMVAJ64A	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN	4.00E-3	1	4.00E-03	
167)	ACPAK5B4	CONTACT PAIR 62-5B 4-6 FAILS TO OPEN	1.35E-4	8	1.08E-03	5.40E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
	ADGQJ02A	EMERGENCY DESIEL GENERATOR '2A' OOS FOR MAINT.	1.00E-2	1	1.00E-02	
168)	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST		.5	5.00E-01	8.00E-06
	AMVAJ64A	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN	4.00E-3	1	4.00E-03	
	AMVAK64B	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN	4.00E-3	1	4.00E-03	
169)	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST		.5	5.00E-01	7.92E-06
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
	ARCHK08A	RELAY 62-6A FAILS TO ENERGIZE	1.00E-4	6	6.00E-04	
170)	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST		.5	5.00E-01	7.92E-06
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
	ARCMX275	RELAY 27-5 FAILS TO DE-ENERGIZE	1.00E-4	6	6.00E-04	
171)	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST		.5	5.00E-01	7.92E-06
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
	ARCMKB01	RELAY 27Y1/1-9 FAILS TO DEENERGIZE	1.00E-4	6	6.00E-04	
172)	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST		.5	5.00E-01	7.92E-06
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
	AFNEJ64A	FAN F-64-1A FAILS TO START	6.00E-4	1	6.00E-04	
173)	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST		.5	5.00E-01	7.92E-06

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	MODULE/EVENT NAME	DESCRIPTION	RATE	EXPOSURE	B.E. PROB.	MOD./CS. PROB.
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
	ARCHKB21	RELAY 27Y2/1-9 FAILS TO ENERGIZE	1.00E-4	6	6.00E-04	
174)	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST		.5	5.00E-01	7.92E-06
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
	ARCHKB04	RELAY 27Y/1-9 FAILS TO ENERGIZE	1.00E-4	6	6.00E-04	
175)	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST		.5	5.00E-01	7.92E-06
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
	ARCMX7X6	RELAY 27X-6 FAILS TO DE-ENERGIZE	1.00E-4	6	6.00E-04	
176)	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST		.5	5.00E-01	7.92E-06
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
	ARCHJA04	RELAY 27Y/1-8 FAILS TO ENERGIZE	1.00E-4	6	6.00E-04	
177)	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST		.5	5.00E-01	7.92E-06
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
	ARCHX7Y7	RELAY 27Y-7 FAILS TO ENERGIZE	1.00E-4	6	6.00E-04	
178)	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST		.5	5.00E-01	7.92E-06
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
	ARCMX277	RELAY 27-7 FAILS TO DE-ENERGIZE	1.00E-4	6	6.00E-04	
179)	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST		.5	5.00E-01	7.92E-06
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
	ARCHJA21	RELAY 27Y2/1-8 FAILS TO ENERGIZE	1.00E-4	6	6.00E-04	
180)	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST		.5	5.00E-01	7.92E-06
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
	ARCMK15B	RELAY 62-5B FAILS TO DEENERGIZE	1.00E-4	6	6.00E-04	
181)	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST		.5	5.00E-01	7.92E-06
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
	ARCHKB05	RELAY 27X/1-9 FAILS TO ENERGIZE	1.00E-4	6	6.00E-04	
182)	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST		.5	5.00E-01	7.92E-06
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
	ARCMJ15A	RELAY 62-5A FAILS TO DEENERGIZE	1.00E-4	6	6.00E-04	
183)	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST		.5	5.00E-01	7.92E-06
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
	ARCMX274	RELAY 27-4 FAILS TO DE-ENERGIZE	1.00E-4	6	6.00E-04	
184)	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST		.5	5.00E-01	7.92E-06
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
	ARCHX7Y4	RELAY 27Y-4 FAILS TO ENERGIZE	1.00E-4	6	6.00E-04	
185)	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST		.5	5.00E-01	7.92E-06
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
	ARCMX7X4	RELAY 27X-4 FAILS TO DEENERGIZE	1.00E-4	6	6.00E-04	
186)	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST		.5	5.00E-01	7.92E-06
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
	ARCHJA05	RELAY 27X/1-8 FAILS TO ENERGIZE	1.00E-4	6	6.00E-04	
187)	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST		.5	5.00E-01	7.92E-06
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
	ARCMX7X7	RELAY 27X-7 FAILS TO DE-ENERGIZE	1.00E-4	6	6.00E-04	
188)	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST		.5	5.00E-01	7.92E-06
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
	ARCHX7Y5	RELAY 27Y-5 FAILS TO ENERGIZE	1.00E-4	6	6.00E-04	
189)	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST		.5	5.00E-01	7.92E-06
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
	AFNEK64B	FAN F-64-1B FAILS TO START	6.00E-4	1	6.00E-04	

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	MODULE/EVENT NAME	DESCRIPTION		RATE	EXPOSURE	B.E. PROB.	MOD./CS. PROB.
190)	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	7.92E-06
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
	ARCMX7X5	RELAY 27X-5 FAILS TO DE-ENERGIZE		1.00E-4	6	6.00E-04	
191)	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	7.92E-06
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
	ARCHX7Y6	RELAY 27Y-6 FAILS TO ENERGIZE		1.00E-4	6	6.00E-04	
192)	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	7.92E-06
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
	ARCMX276	RELAY 27-6 FAILS TO DE-ENERGIZE		1.00E-4	6	6.00E-04	
193)	AB1BAM36	CB 17C BETWEEN MCC 3-7, MCC 6-7 AND BUS 1-7 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	4.80E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
	AMVAJ64A	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
194)	AB1BAM44	CB 4C BETWEEN MCC 1-4, MCC 4-4 AND BUS 1-4 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	4.80E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
	AMVAK64B	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
195)	AB1BXM25	CB 6C BETWEEN MCC 2-5, MCC 1-5 AND BUS 1-5 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	4.80E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
	AMVAK64B	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
196)	AB1BA09C	CB 9C FAILS TO OPEN (FAILURE RATE ASSUMED SAME AS CLOSE)		4.00E-4	6	2.40E-03	4.80E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
	AMVAJ64A	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
197)	AB1BAM23	CB 2C BETWEEN MCC 2-4, MCC 3-4 AND BUS 1-4 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	4.80E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
	AMVAK64B	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
198)	AB1BAM68	CB 12D BETWEEN MCC 8-6 AND BUS 1-6 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	4.80E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
	AMVAJ64A	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
199)	AB1BA841	CB 4841 FAILS TO OPEN (FAILURE ASSUMED SAME AS CLOSE)	(UV OR	4.00E-4	6	2.40E-03	4.80E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
	AMVAK64B	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
200)	AB1BAM47	CB 16C BETWEEN MCC 4-7 MCC, 7-7 AND BUS 1-7 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	4.80E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
	AMVAJ64A	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
201)	AB1BPM85	CB 8D BETWEEN MCC 8-5 AND BUS 1-5 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	4.80E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
	AMVAK64B	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
202)	AB1BAM67	CB 14C BETWEEN MCC 6-6, MCC 7-6 AND BUS 1-6 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	4.80E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
	AMVAJ64A	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
203)	AB1BA971	CB 4971 FAILS TO OPEN (FAILURE ASSUMED SAME AS CLOSE)	(UV OR	4.00E-4	6	2.40E-03	4.80E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
	AMVAJ64A	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
204)	AB1BA11C	CB 11C FAILS TO CLOSE		4.00E-4	6	2.40E-03	4.80E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
	AMVAJ64A	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
205)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	4.52E-06
	ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
	AMVQJ64A	MOTOR OPERATED INTAKE DAMPER OOS FOR MAINT.		9.04E-4	1	9.04E-04	
206)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	4.52E-06
	ADGQJ02A	EMERGENCY DESIEL GENERATOR '2A' OOS FOR MAINT.		1.00E-2	1	1.00E-02	

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	MODULE/EVENT NAME	DESCRIPTION	RATE	EXPOSURE	B.E. PROB.	MOD./CS. PROB.
	AMVQK64B	MOTOR OPERATED INTAKE DAMPER OOS FOR MAINT.	9.04E-4	1	9.04E-04	
207)	ACPBK5A2	CONTACT PAIR 62-6A 2-6 FAILS TO CLOSE	1.35E-4	6	8.10E-04	4.05E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
	ADGQJ02A	EMERGENCY DESIEL GENERATOR '2A' OOS FOR MAINT.	1.00E-2	1	1.00E-02	
208)	ACPAX701	CONTACT PAIR 27-7 2-10 FAILS TO OPEN	1.35E-4	6	8.10E-04	4.05E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
	ADGQJ02A	EMERGENCY DESIEL GENERATOR '2A' OOS FOR MAINT.	1.00E-2	1	1.00E-02	
209)	ACPAK5A3	CONTACT PAIR 62-5A 3-5 FAILS TO OPEN	1.35E-4	6	8.10E-04	4.05E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
	ADGQJ02A	EMERGENCY DESIEL GENERATOR '2A' OOS FOR MAINT.	1.00E-2	1	1.00E-02	
210)	ACPBXX41	CONTACT PAIR 27X-4 9-13 FAILS TO CLOSE	1.35E-4	6	8.10E-04	4.05E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
	ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.	1.00E-2	1	1.00E-02	
211)	ACPAX601	CONTACT PAIR 27-6 2-10 FAILS TO OPEN	1.35E-4	6	8.10E-04	4.05E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
	ADGQJ02A	EMERGENCY DESIEL GENERATOR '2A' OOS FOR MAINT.	1.00E-2	1	1.00E-02	
212)	ACPBX42C	CONTACT PAIR 27Y-4 2-2C FAILS TO CLOSE	1.35E-4	6	8.10E-04	4.05E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
	ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.	1.00E-2	1	1.00E-02	
213)	ACPBX65C	CONTACT PAIR 27Y-6 5-5C FAILS TO CLOSE	1.35E-4	6	8.10E-04	4.05E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
	ADGQJ02A	EMERGENCY DESIEL GENERATOR '2A' OOS FOR MAINT.	1.00E-2	1	1.00E-02	
214)	ACPAX501	CONTACT PAIR 27-5 2-10 FAILS TO OPEN	1.35E-4	6	8.10E-04	4.05E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
	ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.	1.00E-2	1	1.00E-02	
215)	ACPBX47C	CONTACT PAIR 27Y-4 7-7C FAILS TO CLOSE	1.35E-4	6	8.10E-04	4.05E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
	ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.	1.00E-2	1	1.00E-02	
216)	ACPBX513	CONTACT PAIR 27X-5 9-13 FAILS TO CLOSE	1.35E-4	6	8.10E-04	4.05E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
	ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.	1.00E-2	1	1.00E-02	
217)	ACPBX52C	CONTACT PAIR 27Y-5 2-2C FAILS TO CLOSE	1.35E-4	6	8.10E-04	4.05E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
	ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.	1.00E-2	1	1.00E-02	
218)	ACPDJA04	AUX CONTACT PAIR 27Y/1-8 18 FAILS TO REMAIN CLOSED	1.25E-7	18	8.10E-04	4.05E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
	ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.	1.00E-2	1	1.00E-02	
219)	ACPDKB04	AUX CONTACT PAIR 27Y/1-9 18 FAILS TO REMAIN CLOSED	1.25E-7	18	8.10E-04	4.05E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
	ADGQJ02A	EMERGENCY DESIEL GENERATOR '2A' OOS FOR MAINT.	1.00E-2	1	1.00E-02	
220)	ACPDKB03	AUX CONTACT PAIR 27Y/1-9 17 FAILS TO REMAIN CLOSED	1.25E-7	18	8.10E-04	4.05E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
	ADGQJ02A	EMERGENCY DESIEL GENERATOR '2A' OOS FOR MAINT.	1.00E-2	1	1.00E-02	
221)	ACPBXX51	CONTACT PAIR 27X-5 9-13 FAILS TO CLOSE	1.35E-4	6	8.10E-04	4.05E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
	ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.	1.00E-2	1	1.00E-02	
222)	ACPBXX71	CONTACT PAIR 27X-7 9-13 FAILS TO CLOSE	1.35E-4	6	8.10E-04	4.05E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
	ADGQJ02A	EMERGENCY DESIEL GENERATOR '2A' OOS FOR MAINT.	1.00E-2	1	1.00E-02	
223)	ACPBX613	CONTACT PAIR 27X-6 9-13 FAILS TO CLOSE	1.35E-4	6	8.10E-04	4.05E-06

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MODULE/EVENT NAME	DESCRIPTION		RATE	EXPOSURE	B.E. PROB.	MOD./CS. PROB.
ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
ADGQJ02A	EMERGENCY DESIEL GENERATOR '2A' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
224) ACPBI83C	CONTACT PAIR 27Y/1-8 3-3C FAIL TO CLOSE		1.35E-4	6	8.10E-04	4.05E-06
ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
225) ACPAX401	CONTACT PAIR 27-4 2-10 FAILS TO OPEN		1.35E-4	6	8.10E-04	4.05E-06
ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
226) ACPBX72C	CONTACT PAIR 27Y-7 2-2C FAILS TO CLOSE		1.35E-4	6	8.10E-04	4.05E-06
ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
ADGQJ02A	EMERGENCY DESIEL GENERATOR '2A' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
227) ACPBXX61	CONTACT PAIR 27X-6 9-13 FAILS TO CLOSE		1.35E-4	6	8.10E-04	4.05E-06
ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
ADGQJ02A	EMERGENCY DESIEL GENERATOR '2A' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
228) ACPBK901	BREAKER 9C CP 15-16 FAILS TO CLOSE UPON BREAKER TRIP		1.35E-4	6	8.10E-04	4.05E-06
ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
ADGQJ02A	EMERGENCY DESIEL GENERATOR '2A' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
229) ACPBI93C	CONTACT PAIR 27Y/1-9 3-3C FAIL TO CLOSE		1.35E-4	6	8.10E-04	4.05E-06
ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
ADGQJ02A	EMERGENCY DESIEL GENERATOR '2A' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
230) ACPDJA03	AUX CONTACT PAIR 27Y/1-8 17 FAILS TO REMAIN CLOSED		1.25E-7	18	8.10E-04	4.05E-06
ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
231) ACPBX74C	CONTACT PAIR 27Y-7 4-4C FAILS TO CLOSE		1.35E-4	6	8.10E-04	4.05E-06
ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
ADGQJ02A	EMERGENCY DESIEL GENERATOR '2A' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
232) ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	4.00E-06
AMVAK64B	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
WAVAJ129	SW-FCV-129 FAILS TO OPEN		2.00E-3	1	2.00E-03	
233) ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	4.00E-06
AMVAJ64A	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
WAVAK130	SW-FCV-130 FAILS TO OPEN		2.00E-3	1	2.00E-03	
234) ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	6.00E-06
DB1DAB08	CB 8 OFF OF DC BUS BX FAILS TO REMAIN CLOSED		5.00E-7	1	1.20E-05	
235) ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	6.00E-06
DB1DAA19	CB 19 OFF OF DC BUS A FAILS TO REMAIN CLOSED		5.00E-7	1	1.20E-05	
236) ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	4.00E-06
AFNFCCRA	CCF SWGR 'A' ROOM INTAKE/EXHAUST FANS FAIL TO RUN	(SCRE	1.00E-5	.8	8.00E-06	
237) ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	3.92E-06
ADGEJ02A	DIESEL 2A FAILS TO START		2.80E-3	1	2.80E-03	
ADGEK02B	DIESEL 2B FAILS TO START		2.80E-3	1	2.80E-03	
238) ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	5.60E-06
ADGEJ02A	DIESEL 2A FAILS TO START		2.80E-3	1	2.80E-03	
AMVAK64B	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
239) ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	5.60E-06
ADGEK02B	DIESEL 2B FAILS TO START		2.80E-3	1	2.80E-03	
AMVAJ64A	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
240) AB1BAM67	CB 14C BETWEEN MCC 6-6, MCC 7-6 AND BUS 1-6 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	3.36E-06
ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
ADGEJ02A	DIESEL 2A FAILS TO START		2.80E-3	1	2.80E-03	

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MODULE/EVENT NAME	DESCRIPTION		RATE	EXPOSURE	B.E. PROB.	MOD./CS. PROB.
241) AB1BAM47	CB 16C BETWEEN MCC 4-7 MCC, 7-7 AND BUS 1-7 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	3.36E-06
ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
ADGEJ02A	DIESEL 2A FAILS TO START		2.80E-3	1	2.80E-03	
242) AB1BAM36	CB 17C BETWEEN MCC 3-7, MCC 6-7 AND BUS 1-7 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	3.36E-06
ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
ADGEJ02A	DIESEL 2A FAILS TO START		2.80E-3	1	2.80E-03	
243) AB1BA971	CB 4971 FAILS TO OPEN (FAILURE ASSUMED SAME AS CLOSE)	(UV OR	4.00E-4	6	2.40E-03	3.36E-06
ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
ADGEJ02A	DIESEL 2A FAILS TO START		2.80E-3	1	2.80E-03	
244) AB1BA09C	CB 9C FAILS TO OPEN (FAILURE RATE ASSUMED SAME AS CLOSE)		4.00E-4	6	2.40E-03	3.36E-06
ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
ADGEJ02A	DIESEL 2A FAILS TO START		2.80E-3	1	2.80E-03	
245) AB1BA8**	CB 4841 FAILS TO OPEN (FAILURE ASSUMED SAME AS CLOSE)	(UV OR	4.00E-4	6	2.40E-03	3.36E-06
ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
ADGEK02B	DIESEL 2B FAILS TO START		2.80E-3	1	2.80E-03	
246) AB1BPM85	CB 8D BETWEEN MCC 8-5 AND BUS 1-5 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	3.36E-06
ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
ADGEK02B	DIESEL 2B FAILS TO START		2.80E-3	1	2.80E-03	
247) AB1BAM44	CB 4C BETWEEN MCC 1-4, MCC 4-4 AND BUS 1-4 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	3.36E-06
ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
ADGEK02B	DIESEL 2B FAILS TO START		2.80E-3	1	2.80E-03	
248) AB1BXM25	CB 6C BETWEEN MCC 2-5, MCC 1-5 AND BUS 1-5 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	3.36E-06
ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
ADGEK02B	DIESEL 2B FAILS TO START		2.80E-3	1	2.80E-03	
249) AB1BAM23	CB 2C BETWEEN MCC 2-4, MCC 3-4 AND BUS 1-4 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	3.36E-06
ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
ADGEK02B	DIESEL 2B FAILS TO START		2.80E-3	1	2.80E-03	
250) AB1BAM68	CB 12D BETWEEN MCC 8-6 AND BUS 1-6 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	3.36E-06
ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
ADGEJ02A	DIESEL 2A FAILS TO START		2.80E-3	1	2.80E-03	
251) AB1BA11C	CB 11C FAILS TO CLOSE		4.00E-4	6	2.40E-03	3.36E-06
ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
ADGEJ02A	DIESEL 2A FAILS TO START		2.80E-3	1	2.80E-03	
252) AB1BA841	CB 4841 FAILS TO OPEN (FAILURE ASSUMED SAME AS CLOSE)	(UV OR	4.00E-4	6	2.40E-03	4.80E-06
ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
AMVAK64B	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
253) AB1BA09C	CB 9C FAILS TO OPEN (FAILURE RATE ASSUMED SAME AS CLOSE)		4.00E-4	6	2.40E-03	4.80E-06
ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
AMVAJ64A	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
254) AB1BXM25	CB 6C BETWEEN MCC 2-5, MCC 1-5 AND BUS 1-5 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	4.80E-06
ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
AMVAK64B	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
255) AB1BAM36	CB 17C BETWEEN MCC 3-7, MCC 6-7 AND BUS 1-7 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	4.80E-06
ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
AMVAJ64A	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
256) AB1BAM67	CB 14C BETWEEN MCC 6-6, MCC 7-6 AND BUS 1-6 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	4.80E-06
ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
AMVAJ64A	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
257) AB1BA11C	CB 11C FAILS TO CLOSE		4.00E-4	6	2.40E-03	4.80E-06
ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	

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	MODULE/EVENT NAME	DESCRIPTION		RATE	EXPOSURE	B.E. PROB.	MOD./CS. PROB.
	AMVAJ64A	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
258)	AB1BAM47	CB 16C BETWEEN MCC 4-7 MCC, 7-7 AND BUS 1-7 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	4.80E-06
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	AMVAJ64A	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
259)	AB1BAM68	CB 12D BETWEEN MCC 8-6 AND BUS 1-6 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	4.80E-06
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	AMVAJ64A	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
260)	AB1BAM44	CB 4C BETWEEN MCC 1-4, MCC 4-4 AND BUS 1-4 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	4.80E-06
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	AMVAK64B	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
261)	AB1BA971	CB 4971 FAILS TO OPEN (FAILURE ASSUMED SAME AS CLOSE)	(UV OR	4.00E-4	6	2.40E-03	4.80E-06
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	AMVAJ64A	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
262)	AB1BPM85	CB 8D BETWEEN MCC 8-5 AND BUS 1-5 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	4.80E-06
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	AMVAK64B	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
263)	AB1BAM23	CB 2C BETWEEN MCC 2-4, MCC 3-4 AND BUS 1-4 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	4.80E-06
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	AMVAK64B	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
264)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	3.17E-06
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
	AFNFJ64A	FAN F-64-1A FAILS TO RUN		1.00E-5	1	2.40E-04	
265)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	3.17E-06
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
	AFNFK64B	FAN F-64-1B FAILS TO RUN		1.00E-5	1	2.40E-04	
266)	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	4.52E-06
	ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
	AMVQJ64A	MOTOR OPERATED INTAKE DAMPER OOS FOR MAINT.		9.04E-4	1	9.04E-04	
267)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	3.00E-06
	ADGQJ02A	EMERGENCY DESIEL GENERATOR '2A' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
	ARCHK08A	RELAY 62-6A FAILS TO ENERGIZE		1.00E-4	6	6.00E-04	
268)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	3.00E-06
	ADGQJ02A	EMERGENCY DESIEL GENERATOR '2A' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
	ARCMJ15A	RELAY 62-5A FAILS TO DEENERGIZE		1.00E-4	6	6.00E-04	
269)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	3.00E-06
	ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
	AFNEJ64A	FAN F-64-1A FAILS TO START		6.00E-4	1	6.00E-04	
270)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	3.00E-06
	ADGQJ02A	EMERGENCY DESIEL GENERATOR '2A' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
	AFNEK64B	FAN F-64-1B FAILS TO START		6.00E-4	1	6.00E-04	
271)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	3.00E-06
	ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
	ARCHJA04	RELAY 27Y/1-8 FAILS TO ENERGIZE		1.00E-4	6	6.00E-04	
272)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	3.00E-06
	ADGQJ02A	EMERGENCY DESIEL GENERATOR '2A' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
	ARCMX276	RELAY 27-6 FAILS TO DE-ENERGIZE		1.00E-4	6	6.00E-04	
273)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	3.00E-06
	ADGQJ02A	EMERGENCY DESIEL GENERATOR '2A' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
	ARCMK15B	RELAY 62-5B FAILS TO DEENERGIZE		1.00E-4	6	6.00E-04	
274)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	3.00E-06

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	MODULE/EVENT NAME	DESCRIPTION	RATE	EXPOSURE	B.E. PROB.	MOD./CS. PROB.
	ADGQJ02A	EMERGENCY DESIEL GENERATOR '2A' OOS FOR MAINT.	1.00E-2	1	1.00E-02	
	ARCHX7Y6	RELAY 27Y-6 FAILS TO ENERGIZE	1.00E-4	6	6.00E-04	
275)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	3.00E-06
	ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.	1.00E-2	1	1.00E-02	
	ARCHJA05	RELAY 27X/1-8 FAILS TO ENERGIZE	1.00E-4	6	6.00E-04	
276)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	3.00E-06
	ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.	1.00E-2	1	1.00E-02	
	ARCHJA21	RELAY 27Y2/1-8 FAILS TO ENERGIZE	1.00E-4	6	6.00E-04	
277)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	3.00E-06
	ADGQJ02A	EMERGENCY DESIEL GENERATOR '2A' OOS FOR MAINT.	1.00E-2	1	1.00E-02	
	ARCMX277	RELAY 27-7 FAILS TO DE-ENERGIZE	1.00E-4	6	6.00E-04	
278)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	3.00E-06
	ADGQJ02A	EMERGENCY DESIEL GENERATOR '2A' OOS FOR MAINT.	1.00E-2	1	1.00E-02	
	ARCMX7X6	RELAY 27X-6 FAILS TO DE-ENERGIZE	1.00E-4	6	6.00E-04	
279)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	3.00E-06
	ADGQJ02A	EMERGENCY DESIEL GENERATOR '2A' OOS FOR MAINT.	1.00E-2	1	1.00E-02	
	ARCMKB01	RELAY 27Y1/1-9 FAILS TO DEENERGIZE	1.00E-4	6	6.00E-04	
280)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	3.00E-06
	ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.	1.00E-2	1	1.00E-02	
	ARCHX7Y5	RELAY 27Y-5 FAILS TO ENERGIZE	1.00E-4	6	6.00E-04	
281)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	3.00E-06
	ADGQJ02A	EMERGENCY DESIEL GENERATOR '2A' OOS FOR MAINT.	1.00E-2	1	1.00E-02	
	ARCHX7Y7	RELAY 27Y-7 FAILS TO ENERGIZE	1.00E-4	6	6.00E-04	
282)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	3.00E-06
	ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.	1.00E-2	1	1.00E-02	
	ARCMX274	RELAY 27-4 FAILS TO DE-ENERGIZE	1.00E-4	6	6.00E-04	
283)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	3.00E-06
	ADGQJ02A	EMERGENCY DESIEL GENERATOR '2A' OOS FOR MAINT.	1.00E-2	1	1.00E-02	
	ARCHKB21	RELAY 27Y2/1-9 FAILS TO ENERGIZE	1.00E-4	6	6.00E-04	
284)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	3.00E-06
	ADGQJ02A	EMERGENCY DESIEL GENERATOR '2A' OOS FOR MAINT.	1.00E-2	1	1.00E-02	
	ARCHKB04	RELAY 27Y/1-9 FAILS TO ENERGIZE	1.00E-4	6	6.00E-04	
285)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	3.00E-06
	ADGQJ02A	EMERGENCY DESIEL GENERATOR '2A' OOS FOR MAINT.	1.00E-2	1	1.00E-02	
	ARCMX7X7	RELAY 27X-7 FAILS TO DE-ENERGIZE	1.00E-4	6	6.00E-04	
286)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	3.00E-06
	ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.	1.00E-2	1	1.00E-02	
	ARCMJA01	RELAY 27Y1/1-8 FAILS TO DEENERGIZE	1.00E-4	6	6.00E-04	
287)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	3.00E-06
	ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.	1.00E-2	1	1.00E-02	
	ARCMX7X4	RELAY 27X-4 FAILS TO DEENERGIZE	1.00E-4	6	6.00E-04	
288)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	3.00E-06
	ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.	1.00E-2	1	1.00E-02	
	ARCHX7Y4	RELAY 27Y-4 FAILS TO ENERGIZE	1.00E-4	6	6.00E-04	
289)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	3.00E-06
	ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.	1.00E-2	1	1.00E-02	
	ARCMX7X5	RELAY 27X-5 FAILS TO DE-ENERGIZE	1.00E-4	6	6.00E-04	
290)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	3.00E-06
	ADGQJ02A	EMERGENCY DESIEL GENERATOR '2A' OOS FOR MAINT.	1.00E-2	1	1.00E-02	
	ARCHKB05	RELAY 27X/1-9 FAILS TO ENERGIZE	1.00E-4	6	6.00E-04	

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MODULE/EVENT NAME	DESCRIPTION		RATE	EXPOSURE	B.E. PROB.	MOD./CS. PROB.
291) ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	3.00E-06
ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
ARCMX275	RELAY 27-5 FAILS TO DE-ENERGIZE		1.00E-4	6	6.00E-04	
292) ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	2.92E-06
ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
ATRQJ485	4160/480V TRANSFORMER (485) OOS FOR MAINT.		2.21E-4	1	2.21E-04	
293) ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	2.92E-06
ADCFJ02A	EDG '2A' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E 02	
ATRQK496	4160/480V TRANSFORMER (496) OOS FOR MAINT.		2.21E-4	1	2.21E-04	
294) AB1BA841	CB 4841 FAILS TO OPEN (FAILURE ASSUMED SAME AS CLOSE)	(UV OR	4.00E-4	6	2.40E-03	2.88E-06
AB1BAM68	CB 12D BETWEEN MCC 8-6 AND BUS 1-6 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	
ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
295) AB1BA11C	CB 11C FAILS TO CLOSE		4.00E-4	6	2.40E-03	2.88E-06
AB1BAM23	CB 2C BETWEEN MCC 2-4, MCC 3-4 AND BUS 1-4 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	
ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
296) AB1BA11C	CB 11C FAILS TO CLOSE		4.00E-4	6	2.40E-03	2.88E-06
AB1BAM44	CB 4C BETWEEN MCC 1-4, MCC 4-4 AND BUS 1-4 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	
ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
297) AB1BA09C	CB 9C FAILS TO OPEN (FAILURE RATE ASSUMED SAME AS CLOSE)		4.00E-4	6	2.40E-03	2.88E-06
AB1BA841	CB 4841 FAILS TO OPEN (FAILURE ASSUMED SAME AS CLOSE)	(UV OR	4.00E-4	6	2.40E-03	
ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
298) AB1BA09C	CB 9C FAILS TO OPEN (FAILURE RATE ASSUMED SAME AS CLOSE)		4.00E-4	6	2.40E-03	2.88E-06
AB1BPM85	CB 8D BETWEEN MCC 8-5 AND BUS 1-5 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	
ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
299) AB1BA841	CB 4841 FAILS TO OPEN (FAILURE ASSUMED SAME AS CLOSE)	(UV OR	4.00E-4	6	2.40E-03	2.88E-06
AB1BA971	CB 4971 FAILS TO OPEN (FAILURE ASSUMED SAME AS CLOSE)	(UV OR	4.00E-4	6	2.40E-03	
ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
300) AB1BA841	CB 4841 FAILS TO OPEN (FAILURE ASSUMED SAME AS CLOSE)	(UV OR	4.00E-4	6	2.40E-03	2.88E-06
AB1BAM36	CB 17C BETWEEN MCC 3-7, MCC 6-7 AND BUS 1-7 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	
ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
301) AB1BA841	CB 4841 FAILS TO OPEN (FAILURE ASSUMED SAME AS CLOSE)	(UV OR	4.00E-4	6	2.40E-03	2.88E-06
AB1BAM67	CB 14C BETWEEN MCC 6-6, MCC 7-6 AND BUS 1-6 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	
ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
302) AB1BAM68	CB 12D BETWEEN MCC 8-6 AND BUS 1-6 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	2.88E-06
AB1BXM25	CB 6C BETWEEN MCC 2-5, MCC 1-5 AND BUS 1-5 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	
ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
303) AB1BA841	CB 4841 FAILS TO OPEN (FAILURE ASSUMED SAME AS CLOSE)	(UV OR	4.00E-4	6	2.40E-03	2.88E-06
AB1BAM47	CB 16C BETWEEN MCC 4-7 MCC, 7-7 AND BUS 1-7 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	
ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
304) AB1BA11C	CB 11C FAILS TO CLOSE		4.00E-4	6	2.40E-03	2.88E-06
AB1BPM85	CB 8D BETWEEN MCC 8-5 AND BUS 1-5 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	
ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
305) AB1BAM68	CB 12D BETWEEN MCC 8-6 AND BUS 1-6 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	2.88E-06
AB1BPM85	CB 8D BETWEEN MCC 8-5 AND BUS 1-5 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	
ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
306) AB1BA11C	CB 11C FAILS TO CLOSE		4.00E-4	6	2.40E-03	2.88E-06
AB1BA841	CB 4841 FAILS TO OPEN (FAILURE ASSUMED SAME AS CLOSE)	(UV OR	4.00E-4	6	2.40E-03	
ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
307) AB1BAM23	CB 2C BETWEEN MCC 2-4, MCC 3-4 AND BUS 1-4 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	2.88E-06
AB1BAM68	CB 12D BETWEEN MCC 8-6 AND BUS 1-6 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	

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	MODULE/EVENT NAME	DESCRIPTION			RATE	EXPOSURE	B.E. PROB.	MOD./CS. PROB.
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST				.5	5.00E-01	
308)	AB1BA971	CB 4971 FAILS TO OPEN (FAILURE ASSUMED SAME AS CLOSE)	(UV OR		4.00E-4	6	2.40E-03	2.88E-06
	AB1BAM23	CB 2C BETWEEN MCC 2-4, MCC 3-4 AND BUS 1-4 FAILS TO OPEN	(FR SA		4.00E-4	6	2.40E-03	
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST				.5	5.00E-01	
309)	AB1BA971	CB 4971 FAILS TO OPEN (FAILURE ASSUMED SAME AS CLOSE)	(UV OR		4.00E-4	6	2.40E-03	2.88E-06
	AB1BAM44	CB 4C BETWEEN MCC 1-4, MCC 4-4 AND BUS 1-4 FAILS TO OPEN	(FR SA		4.00E-4	6	2.40E-03	
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST				.5	5.00E-01	
310)	AB1BA971	CB 4971 FAILS TO OPEN (FAILURE ASSUMED SAME AS CLOSE)	(UV OR		4.00E-4	6	2.40E-03	2.88E-06
	AB1BPM85	CB 8D BETWEEN MCC 8-5 AND BUS 1-5 FAILS TO OPEN	(FR SA		4.00E-4	6	2.40E-03	
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST				.5	5.00E-01	
311)	AB1BA09C	CB 9C FAILS TO OPEN (FAILURE RATE ASSUMED SAME AS CLOSE)			4.00E-4	6	2.40E-03	2.88E-06
	AB1BXM25	CB 6C BETWEEN MCC 2-5, MCC 1-5 AND BUS 1-5 FAILS TO OPEN	(FR SA		4.00E-4	6	2.40E-03	
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST				.5	5.00E-01	
312)	AB1BAM23	CB 2C BETWEEN MCC 2-4, MCC 3-4 AND BUS 1-4 FAILS TO OPEN	(FR SA		4.00E-4	6	2.40E-03	2.88E-06
	AB1BAM36	CB 17C BETWEEN MCC 3-7, MCC 6-7 AND BUS 1-7 FAILS TO OPEN	(FR SA		4.00E-4	6	2.40E-03	
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST				.5	5.00E-01	
313)	AB1BAM23	CB 2C BETWEEN MCC 2-4, MCC 3-4 AND BUS 1-4 FAILS TO OPEN	(FR SA		4.00E-4	6	2.40E-03	2.88E-06
	AB1BAM67	CB 14C BETWEEN MCC 6-6, MCC 7-6 AND BUS 1-6 FAILS TO OPEN	(FR SA		4.00E-4	6	2.40E-03	
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST				.5	5.00E-01	
314)	AB1BAM44	CB 4C BETWEEN MCC 1-4, MCC 4-4 AND BUS 1-4 FAILS TO OPEN	(FR SA		4.00E-4	6	2.40E-03	2.88E-06
	AB1BAM68	CB 12D BETWEEN MCC 8-6 AND BUS 1-6 FAILS TO OPEN	(FR SA		4.00E-4	6	2.40E-03	
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST				.5	5.00E-01	
315)	AB1BAM44	CB 4C BETWEEN MCC 1-4, MCC 4-4 AND BUS 1-4 FAILS TO OPEN	(FR SA		4.00E-4	6	2.40E-03	2.88E-06
	AB1BAM47	CB 16C BETWEEN MCC 4-7 MCC, 7-7 AND BUS 1-7 FAILS TO OPEN	(FR SA		4.00E-4	6	2.40E-03	
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST				.5	5.00E-01	
316)	AB1BAM23	CB 2C BETWEEN MCC 2-4, MCC 3-4 AND BUS 1-4 FAILS TO OPEN	(FR SA		4.00E-4	6	2.40E-03	2.88E-06
	AB1BAM47	CB 16C BETWEEN MCC 4-7 MCC, 7-7 AND BUS 1-7 FAILS TO OPEN	(FR SA		4.00E-4	6	2.40E-03	
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST				.5	5.00E-01	
317)	AB1BAM36	CB 17C BETWEEN MCC 3-7, MCC 6-7 AND BUS 1-7 FAILS TO OPEN	(FR SA		4.00E-4	6	2.40E-03	2.88E-06
	AB1BXM25	CB 6C BETWEEN MCC 2-5, MCC 1-5 AND BUS 1-5 FAILS TO OPEN	(FR SA		4.00E-4	6	2.40E-03	
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST				.5	5.00E-01	
318)	AB1BAM67	CB 14C BETWEEN MCC 6-6, MCC 7-6 AND BUS 1-6 FAILS TO OPEN	(FR SA		4.00E-4	6	2.40E-03	2.88E-06
	AB1BXM25	CB 6C BETWEEN MCC 2-5, MCC 1-5 AND BUS 1-5 FAILS TO OPEN	(FR SA		4.00E-4	6	2.40E-03	
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST				.5	5.00E-01	
319)	AB1BAM47	CB 16C BETWEEN MCC 4-7 MCC, 7-7 AND BUS 1-7 FAILS TO OPEN	(FR SA		4.00E-4	6	2.40E-03	2.88E-06
	AB1BXM25	CB 6C BETWEEN MCC 2-5, MCC 1-5 AND BUS 1-5 FAILS TO OPEN	(FR SA		4.00E-4	6	2.40E-03	
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST				.5	5.00E-01	
320)	AB1BAM36	CB 17C BETWEEN MCC 3-7, MCC 6-7 AND BUS 1-7 FAILS TO OPEN	(FR SA		4.00E-4	6	2.40E-03	2.88E-06
	AB1BAM44	CB 4C BETWEEN MCC 1-4, MCC 4-4 AND BUS 1-4 FAILS TO OPEN	(FR SA		4.00E-4	6	2.40E-03	
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST				.5	5.00E-01	
321)	AB1BAM44	CB 4C BETWEEN MCC 1-4, MCC 4-4 AND BUS 1-4 FAILS TO OPEN	(FR SA		4.00E-4	6	2.40E-03	2.88E-06
	AB1BAM67	CB 14C BETWEEN MCC 6-6, MCC 7-6 AND BUS 1-6 FAILS TO OPEN	(FR SA		4.00E-4	6	2.40E-03	
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST				.5	5.00E-01	
322)	AB1BA11C	CB 11C FAILS TO CLOSE			4.00E-4	6	2.40E-03	2.88E-06
	AB1BXM25	CB 6C BETWEEN MCC 2-5, MCC 1-5 AND BUS 1-5 FAILS TO OPEN	(FR SA		4.00E-4	6	2.40E-03	
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST				.5	5.00E-01	
323)	AB1BA971	CB 4971 FAILS TO OPEN (FAILURE ASSUMED SAME AS CLOSE)	(UV OR		4.00E-4	6	2.40E-03	2.88E-06
	AB1BXM25	CB 6C BETWEEN MCC 2-5, MCC 1-5 AND BUS 1-5 FAILS TO OPEN	(FR SA		4.00E-4	6	2.40E-03	
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST				.5	5.00E-01	
324)	AB1BAM36	CB 17C BETWEEN MCC 3-7, MCC 6-7 AND BUS 1-7 FAILS TO OPEN	(FR SA		4.00E-4	6	2.40E-03	2.88E-06

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	MODULE/EVENT NAME	DESCRIPTION		RATE	EXPOSURE	B.E. PROB.	MOD./CS. PROB.
	AB1BPM85	CB 8D BETWEEN MCC 8-5 AND BUS 1-5 FAILS TO OPEN	(FR SA	1.00E-4	6	2.40E-03	
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
325)	AB1BAM67	CB 14C BETWEEN MCC 6-6, MCC 7-6 AND BUS 1-6 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	2.88E-06
	AB1BPM85	CB 8D BETWEEN MCC 8-5 AND BUS 1-5 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
326)	AB1BA09C	CB 9C FAILS TO OPEN (FAILURE RATE ASSUMED SAME AS CLOSE)		4.00E-4	6	2.40E-03	2.88E-06
	AB1BAM44	CB 4C BETWEEN MCC 1-4, MCC 4-4 AND BUS 1-4 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
327)	AB1BAM47	CB 16C BETWEEN MCC 4-7 MCC, 7-7 AND BUS 1-7 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	2.88E-06
	AB1BPM85	CB 8D BETWEEN MCC 8-5 AND BUS 1-5 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
328)	AB1BA09C	CB 9C FAILS TO OPEN (FAILURE RATE ASSUMED SAME AS CLOSE)		4.00E-4	6	2.40E-03	2.88E-06
	AB1BAM23	CB 2C BETWEEN MCC 2-4, MCC 3-4 AND BUS 1-4 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
329)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	2.80E-06
	ADGEJ02A	DIESEL 2A FAILS TO START		2.80E-3	1	2.80E-03	
	WAVAK130	SW-FCV-130 FAILS TO OPEN		2.00E-3	1	2.00E-03	
330)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	2.80E-06
	ADGEK02B	DIESEL 2B FAILS TO START		2.80E-3	1	2.80E-03	
	WAVAJ129	SW-FCV-129 FAILS TO OPEN		2.00E-3	1	2.00E-03	
331)	ACPAX401	CONTACT PAIR 27-4 2-10 FAILS TO OPEN		1.35E-4	6	8.10E-04	4.05E-06
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
332)	ACPBI83C	CONTACT PAIR 27Y/1-8 3-3C FAIL TO CLOSE		1.35E-4	6	8.10E-04	4.05E-06
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
333)	ACPBXX41	CONTACT PAIR 27X-4 9-13 FAILS TO CLOSE		1.35E-4	6	8.10E-04	4.05E-06
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
334)	ACPDJA03	AUX CONTACT PAIR 27Y/1-8 17 FAILS TO REMAIN CLOSED		1.25E-7	18	8.10E-04	4.05E-06
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
335)	ACPAX501	CONTACT PAIR 27-5 2-10 FAILS TO OPEN		1.35E-4	6	8.10E-04	4.05E-06
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
336)	ACPBXX51	CONTACT PAIR 27X-5 9-13 FAILS TO CLOSE		1.35E-4	6	8.10E-04	4.05E-06
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
337)	ACPDJA04	AUX CONTACT PAIR 27Y/1-8 18 FAILS TO REMAIN CLOSED		1.25E-7	18	8.10E-04	4.05E-06
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
338)	ACPBX52C	CONTACT PAIR 27Y-5 2-2C FAILS TO CLOSE		1.35E-4	6	8.10E-04	4.05E-06
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
339)	ACPBX47C	CONTACT PAIR 27Y-4 7-7C FAILS TO CLOSE		1.35E-4	6	8.10E-04	4.05E-06
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
340)	ACPBX42C	CONTACT PAIR 27Y-4 2-2C FAILS TO CLOSE		1.35E-4	6	8.10E-04	4.05E-06
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.		1.00E-2	1	1.00E-02	

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MODULE/EVENT NAME	DESCRIPTION		RATE	EXPOSURE	B.E. PROB.	MOD./CS. PROB.
341) ACPBX513	CONTACT PAIR 27X-5 9-13 FAILS TO CLOSE		1.35E-4	6	8.10E-04	4.05E-06
ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
342) ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	4.00E-06
AMVAJ64A	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
WAVAK130	SW-FCV-130 FAILS TO OPEN		2.00E-3	1	2.00E-03	
343) ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	4.00E-06
AMVAK64B	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
WAVAJ129	SW-FCV-129 FAILS TO OPEN		2.00E-3	1	2.00E-03	
344) ACVAJ64A	FAN F-64-1A EXHAUST DAMPER FAILS TO OPEN		2.00E-4	1	2.00E-04	2.64E-06
ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
345) ACVAK64B	FAN F-64-1B EXHAUST DAMPER FAILS TO OPEN		2.00E-4	1	2.00E-04	2.64E-06
ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
346) ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	3.92E-06
ADGEJ02A	DIESEL 2A FAILS TO START		2.80E-3	1	2.80E-03	
ADGEK02B	DIESEL 2B FAILS TO START		2.80E-3	1	2.80E-03	
347) AB1BA09C	CB 9C FAILS TO OPEN (FAILURE RATE ASSUMED SAME AS CLOSE)		4.00E-4	6	2.40E-03	2.40E-06
ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
WAVAJ129	SW-FCV-129 FAILS TO OPEN		2.00E-3	1	2.00E-03	
348) AB1BA841	CB 4841 FAILS TO OPEN (FAILURE ASSUMED SAME AS CLOSE)	(UV OR	4.00E-4	6	2.40E-03	2.40E-06
ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
WAVAK130	SW-FCV-130 FAILS TO OPEN		2.00E-3	1	2.00E-03	
349) AB1BAM36	CB 17C BETWEEN MCC 3-7, MCC 6-7 AND BUS 1-7 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	2.40E-06
ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
WAVAJ129	SW-FCV-129 FAILS TO OPEN		2.00E-3	1	2.00E-03	
350) AB1BAM68	CB 12D BETWEEN MCC 8-6 AND BUS 1-6 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	2.40E-06
ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
WAVAJ129	SW-FCV-129 FAILS TO OPEN		2.00E-3	1	2.00E-03	
351) AB1BAM67	CB 14C BETWEEN MCC 6-6, MCC 7-6 AND BUS 1-6 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	2.40E-06
ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
WAVAJ129	SW-FCV-129 FAILS TO OPEN		2.00E-3	1	2.00E-03	
352) AB1BXM25	CB 6C BETWEEN MCC 2-5, MCC 1-5 AND BUS 1-5 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	2.40E-06
ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
WAVAK130	SW-FCV-130 FAILS TO OPEN		2.00E-3	1	2.00E-03	
353) AB1BAM44	CB 4C BETWEEN MCC 1-4, MCC 4-4 AND BUS 1-4 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	2.40E-06
ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
WAVAK130	SW-FCV-130 FAILS TO OPEN		2.00E-3	1	2.00E-03	
354) AB1BAM47	CB 16C BETWEEN MCC 4-7 MCC, 7-7 AND BUS 1-7 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	2.40E-06
ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
WAVAJ129	SW-FCV-129 FAILS TO OPEN		2.00E-3	1	2.00E-03	
355) AB1BPM85	CB 8D BETWEEN MCC 8-5 AND BUS 1-5 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	2.40E-06
ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
WAVAK130	SW-FCV-130 FAILS TO OPEN		2.00E-3	1	2.00E-03	
356) AB1BAM23	CB 2C BETWEEN MCC 2-4, MCC 3-4 AND BUS 1-4 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	2.40E-06
ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
WAVAK130	SW-FCV-130 FAILS TO OPEN		2.00E-3	1	2.00E-03	
357) AB1BA11C	CB 11C FAILS TO CLOSE		4.00E-4	6	2.40E-03	2.40E-06
ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	

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	MODULE/EVENT NAME	DESCRIPTION	RATE	EXPOSURE	B.E. PROB.	MOD./CS. PROB.
	WAVAJ129	SW-FCV-129 FAILS TO OPEN	2.00E-3	1	2.00E-03	
358)	AB1BA971	CB 4971 FAILS TO OPEN (FAILURE ASSUMED SAME AS CLOSE) (UV OR	4.00E-4	6	2.40E-03	2.40E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
	WAVAJ129	SW-FCV-129 FAILS TO OPEN	2.00E-3	1	2.00E-03	
359)	AB1DJ102	LIGHTING PANEL LP-D1 CKT. #2 FAILS TO REMAIN CLOSED	5.00E-7	1	1.80E-04	2.38E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
360)	AB1DKB01	AC DIST. CABINET EMERG. GEN. 2B CKT. 3 FAILS TO REMAIN CLOSED	5.00E-7	1	1.80E-04	2.38E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
361)	AB1DJD06	CB 6 DIESEL STARTER 2A2 FAILS TO REMAIN CLOSED	5.00E-7	1	1.80E-04	2.38E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
362)	AB1DKD03	CB 3 ALTERNATE FAILS TO REMAIN CLOSED	5.00E-7	1	1.80E-04	2.38E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
363)	AB1DJD03	CB 3 ALTERNATE FAILS TO REMAIN CLOSED	5.00E-7	1	1.80E-04	2.38E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
364)	AB1DJ110	LIGHTING PANEL LP-D1 CKT. #10 FAILS TO REMAIN CLOSED	5.00E-7	1	1.80E-04	2.38E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
365)	AB1DJD02	CB 2 GOVERNOR CONTROL FAILS TO REMAIN CLOSED	5.00E-7	1	1.80E-04	2.38E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
366)	AB1DJD01	CB 1 EG FIELD FLASH FAILS TO REMAIN CLOSED	5.00E-7	1	1.80E-04	2.38E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
367)	AB1DKD02	CB 2 GOVERNOR CONTROL FAILS TO REMAIN CLOSED	5.00E-7	1	1.80E-04	2.38E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
368)	AB1DKD04	CB 4 DIESEL STARTER 2B1 FAILS TO REMAIN CLOSED	5.00E-7	1	1.80E-04	2.38E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
369)	AB1DKD01	CB 1 EG FIELD FLASH FAILS TO REMAIN CLOSED	5.00E-7	1	1.80E-04	2.38E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
370)	AB1DKD06	CB 6 DIESEL STARTER 2B2 FAILS TO REMAIN CLOSED	5.00E-7	1	1.80E-04	2.38E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
371)	AB1DJD04	CB 4 DIESEL STARTER 2A1 FAILS TO REMAIN CLOSED	5.00E-7	1	1.80E-04	2.38E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
372)	AB1DJA01	AC DIST. CABINET EMERG. GEN. 2A CKT. 3 FAILS TO REMAIN CLOSED	5.00E-7	1	1.80E-04	2.38E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
373)	ACPCK6A2	CONTACT PAIR 62-6A 2-6 FAILS TO REMAIN OPEN	2.66E-8	18	1.72E-04	2.28E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
374)	AB1BPM85	CB 8D BETWEEN MCC 8-5 AND BUS 1-5 FAILS TO OPEN (FR SA	4.00E-4	6	2.40E-03	3.36E-06

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	MODULE/EVENT NAME	DESCRIPTION		RATE	EXPOSURE	B.E. PROB.	MOD./CS. PROB.
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	ADGEK02B	DIESEL 2B FAILS TO START		2.80E-3	1	2.80E-03	
375)	AB1BA971	CB 4971 FAILS TO OPEN (FAILURE ASSUMED SAME AS CLOSE)	(UV OR	4.00E-4	6	2.40E-03	3.36E-06
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	ADGEJ02A	DIESEL 2A FAILS TO START		2.80E-3	1	2.80E-03	
376)	AB1BAM68	CB 12D BETWEEN MCC 8-6 AND BUS 1-6 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	3.36E-06
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	ADGEJ02A	DIESEL 2A FAILS TO START		2.80E-3	1	2.80E-03	
377)	AB1BXM25	CB 6C BETWEEN MCC 2-5, MCC 1-5 AND BUS 1-5 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	3.36E-06
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	ADGEK02B	DIESEL 2B FAILS TO START		2.80E-3	1	2.80E-03	
378)	AB1BA09C	CB 9C FAILS TO OPEN (FAILURE RATE ASSUMED SAME AS CLOSE)		4.00E-4	6	2.40E-03	3.36E-06
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	ADGEJ02A	DIESEL 2A FAILS TO START		2.80E-3	1	2.80E-03	
379)	AB1BA841	CB 4841 FAILS TO OPEN (FAILURE ASSUMED SAME AS CLOSE)	(UV OR	4.00E-4	6	2.40E-03	3.36E-06
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	ADGEK02B	DIESEL 2B FAILS TO START		2.80E-3	1	2.80E-03	
380)	AB1BAM44	CB 4C BETWEEN MCC 1-4, MCC 4-4 AND BUS 1-4 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	3.36E-06
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	ADGEK02B	DIESEL 2B FAILS TO START		2.80E-3	1	2.80E-03	
381)	AB1BA11C	CB 11C FAILS TO CLOSE		4.00E-4	6	2.40E-03	3.36E-06
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	ADGEJ02A	DIESEL 2A FAILS TO START		2.80E-3	1	2.80E-03	
382)	AB1BAM36	CB 17C BETWEEN MCC 3-7, MCC 6-7 AND BUS 1-7 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	3.36E-06
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	ADGEJ02A	DIESEL 2A FAILS TO START		2.80E-3	1	2.80E-03	
383)	AB1BAM67	CB 14C BETWEEN MCC 6-6, MCC 7-6 AND BUS 1-6 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	3.36E-06
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	ADGEJ02A	DIESEL 2A FAILS TO START		2.80E-3	1	2.80E-03	
384)	AB1BAM23	CB 2C BETWEEN MCC 2-4, MCC 3-4 AND BUS 1-4 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	3.36E-06
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	ADGEK02B	DIESEL 2B FAILS TO START		2.80E-3	1	2.80E-03	
385)	AB1BAM47	CB 16C BETWEEN MCC 4-7 MCC, 7-7 AND BUS 1-7 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	3.36E-06
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	ADGEJ02A	DIESEL 2A FAILS TO START		2.80E-3	1	2.80E-03	
386)	ACPAK5B4	CONTACT PAIR 62-5B 4-6 FAILS TO OPEN		1.35E-4	8	1.08E-03	2.16E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
	AMVAJ64A	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
387)	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	3.17E-06
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
	AFNFK64B	FAN F-64-1B FAILS TO RUN		1.00E-5	1	2.40E-04	
388)	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	3.17E-06
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
	AFNFJ64A	FAN F-64-1A FAILS TO RUN		1.00E-5	1	2.40E-04	
389)	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	3.00E-06
	ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
	ARCHX7Y4	RELAY 27Y-4 FAILS TO ENERGIZE		1.00E-4	6	6.00E-04	
390)	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	3.00E-06
	ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
	ARCMX7X4	RELAY 27X-4 FAILS TO DEENERGIZE		1.00E-4	6	6.00E-04	

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MODULE/EVENT NAME	DESCRIPTION		RATE	EXPOSURE	B.E. PROB.	MOD./CS. PROB.
391) ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	3.00E-06
ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
ARCHJA05	RELAY 27X/1-8 FAILS TO ENERGIZE		1.00E-4	6	6.00E-04	
392) ADG3CPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	3.00E-06
ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
ARCHJA04	RELAY 27Y/1-8 FAILS TO ENERGIZE		1.00E-4	6	6.00E-04	
393) ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	3.00E-06
ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
ARCMX275	RELAY 27-5 FAILS TO DE-ENERGIZE		1.00E-4	6	6.00E-04	
394) ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	3.00E-06
ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
ARCHX7Y5	RELAY 27Y-5 FAILS TO ENERGIZE		1.00E-4	6	6.00E-04	
395) ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	2.00E-06
WAVAJ129	SW-FCV-129 FAILS TO OPEN		2.00E-3	1	2.00E-03	
WAVAK130	SW-FCV-130 FAILS TO OPEN		2.00E-3	1	2.00E-03	
396) ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	3.00E-06
ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
ARCHJA21	RELAY 27Y2/1-8 FAILS TO ENERGIZE		1.00E-4	6	6.00E-04	
397) ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	3.00E-06
ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
AFNEJ64A	FAN F-64-1A FAILS TO START		6.00E-4	1	6.00E-04	
398) ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	3.00E-06
ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
ARCMX274	RELAY 27-4 FAILS TO DE-ENERGIZE		1.00E-4	6	6.00E-04	
399) ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	3.00E-06
ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
ARCMX7X5	RELAY 27X-5 FAILS TO DE-ENERGIZE		1.00E-4	6	6.00E-04	
400) ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	2.92E-06
ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
ATRQK496	4160/480V TRANSFORMER (496) OOS FOR MAINT.		2.21E-4	1	2.21E-04	
401) AB1BAM36	CB 17C BETWEEN MCC 3-7, MCC 6-7 AND BUS 1-7 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	2.88E-06
AB1BXM25	CB 6C BETWEEN MCC 2-5, MCC 1-5 AND BUS 1-5 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	
ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
402) AB1BAM67	CB 14C BETWEEN MCC 6-6, MCC 7-6 AND BUS 1-6 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	2.88E-06
AB1BXM25	CB 6C BETWEEN MCC 2-5, MCC 1-5 AND BUS 1-5 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	
ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
403) AB1BAM47	CB 16C BETWEEN MCC 4-7 MCC, 7-7 AND BUS 1-7 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	2.88E-06
AB1BXM25	CB 6C BETWEEN MCC 2-5, MCC 1-5 AND BUS 1-5 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	
ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
404) AB1BA09C	CB 9C FAILS TO OPEN (FAILURE RATE ASSUMED SAME AS CLOSE)		4.00E-4	6	2.40E-03	2.88E-06
AB1BA841	CB 4841 FAILS TO OPEN (FAILURE ASSUMED SAME AS CLOSE)	(UV OR	4.00E-4	6	2.40E-03	
ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
405) AB1BA11C	CB 11C FAILS TO CLOSE		4.00E-4	6	2.40E-03	2.88E-06
AB1BAM23	CB 2C BETWEEN MCC 2-4, MCC 3-4 AND BUS 1-4 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	
ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
406) AB1BA971	CB 4971 FAILS TO OPEN (FAILURE ASSUMED SAME AS CLOSE)	(UV OR	4.00E-4	6	2.40E-03	2.88E-06
AB1BPM85	CB 8D BETWEEN MCC 8-5 AND BUS 1-5 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	
ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
407) AB1BA841	CB 4841 FAILS TO OPEN (FAILURE ASSUMED SAME AS CLOSE)	(UV OR	4.00E-4	6	2.40E-03	2.88E-06
AB1BAM68	CB 12D BETWEEN MCC 8-6 AND BUS 1-6 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	

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MODULE/EVENT NAME	DESCRIPTION		RATE	EXPOSURE	B.E. PROB.	MOD./CS. PROB.
ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
408) AB1BA11C	CB 11C FAILS TO CLOSE		4.00E-4	6	2.40E-03	2.88E-06
AB1BXM25	CB 6C BETWEEN MCC 2-5, MCC 1-5 AND BUS 1-5 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	
ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
409) AB1BAM36	CB 17C BETWEEN MCC 3-7, MCC 6-7 AND BUS 1-7 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	2.88E-06
AB1BAM44	CB 4C BETWEEN MCC 1-4, MCC 4-4 AND BUS 1-4 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	
ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
410) AB1BAM44	CB 4C BETWEEN MCC 1-4, MCC 4-4 AND BUS 1-4 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	2.88E-06
AB1BAM47	CB 16C BETWEEN MCC 4-7 MCC, 7-7 AND BUS 1-7 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	
ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
411) AB1BA971	CB 4971 FAILS TO OPEN (FAILURE ASSUMED SAME AS CLOSE)	(UV OR	4.00E-4	6	2.40E-03	2.88E-06
AB1BXM25	CB 6C BETWEEN MCC 2-5, MCC 1-5 AND BUS 1-5 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	
ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
412) AB1BA09C	CB 9C FAILS TO OPEN (FAILURE RATE ASSUMED SAME AS CLOSE)		4.00E-4	6	2.40E-03	2.88E-06
AB1BPM85	CB 8D BETWEEN MCC 8-5 AND BUS 1-5 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	
ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
413) AB1BAM36	CB 17C BETWEEN MCC 3-7, MCC 6-7 AND BUS 1-7 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	2.88E-06
AB1BPM85	CB 8D BETWEEN MCC 8-5 AND BUS 1-5 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	
ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
414) AB1BAM67	CB 14C BETWEEN MCC 6-6, MCC 7-6 AND BUS 1-6 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	2.88E-06
AB1BPM85	CB 8D BETWEEN MCC 8-5 AND BUS 1-5 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	
ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
415) AB1BAM47	CB 16C BETWEEN MCC 4-7 MCC, 7-7 AND BUS 1-7 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	2.88E-06
AB1BPM85	CB 8D BETWEEN MCC 8-5 AND BUS 1-5 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	
ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
416) AB1BAM68	CB 12D BETWEEN MCC 8-6 AND BUS 1-6 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	2.88E-06
AB1BPM85	CB 8D BETWEEN MCC 8-5 AND BUS 1-5 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	
ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
417) AB1BAM23	CB 2C BETWEEN MCC 2-4, MCC 3-4 AND BUS 1-4 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	2.88E-06
AB1BAM36	CB 17C BETWEEN MCC 3-7, MCC 6-7 AND BUS 1-7 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	
ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
418) AB1BAM23	CB 2C BETWEEN MCC 2-4, MCC 3-4 AND BUS 1-4 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	2.88E-06
AB1BAM67	CB 14C BETWEEN MCC 6-6, MCC 7-6 AND BUS 1-6 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	
ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
419) AB1BAM23	CB 2C BETWEEN MCC 2-4, MCC 3-4 AND BUS 1-4 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	2.88E-06
AB1BAM68	CB 12D BETWEEN MCC 8-6 AND BUS 1-6 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	
ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
420) AB1BAM68	CB 12D BETWEEN MCC 8-6 AND BUS 1-6 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	2.88E-06
AB1BXM25	CB 6C BETWEEN MCC 2-5, MCC 1-5 AND BUS 1-5 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	
ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
421) AB1BA11C	CB 11C FAILS TO CLOSE		4.00E-4	6	2.40E-03	2.88E-06
AB1BA841	CB 4841 FAILS TO OPEN (FAILURE ASSUMED SAME AS CLOSE)	(UV OR	4.00E-4	6	2.40E-03	
ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
422) AB1BA09C	CB 9C FAILS TO OPEN (FAILURE RATE ASSUMED SAME AS CLOSE)		4.00E-4	6	2.40E-03	2.88E-06
AB1BAM44	CB 4C BETWEEN MCC 1-4, MCC 4-4 AND BUS 1-4 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	
ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
423) AB1BA841	CB 4841 FAILS TO OPEN (FAILURE ASSUMED SAME AS CLOSE)	(UV OR	4.00E-4	6	2.40E-03	2.88E-06
AB1BAM36	CB 17C BETWEEN MCC 3-7, MCC 6-7 AND BUS 1-7 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	
ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
424) AB1BA971	CB 4971 FAILS TO OPEN (FAILURE ASSUMED SAME AS CLOSE)	(UV OR	4.00E-4	6	2.40E-03	2.88E-06

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	MODULE/EVENT NAME	DESCRIPTION		RATE	EXPOSURE	B.E. PROB.	MOD./CS. PROB.
	AB1BAM44	CB 4C BETWEEN MCC 1-4, MCC 4-4 AND BUS 1-4 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
425)	AB1BA841	CB 4841 FAILS TO OPEN (FAILURE ASSUMED SAME AS CLOSE)	(UV OR	4.00E-4	6	2.40E-03	2.88E-06
	AB1BAM67	CB 14C BETWEEN MCC 6-6, MCC 7-6 AND BUS 1-6 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
426)	AB1BA841	CB 4841 FAILS TO OPEN (FAILURE ASSUMED SAME AS CLOSE)	(UV OR	4.00E-4	6	2.40E-03	2.88E-06
	AB1BA971	CB 4971 FAILS TO OPEN (FAILURE ASSUMED SAME AS CLOSE)	(UV OR	4.00E-4	6	2.40E-03	
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
427)	AB1BAM23	CB 2C BETWEEN MCC 2-4, MCC 3-4 AND BUS 1-4 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	2.88E-06
	AB1BAM47	CB 16C BETWEEN MCC 4-7 MCC, 7-7 AND BUS 1-7 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
428)	AB1BAM44	CB 4C BETWEEN MCC 1-4, MCC 4-4 AND BUS 1-4 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	2.88E-06
	AB1BAM67	CB 14C BETWEEN MCC 6-6, MCC 7-6 AND BUS 1-6 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
429)	AB1BAM44	CB 4C BETWEEN MCC 1-4, MCC 4-4 AND BUS 1-4 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	2.88E-06
	AB1BAM68	CB 12D BETWEEN MCC 8-6 AND BUS 1-6 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
430)	AB1BA09C	CB 9C FAILS TO OPEN (FAILURE RATE ASSUMED SAME AS CLOSE)		4.00E-4	6	2.40E-03	2.88E-06
	AB1BAM23	CB 2C BETWEEN MCC 2-4, MCC 3-4 AND BUS 1-4 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
431)	AB1BA09C	CB 9C FAILS TO OPEN (FAILURE RATE ASSUMED SAME AS CLOSE)		4.00E-4	6	2.40E-03	2.88E-06
	AB1BXM25	CB 6C BETWEEN MCC 2-5, MCC 1-5 AND BUS 1-5 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
432)	AB1BA971	CB 4971 FAILS TO OPEN (FAILURE ASSUMED SAME AS CLOSE)	(UV OR	4.00E-4	6	2.40E-03	2.88E-06
	AB1BAM23	CB 2C BETWEEN MCC 2-4, MCC 3-4 AND BUS 1-4 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
433)	AB1BA841	CB 4841 FAILS TO OPEN (FAILURE ASSUMED SAME AS CLOSE)	(UV OR	4.00E-4	6	2.40E-03	2.88E-06
	AB1BAM47	CB 16C BETWEEN MCC 4-7 MCC, 7-7 AND BUS 1-7 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
434)	AB1BA11C	CB 11C FAILS TO CLOSE		4.00E-4	6	2.40E-03	2.88E-06
	AB1BPM85	CB 8D BETWEEN MCC 8-5 AND BUS 1-5 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
435)	AB1BA11C	CB 11C FAILS TO CLOSE		4.00E-4	6	2.40E-03	2.88E-06
	AB1BAM44	CB 4C BETWEEN MCC 1-4, MCC 4-4 AND BUS 1-4 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
436)	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	2.80E-06
	ADGEK02B	DIESEL 2B FAILS TO START		2.80E-3	1	2.80E-03	
	WAVAJ129	SW-FCV-129 FAILS TO OPEN		2.00E-3	1	2.00E-03	
437)	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	2.80E-06
	ADGEJ02A	DIESEL 2A FAILS TO START		2.80E-3	1	2.80E-03	
	WAVAK130	SW-FCV-130 FAILS TO OPEN		2.00E-3	1	2.00E-03	
438)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	1.81E-06
	AMVAK64B	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
	AMVQJ64A	MOTOR OPERATED INTAKE DAMPER OOS FOR MAINT.		9.04E-4	1	9.04E-04	
439)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	1.81E-06
	AMVAJ64A	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
	AMVQK64B	MOTOR OPERATED INTAKE DAMPER OOS FOR MAINT.		9.04E-4	1	9.04E-04	
440)	ACPBKB03	CONTACT PAIR 27X/1-9 2-5 FAILS TO CLOSE		1.35E-4	1	1.35E-04	1.78E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	

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MODULE/EVENT NAME	DESCRIPTION	RATE	EXPOSURE	B.E. PROB.	MOD./CS. PROB.
441) ACPBJA03	CONTACT PAIR 27X/1-8 2-5 FAILS TO CLOSE	1.35E-4	1	1.35E-04	1.78E-06
ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
442) ACPAJA01	CONTACT PAIR 52MOC/EG2A M9-M10 FAILS TO OPEN	1.35E-4	1	1.35E-04	1.78E-06
ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
443) ACPAKB01	CONTACT PAIR 52MOC/EG2B M9-M10 FAILS TO OPEN	1.35E-4	1	1.35E-04	1.78E-06
ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
444) ACVAJ64A	FAN F-64-1A EXHAUST DAMPER FAILS TO OPEN	2.00E-4	1	2.00E-04	2.64E-06
ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST		.5	5.00E-01	
ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
445) ACVAK64B	FAN F-64-1B EXHAUST DAMPER FAILS TO OPEN	2.00E-4	1	2.00E-04	2.64E-06
ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST		.5	5.00E-01	
ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
446) ACPBX52C	CONTACT PAIR 27Y-5 2-2C FAILS TO CLOSE	1.35E-4	6	8.10E-04	1.62E-06
ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
AMVAK64B	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN	4.00E-3	1	4.00E-03	
447) ACPBX47C	CONTACT PAIR 27Y-4 7-7C FAILS TO CLOSE	1.35E-4	6	8.10E-04	1.62E-06
ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
AMVAK64B	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN	4.00E-3	1	4.00E-03	
448) ACPBX42C	CONTACT PAIR 27Y-4 2-2C FAILS TO CLOSE	1.35E-4	6	8.10E-04	1.62E-06
ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
AMVAK64B	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN	4.00E-3	1	4.00E-03	
449) ACPBK901	BREAKER 9C CP 15-16 FAILS TO CLOSE UPON BREAKER TRIP	1.35E-4	6	8.10E-04	1.62E-06
ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
AMVAJ64A	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN	4.00E-3	1	4.00E-03	
450) ACPBK5A2	CONTACT PAIR 62-6A 2-6 FAILS TO CLOSE	1.35E-4	6	8.10E-04	1.62E-06
ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
AMVAJ64A	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN	4.00E-3	1	4.00E-03	
451) ACPAK5A3	CONTACT PAIR 62-5A 3-5 FAILS TO OPEN	1.35E-4	6	8.10E-04	1.62E-06
ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
AMVAJ64A	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN	4.00E-3	1	4.00E-03	
452) ACPBX513	CONTACT PAIR 27X-5 9-13 FAILS TO CLOSE	1.35E-4	6	8.10E-04	1.62E-06
ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
AMVAK64B	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN	4.00E-3	1	4.00E-03	
453) ACPBX65C	CONTACT PAIR 27Y-6 5-5C FAILS TO CLOSE	1.35E-4	6	8.10E-04	1.62E-06
ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
AMVAJ64A	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN	4.00E-3	1	4.00E-03	
454) ACPBX72C	CONTACT PAIR 27Y-7 2-2C FAILS TO CLOSE	1.35E-4	6	8.10E-04	1.62E-06
ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
AMVAJ64A	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN	4.00E-3	1	4.00E-03	
455) ACPBXX61	CONTACT PAIR 27X-6 9-13 FAILS TO CLOSE	1.35E-4	6	8.10E-04	1.62E-06
ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
AMVAJ64A	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN	4.00E-3	1	4.00E-03	
456) ACPBX613	CONTACT PAIR 27X-6 9-13 FAILS TO CLOSE	1.35E-4	6	8.10E-04	1.62E-06
ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
AMVAJ64A	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN	4.00E-3	1	4.00E-03	
457) ACPAX701	CONTACT PAIR 27-7 2-10 FAILS TO OPEN	1.35E-4	6	8.10E-04	1.62E-06
ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	

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	MODULE/EVENT NAME	DESCRIPTION		RATE	EXPOSURE	B.E. PROB.	MOD./CS. PROB.
	AMVAJ64A	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
458)	ACPBXX71	CONTACT PAIR 27X-7 9-13 FAILS TO CLOSE		1.35E-4	6	8.10E-04	1.62E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
	AMVAJ64A	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
459)	ACPBX74C	CONTACT PAIR 27Y-7 4-4C FAILS TO CLOSE		1.35E-4	6	8.10E-04	1.62E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
	AMVAJ64A	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
460)	ACPBXX41	CONTACT PAIR 27X-4 9-13 FAILS TO CLOSE		1.35E-4	6	8.10E-04	1.62E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
	AMVAK64B	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
461)	ACPBXX51	CONTACT PAIR 27X-5 9-13 FAILS TO CLOSE		1.35E-4	6	8.10E-04	1.62E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
	AMVAK64B	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
462)	ACPAX601	CONTACT PAIR 27-6 2-10 FAILS TO OPEN		1.35E-4	6	8.10E-04	1.62E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
	AMVAJ64A	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
463)	ACPAX501	CONTACT PAIR 27-5 2-10 FAILS TO OPEN		1.35E-4	6	8.10E-04	1.62E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
	AMVAK64B	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
464)	ACPDJA04	AUX CONTACT PAIR 27Y/1-8 18 FAILS TO REMAIN CLOSED		1.25E-7	18	8.10E-04	1.62E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
	AMVAK64B	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
465)	ACPBI93C	CONTACT PAIR 27Y/1-9 3-3C FAIL TO CLOSE		1.35E-4	6	8.10E-04	1.62E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
	AMVAJ64A	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
466)	ACPDKB04	AUX CONTACT PAIR 27Y/1-9 18 FAILS TO REMAIN CLOSED		1.25E-7	18	8.10E-04	1.62E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
	AMVAJ64A	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
467)	ACPBI83C	CONTACT PAIR 27Y/1-8 3-3C FAIL TO CLOSE		1.35E-4	6	8.10E-04	1.62E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
	AMVAK64B	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
468)	ACPDKB03	AUX CONTACT PAIR 27Y/1-9 17 FAILS TO REMAIN CLOSED		1.25E-7	18	8.10E-04	1.62E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
	AMVAJ64A	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
469)	ACPDJA03	AUX CONTACT PAIR 27Y/1-8 17 FAILS TO REMAIN CLOSED		1.25E-7	18	8.10E-04	1.62E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
	AMVAK64B	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
470)	ACPAX401	CONTACT PAIR 27-4 2-10 FAILS TO OPEN		1.35E-4	6	8.10E-04	1.62E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
	AMVAK64B	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
471)	AB1BA841	CB 4841 FAILS TO OPEN {FAILURE ASSUMED SAME AS CLOSE)	(UV OR	4.00E-4	6	2.40E-03	2.40E-06
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	WAVAK130	SW-FCV-130 FAILS TO OPEN		2.00E-3	1	2.00E-03	
472)	AB1BAM44	CB 4C BETWEEN MCC 1-4, MCC 4-4 AND BUS 1-4 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	2.40E-06
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	WAVAK130	SW-FCV-130 FAILS TO OPEN		2.00E-3	1	2.00E-03	
473)	AB1BAM36	CB 17C BETWEEN MCC 3-7, MCC 6-7 AND BUS 1-7 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	2.40E-06
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	WAVAJ129	SW-FCV-129 FAILS TO OPEN		2.00E-3	1	2.00E-03	
474)	AB1BAM47	CB 16C BETWEEN MCC 4-7 MCC, 7-7 AND BUS 1-7 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	2.40E-06

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	MODULE/EVENT NAME	DESCRIPTION		RATE	EXPOSURE	B.E. PROB.	MOD./CS. PROB.
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	WAVAJ129	SW-FCV-129 FAILS TO OPEN		2.00E-3	1	2.00E-03	
475)	AB1BAM68	CB 12D BETWEEN MCC 8-6 AND BUS 1-6 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	2.40E-06
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	WAVAJ129	SW-FCV-129 FAILS TO OPEN		2.00E-3	1	2.00E-03	
476)	AB1BA09C	CB 9C FAILS TO OPEN (FAILURE RATE ASSUMED SAME AS CLOSE)		4.00E-4	6	2.40E-03	2.40E-06
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	WAVAJ129	SW-FCV-129 FAILS TO OPEN		2.00E-3	1	2.00E-03	
477)	AB1BA971	CB 4971 FAILS TO OPEN (FAILURE ASSUMED SAME AS CLOSE)	(UV OR	4.00E-4	6	2.40E-03	2.40E-06
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	WAVAJ129	SW-FCV-129 FAILS TO OPEN		2.00E-3	1	2.00E-03	
478)	AB1BXM25	CB 6C BETWEEN MCC 2-5, MCC 1-5 AND BUS 1-5 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	2.40E-06
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	WAVAK130	SW-FCV-130 FAILS TO OPEN		2.00E-3	1	2.00E-03	
479)	AB1BPM85	CB 8D BETWEEN MCC 8-5 AND BUS 1-5 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	2.40E-06
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	WAVAK130	SW-FCV-130 FAILS TO OPEN		2.00E-3	1	2.00E-03	
480)	AB1BAM23	CB 2C BETWEEN MCC 2-4, MCC 3-4 AND BUS 1-4 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	2.40E-06
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	WAVAK130	SW-FCV-130 FAILS TO OPEN		2.00E-3	1	2.00E-03	
481)	AB1BA11C	CB 11C FAILS TO CLOSE		4.00E-4	6	2.40E-03	2.40E-06
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	WAVAJ129	SW-FCV-129 FAILS TO OPEN		2.00E-3	1	2.00E-03	
482)	AB1BAM67	CB 14C BETWEEN MCC 6-6, MCC 7-6 AND BUS 1-6 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	2.40E-06
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	WAVAJ129	SW-FCV-129 FAILS TO OPEN		2.00E-3	1	2.00E-03	
483)	AB1DJA01	AC DIST. CABINET EMERG. GEN. 2A CKT. 3 FAILS TO REMAIN CLOSED		5.00E-7	1	1.80E-04	2.38E-06
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
484)	AB1DJD06	CB 6 DIESEL STARTER 2A2 FAILS TO REMAIN CLOSED		5.00E-7	1	1.80E-04	2.38E-06
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
485)	AB1DJD01	CB 1 EG FIELD FLASH FAILS TO REMAIN CLOSED		5.00E-7	1	1.80E-04	2.38E-06
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
486)	AB1DJD02	CB 2 GOVERNOR CONTROL FAILS TO REMAIN CLOSED		5.00E-7	1	1.80E-04	2.38E-06
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
487)	AB1DJD03	CB 3 ALTERNATE FAILS TO REMAIN CLOSED		5.00E-7	1	1.80E-04	2.38E-06
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
488)	AB1DKD04	CB 4 DIESEL STARTER 2B1 FAILS TO REMAIN CLOSED		5.00E-7	1	1.80E-04	2.38E-06
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
489)	AB1DKD06	CB 6 DIESEL STARTER 2B2 FAILS TO REMAIN CLOSED		5.00E-7	1	1.80E-04	2.38E-06
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
490)	AB1DKD02	CB 2 GOVERNOR CONTROL FAILS TO REMAIN CLOSED		5.00E-7	1	1.80E-04	2.38E-06
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	

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	MODULE/EVENT NAME	DESCRIPTION		RATE	EXPOSURE	B.E. PROB.	MOD./CS. PROB.
491)	AB1DKD03	CB 3 ALTERNATE FAILS TO REMAIN CLOSED		5.00E-7	1	1.80E-04	2.38E-06
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
492)	AB1DJ110	LIGHTING PANEL LP-D1 CKT. #10 FAILS TO REMAIN CLOSED		5.00E-7	1	1.80E-04	2.38E-06
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
493)	AB1DJ102	LIGHTING PANEL LP-D1 CKT. #2 FAILS TO REMAIN CLOSED		5.00E-7	1	1.80E-04	2.38E-06
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
494)	AB1DJD04	CB 4 DIESEL STARTER 2A1 FAILS TO REMAIN CLOSED		5.00E-7	1	1.80E-04	2.38E-06
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
495)	AB1DKD01	CB 1 EG FIELD FLASH FAILS TO REMAIN CLOSED		5.00E-7	1	1.80E-04	2.38E-06
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
496)	AB1DKB01	AC DIST. CABINET EMERG. GEN. 2B CKT. 3 FAILS TO REMAIN CLOSED		5.00E-7	1	1.80E-04	2.38E-06
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
497)	ACPCK6A2	CONTACT PAIR 62-6A 2-6 FAILS TO REMAIN OPEN		2.66E-8	18	1.72E-04	2.28E-06
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
498)	ACPAK5B4	CONTACT PAIR 62-5B 4-6 FAILS TO OPEN		1.35E-4	8	1.08E-03	1.51E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
	ADGEJ02A	DIESEL 2A FAILS TO START		2.80E-3	1	2.80E-03	
499)	ACPDK11C	CONTACT PAIR 15-16 FOR 11C CELL SWITCH FAILS TO REMAIN CLOSED		1.25E-7	1	3.00E-06	1.50E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
500)	ACPAK5B4	CONTACT PAIR 62-5B 4-6 FAILS TO OPEN		1.35E-4	8	1.08E-03	2.16E-06
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	AMVAJ64A	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
501)	ATRTCC56	CCF OF TRANSFORMERS 485 AND 496	(SCREE	7.00E-7	0.1	1.68E-06	1.68E-06
502)	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	2.00E-06
	WAVAJ129	SW-FCV-129 FAILS TO OPEN		2.00E-3	1	2.00E-03	
	WAVAK130	SW-FCV-130 FAILS TO OPEN		2.00E-3	1	2.00E-03	
503)	AB1BAM44	CB 4C BETWEEN MCC 1-4, MCC 4-4 AND BUS 1-4 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	1.30E-06
	ACPAK5B4	CONTACT PAIR 62-5B 4-6 FAILS TO OPEN		1.35E-4	8	1.08E-03	
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
504)	AB1BA841	CB 4841 FAILS TO OPEN (FAILURE ASSUMED SAME AS CLOSE)	(UV OR	4.00E-4	6	2.40E-03	1.30E-06
	ACPAK5B4	CONTACT PAIR 62-5B 4-6 FAILS TO OPEN		1.35E-4	8	1.08E-03	
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
505)	AB1BPM85	CB 8D BETWEEN MCC 8-5 AND BUS 1-5 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	1.30E-06
	ACPAK5B4	CONTACT PAIR 62-5B 4-6 FAILS TO OPEN		1.35E-4	8	1.08E-03	
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
506)	AB1BXM25	CB 6C BETWEEN MCC 2-5, MCC 1-5 AND BUS 1-5 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	1.30E-06
	ACPAK5B4	CONTACT PAIR 62-5B 4-6 FAILS TO OPEN		1.35E-4	8	1.08E-03	
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
507)	AB1BAM23	CB 2C BETWEEN MCC 2-4, MCC 3-4 AND BUS 1-4 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	1.30E-06
	ACPAK5B4	CONTACT PAIR 62-5B 4-6 FAILS TO OPEN		1.35E-4	8	1.08E-03	
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
508)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	1.27E-06
	ADGEJ02A	DIESEL 2A FAILS TO START		2.80E-3	1	2.80E-03	

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	MODULE/EVENT NAME	DESCRIPTION	RATE	EXPOSURE	B.E. PROB.	MOD./CS. PROB.
	AMVQK64B	MOTOR OPERATED INTAKE DAMPER OOS FOR MAINT.	9.04E-4	1	9.04E-04	
509)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	1.27E-06
	ADGEK02B	DIESEL 2B FAILS TO START	2.80E-3	1	2.80E-03	
	AMVQJ64A	MOTOR OPERATED INTAKE DAMPER OOS FOR MAINT.	9.04E-4	1	9.04E-04	
510)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	1.21E-06
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
	DBSTJE2A	LOCAL FAULTS ON 125VDC DISTRIBUTION CABINET EGG2A	3.83E-6	1	9.19E-05	
511)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	1.21E-06
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN STAET	1.10E-3	1	2.64E-02	
	DBSTKE2B	LOCAL FAULTS ON 125VDC DISTRIBUTION CABINET EGG2B	3.83E-6	1	9.19E-05	
512)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	1.21E-06
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
	DBSTI00B	LOCAL FAULTS ON 125VDC DISTRIBUTION PANEL B	3.83E-6	1	9.19E-05	
513)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	1.21E-06
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
	DBSTI00A	LOCAL FAULTS ON 125VDC DISTRIBUTION PANEL A	3.83E-6	1	9.19E-05	
514)	ABSTJA03	FAULT ON AC DIST CABINET EMERG. GEN. 2A	3.83E-6	1	9.19E-05	1.21E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
515)	ABSTJA02	FAULT ON LIGHTING PANEL LP-D1	3.83E-6	1	9.19E-05	1.21E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
516)	ABSTKB02	FAULT ON LIGHTING PANEL LP-D2	3.83E-6	1	9.19E-05	1.21E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
517)	ABSTKB03	FAULT ON AC DIST CABINET EMERG. GEN. 2B	3.83E-6	1	9.19E-05	1.21E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
518)	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST		.5	5.00E-01	1.81E-06
	AMVAK64B	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN	4.00E-3	1	4.00E-03	
	AMVQJ64A	MOTOR OPERATED INTAKE DAMPER OOS FOR MAINT.	9.04E-4	1	9.04E-04	
519)	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST		.5	5.00E-01	1.81E-06
	AMVAJ64A	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN	4.00E-3	1	4.00E-03	
	AMVQK64B	MOTOR OPERATED INTAKE DAMPER OOS FOR MAINT.	9.04E-4	1	9.04E-04	
520)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	1.20E-06
	AFNEJ64A	FAN F-64-1A FAILS TO START	6.00E-4	1	6.00E-04	
	AMVAK64B	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN	4.00E-3	1	4.00E-03	
521)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	1.20E-06
	AFNEK64B	FAN F-64-1B FAILS TO START	6.00E-4	1	6.00E-04	
	AMVAJ64A	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN	4.00E-3	1	4.00E-03	
522)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	1.20E-06
	ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.	1.00E-2	1	1.00E-02	
	AFNFJ64A	FAN F-64-1A FAILS TO RUN	1.00E-5	1	2.40E-04	
523)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	1.20E-06
	ADGQJ02A	EMERGENCY DESIEL GENERATOR '2A' OOS FOR MAINT.	1.00E-2	1	1.00E-02	
	AFNFK64B	FAN F-64-1B FAILS TO RUN	1.00E-5	1	2.40E-04	
524)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	1.20E-06
	AMVAJ64A	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN	4.00E-3	1	4.00E-03	
	ARCMK15B	RELAY 62-5B FAILS TO DEENERGIZE	1.00E-4	6	6.00E-04	
525)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	1.20E-06

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	MODULE/EVENT NAME	DESCRIPTION	RATE	EXPOSURE	B.E. PROB.	MOD./CS. PROB.
	AMVAJ64A	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN	4.00E-3	1	4.00E-03	
	ARCHK08A	RELAY 62-6A FAILS TO ENERGIZE	1.00E-4	6	6.00E-04	
526)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	1.20E-06
	AMVAJ64A	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN	4.00E-3	1	4.00E-03	
	ARCMX7X6	RELAY 27X-6 FAILS TO DE-ENERGIZE	1.00E-4	6	6.00E-04	
527)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	1.20E-06
	AMVAJ64A	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN	4.00E-3	1	4.00E-03	
	ARCMX276	RELAY 27-6 FAILS TO DE-ENERGIZE	1.00E-4	6	6.00E-04	
528)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	1.20E-06
	AMVAJ64A	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN	4.00E-3	1	4.00E-03	
	ARCHX7Y6	RELAY 27Y-6 FAILS TO ENERGIZE	1.00E-4	6	6.00E-04	
529)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	1.20E-06
	AMVAJ64A	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN	4.00E-3	1	4.00E-03	
	ARCHX7Y7	RELAY 27Y-7 FAILS TO ENERGIZE	1.00E-4	6	6.00E-04	
530)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	1.20E-06
	AMVAJ64A	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN	4.00E-3	1	4.00E-03	
	ARCMX277	RELAY 27-7 FAILS TO DE-ENERGIZE	1.00E-4	6	6.00E-04	
531)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	1.20E-06
	AMVAK64B	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN	4.00E-3	1	4.00E-03	
	ARCMX274	RELAY 27-4 FAILS TO DE-ENERGIZE	1.00E-4	6	6.00E-04	
532)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	1.20E-06
	AMVAK64B	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN	4.00E-3	1	4.00E-03	
	ARCHX7Y4	RELAY 27Y-4 FAILS TO ENERGIZE	1.00E-4	6	6.00E-04	
533)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	1.20E-06
	AMVAK64B	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN	4.00E-3	1	4.00E-03	
	ARCMX7X4	RELAY 27X-4 FAILS TO DEENERGIZE	1.00E-4	6	6.00E-04	
534)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	1.20E-06
	AMVAK64B	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN	4.00E-3	1	4.00E-03	
	ARCMX275	RELAY 27-5 FAILS TO DE-ENERGIZE	1.00E-4	6	6.00E-04	
535)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	1.20E-06
	AMVAK64B	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN	4.00E-3	1	4.00E-03	
	ARCHX7Y5	RELAY 27Y-5 FAILS TO ENERGIZE	1.00E-4	6	6.00E-04	
536)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	1.20E-06
	AMVAK64B	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN	4.00E-3	1	4.00E-03	
	ARCMX7X5	RELAY 27X-5 FAILS TO DE-ENERGIZE	1.00E-4	6	6.00E-04	
537)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	1.20E-06
	AMVAK64B	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN	4.00E-3	1	4.00E-03	
	ARCHJA05	RELAY 27X/1-8 FAILS TO ENERGIZE	1.00E-4	6	6.00E-04	
538)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	1.20E-06
	AMVAJ64A	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN	4.00E-3	1	4.00E-03	
	ARCMX7X7	RELAY 27X-7 FAILS TO DE-ENERGIZE	1.00E-4	6	6.00E-04	
539)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	1.20E-06
	AMVAK64B	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN	4.00E-3	1	4.00E-03	
	ARCHJA04	RELAY 27Y/1-8 FAILS TO ENERGIZE	1.00E-4	6	6.00E-04	
540)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	1.20E-06
	AMVAJ64A	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN	4.00E-3	1	4.00E-03	
	ARCHKB05	RELAY 27X/1-9 FAILS TO ENERGIZE	1.00E-4	6	6.00E-04	
541)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	1.20E-06
	AMVAJ64A	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN	4.00E-3	1	4.00E-03	
	ARCHKB04	RELAY 27Y/1-9 FAILS TO ENERGIZE	1.00E-4	6	6.00E-04	

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	MODULE/EVENT NAME	DESCRIPTION		RATE	EXPOSURE	B.E. PROB.	MOD./CS. PROB.
542)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	1.20E-06
	AMVAJ64A	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
	ARCMJ15A	RELAY 62-5A FAILS TO DEENERGIZE		1.00E-4	6	6.00E-04	
543)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	1.20E-06
	AMVAJ64A	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
	ARCMKB01	RELAY 27Y1/1-9 FAILS TO DEENERGIZE		1.00E-4	6	6.00E-04	
544)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	1.20E-06
	AMVAK64B	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
	ARCMJA01	RELAY 27Y1/1-8 FAILS TO DEENERGIZE		1.00E-4	6	6.00E-04	
545)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	1.20E-06
	AMVAJ64A	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
	ARCHKB21	RELAY 27Y2/1-9 FAILS TO ENERGIZE		1.00E-4	6	6.00E-04	
546)	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	1.20E-06
	AMVAK64B	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
	ARCHJA21	RELAY 27Y2/1-8 FAILS TO ENERGIZE		1.00E-4	6	6.00E-04	
547)	ABKDCC56	CCF OF CB'S 4850 AND 4960 TO REMAIN CLOSED	(SCREE	6.00E-7	0.1	1.44E-06	1.44E-06
548)	ACPAKB01	CONTACT PAIR 52MOC/EG2B M9-M10 FAILS TO OPEN		1.35E-4	1	1.35E-04	1.78E-06
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
549)	ACPBJA03	CONTACT PAIR 27X/1-8 2-5 FAILS TO CLOSE		1.35E-4	1	1.35E-04	1.78E-06
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
550)	ACPBKB03	CONTACT PAIR 27X/1-9 2-5 FAILS TO CLOSE		1.35E-4	1	1.35E-04	1.78E-06
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
551)	ACPBX65C	CONTACT PAIR 27Y-6 5-5C FAILS TO CLOSE		1.35E-4	6	8.10E-04	1.13E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
	ADGEJ02A	DIESEL 2A FAILS TO START		2.80E-3	1	2.80E-03	
552)	ACPBX72C	CONTACT PAIR 27Y-7 2-2C FAILS TO CLOSE		1.35E-4	6	8.10E-04	1.13E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
	ADGEJ02A	DIESEL 2A FAILS TO START		2.80E-3	1	2.80E-03	
553)	ACPBK5A2	CONTACT PAIR 62-6A 2-6 FAILS TO CLOSE		1.35E-4	6	8.10E-04	1.13E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
	ADGEJ02A	DIESEL 2A FAILS TO START		2.80E-3	1	2.80E-03	
554)	ACPBI93C	CONTACT PAIR 27Y/1-9 3-3C FAIL TO CLOSE		1.35E-4	6	8.10E-04	1.13E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
	ADGEJ02A	DIESEL 2A FAILS TO START		2.80E-3	1	2.80E-03	
555)	ACPBXX41	CONTACT PAIR 27X-4 9-13 FAILS TO CLOSE		1.35E-4	6	8.10E-04	1.13E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
	ADGEK02B	DIESEL 2B FAILS TO START		2.80E-3	1	2.80E-03	
556)	ACPAX401	CONTACT PAIR 27-4 2-10 FAILS TO OPEN		1.35E-4	6	8.10E-04	1.13E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
	ADGEK02B	DIESEL 2B FAILS TO START		2.80E-3	1	2.80E-03	
557)	ACPAX501	CONTACT PAIR 27-5 2-10 FAILS TO OPEN		1.35E-4	6	8.10E-04	1.13E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
	ADGEK02B	DIESEL 2B FAILS TO START		2.80E-3	1	2.80E-03	
558)	ACPDJA04	AUX CONTACT PAIR 27Y/1-8 18 FAILS TO REMAIN CLOSED		1.25E-7	18	8.10E-04	1.13E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
	ADGEK02B	DIESEL 2B FAILS TO START		2.80E-3	1	2.80E-03	
559)	ACPDJA03	AUX CONTACT PAIR 27Y/1-8 17 FAILS TO REMAIN CLOSED		1.25E-7	18	8.10E-04	1.13E-06

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	MODULE/EVENT NAME	DESCRIPTION	RATE	EXPOSURE	B.E. PROB.	MOD./CS. PROB.
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
	ADGEK02B	DIESEL 2B FAILS TO START	2.80E-3	1	2.80E-03	
560)	ACPDKB04	AUX CONTACT PAIR 27Y/1-9 18 FAILS TO REMAIN CLOSED	1.25E-7	18	8.10E-04	1.13E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
	ADGEJ02A	DIESEL 2A FAILS TO START	2.80E-3	1	2.80E-03	
561)	ACPDKB03	AUX CONTACT PAIR 27Y/1-9 17 FAILS TO REMAIN CLOSED	1.25E-7	18	8.10E-04	1.13E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
	ADGEJ02A	DIESEL 2A FAILS TO START	2.80E-3	1	2.80E-03	
562)	ACPBI83C	CONTACT PAIR 27Y/1-8 3-3C FAIL TO CLOSE	1.35E-4	6	8.10E-04	1.13E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
	ADGEK02B	DIESEL 2B FAILS TO START	2.80E-3	1	2.80E-03	
563)	ACPBX47C	CONTACT PAIR 27Y-4 7-7C FAILS TO CLOSE	1.35E-4	6	8.10E-04	1.13E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
	ADGEK02B	DIESEL 2B FAILS TO START	2.80E-3	1	2.80E-03	
564)	ACPBK901	BREAKER 9C CP 15-16 FAILS TO CLOSE UPON BREAKER TRIP	1.35E-4	6	8.10E-04	1.13E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
	ADGEJ02A	DIESEL 2A FAILS TO START	2.80E-3	1	2.80E-03	
565)	ACPBX513	CONTACT PAIR 27X-5 9-13 FAILS TO CLOSE	1.35E-4	6	8.10E-04	1.13E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
	ADGEK02B	DIESEL 2B FAILS TO START	2.80E-3	1	2.80E-03	
566)	ACPBXX51	CONTACT PAIR 27X-5 9-13 FAILS TO CLOSE	1.35E-4	6	8.10E-04	1.13E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
	ADGEK02B	DIESEL 2B FAILS TO START	2.80E-3	1	2.80E-03	
567)	ACPBX52C	CONTACT PAIR 27Y-5 2-2C FAILS TO CLOSE	1.35E-4	6	8.10E-04	1.13E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
	ADGEK02B	DIESEL 2B FAILS TO START	2.80E-3	1	2.80E-03	
568)	ACPAX601	CONTACT PAIR 27-6 2-10 FAILS TO OPEN	1.35E-4	6	8.10E-04	1.13E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
	ADGEJ02A	DIESEL 2A FAILS TO START	2.80E-3	1	2.80E-03	
569)	ACPBX42C	CONTACT PAIR 27Y-4 2-2C FAILS TO CLOSE	1.35E-4	6	8.10E-04	1.13E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
	ADGEK02B	DIESEL 2B FAILS TO START	2.80E-3	1	2.80E-03	
570)	ACPAK5A3	CONTACT PAIR 62-5A 3-5 FAILS TO OPEN	1.35E-4	6	8.10E-04	1.13E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
	ADGEJ02A	DIESEL 2A FAILS TO START	2.80E-3	1	2.80E-03	
571)	ACPBX613	CONTACT PAIR 27X-6 9-13 FAILS TO CLOSE	1.35E-4	6	8.10E-04	1.13E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
	ADGEJ02A	DIESEL 2A FAILS TO START	2.80E-3	1	2.80E-03	
572)	ACPBXX71	CONTACT PAIR 27X-7 9-13 FAILS TO CLOSE	1.35E-4	6	8.10E-04	1.13E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
	ADGEJ02A	DIESEL 2A FAILS TO START	2.80E-3	1	2.80E-03	
573)	ACPAX701	CONTACT PAIR 27-7 2-10 FAILS TO OPEN	1.35E-4	6	8.10E-04	1.13E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
	ADGEJ02A	DIESEL 2A FAILS TO START	2.80E-3	1	2.80E-03	
574)	ACPBXX61	CONTACT PAIR 27X-6 9-13 FAILS TO CLOSE	1.35E-4	6	8.10E-04	1.13E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
	ADGEJ02A	DIESEL 2A FAILS TO START	2.80E-3	1	2.80E-03	
575)	ACPBX74C	CONTACT PAIR 27Y-7 4-4C FAILS TO CLOSE	1.35E-4	6	8.10E-04	1.13E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST		.5	5.00E-01	
	ADGEJ02A	DIESEL 2A FAILS TO START	2.80E-3	1	2.80E-03	

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MODULE/EVENT NAME	DESCRIPTION		RATE	EXPOSURE	B.E. PROB.	MOD./CS. PROB.
576) ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	1.10E-06
ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
ATRQJ485	4160/480V TRANSFORMER (485) OOS FOR MAINT.		2.21E-4	1	2.21E-04	
577) ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	1.10E-06
ADGQJ02A	EMERGENCY DESIEL GENERATOR '2A' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
ATRQK496	4160/480V TRANSFORMER (496) OOS FOR MAINT.		2.21E-4	1	2.21E-04	
578) AB1BXM25	CB 6C BETWEEN MCC 2-5, MCC 1-5 AND BUS 1-5 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	1.08E-06
ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
AMVQK64B	MOTOR OPERATED INTAKE DAMPER OOS FOR MAINT.		9.04E-4	1	9.04E-04	
579) AB1BAM44	CB 4C BETWEEN MCC 1-4, MCC 4-4 AND BUS 1-4 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	1.08E-06
ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
AMVQK64B	MOTOR OPERATED INTAKE DAMPER OOS FOR MAINT.		9.04E-4	1	9.04E-04	
580) AB1BAM23	CB 2C BETWEEN MCC 2-4, MCC 3-4 AND BUS 1-4 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	1.08E-06
ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
AMVQK64B	MOTOR OPERATED INTAKE DAMPER OOS FOR MAINT.		9.04E-4	1	9.04E-04	
581) AB1BA09C	CB 9C FAILS TO OPEN (FAILURE RATE ASSUMED SAME AS CLOSE)		4.00E-4	6	2.40E-03	1.08E-06
ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
AMVQJ64A	MOTOR OPERATED INTAKE DAMPER OOS FOR MAINT.		9.04E-4	1	9.04E-04	
582) AB1BA11C	CB 11C FAILS TO CLOSE		4.00E-4	6	2.40E-03	1.08E-06
ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
AMVQJ64A	MOTOR OPERATED INTAKE DAMPER OOS FOR MAINT.		9.04E-4	1	9.04E-04	
583) AB1BA841	CB 4841 FAILS TO OPEN (FAILURE ASSUMED SAME AS CLOSE)	(UV OR	4.00E-4	6	2.40E-03	1.08E-06
ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
AMVQK64B	MOTOR OPERATED INTAKE DAMPER OOS FOR MAINT.		9.04E-4	1	9.04E-04	
584) AB1BPM85	CB 8D BETWEEN MCC 8-5 AND BUS 1-5 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	1.08E-06
ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
AMVQK64B	MOTOR OPERATED INTAKE DAMPER OOS FOR MAINT.		9.04E-4	1	9.04E-04	
585) AB1BAM36	CB 17C BETWEEN MCC 3-7, MCC 6-7 AND BUS 1-7 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	1.08E-06
ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
AMVQJ64A	MOTOR OPERATED INTAKE DAMPER OOS FOR MAINT.		9.04E-4	1	9.04E-04	
586) AB1BAM67	CB 14C BETWEEN MCC 6-6, MCC 7-6 AND BUS 1-6 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	1.08E-06
ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
AMVQJ64A	MOTOR OPERATED INTAKE DAMPER OOS FOR MAINT.		9.04E-4	1	9.04E-04	
587) AB1BAM47	CB 16C BETWEEN MCC 4-7 MCC, 7-7 AND BUS 1-7 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	1.08E-06
ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
AMVQJ64A	MOTOR OPERATED INTAKE DAMPER OOS FOR MAINT.		9.04E-4	1	9.04E-04	
588) AB1BAM68	CB 12D BETWEEN MCC 8-6 AND BUS 1-6 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	1.08E-06
ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
AMVQJ64A	MOTOR OPERATED INTAKE DAMPER OOS FOR MAINT.		9.04E-4	1	9.04E-04	
589) AB1BA971	CB 4971 FAILS TO OPEN (FAILURE ASSUMED SAME AS CLOSE)	(UV OR	4.00E-4	6	2.40E-03	1.08E-06
ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
AMVQJ64A	MOTOR OPERATED INTAKE DAMPER OOS FOR MAINT.		9.04E-4	1	9.04E-04	
590) ACPBX613	CONTACT PAIR 27X-6 9-13 FAILS TO CLOSE		1.35E-4	6	8.10E-04	1.62E-06
ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
AMVAJ64A	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
591) ACPBXX71	CONTACT PAIR 27X-7 9-13 FAILS TO CLOSE		1.35E-4	6	8.10E-04	1.62E-06
ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
AMVAJ64A	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
592) ACPBX74C	CONTACT PAIR 27Y-7 4-4C FAILS TO CLOSE		1.35E-4	6	8.10E-04	1.62E-06
ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	

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	MODULE/EVENT NAME	DESCRIPTION	RATE	EXPOSURE	B.E. PROB.	MOD./CS. PROB.
	AMVAJ64A	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN	4.00E-3	1	4.00E-03	
593)	ACPBI93C	CONTACT PAIR 27Y/1-9 3-3C FAIL TO CLOSE	1.35E-4	6	8.10E-04	1.62E-06
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST		.5	5.00E-01	
	AMVAJ64A	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN	4.00E-3	1	4.00E-03	
594)	ACPDKB04	AUX CONTACT PAIR 27Y/1-9 18 FAILS TO REMAIN CLOSED	1.25E-7	18	8.10E-04	1.62E-06
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST		.5	5.00E-01	
	AMVAJ64A	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN	4.00E-3	1	4.00E-03	
595)	ACPDKB03	AUX CONTACT PAIR 27Y/1-9 17 FAILS TO REMAIN CLOSED	1.25E-7	18	8.10E-04	1.62E-06
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST		.5	5.00E-01	
	AMVAJ64A	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN	4.00E-3	1	4.00E-03	
596)	ACPDJA03	AUX CONTACT PAIR 27Y/1-8 17 FAILS TO REMAIN CLOSED	1.25E-7	18	8.10E-04	1.62E-06
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST		.5	5.00E-01	
	AMVAK64B	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN	4.00E-3	1	4.00E-03	
597)	ACPAX501	CONTACT PAIR 27-5 2-10 FAILS TO OPEN	1.35E-4	6	8.10E-04	1.62E-06
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST		.5	5.00E-01	
	AMVAK64B	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN	4.00E-3	1	4.00E-03	
598)	ACPBXX41	CONTACT PAIR 27X-4 9-13 FAILS TO CLOSE	1.35E-4	6	8.10E-04	1.62E-06
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST		.5	5.00E-01	
	AMVAK64B	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN	4.00E-3	1	4.00E-03	
599)	ACPAX401	CONTACT PAIR 27-4 2-10 FAILS TO OPEN	1.35E-4	6	8.10E-04	1.62E-06
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST		.5	5.00E-01	
	AMVAK64B	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN	4.00E-3	1	4.00E-03	
600)	ACPBI83C	CONTACT PAIR 27Y/1-8 3-3C FAIL TO CLOSE	1.35E-4	6	8.10E-04	1.62E-06
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST		.5	5.00E-01	
	AMVAK64B	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN	4.00E-3	1	4.00E-03	
601)	ACPDJA04	AUX CONTACT PAIR 27Y/1-8 18 FAILS TO REMAIN CLOSED	1.25E-7	18	8.10E-04	1.62E-06
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST		.5	5.00E-01	
	AMVAK64B	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN	4.00E-3	1	4.00E-03	
602)	ACPAX701	CONTACT PAIR 27-7 2-10 FAILS TO OPEN	1.35E-4	6	8.10E-04	1.62E-06
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST		.5	5.00E-01	
	AMVAJ64A	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN	4.00E-3	1	4.00E-03	
603)	ACPBX72C	CONTACT PAIR 27Y-7 2-2C FAILS TO CLOSE	1.35E-4	6	8.10E-04	1.62E-06
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST		.5	5.00E-01	
	AMVAJ64A	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN	4.00E-3	1	4.00E-03	
604)	ACPAX601	CONTACT PAIR 27-6 2-10 FAILS TO OPEN	1.35E-4	6	8.10E-04	1.62E-06
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST		.5	5.00E-01	
	AMVAJ64A	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN	4.00E-3	1	4.00E-03	
605)	ACPBXX61	CONTACT PAIR 27X-6 9-13 FAILS TO CLOSE	1.35E-4	6	8.10E-04	1.62E-06
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST		.5	5.00E-01	
	AMVAJ64A	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN	4.00E-3	1	4.00E-03	
606)	ACPBXX51	CONTACT PAIR 27X-5 9-13 FAILS TO CLOSE	1.35E-4	6	8.10E-04	1.62E-06
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST		.5	5.00E-01	
	AMVAK64B	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN	4.00E-3	1	4.00E-03	
607)	ACPBX65C	CONTACT PAIR 27Y-6 5-5C FAILS TO CLOSE	1.35E-4	6	8.10E-04	1.62E-06
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST		.5	5.00E-01	
	AMVAJ64A	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN	4.00E-3	1	4.00E-03	
608)	ACPBX47C	CONTACT PAIR 27Y-4 7-7C FAILS TO CLOSE	1.35E-4	6	8.10E-04	1.62E-06
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST		.5	5.00E-01	
	AMVAK64B	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN	4.00E-3	1	4.00E-03	
609)	ACPBX513	CONTACT PAIR 27X-5 9-13 FAILS TO CLOSE	1.35E-4	6	8.10E-04	1.62E-06

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	MODULE/EVENT NAME	DESCRIPTION		RATE	EXPOSURE	B.E. PROB.	MOD./CS. PROB.
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	AMVAK64B	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
610)	ACPBX42C	CONTACT PAIR 27Y-4 2-2C FAILS TO CLOSE		1.35E-4	6	8.10E-04	1.62E-06
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	AMVAK64B	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
611)	ACPBK901	BREAKER 9C CP 15-16 FAILS TO CLOSE UPON BREAKER TRIP		1.35E-4	6	8.10E-04	1.62E-06
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	AMVAJ64A	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
612)	ACPBK5A2	CONTACT PAIR 62-6A 2-6 FAILS TO CLOSE		1.35E-4	6	8.10E-04	1.62E-06
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	AMVAJ64A	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
613)	ACPAK5A3	CONTACT PAIR 62-5A 3-5 FAILS TO OPEN		1.35E-4	6	8.10E-04	1.62E-06
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	AMVAJ64A	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
614)	ACPBX52C	CONTACT PAIR 27Y-5 2-2C FAILS TO CLOSE		1.35E-4	6	8.10E-04	1.62E-06
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	AMVAK64B	MOTOR OPERATED INTAKE DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
615)	ACPAK5B4	CONTACT PAIR 62-5B 4-6 FAILS TO OPEN		1.35E-4	8	1.08E-03	1.08E-06
	ADCACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
	WAVAJ129	SW-FCV-129 FAILS TO OPEN		2.00E-3	1	2.00E-03	
616)	ACPAK5B4	CONTACT PAIR 62-5B 4-6 FAILS TO OPEN		1.35E-4	8	1.08E-03	1.51E-06
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
	ADGEJ02A	DIESEL 2A FAILS TO START		2.80E-3	1	2.80E-03	
617)	ACVAJ64A	FAN F-64-1A EXHAUST DAMPER FAILS TO OPEN		2.00E-4	1	2.00E-04	1.00E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
	ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
618)	ACVAK64B	FAN F-64-1B EXHAUST DAMPER FAILS TO OPEN		2.00E-4	1	2.00E-04	1.00E-06
	ADGACPSF	COND. PROB. DG A LOADS ONTO BUS 1-5 FIRST			.5	5.00E-01	
	ADGQJ02A	EMERGENCY DESIEL GENERATOR '2A' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
619)	AB1DCC56	CCF OF CB'S 4851 AND 4961 TO REMAIN CLOSED	(SCREE	5.00E-7	0.1	1.20E-06	1.20E-06
620)	ABSVAM05	MCC-5, BUS FAULT		4.80E-8	1	1.15E-06	1.15E-06
621)	AB1BA841	CB 4841 FAILS TO OPEN (FAILURE ASSUMED SAME AS CLOSE)	(UV OR	4.00E-4	6	2.40E-03	1.30E-06
	ACPAK5B4	CONTACT PAIR 62-5B 4-6 FAILS TO OPEN		1.35E-4	8	1.08E-03	
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
622)	AB1BAM23	CB 2C BETWEEN MCC 2-4, MCC 3-4 AND BUS 1-4 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	1.30E-06
	ACPAK5B4	CONTACT PAIR 62-5B 4-6 FAILS TO OPEN		1.35E-4	8	1.08E-03	
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
623)	AB1BXM25	CB 6C BETWEEN MCC 2-5, MCC 1-5 AND BUS 1-5 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	1.30E-06
	ACPAK5B4	CONTACT PAIR 62-5B 4-6 FAILS TO OPEN		1.35E-4	8	1.08E-03	
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
624)	AB1BAM44	CB 4C BETWEEN MCC 1-4, MCC 4-4 AND BUS 1-4 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	1.30E-06
	ACPAK5B4	CONTACT PAIR 62-5B 4-6 FAILS TO OPEN		1.35E-4	8	1.08E-03	
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
625)	AB1BPM85	CB 8D BETWEEN MCC 8-5 AND BUS 1-5 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	1.30E-06
	ACPAK5B4	CONTACT PAIR 62-5B 4-6 FAILS TO OPEN		1.35E-4	8	1.08E-03	
	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	
626)	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	1.27E-06
	ADGEJ02A	DIESEL 2A FAILS TO START		2.80E-3	1	2.80E-03	
	AMVQK64B	MOTOR OPERATED INTAKE DAMPER OOS FOR MAINT.		9.04E-4	1	9.04E-04	
627)	ADGBCPSF	COND. PROB. DG B LOADS ONTO BUS 1-6 FIRST			.5	5.00E-01	1.27E-06

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MODULE/EVENT NAME	DESCRIPTION	RATE	EXPOSURE	B.E. PROB.	MOD./CS. PROB.
ADGEK02B	DIESEL 2B FAILS TO START	2.80E-3	1	2.80E-03	
AMVQJ64*	MOTOR OPERATED INTAKE DAMPER OOS FOR MAINT.	9.04E-4	1	9.04E-04	

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MODULE/EVENT NAME	DESCRIPTION	RATE	EXPOSURE	B.E. PROB.	MOD./CS. PROB.
1) GAAM05	<module>				*6.44E-03
1) ADGFCCAB	CCF OF EDG'S '2A' AND '2B' TO RUN	1.10E-3	0.068	1.80E-03	1.80E-03
2) ADGCCOOL	COMMON CAUSE FAILURE OR EDG ROOM COOLING		6.70E-04	6.70E-04	6.70E-04
3) ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST		0.5	5.00E-01	3.48E-04
ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
4) ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST		0.5	5.00E-01	3.48E-04
ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
5) WAVAC290	CCF OF SW-FCV-129 & 130 TO OPEN	2.00E-3	6.8E-2	1.36E-04	1.36E-04
6) ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST		0.5	5.00E-01	1.32E-04
ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.	1.00E-2	1	1.00E-02	
7) ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST		0.5	5.00E-01	1.32E-04
ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
ADGQJ02A	EMERGENCY DIESEL GENERATOR '2A' OOS FOR MAINT.	1.00E-2	1	1.00E-02	
8) ADGECCAB	CCF OF EDG'S '2A' AND '2B' TO START	2.80E-3	0.038	1.06E-04	1.06E-04
9) AB1911CP	CONDITIONAL PROBABILITY OF 9C HAVING TO OPEN/RECLOSE		0.32	3.20E-01	7.68E-05
AB1BACCF	COMMON MODE FAILURE OF 9C TO RECLOSE THAT PREVENTS 11C FROM CLOSIN		2.4E-04	2.40E-04	
10) ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST		0.5	5.00E-01	5.28E-05
ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
AMVAK64B	FAN F-64-1B MOTOR OPERATED EXHAUST DAMPER FAILS TO OPEN	4.00E-3	1	4.00E-03	
11) ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST		0.5	5.00E-01	5.28E-05
ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
AMVAJ64A	FAN F-64-1A MOTOR OPERATED EXHAUST DAMPER FAILS TO OPEN	4.00E-3	1	4.00E-03	
12) ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST		0.5	5.00E-01	5.28E-05
ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
AMVAK64B	FAN F-64-1B MOTOR OPERATED EXHAUST DAMPER FAILS TO OPEN	4.00E-3	1	4.00E-03	
13) ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST		0.5	5.00E-01	5.28E-05
ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
AMVAJ64A	FAN F-64-1A MOTOR OPERATED EXHAUST DAMPER FAILS TO OPEN	4.00E-3	1	4.00E-03	
14) ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST		0.5	5.00E-01	3.70E-05
ADGEK02B	DIESEL 2B FAILS TO START	2.80E-3	1	2.80E-03	
ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
15) ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST		0.5	5.00E-01	3.70E-05
ADGEJ02A	DIESEL 2A FAILS TO START	2.80E-3	1	2.80E-03	
ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
16) AB1BA09C	CB 9C FAILS TO OPEN (FAILURE RATE ASSUMED SAME AS CLOSE)	4.00E-4	6	2.40E-03	3.17E-05
ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST		0.5	5.00E-01	
ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
17) AB1BA11C	CB 11C FAILS TO CLOSE	4.00E-4	6	2.40E-03	3.17E-05
ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST		0.5	5.00E-01	
ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
18) AB1BA11C	CB 11C FAILS TO CLOSE	4.00E-4	6	2.40E-03	3.17E-05
ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST		0.5	5.00E-01	
ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
19) AB1BA841	CB 4841 FAILS TO OPEN (FAILURE ASSUMED SAME AS CLOSE) (UV OR	4.00E-4	6	2.40E-03	3.17E-05
ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST		0.5	5.00E-01	
ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
20) AB1BA841	CB 4841 FAILS TO OPEN (FAILURE ASSUMED SAME AS CLOSE) (UV OR	4.00E-4	6	2.40E-03	3.17E-05

Appendix C.2 Rev. 1

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	MODULE/EVENT NAME	DESCRIPTION		RATE	EXPOSURE	B.E. PROB.	MOD./CS. PROB.
	ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST			0.5	5.00E-01	
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
21)	AB1BA971	CB 4971 FAILS TO OPEN (FAILURE ASSUMED SAME AS CLOSE)	(UV OR	4.00E-4	6	2.40E-03	3.17E-05
	ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST			0.5	5.00E-01	
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
22)	AB1BA971	CB 4971 FAILS TO OPEN (FAILURE ASSUMED SAME AS CLOSE)	(UV OR	4.00E-4	6	2.40E-03	3.17E-05
	ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST			0.5	5.00E-01	
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
23)	AB1BA9C0	CB 9C FAILS TO CLOSE		4.00E-4	6	2.40E-03	3.17E-05
	ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST			0.5	5.00E-01	
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
24)	AB1BAC11	CB 11C FAILS TO OPEN		4.00E-4	6	2.40E-03	3.17E-05
	ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST			0.5	5.00E-01	
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
25)	AB1BAM23	CB 2C BETWEEN MCC 2-4, MCC 3-4 AND BUS 1-4 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	3.17E-05
	ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST			0.5	5.00E-01	
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
26)	AB1BAM23	CB 2C BETWEEN MCC 2-4, MCC 3-4 AND BUS 1-4 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	3.17E-05
	ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST			0.5	5.00E-01	
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
27)	AB1BAM36	CB 17C BETWEEN MCC 3-7, MCC 6-7 AND BUS 1-7 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	3.17E-05
	ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST			0.5	5.00E-01	
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
28)	AB1BAM36	CB 17C BETWEEN MCC 3-7, MCC 6-7 AND BUS 1-7 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	3.17E-05
	ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST			0.5	5.00E-01	
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
29)	AB1BAM44	CB 4C BETWEEN MCC 1-4, MCC 4-4 AND BUS 1-4 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	3.17E-05
	ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST			0.5	5.00E-01	
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
30)	AB1BAM44	CB 4C BETWEEN MCC 1-4, MCC 4-4 AND BUS 1-4 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	3.17E-05
	ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST			0.5	5.00E-01	
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
31)	AB1BAM47	CB 16C BETWEEN MCC 4-7 MCC, 7-7 AND BUS 1-7 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	3.17E-05
	ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST			0.5	5.00E-01	
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
32)	AB1BAM47	CB 16C BETWEEN MCC 4-7 MCC, 7-7 AND BUS 1-7 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	3.17E-05
	ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST			0.5	5.00E-01	
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
33)	AB1BAM67	CB 14C BETWEEN MCC 6-6, MCC 7-6 AND BUS 1-6 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	3.17E-05
	ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST			0.5	5.00E-01	
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
34)	AB1BAM67	CB 14C BETWEEN MCC 6-6, MCC 7-6 AND BUS 1-6 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	3.17E-05
	ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST			0.5	5.00E-01	
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
35)	AB1BAM68	CB 12D BETWEEN MCC 8-6 AND BUS 1-6 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	3.17E-05
	ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST			0.5	5.00E-01	
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
36)	AB1BAM68	CB 12D BETWEEN MCC 8-6 AND BUS 1-6 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	3.17E-05
	ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST			0.5	5.00E-01	
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	

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	MODULE/EVENT NAME	DESCRIPTION		RATE	EXPOSURE	B.E. PROB.	MOD./CS. PROB.
37)	AB1BPM85	CB 8D BETWEEN MCC 8-5 AND BUS 1-5 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	3.17E-05
	ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST			0.5	5.00E-01	
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
38)	AB1BPM85	CB 8D BETWEEN MCC 8-5 AND BUS 1-5 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	3.17E-05
	ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST			0.5	5.00E-01	
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
39)	AB1BXM25	CB 6C BETWEEN MCC 2-5, MCC 1-5 AND BUS 1-5 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	3.17E-05
	ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST			0.5	5.00E-01	
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
40)	AB1BXM25	CB 6C BETWEEN MCC 2-5, MCC 1-5 AND BUS 1-5 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	3.17E-05
	ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST			0.5	5.00E-01	
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
41)	ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST			0.5	5.00E-01	3.00E-05
	AFNECCRA	CCF OF SWGR ROOM 'A' INTAKE/EXHAUST FANS TO START AFTER LOSP	(SCR	6.00E-4	.1	6.00E-05	
42)	ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST			0.5	5.00E-01	3.00E-05
	AFNECCRA	CCF OF SWGR ROOM 'A' INTAKE/EXHAUST FANS TO START AFTER LOSP	(SCR	6.00E-4	.1	6.00E-05	
43)	ADGEJ02A	DIESEL 2A FAILS TO START		2.80E-3	1	2.80E-03	2.80E-05
	ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
44)	ADGEK02B	DIESEL 2B FAILS TO START		2.80E-3	1	2.80E-03	2.80E-05
	ADGQJ02A	EMERGENCY DIESEL GENERATOR '2A' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
45)	ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST			0.5	5.00E-01	2.64E-05
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
	WAVAJ129	SW-FCV-129 FAILS TO OPEN		2.00E-3	1	2.00E-03	
46)	ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST			0.5	5.00E-01	2.64E-05
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
	WAVAK130	SW-FCV-130 FAILS TO OPEN		2.00E-3	1	2.00E-03	
47)	ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST			0.5	5.00E-01	2.64E-05
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
	WAVAK130	SW-FCV-130 FAILS TO OPEN		2.00E-3	1	2.00E-03	
48)	ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST			0.5	5.00E-01	2.64E-05
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
	WAVAJ129	SW-FCV-129 FAILS TO OPEN		2.00E-3	1	2.00E-03	
49)	ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST			0.5	5.00E-01	2.00E-05
	ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
	AMVAJ64A	FAN F-64-1A MOTOR OPERATED EXHAUST DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
50)	ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST			0.5	5.00E-01	2.00E-05
	ADGQJ02A	EMERGENCY DIESEL GENERATOR '2A' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
	AMVAK64B	FAN F-64-1B MOTOR OPERATED EXHAUST DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
51)	AB1BA09C	CB 9C FAILS TO OPEN (FAILURE RATE ASSUMED SAME AS CLOSE)		4.00E-4	6	2.40E-03	1.20E-05
	ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST			0.5	5.00E-01	
	ADGQJ02A	EMERGENCY DIESEL GENERATOR '2A' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
52)	AB1BA11C	CB 11C FAILS TO CLOSE		4.00E-4	6	2.40E-03	1.20E-05
	ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST			0.5	5.00E-01	
	ADGQJ02A	EMERGENCY DIESEL GENERATOR '2A' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
53)	AB1BA841	CB 4841 FAILS TO OPEN (FAILURE ASSUMED SAME AS CLOSE)	(UV OR	4.00E-4	6	2.40E-03	1.20E-05
	ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST			0.5	5.00E-01	
	ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
54)	AB1BA971	CB 4971 FAILS TO OPEN (FAILURE ASSUMED SAME AS CLOSE)	(UV OR	4.00E-4	6	2.40E-03	1.20E-05
	ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST			0.5	5.00E-01	
	ADGQJ02A	EMERGENCY DIESEL GENERATOR '2A' OOS FOR MAINT.		1.00E-2	1	1.00E-02	

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MODULE/EVENT NAME	DESCRIPTION		RATE	EXPOSURE	B.E. PROB.	MOD./CS. PROB.
55) AB1BAM23	CB 2C BETWEEN MCC 2-4, MCC 3-4 AND BUS 1-4 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	1.20E-05
ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST			0.5	5.00E-01	
ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
56) AB1BAM36	CB 17C BETWEEN MCC 3-7, MCC 6-7 AND BUS 1-7 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	1.20E-05
ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST			0.5	5.00E-01	
ADGQJ02A	EMERGENCY DIESEL GENERATOR '2A' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
57) AB1BAM44	CB 4C BETWEEN MCC 1-4, MCC 4-4 AND BUS 1-4 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	1.20E-05
ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST			0.5	5.00E-01	
ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
58) AB1BAM47	CB 16C BETWEEN MCC 4-7 MCC, 7-7 AND BUS 1-7 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	1.20E-05
ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST			0.5	5.00E-01	
ADGQJ02A	EMERGENCY DIESEL GENERATOR '2A' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
59) AB1BAM67	CB 14C BETWEEN MCC 6-6, MCC 7-6 AND BUS 1-6 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	1.20E-05
ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST			0.5	5.00E-01	
ADGQJ02A	EMERGENCY DIESEL GENERATOR '2A' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
60) AB1BAM68	CB 12D BETWEEN MCC 8-6 AND BUS 1-6 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	1.20E-05
ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST			0.5	5.00E-01	
ADGQJ02A	EMERGENCY DIESEL GENERATOR '2A' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
61) AB1BPM85	CB 8D BETWEEN MCC 8-5 AND BUS 1-5 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	1.20E-05
ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST			0.5	5.00E-01	
ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
62) AB1BXM25	CB 6C BETWEEN MCC 2-5, MCC 1-5 AND BUS 1-5 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	1.20E-05
ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST			0.5	5.00E-01	
ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
63) ACPDA2A5	CONTACT PAIR 62-5A 3-5 FAILS TO REMAIN CLOSED		1.25E-7	1.5	8.21E-04	1.08E-05
ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST			0.5	5.00E-01	
ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
64) ACPDA2A6	CONTACT PAIR 62-6A 3-5 FAILS TO REMAIN CLOSED		1.25E-7	1.5	8.21E-04	1.08E-05
ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST			0.5	5.00E-01	
ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
65) ACPAX401	CONTACT PAIR 27-4 2-10 FAILS TO OPEN		1.35E-4	6	8.10E-04	1.07E-05
ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST			0.5	5.00E-01	
ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
66) ACPAX401	CONTACT PAIR 27-4 2-10 FAILS TO OPEN		1.35E-4	6	8.10E-04	1.07E-05
ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST			0.5	5.00E-01	
ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
67) ACPAX501	CONTACT PAIR 27-5 2-10 FAILS TO OPEN		1.35E-4	6	8.10E-04	1.07E-05
ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST			0.5	5.00E-01	
ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
68) ACPAX501	CONTACT PAIR 27-5 2-10 FAILS TO OPEN		1.35E-4	6	8.10E-04	1.07E-05
ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST			0.5	5.00E-01	
ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
69) ACPAX601	CONTACT PAIR 27-6 2-10 FAILS TO OPEN		1.35E-4	6	8.10E-04	1.07E-05
ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST			0.5	5.00E-01	
ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
70) ACPAX601	CONTACT PAIR 27-6 2-10 FAILS TO OPEN		1.35E-4	6	8.10E-04	1.07E-05
ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST			0.5	5.00E-01	
ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START		1.10E-3	1	2.64E-02	
71) ACPAX701	CONTACT PAIR 27-7 2-10 FAILS TO OPEN		1.35E-4	6	8.10E-04	1.07E-05
ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST			0.5	5.00E-01	

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	MODULE/EVENT NAME	DESCRIPTION	RATE	EXPOSURE	B.E. PROB.	MOD./CS. PROB.
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
72)	ACPAX701	CONTACT PAIR 27-7 2-10 FAILS TO OPEN	1.35E-4	6	8.10E-04	1.07E-05
	ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST		0.5	5.00E-01	
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
73)	ACPBA5A2	CONTACT PAIR 62-5A 2-6 FAILS TO CLOSE	1.35E-4	6	8.10E-04	1.07E-05
	ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST		0.5	5.00E-01	
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
74)	ACPBA6A2	CONTACT PAIR 62-6A 2-6 FAILS TO CLOSE	1.35E-4	6	8.10E-04	1.07E-05
	ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST		0.5	5.00E-01	
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
75)	ACPBI83C	CONTACT PAIR 27Y/1-8 3-3C FAIL TO CLOSE	1.35E-4	6	8.10E-04	1.07E-05
	ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST		0.5	5.00E-01	
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
76)	ACPBI83C	CONTACT PAIR 27Y/1-8 3-3C FAIL TO CLOSE	1.35E-4	6	8.10E-04	1.07E-05
	ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST		0.5	5.00E-01	
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
77)	ACPBI93C	CONTACT PAIR 27Y/1-9 3-3C FAIL TO CLOSE	1.35E-4	6	8.10E-04	1.07E-05
	ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST		0.5	5.00E-01	
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
78)	ACPBI93C	CONTACT PAIR 27Y/1-9 3-3C FAIL TO CLOSE	1.35E-4	6	8.10E-04	1.07E-05
	ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST		0.5	5.00E-01	
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
79)	ACPBK4A5	CONTACT PAIR 62-5A 4-6 FAILS TO CLOSE	1.35E-4	6	8.10E-04	1.07E-05
	ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST		0.5	5.00E-01	
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
80)	ACPBK6A4	CONTACT PAIR 62-6A 4-6 FAILS TO CLOSE	1.35E-4	6	8.10E-04	1.07E-05
	ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST		0.5	5.00E-01	
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
81)	ACPBK6A4	CONTACT PAIR 62-6A 4-6 FAILS TO CLOSE	1.35E-4	6	8.10E-04	1.07E-05
	ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST		0.5	5.00E-01	
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
82)	ACPBX42C	CONTACT PAIR 27Y-4 2-2C FAILS TO CLOSE	1.35E-4	6	8.10E-04	1.07E-05
	ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST		0.5	5.00E-01	
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
83)	ACPBX42C	CONTACT PAIR 27Y-4 2-2C FAILS TO CLOSE	1.35E-4	6	8.10E-04	1.07E-05
	ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST		0.5	5.00E-01	
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
84)	ACPBX47C	CONTACT PAIR 27Y-4 7-7C FAILS TO CLOSE	1.35E-4	6	8.10E-04	1.07E-05
	ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST		0.5	5.00E-01	
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
85)	ACPBX47C	CONTACT PAIR 27Y-4 7-7C FAILS TO CLOSE	1.35E-4	6	8.10E-04	1.07E-05
	ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST		0.5	5.00E-01	
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
86)	ACPBX513	CONTACT PAIR 27X-5 9-13 FAILS TO CLOSE	1.35E-4	6	8.10E-04	1.07E-05
	ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST		0.5	5.00E-01	
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
87)	ACPBX513	CONTACT PAIR 27X-5 9-13 FAILS TO CLOSE	1.35E-4	6	8.10E-04	1.07E-05
	ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST		0.5	5.00E-01	
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
88)	ACPBX52C	CONTACT PAIR 27Y-5 2-2C FAILS TO CLOSE	1.35E-4	6	8.10E-04	1.07E-05

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MODULE/EVENT NAME	DESCRIPTION	RATE	EXPOSURE	B.E. PROB.	MOD./CS. PROB.
ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST		0.5	5.00E-01	
ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
89) ACPBX52C	CONTACT PAIR 27Y-5 2-2C FAILS TO CLOSE	1.35E-4	6	8.10E-04	1.07E-05
ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST		0.5	5.00E-01	
ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
90) ACPBX613	CONTACT PAIR 27X-6 9-13 FAILS TO CLOSE	1.35E-4	6	8.10E-04	1.07E-05
ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST		0.5	5.00E-01	
ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
91) ACPBX613	CONTACT PAIR 27X-6 9-13 FAILS TO CLOSE	1.35E-4	6	8.10E-04	1.07E-05
ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST		0.5	5.00E-01	
ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
92) ACPBX65C	CONTACT PAIR 27Y-6 5-5C FAILS TO CLOSE	1.35E-4	6	8.10E-04	1.07E-05
ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST		0.5	5.00E-01	
ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
93) ACPBX65C	CONTACT PAIR 27Y-6 5-5C FAILS TO CLOSE	1.35E-4	6	8.10E-04	1.07E-05
ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST		0.5	5.00E-01	
ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
94) ACPBX72C	CONTACT PAIR 27Y-7 2-2C FAILS TO CLOSE	1.35E-4	6	8.10E-04	1.07E-05
ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST		0.5	5.00E-01	
ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
95) ACPBX72C	CONTACT PAIR 27Y-7 2-2C FAILS TO CLOSE	1.35E-4	6	8.10E-04	1.07E-05
ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST		0.5	5.00E-01	
ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
96) ACPBX74C	CONTACT PAIR 27Y-7 4-4C FAILS TO CLOSE	1.35E-4	6	8.10E-04	1.07E-05
ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST		0.5	5.00E-01	
ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
97) ACPBX74C	CONTACT PAIR 27Y-7 4-4C FAILS TO CLOSE	1.35E-4	6	8.10E-04	1.07E-05
ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST		0.5	5.00E-01	
ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
98) ACPBXX41	CONTACT PAIR 27X-4 9-13 FAILS TO CLOSE	1.35E-4	6	8.10E-04	1.07E-05
ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST		0.5	5.00E-01	
ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
99) ACPBXX41	CONTACT PAIR 27X-4 9-13 FAILS TO CLOSE	1.35E-4	6	8.10E-04	1.07E-05
ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST		0.5	5.00E-01	
ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
100) ACPBXX51	CONTACT PAIR 27X-5 9-13 FAILS TO CLOSE	1.35E-4	6	8.10E-04	1.07E-05
ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST		0.5	5.00E-01	
ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
101) ACPBXX51	CONTACT PAIR 27X-5 9-13 FAILS TO CLOSE	1.35E-4	6	8.10E-04	1.07E-05
ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST		0.5	5.00E-01	
ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
102) ACPBXX61	CONTACT PAIR 27X-6 9-13 FAILS TO CLOSE	1.35E-4	6	8.10E-04	1.07E-05
ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST		0.5	5.00E-01	
ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
103) ACPBXX61	CONTACT PAIR 27X-6 9-13 FAILS TO CLOSE	1.35E-4	6	8.10E-04	1.07E-05
ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST		0.5	5.00E-01	
ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
104) ACPBXX71	CONTACT PAIR 27X-7 9-13 FAILS TO CLOSE	1.35E-4	6	8.10E-04	1.07E-05
ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST		0.5	5.00E-01	
ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	

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	MODULE/EVENT NAME	DESCRIPTION	RATE	EXPOSURE	B.E. PROB.	MOD./CS. PROB.
105)	ACPBXX71	CONTACT PAIR 27X-7 9-13 FAILS TO CLOSE	1.35E-4	6	8.10E-04	1.07E-05
	ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST		0.5	5.00E-01	
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
106)	ACPDJA03	AUX CONTACT PAIR 27Y/1-8 17 FAILS TO REMAIN CLOSED	1.25E-7	18	8.10E-04	1.07E-05
	ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST		0.5	5.00E-01	
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
107)	ACPDJA03	AUX CONTACT PAIR 27Y/1-8 17 FAILS TO REMAIN CLOSED	1.25E-7	18	8.10E-04	1.07E-05
	ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST		.5	5.00E-01	
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
108)	ACPDJA04	AUX CONTACT PAIR 27Y/1-8 18 FAILS TO REMAIN CLOSED	1.25E-7	18	8.10E-04	1.07E-05
	ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST		0.5	5.00E-01	
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
109)	ACPDJA04	AUX CONTACT PAIR 27Y/1-8 18 FAILS TO REMAIN CLOSED	1.25E-7	18	8.10E-04	1.07E-05
	ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST		0.5	5.00E-01	
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
110)	ACPDKB03	AUX CONTACT PAIR 27Y/1-9 17 FAILS TO REMAIN CLOSED	1.25E-7	18	8.10E-04	1.07E-05
	ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST		0.5	5.00E-01	
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
111)	ACPDKB03	AUX CONTACT PAIR 27Y/1-9 17 FAILS TO REMAIN CLOSED	1.25E-7	18	8.10E-04	1.07E-05
	ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST		0.5	5.00E-01	
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
112)	ACPDKB04	AUX CONTACT PAIR 27Y/1-9 18 FAILS TO REMAIN CLOSED	1.25E-7	18	8.10E-04	1.07E-05
	ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST		0.5	5.00E-01	
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
113)	ACPDKB04	AUX CONTACT PAIR 27Y/1-9 18 FAILS TO REMAIN CLOSED	1.25E-7	18	8.10E-04	1.07E-05
	ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST		0.5	5.00E-01	
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
114)	ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST		0.5	5.00E-01	1.00E-05
	ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.	1.00E-2	1	1.00E-02	
	WAVAJ129	SW-FCV-129 FAILS TO OPEN	2.00E-3	1	2.00E-03	
115)	ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST		0.5	5.00E-01	1.00E-05
	ADGQJ02A	EMERGENCY DIESEL GENERATOR '2A' OOS FOR MAINT.	1.00E-2	1	1.00E-02	
	WAVAK130	SW-FCV-130 FAILS TO OPEN	2.00E-3	1	2.00E-03	
116)	ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST		0.5	5.00E-01	8.00E-06
	AMVAJ64A	FAN F-64-1A MOTOR OPERATED EXHAUST DAMPER FAILS TO OPEN	4.00E-3	1	4.00E-03	
	AMVAK64B	FAN F-64-1B MOTOR OPERATED EXHAUST DAMPER FAILS TO OPEN	4.00E-3	1	4.00E-03	
117)	ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST		0.5	5.00E-01	8.00E-06
	AMVAJ64A	FAN F-64-1A MOTOR OPERATED EXHAUST DAMPER FAILS TO OPEN	4.00E-3	1	4.00E-03	
	AMVAK64B	FAN F-64-1B MOTOR OPERATED EXHAUST DAMPER FAILS TO OPEN	4.00E-3	1	4.00E-03	
118)	ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST		0.5	5.00E-01	7.92E-06
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
	AFNEK64B	FAN F-64-1B FAILS TO START	6.00E-4	1	6.00E-04	
119)	ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST		0.5	5.00E-01	7.92E-06
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
	AFNEJ64A	FAN F-64-1A FAILS TO START	6.00E-4	1	6.00E-04	
120)	ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST		0.5	5.00E-01	7.92E-06
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
	AFNEK64B	FAN F-64-1B FAILS TO START	6.00E-4	1	6.00E-04	
121)	ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST		0.5	5.00E-01	7.92E-06
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	

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	MODULE/EVENT NAME	DESCRIPTION	RATE	EXPOSURE	B.E. PROB.	MOD./CS. PROB.
	AFNEJ64A	FAN F-64-1A FAILS TO START	6.00E-4	1	6.00E-04	
122)	ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST		0.5	5.00E-01	7.92E-06
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
	ARCHX7Y6	RELAY 27Y-6 FAILS TO ENERGIZE	1.00E-4	6	6.00E-04	
123)	ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST		0.5	5.00E-01	7.92E-06
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
	ARCMX276	RELAY 27-6 FAILS TO DE-ENERGIZE	1.00E-4	6	6.00E-04	
124)	ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST		0.5	5.00E-01	7.92E-06
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
	ARCHKB21	RELAY 27Y2/1-9 FAILS TO ENERGIZE	1.00E-4	6	6.00E-04	
125)	ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST		0.5	5.00E-01	7.92E-06
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
	ARCMX277	RELAY 27-7 FAILS TO DE-ENERGIZE	1.00E-4	6	6.00E-04	
126)	ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST		0.5	5.00E-01	7.92E-06
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
	ARCMX7X7	RELAY 27X-7 FAILS TO DE-ENERGIZE	1.00E-4	6	6.00E-04	
127)	ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST		0.5	5.00E-01	7.92E-06
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
	ARCHJA04	RELAY 27Y/1-8 FAILS TO ENERGIZE	1.00E-4	6	6.00E-04	
128)	ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST		0.5	5.00E-01	7.92E-06
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
	ARCHKB04	RELAY 27Y/1-9 FAILS TO ENERGIZE	1.00E-4	6	6.00E-04	
129)	ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST		0.5	5.00E-01	7.92E-06
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
	ARCHX7Y4	RELAY 27Y-4 FAILS TO ENERGIZE	1.00E-4	6	6.00E-04	
130)	ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST		0.5	5.00E-01	7.92E-06
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
	ARCMX275	RELAY 27-5 FAILS TO DE-ENERGIZE	1.00E-4	6	6.00E-04	
131)	ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST		0.5	5.00E-01	7.92E-06
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
	ARCMJA01	RELAY 27Y1/1-8 FAILS TO DEENERGIZE	1.00E-4	6	6.00E-04	
132)	ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST		0.5	5.00E-01	7.92E-06
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
	ARCMX7X5	RELAY 27X-5 FAILS TO DE-ENERGIZE	1.00E-4	6	6.00E-04	
133)	ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST		0.5	5.00E-01	7.92E-06
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
	ARCMX7X4	RELAY 27X-4 FAILS TO DEENERGIZE	1.00E-4	6	6.00E-04	
134)	ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST		0.5	5.00E-01	7.92E-06
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
	ARCHKB05	RELAY 27X/1-9 FAILS TO ENERGIZE	1.00E-4	6	6.00E-04	
135)	ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST		0.5	5.00E-01	7.92E-06
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
	ARCHJA21	RELAY 27Y2/1-8 FAILS TO ENERGIZE	1.00E-4	6	6.00E-04	
136)	ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST		0.5	5.00E-01	7.92E-06
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
	ARCHJA05	RELAY 27X/1-8 FAILS TO ENERGIZE	1.00E-4	6	6.00E-04	
137)	ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST		0.5	5.00E-01	7.92E-06
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
	ARCMKB01	RELAY 27Y1/1-9 FAILS TO DEENERGIZE	1.00E-4	6	6.00E-04	
138)	ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST		0.5	5.00E-01	7.92E-06

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MODULE/EVENT NAME	DESCRIPTION	RATE	EXPOSURE	B.E. PROB.	MOD./CS. PROB.
ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
ARCHX7Y5	RELAY 27Y-5 FAILS TO ENERGIZE	1.00E-4	6	6.00E-04	
139) ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST		0.5	5.00E-01	7.92E-06
ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
ARCMX7X6	RELAY 27X-6 FAILS TO DE-ENERGIZE	1.00E-4	6	6.00E-04	
140) ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST		0.5	5.00E-01	7.92E-06
ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
ARCHX7Y7	RELAY 27Y-7 FAILS TO ENERGIZE	1.00E-4	6	6.00E-04	
141) ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST		0.5	5.00E-01	7.92E-06
ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
ARCHK08A	RELAY 62-6A FAILS TO ENERGIZE	1.00E-4	6	6.00E-04	
142) ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST		0.5	5.00E-01	7.92E-06
ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
ARCMX274	RELAY 27-4 FAILS TO DE-ENERGIZE	1.00E-4	6	6.00E-04	
143) ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST		0.5	5.00E-01	7.92E-06
ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
ARCHX7Y7	RELAY 27Y-7 FAILS TO ENERGIZE	1.00E-4	6	6.00E-04	
144) ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST		0.5	5.00E-01	7.92E-06
ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
ARCMJ15A	RELAY 62-5A FAILS TO DEENERGIZE	1.00E-4	6	6.00E-04	
145) ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST		0.5	5.00E-01	7.92E-06
ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
ARCMX7X7	RELAY 27X-7 FAILS TO DE-ENERGIZE	1.00E-4	6	6.00E-04	
146) ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST		0.5	5.00E-01	7.92E-06
ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
ARCMX276	RELAY 27-6 FAILS TO DE-ENERGIZE	1.00E-4	6	6.00E-04	
147) ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST		0.5	5.00E-01	7.92E-06
ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
ARCMX7X4	RELAY 27X-4 FAILS TO DEENERGIZE	1.00E-4	6	6.00E-04	
148) ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST		0.5	5.00E-01	7.92E-06
ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
ARCHKB21	RELAY 27Y2/1-9 FAILS TO ENERGIZE	1.00E-4	6	6.00E-04	
149) ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST		0.5	5.00E-01	7.92E-06
ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
ARCHJA04	RELAY 27Y/1-8 FAILS TO ENERGIZE	1.00E-4	6	6.00E-04	
150) ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST		0.5	5.00E-01	7.92E-06
ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
ARCHK08A	RELAY 62-6A FAILS TO ENERGIZE	1.00E-4	6	6.00E-04	
151) ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST		0.5	5.00E-01	7.92E-06
ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
ARCMKB01	RELAY 27Y1/1-9 FAILS TO DEENERGIZE	1.00E-4	6	6.00E-04	
152) ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST		0.5	5.00E-01	7.92E-06
ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
ARCMX275	RELAY 27-5 FAILS TO DE-ENERGIZE	1.00E-4	6	6.00E-04	
153) ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST		0.5	5.00E-01	7.92E-06
ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
ARCHKB05	RELAY 27X/1-9 FAILS TO ENERGIZE	1.00E-4	6	6.00E-04	
154) ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST		0.5	5.00E-01	7.92E-06
ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
ARCMX7X6	RELAY 27X-6 FAILS TO DE-ENERGIZE	1.00E-4	6	6.00E-04	

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	MODULE/EVENT NAME	DESCRIPTION	RATE	EXPOSURE	B.E. PROB.	MOD./CS. PROB.
155)	ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST		0.5	5.00E-01	7.92E-06
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
	ARCHJ15A	RELAY 62-5A FAILS TO ENERGIZE	1.00E-4	6	6.00E-04	
156)	ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST		0.5	5.00E-01	7.92E-06
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
	ARCMK15A	RELAY 62-6A FAILS TO DE-ENERGIZE	1.00E-4	6	6.00E-04	
157)	ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST		0.5	5.00E-01	7.92E-06
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
	ARCHX7Y5	RELAY 27Y-5 FAILS TO ENERGIZE	1.00E-4	6	6.00E-04	
158)	ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST		0.5	5.00E-01	7.92E-06
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
	ARCMX277	RELAY 27-7 FAILS TO DE-ENERGIZE	1.00E-4	6	6.00E-04	
159)	ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST		0.5	5.00E-01	7.92E-06
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
	ARCHJA05	RELAY 27X/1-8 FAILS TO ENERGIZE	1.00E-4	6	6.00E-04	
160)	ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST		0.5	5.00E-01	7.92E-06
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
	ARCMJA01	RELAY 27Y1/1-8 FAILS TO DEENERGIZE	1.00E-4	6	6.00E-04	
161)	ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST		0.5	5.00E-01	7.92E-06
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
	ARCHX7Y6	RELAY 27Y-6 FAILS TO ENERGIZE	1.00E-4	6	6.00E-04	
162)	ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST		0.5	5.00E-01	7.92E-06
	ADGFJ02A	EDG '2A' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
	ARCHKB04	RELAY 27Y/1-9 FAILS TO ENERGIZE	1.00E-4	6	6.00E-04	
163)	ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST		0.5	5.00E-01	7.92E-06
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
	ARCHJA21	RELAY 27Y2/1-8 FAILS TO ENERGIZE	1.00E-4	6	6.00E-04	
164)	ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST		0.5	5.00E-01	7.92E-06
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
	ARCMX7X5	RELAY 27X-5 FAILS TO DE-ENERGIZE	1.00E-4	6	6.00E-04	
165)	ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST		0.5	5.00E-01	7.92E-06
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
	ARCHX7Y4	RELAY 27Y-4 FAILS TO ENERGIZE	1.00E-4	6	6.00E-04	
166)	ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST		0.5	5.00E-01	7.92E-06
	ADGFK02B	EDG '2B' FAILS TO RUN GIVEN START	1.10E-3	1	2.64E-02	
	ARCMX274	RELAY 27-4 FAILS TO DE-ENERGIZE	1.00E-4	6	6.00E-04	
167)	ADGEJ02A	DIESEL 2A FAILS TO START	2.80E-3	1	2.80E-03	7.84E-06
	ADGEK02B	DIESEL 2B FAILS TO START	2.80E-3	1	2.80E-03	
168)	ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST		0.5	5.00E-01	5.60E-06
	ADGEK02B	DIESEL 2B FAILS TO START	2.80E-3	1	2.80E-03	
	AMVAJ64A	FAN F-64-1A MOTOR OPERATED EXHAUST DAMPER FAILS TO OPEN	4.00E-3	1	4.00E-03	
169)	ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST		0.5	5.00E-01	5.60E-06
	ADGEJ02A	DIESEL 2A FAILS TO START	2.80E-3	1	2.80E-03	
	AMVAK64B	FAN F-64-1B MOTOR OPERATED EXHAUST DAMPER FAILS TO OPEN	4.00E-3	1	4.00E-03	
170)	AB1BA09C	CB 9C FAILS TO OPEN (FAILURE RATE ASSUMED SAME AS CLOSE)	4.00E-4	6	2.40E-03	4.80E-06
	ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST		0.5	5.00E-01	
	AMVAJ64A	FAN F-64-1A MOTOR OPERATED EXHAUST DAMPER FAILS TO OPEN	4.00E-3	1	4.00E-03	
171)	AB1BA11C	CB 11C FAILS TO CLOSE	4.00E-4	6	2.40E-03	4.80E-06
	ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST		0.5	5.00E-01	
	AMVAJ64A	FAN F-64-1A MOTOR OPERATED EXHAUST DAMPER FAILS TO OPEN	4.00E-3	1	4.00E-03	

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MODULE/EVENT NAME	DESCRIPTION		RATE	EXPOSURE	B.E. PROB.	MOD./CS. PROB.
172) AB1BA11C	CB 11C FAILS TO CLOSE		4.00E-4	6	2.40E-03	4.80E-06
ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST			0.5	5.00E-01	
AMVAJ64A	FAN F-64-1A MOTOR OPERATED EXHAUST DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
173) AB1BA841	CB 4841 FAILS TO OPEN (FAILURE ASSUMED SAME AS CLOSE)	(UV OR	4.00E-4	6	2.40E-03	4.80E-06
ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST			0.5	5.00E-01	
AMVAK64B	FAN F-64-1B MOTOR OPERATED EXHAUST DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
174) AB1BA841	CB 4841 FAILS TO OPEN (FAILURE ASSUMED SAME AS CLOSE)	(UV OR	4.00E-4	6	2.40E-03	4.80E-06
ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST			0.5	5.00E-01	
AMVAK64B	FAN F-64-1B MOTOR OPERATED EXHAUST DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
175) AB1BA971	CB 4971 FAILS TO OPEN (FAILURE ASSUMED SAME AS CLOSE)	(UV OR	4.00E-4	6	2.40E-03	4.80E-06
ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST			0.5	5.00E-01	
AMVAJ64A	FAN F-64-1A MOTOR OPERATED EXHAUST DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
176) AB1BA971	CB 4971 FAILS TO OPEN (FAILURE ASSUMED SAME AS CLOSE)	(UV OR	4.00E-4	6	2.40E-03	4.80E-06
ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST			0.5	5.00E-01	
AMVAJ64A	FAN F-64-1A MOTOR OPERATED EXHAUST DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
177) AB1BA9C0	CB 9C FAILS TO CLOSE		4.00E-4	6	2.40E-03	4.80E-06
ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST			0.5	5.00E-01	
AMVAK64B	FAN F-64-1B MOTOR OPERATED EXHAUST DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
178) AB1BAC11	CB 11C FAILS TO OPEN		4.00E-4	6	2.40E-03	4.80E-06
ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST			0.5	5.00E-01	
AMVAK64B	FAN F-64-1B MOTOR OPERATED EXHAUST DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
179) AB1BAM23	CB 2C BETWEEN MCC 2-4, MCC 3-4 AND BUS 1-4 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	4.80E-06
ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST			0.5	5.00E-01	
AMVAK64B	FAN F-64-1B MOTOR OPERATED EXHAUST DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
180) AB1BAM23	CB 2C BETWEEN MCC 2-4, MCC 3-4 AND BUS 1-4 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	4.80E-06
ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST			0.5	5.00E-01	
AMVAK64B	FAN F-64-1B MOTOR OPERATED EXHAUST DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
181) AB1BAM36	CB 17C BETWEEN MCC 3-7, MCC 6-7 AND BUS 1-7 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	4.80E-06
ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST			0.5	5.00E-01	
AMVAJ64A	FAN F-64-1A MOTOR OPERATED EXHAUST DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
182) AB1BAM36	CB 17C BETWEEN MCC 3-7, MCC 6-7 AND BUS 1-7 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	4.80E-06
ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST			0.5	5.00E-01	
AMVAJ64A	FAN F-64-1A MOTOR OPERATED EXHAUST DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
183) AB1BAM44	CB 4C BETWEEN MCC 1-4, MCC 4-4 AND BUS 1-4 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	4.80E-06
ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST			0.5	5.00E-01	
AMVAK64B	FAN F-64-1B MOTOR OPERATED EXHAUST DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
184) AB1BAM44	CB 4C BETWEEN MCC 1-4, MCC 4-4 AND BUS 1-4 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	4.80E-06
ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST			0.5	5.00E-01	
AMVAK64B	FAN F-64-1B MOTOR OPERATED EXHAUST DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
185) AB1BAM47	CB 16C BETWEEN MCC 4-7 MCC, 7-7 AND BUS 1-7 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	4.80E-06
ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST			0.5	5.00E-01	
AMVAJ64A	FAN F-64-1A MOTOR OPERATED EXHAUST DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
186) AB1BAM47	CB 16C BETWEEN MCC 4-7 MCC, 7-7 AND BUS 1-7 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	4.80E-06
ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST			0.5	5.00E-01	
AMVAJ64A	FAN F-64-1A MOTOR OPERATED EXHAUST DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
187) AB1BAM67	CB 14C BETWEEN MCC 6-6, MCC 7-6 AND BUS 1-6 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	4.80E-06
ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST			0.5	5.00E-01	
AMVAJ64A	FAN F-64-1A MOTOR OPERATED EXHAUST DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
188) AB1BAM67	CB 14C BETWEEN MCC 6-6, MCC 7-6 AND BUS 1-6 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	4.80E-06
ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST			0.5	5.00E-01	

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	MODULE/EVENT NAME	DESCRIPTION		RATE	EXPOSURE	B.E. PROB.	MOD./CS. PROB.
	AMVAJ64A	FAN F-64-1A MOTOR OPERATED EXHAUST DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
189)	AB1BAM68	CB 12D BETWEEN MCC 8-6 AND BUS 1-6 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	4.80E-06
	ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST			0.5	5.00E-01	
	AMVAJ64A	FAN F-64-1A MOTOR OPERATED EXHAUST DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
190)	AB1BAM68	CB 12D BETWEEN MCC 8-6 AND BUS 1-6 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	4.80E-06
	ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST			0.5	5.00E-01	
	AMVAJ64A	FAN F-64-1A MOTOR OPERATED EXHAUST DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
191)	AB1BPM85	CB 8D BETWEEN MCC 8-5 AND BUS 1-5 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	4.80E-06
	ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST			0.5	5.00E-01	
	AMVAK64B	FAN F-64-1B MOTOR OPERATED EXHAUST DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
192)	AB1BPM85	CB 8D BETWEEN MCC 8-5 AND BUS 1-5 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	4.80E-06
	ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST			0.5	5.00E-01	
	AMVAK64B	FAN F-64-1B MOTOR OPERATED EXHAUST DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
193)	AB1BXM25	CB 6C BETWEEN MCC 2-5, MCC 1-5 AND BUS 1-5 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	4.80E-06
	ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST			0.5	5.00E-01	
	AMVAK64B	FAN F-64-1B MOTOR OPERATED EXHAUST DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
194)	AB1BXM25	CB 6C BETWEEN MCC 2-5, MCC 1-5 AND BUS 1-5 FAILS TO OPEN	(FR SA	4.00E-4	6	2.40E-03	4.80E-06
	ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST			0.5	5.00E-01	
	AMVAK64B	FAN F-64-1B MOTOR OPERATED EXHAUST DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
195)	ACPDA2A6	CONTACT PAIR 62-6A 3-5 FAILS TO REMAIN CLOSED		1.25E-7	1.5	8.21E-04	4.11E-06
	ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST			0.5	5.00E-01	
	ADGQJ02A	EMERGENCY DIESEL GENERATOR '2A' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
196)	ACPAX401	CONTACT PAIR 27-4 2-10 FAILS TO OPEN		1.35E-4	6	8.10E-04	4.05E-06
	ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST			0.5	5.00E-01	
	ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
197)	ACPAX501	CONTACT PAIR 27-5 2-10 FAILS TO OPEN		1.35E-4	6	8.10E-04	4.05E-06
	ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST			0.5	5.00E-01	
	ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
198)	ACPAX601	CONTACT PAIR 27-6 2-10 FAILS TO OPEN		1.35E-4	6	8.10E-04	4.05E-06
	ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST			0.5	5.00E-01	
	ADGQJ02A	EMERGENCY DIESEL GENERATOR '2A' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
199)	ACPAX701	CONTACT PAIR 27-7 2-10 FAILS TO OPEN		1.35E-4	6	8.10E-04	4.05E-06
	ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST			0.5	5.00E-01	
	ADGQJ02A	EMERGENCY DIESEL GENERATOR '2A' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
200)	ACPBA5A2	CONTACT PAIR 62-5A 2-6 FAILS TO CLOSE		1.35E-4	6	8.10E-04	4.05E-06
	ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST			0.5	5.00E-01	
	ADGQJ02A	EMERGENCY DIESEL GENERATOR '2A' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
201)	ACPBI83C	CONTACT PAIR 27Y/1-8 3-3C FAIL TO CLOSE		1.35E-4	6	8.10E-04	4.05E-06
	ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST			0.5	5.00E-01	
	ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
202)	ACPBI93C	CONTACT PAIR 27Y/1-9 3-3C FAIL TO CLOSE		1.35E-4	6	8.10E-04	4.05E-06
	ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST			0.5	5.00E-01	
	ADGQJ02A	EMERGENCY DIESEL GENERATOR '2A' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
203)	ACPBK6A4	CONTACT PAIR 62-6A 4-6 ILS TO CLOSE		1.35E-4	6	8.10E-04	4.05E-06
	ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST			0.5	5.00E-01	
	ADGQJ02A	EMERGENCY DIESEL GENERATOR '2A' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
204)	ACPBX42C	CONTACT PAIR 27Y-4 2-2C FAILS TO CLOSE		1.35E-4	6	8.10E-04	4.05E-06
	ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST			0.5	5.00E-01	
	ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.		1.00E-2	1	1.00E-02	
205)	ACPBX47C	CONTACT PAIR 27Y-4 7-7C FAILS TO CLOSE		1.35E-4	6	8.10E-04	4.05E-06

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	MODULE/EVENT NAME	DESCRIPTION	RATE	EXPOSURE	B.E. PROB.	MOD./CS. PROB.
	ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST		0.5	5.00E-01	
	ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.	1.00E-2	1	1.00E-02	
206)	ACPBX513	CONTACT PAIR 27X-5 9-13 FAILS TO CLOSE	1.35E-4	6	8.10E-04	4.05E-06
	ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST		0.5	5.00E-01	
	ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.	1.00E-2	1	1.00E-02	
207)	ACPBX52C	CONTACT PAIR 27Y-5 2-2C FAILS TO CLOSE	1.35E-4	6	8.10E-04	4.05E-06
	ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST		0.5	5.00E-01	
	ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.	1.00E-2	1	1.00E-02	
208)	ACPBX613	CONTACT PAIR 27X-6 9-13 FAILS TO CLOSE	1.35E-4	6	8.10E-04	4.05E-06
	ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST		0.5	5.00E-01	
	ADGQJ02A	EMERGENCY DIESEL GENERATOR '2A' OOS FOR MAINT.	1.00E-2	1	1.00E-02	
209)	ACPBX65C	CONTACT PAIR 27Y-6 5-5C FAILS TO CLOSE	1.35E-4	6	8.10E-04	4.05E-06
	ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST		0.5	5.00E-01	
	ADGQJ02A	EMERGENCY DIESEL GENERATOR '2A' OOS FOR MAINT.	1.00E-2	1	1.00E-02	
210)	ACPBX72C	CONTACT PAIR 27Y-7 2-2C FAILS TO CLOSE	1.35E-4	6	8.10E-04	4.05E-06
	ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST		0.5	5.00E-01	
	ADGQJ02A	EMERGENCY DIESEL GENERATOR '2A' OOS FOR MAINT.	1.00E-2	1	1.00E-02	
211)	ACPBX74C	CONTACT PAIR 27Y-7 4-4C FAILS TO CLOSE	1.35E-4	6	8.10E-04	4.05E-06
	ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST		0.5	5.00E-01	
	ADGQJ02A	EMERGENCY DIESEL GENERATOR '2A' OOS FOR MAINT.	1.00E-2	1	1.00E-02	
212)	ACPBXX41	CONTACT PAIR 27X-4 9-13 FAILS TO CLOSE	1.35E-4	6	8.10E-04	4.05E-06
	ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST		0.5	5.00E-01	
	ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.	1.00E-2	1	1.00E-02	
213)	ACPBXX51	CONTACT PAIR 27X-5 9-13 FAILS TO CLOSE	1.35E-4	6	8.10E-04	4.05E-06
	ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST		0.5	5.00E-01	
	ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.	1.00E-2	1	1.00E-02	
214)	ACPBXX61	CONTACT PAIR 27X-6 9-13 FAILS TO CLOSE	1.35E-4	6	8.10E-04	4.05E-06
	ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST		0.5	5.00E-01	
	ADGQJ02A	EMERGENCY DIESEL GENERATOR '2A' OOS FOR MAINT.	1.00E-2	1	1.00E-02	
215)	ACPBXX71	CONTACT PAIR 27X-7 9-13 FAILS TO CLOSE	1.35E-4	6	8.10E-04	4.05E-06
	ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST		0.5	5.00E-01	
	ADGQJ02A	EMERGENCY DIESEL GENERATOR '2A' OOS FOR MAINT.	1.00E-2	1	1.00E-02	
216)	ACPDJA03	AUX CONTACT PAIR 27Y/1-8 17 FAILS TO REMAIN CLOSED	1.25E-7	18	8.10E-04	4.05E-06
	ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST		0.5	5.00E-01	
	ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.	1.00E-2	1	1.00E-02	
217)	ACPDJA04	AUX CONTACT PAIR 27Y/1-8 18 FAILS TO REMAIN CLOSED	1.25E-7	18	8.10E-04	4.05E-06
	ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST		0.5	5.00E-01	
	ADGQK02B	EMERGENCY DESIEL GENERATOR 'B' OOS FOR MAINT.	1.00E-2	1	1.00E-02	
218)	ACPDKB03	AUX CONTACT PAIR 27Y/1-9 17 FAILS TO REMAIN CLOSED	1.25E-7	18	8.10E-04	4.05E-06
	ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST		0.5	5.00E-01	
	ADGQJ02A	EMERGENCY DIESEL GENERATOR '2A' OOS FOR MAINT.	1.00E-2	1	1.00E-02	
219)	ACPDKB04	AUX CONTACT PAIR 27Y/1-9 18 FAILS TO REMAIN CLOSED	1.25E-7	18	8.10E-04	4.05E-06
	ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST		0.5	5.00E-01	
	ADGQJ02A	EMERGENCY DIESEL GENERATOR '2A' OOS FOR MAINT.	1.00E-2	1	1.00E-02	
220)	ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST		0.5	5.00E-01	4.00E-06
	AMVAK64B	FAN F-64-1B MOTOR OPERATED EXHAUST DAMPER FAILS TO OPEN	4.00E-3	1	4.00E-03	
	WAVAJ129	SW-FCV-129 FAILS TO OPEN	2.00E-3	1	2.00E-03	
221)	ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST		0.5	5.00E-01	4.00E-06
	AMVAJ64A	FAN F-64-1A MOTOR OPERATED EXHAUST DAMPER FAILS TO OPEN	4.00E-3	1	4.00E-03	
	WAVAK130	SW-FCV-130 FAILS TO OPEN	2.00E-3	1	2.00E-03	

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Filter: 'ACTIVE'

	MODULE/EVENT NAME	DESCRIPTION		RATE	EXPOSURE	B.E. PROB.	MOD./CS. PROB.
222)	ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST			0.5	5.00E-01	4.00E-06
	AMVAJ64A	FAN F-64-1A MOTOR OPERATED EXHAUST DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
	WAVAK130	SW-FCV-130 FAILS TO OPEN		2.00E-3	1	2.00E-03	
223)	ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST			0.5	5.00E-01	4.00E-06
	AMVAK64B	FAN F-64-1B MOTOR OPERATED EXHAUST DAMPER FAILS TO OPEN		4.00E-3	1	4.00E-03	
	WAVAJ129	SW-FCV-129 FAILS TO OPEN		2.00E-3	1	2.00E-03	
224)	ADGACPSF	CONDITIONAL PROBABILITY THAT DG A LOADS ONTO BUS 1-5 FIRST			0.5	5.00E-01	4.00E-06
	AFNFCCRA	CCF SWGR 'A' ROOM INTAKE/EXHAUST FANS FAIL TO RUN	(SCRE	1.00E-5	.8	8.00E-06	
225)	ADGBCPSF	CONDITIONAL PROBABILITY THAT DG B LOADS ONTO BUS 1-6 FIRST			0.5	5.00E-01	4.00E-06
	AFNFCCRA	CCF SWGR 'A' ROOM INTAKE/EXHAUST FANS FAIL TO RUN	(SCRE	1.00E-5	.8	8.00E-06	

Appendix D

D.1 ------ Reference 1
D.2 ------ Reference 3
D.3 ------ Reference 4
D.4 ------ DG start data

NRC CORRESPONDENCE RECEIPT AND DISTRIBUTION COVER SHEET

APPENDIX D.1

COTRAP LETTER # A11178

TO: NUCLEAR LICENSING

FROM: John F. Opeka
J. F. Opeka

AGENCY LETTER DATE: 8/16/93

DATE OF RECEIPT: 8/23/93

Please distribute the attached document and insure proper and timely action as per NEO Procedure 4.01 and NL Procedure 3.01, as appropriate.

SUBJECT: NRC Augmented Inspection Team (AIT) Regarding Two Loss of Offsite Power Events and The Loss of Motor-Control Center-5 NRC Report No. 50-213/93-80

COMMENTS:

COMMITMENT ACTION TRACKING INFORMATION

RECEIVED
AUG 26 1993
NUCLEAR LICENSING

COMMENTS:

NU response is required.

NL LEAD	DISCIPLINE LEAD	CAT #	INPUT DUE NL (OR) ACTION COMPLETION DUE	RESPONSE DUE DATE	DESCRIPTION
EPP					

(1) Additional breaker testing in conjunction with (W) is already covered by F35886;

(2) Evaluation of design changes to increase reliability of MCC-5 ABT is already covered by F35885;

(3) NL has already initiated an FSAR change to correct single failure issue.

M Phil 8/27/93 — MILLSTONE 1 & 2

RG Taschi for GVN 8/25/93 — CY, MILLSTONE 3

Robert W Seamon 8/24/93 — REGULATORY COMPLIANCE

ENTD AUG 30 1993

UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
475 ALLENDALE ROAD
KING OF PRUSSIA, PENNSYLVANIA 19406-1415

AUG 16 1993

Docket No. 50-213

RECEIVED
AUG 23 1993
EXECUTIVE VICE PRESIDENT,
NUCLEAR

Mr. John F. Opeka
Executive Vice President - Nuclear
Connecticut Yankee Atomic Power Company
P. O. Box 270
Hartford, Connecticut 06141-0270

Dear Mr. Opeka:

SUBJECT: NRC AUGMENTED INSPECTION TEAM (AIT) REGARDING TWO LOSS OF OFFSITE POWER EVENTS AND THE LOSS OF MOTOR-CONTROL-CENTER-5 NRC REPORT NO. 50-213/93-80

The enclosed report refers to the NRC Augmented Inspection Team (AIT), led by Mr. James Trapp of this office, on June 30 through July 9, 1993, at the Haddam Neck Plant in Haddam, Connecticut. The purpose of this inspection was to review the circumstances regarding two separate loss of offsite power events, and a loss of motor-control-center-5 (MCC-5) that occurred during the conduct of test activities. At the conclusion of the inspection, the team findings were discussed with Mr. Stetz and members of your staff at an exit meeting that was open for public observation on July 27, 1993.

The scope of the inspection included developing a detailed event description, evaluating the root causes for the events, assessing the effectiveness of corrective actions, and evaluating the safety significance of each event. The inspection consisted of selective examination of procedures and representative records, observations of testing and inspections, and interviews with personnel.

The loss of offsite power events were significant because they caused a temporary loss of shutdown cooling and the loss of offsite power is a precursor to station blackout. The reliable operation of MCC-5 is vital to plant safety because both trains of emergency core cooling system injection valves are powered from this motor-control-center. Based on the significance of these events, all of which occurred in a short time period, the NRC dispatched an AIT.

The root causes for the June 22 and June 26, 1993, loss of offsite power events were positively identified as a wiring error and a blown fuse, respectively. For both events, the operator actions to mitigate the consequences of the events were appropriate. The corrective actions taken in response to these events were reviewed by the AIT and determined to be acceptable. The NRC team concluded that these events were the result of defective nonsafety-related equipment and were not the result of recent performance deficiencies by plant staff or procedures.

The root cause for the June 27, 1993, failure of the MCC-5 automatic bus transfer scheme was not positively identified. Although the root cause was not identified, two highly suspect components were identified and replaced. Your corrective actions and compensatory measures taken to ensure the reliability of MCC-5 were outlined in your letter to the NRC, dated July 15, 1993, "Commitments to Test Motor-Control-Center-5." We have reviewed these commitments and determined that the proposed actions and compensatory measures are appropriate. While trouble-shooting the automatic bus transfer (ABT) failure, your staff identified a potential generic problem with the Westinghouse DB 25 breaker, 52X relays. At the conclusion of this inspection, this potentially generic breaker failure concern was still under review by your staff and the breaker vendor. We expect that this issue will be resolved and appropriate actions will be taken in an expeditious manner. In addition, your letter states that you plan to conduct a review of potential design changes to the ABT which could improve the reliability of this scheme. We request that you provide the results of this design review and the schedule for implementing any design changes identified to the Region I Regional Administrator.

The NRC team also noted two issues regarding the licensing basis of MCC-5. The updated UFSAR, Section 8.3, states, in part, that "The Class 1E system has the redundancy, capacity, capability, and reliability to supply power to all safety-related loads. This system ensures a safe plant shutdown to mitigate accident effects, even in the event of a single failure." This statement does not appear to be accurate as related to single failures and MCC-5. In addition, the team questioned the applicability of 10 CFR 50.46(d), which explicitly states that the performance of the emergency core cooling system (ECCS) system must include in particular Criterion 35 of Appendix A, which requires that the ECCS safety function be accomplished assuming a single failure. The current design of the ECCS system does not satisfy the requirement of Criterion 35 due to the single failure vulnerabilities of MCC-5. While the team noted that an exemption had been granted by the NRC for the MCC-5 single failure vulnerability during original plant licensing, an explicit exemption from the 50.46 requirement was not apparent to the team. Both of these issues are currently being reviewed by the NRC.

In accordance with 10 CFR 2.790 of the Commission's regulations, a copy of this letter and the enclosed inspection report will be placed in the NRC Public Document Room.

We will gladly discuss any questions you have concerning this inspection.

Sincerely,

Marvin W. Hodges

Marvin W. Hodges, Director
Division of Reactor Safety

Enclosure: NRC Region I Inspection Report No. 50-213/93-80

cc w/encl:
W. D. Romberg, Vice President, Nuclear, Operations Services
J. P. Stetz, Vice President, Haddam Neck Station
G. H. Bouchard, Director, Nuclear Quality Services
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State of Connecticut SLO

U. S. NUCLEAR REGULATORY COMMISSION
REGION I
AUGMENTED INSPECTION TEAM REPORT

INSPECTION OF TWO LOSS OF OFFSITE POWER EVENTS
AND A LOSS OF MOTOR-CONTROL-CENTER-5

REPORT NO.	93-80
DOCKET NO.	50-213
LICENSE NO.	DPR-61
LICENSEE:	Connecticut Yankee Atomic Power Company P.O. Box 270 Hartford, Connecticut 06141 - 270
FACILITY:	Haddam Neck
INSPECTION DATES:	June 30 - July, 9, 1993
INSPECTORS:	F. Burrows, Electrical Engineer, NRR B. Raymond, Sr. Resident Inspector - Haddam Neck T. Shedlosky, Project Engineer, RI

TEAM LEADER: _____ 8-10-93
James M. Trapp, Team Leader, Engineering Branch, DRS — Date

APPROVED BY: _____ 8/11/93
Jacque P. Durr, Chief, Engineering Branch, Division of Reactor Safety — Date

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EXECUTIVE SUMMARY

The scope of the Augmented Inspection Team (AIT) inspection was provided by the Region I Regional Administrator in the Augmented Inspection Team Charter. The team was tasked with conducting a detailed review of the circumstances surrounding the June 22, 1993 and June 26, 1993, losses of offsite power and the June 27, 1993, loss of motor-control-center-5. Specifically, the team was tasked with developing a detailed sequence of events, evaluating the root cause determination, assessing the effectiveness of the corrective actions, and evaluating the safety significance for each event.

On June 22, 1993, while performing breaker failure trip logic testing on the offsite power tie breaker, the station experienced a total loss of offsite power. In response to the loss of offsite power, both emergency diesel generators automatically started and provided emergency power to the station. The plant was in cold shutdown at the time of the event and shutdown cooling was temporarily lost. This event was important to safety because of the temporary loss of shutdown cooling and the loss of offsite power is a precursor to a station blackout. The root cause for this event has been identified as a wiring error in offsite power tie breaker 12R-1T-2 breaker failure trip logic. The wiring error occurred during or shortly following plant construction. The wiring error had not been previously identified since this was the first test conducted of this particular trip logic which included tripping the breakers. An evaluation of the wiring error's effect on plant safety concluded that the error did not degrade plant safety margins and could be left as-is. The basis for this conclusion was that the station emergency power supplies could be isolated from offsite power system faults by safety-related breakers and the reliability of the offsite power supply was not degraded. The team concluded that the root cause had been correctly identified and the corrective actions were acceptable. Operator performance in response to the loss of offsite power was determined to be good.

On June 26, 1993, while performing surveillance testing of train A of the safety injection actuation logic with a partial loss of offsite power, a complete loss of offsite power occurred. In response to the loss of offsite power, the emergency diesel generators automatically started and shutdown cooling was restored. The root cause of this failure was determined to be a blown fuse to a bus voltage sensing relay. The fuse was likely blown during maintenance being performed on associated equipment. The fuse was replaced and the surveillance procedure was revised to verify that the bus voltage sensing relay fuses were not blown prior to conducting this test. The team determined that the operator response to the loss of offsite power was good. The root cause for this event was a blown fuse and the corrective actions taken were appropriate. The team concluded that the June 22 and June 26 events were not related in that the corrective actions from the first event could not have precluded the second event from occurring.

On June 27, 1993, while performing surveillance testing of train B of the safety injection actuation logic with a partial loss of offsite power, a temporary loss of motor-control-center-5 (MCC-5) occurred when the automatic bus transfer scheme failed to operate. Power was quickly restored to the motor control center by manually closing a breaker to an energized bus. Following this event, an erroneous event classification of an alert was sent to the state and local authorities. The event classification was corrected to an unusual event a short time later. This event was important to safety because MCC-5 provides power for the emergency core cooling system injection valves and the successful operation of MCC-5 is essential for the emergency core cooling systems to function. The root cause evaluation of this event failed to positively identify a root cause for the failure. The evaluation was successful in identifying two components which had the highest probability of having caused the failure. Both of these components have been replaced and the automatic bus transfer (ABT) has been successfully tested numerous times since the event. Because the exact cause of the failure has not been positively identified, a number of compensatory actions were proposed by the licensee. These actions include additional system and component testing, online inspections of suspected components, a design review of the ABT scheme, and resolving a potential generic issue with 52X relay coil plunger sticking. The team reviewed these compensatory measures and determined they were appropriate. The misclassification of the event as an alert was determined to be a performance error by a non-licensed shift member who transmitted the message. The team concluded that the root cause evaluation and testing were thorough and the corrective actions taken in response to this event were appropriate.

The team also noted two issues regarding the licensing basis of MCC-5. The updated UFSAR, Section 8.3, states in part that "The Class 1E system has the redundancy, capacity, capability, and reliability to supply power to all safety-related loads. This system ensures a safe plant shutdown to mitigate accident effects, even in the event of a single failure." This statement does not appear to be accurate as related to single failures and MCC-5. In addition, the team questioned the applicability of 10CFR 50.46 (d), which explicitly states that the performance of the emergency core cooling system (ECCS) system must include in particular Criterion 35 of Appendix A, which requires that the ECCS safety function be accomplished assuming a single failure. The current design of the ECCS system does not satisfy the requirement of Criterion 35 due to the single failure vulnerabilities of MCC-5. While the team noted that an exemption had been granted by the NRC for the MCC-5 single failure vulnerability during original plant licensing, an explicit exemption from the 50.46 requirement was not apparent to the team. Both of these issues are currently being reviewed by the NRC.

DETAILS

1.0 INSPECTION OBJECTIVE

The scope of the Augmented Inspection Team (AIT) inspection was provided by the Region I Regional Administrator in the Augmented Inspection Team Charter (Attachment C). Generally, the team was tasked with conducting a detailed review of the circumstances surrounding the June 22, 1993 and June 26, 1993 losses of offsite power and the June 27, 1993 loss of motor-control-center-5. Specifically, the team was tasked with:

- Developing a detailed sequence of events.
- Collecting, analyzing and documenting factual information to determine the causes, conditions, and circumstances pertaining to each event.
- Evaluating the licensee response to each event including the corrective actions and the inappropriate Emergency Action Level declared following the June 27, 1993 event.
- Assessing the safety significance of each event and communicating to regional and headquarters management the facts and safety concerns related to problems identified, including single failure vulnerabilities and impact of non-safety related equipment on safety-related equipment.
- Evaluating the knowledge and performance of the licensee staff during these events.
- Evaluating the maintenance testing and any changes made to the design which may have contributed to this failure.

This inspection report is divided into three sections with each section providing a description of each event and the team's findings. It was not the responsibility of the AIT to recommend enforcement actions. These aspects will be addressed in subsequent NRC correspondence.

2.0 DETAILED INSPECTION FINDINGS

2.1 LOSS Of OFFSITE POWER EVENT (June 22, 1993)

2.1.1 Description of Event

An unplanned loss of offsite electrical power was caused during a test of transmission line protective equipment on June 22, 1993, at 09:15. The plant was in Operational Mode 5 (cold shutdown) at the time of the event with the reactor coolant system level in the pressurizer and the `A´ residual heat removal (RHR) pump in service for core decay heat removal.

Following the loss of offsite power, both emergency diesels started and energized the safeguards electrical buses. All safety-related equipment functioned properly. Control room operators followed the instructions provided in Emergency Operating Procedure (EOP) 3.1-10, "Partial Loss of AC." They restored core cooling RHR flow in two minutes, service water cooling to the component cooling water (CCW) heat exchangers in eleven minutes and spent fuel pool cooling in twenty-five minutes. Offsite power was restored to station service Bus 1-2 at 09:28. Power was available from both 115 kilovolt (kV) transmission lines into the switchyard during this event.

The loss of offsite power was classified as an Emergency Action Level Unusual Event at 09:36. The NRC Duty Officer was notified at 09:41 and the event classification was promulgated outside the station using the Emergency Notification and Response System (ENRS) at 09:46. The Unusual Event was terminated at 11:15.

Background

Offsite power is supplied to the station by two 115 kV transmission lines. This offsite power system delivers all station service power while the plant is shutdown or operating at low power. Above approximately ten percent power, the unit auxiliary transformer, which is supplied from the main generator output, delivers power to the reactor coolant pump motor buses only. The 115 kV system supplies all other station service power to safeguards electrical buses. The 115 kV system is unaffected by a turbine generator trip. The main generator supplies power to a separate 345 kV distribution system.

The 115 kV system normally receives electric power from two separate offsite sources (Figure 1). Transmission lines from Middletown (1772) and Haddam (1206) supply power to the station 4160 Volt buses through two 115 kV to 4.16 kV station service transformers T-389 and T-399. The two transformers supply power to station service Buses 1-2 and 1-3 through circuit breakers 3891 and 3991, respectively. A normally closed oil circuit breaker 389T399 (12R-1T-2) connects the two 115 kV transmission lines. A normally open circuit breaker B-2T3 can be closed to tie the two 4160 Volt station service buses together in the event that power from either 115/4.16 kV station service transformer is not available. The transformers, the oil circuit breaker 12R-1T-2 and associated motor operated disconnects are all located within the 115 kV switchyard. The 4160 Volt circuit breakers 3891, 3991 and B-2T3 are installed in Buses 1-2 and 1-3 located in the plant "A" switchgear room.

The two 4160 Volt station service buses normally supply the two safeguards electrical buses, Bus 8 and Bus 9. Each of these may be powered from the emergency diesel generators and are each separated from the station service buses in the event of an undervoltage condition by two circuit breakers in series.

There is overlapping responsibility between the plant and other utility organizations for the design, operation and maintenance of the offsite power supply. The Connecticut Valley Electric Power Exchange (CONVEX) load dispatcher has jurisdiction for the operation of the 115 kV lines and associated switching equipment up to and including the 4160 Volt supply breakers 3891 and 3991 to Buses 1-2 and 1-3. Although, those circuit breakers are operated from the plant control room; their position is coordinated with the CONVEX. The plant control room operators also keep CONVEX informed of the position of the normally open 4160 volt bus tie breaker B-2T3. The 115 kV tie breaker 12R-1T-2 may be controlled remotely by the dispatcher; however, it is normally kept in local control from the plant control room. The control room operators are not restricted in operating this equipment in the event of an emergency. The station has maintenance responsibility for all equipment starting with the 115 kV motor operated disconnect at the primary side of each 115/4.16 kV transformer. The Connecticut Light and Power Company, Regional Test Department is responsible for transmission line protection including its design control and testing.

The June 22, 1993, loss of offsite power involved a test of the protective devices that act in the event breaker 12R-1T-2 fails to open when a fault is detected on one of the lines. Both transmission lines are protected by several types of fault detection devices arranged into primary and backup groups. In addition to tripping open the transmission line breakers at remote sub-stations, both the primary and backup devices will trip breaker 12R-1T-2. That breaker has redundant trip coils fed separately by each relay group.

Breaker 12R-1T-2 is monitored for proper operation by a breaker failure scheme. In the event that breaker 12R-1T-2 fails to open, this protection circuit acts to open remote substation breakers supplying power to both the Haddam (1206) and Middletown lines (1772) in order to de-energize the faulted line from the other sources of power. In addition to opening the remote 115 kV breakers, the breaker failure protection logic also trips open the 4160 Volt supply breakers 3891 and 3991. These breakers are tripped to isolate any potential electrical sources, such as the emergency diesel generators, from feeding the faulted transmission lines. Unless isolated for testing, actuation of the 12R-1T-2 breaker failure logic will always cause a full loss of offsite power at the Haddam Neck Plant.

Connecticut Light and Power Company, Regional Test Department is responsible for transmission line protection including design control. Its personnel conduct the tests of transmission line protective devices including the 12R-1T-2 breaker failure logic. Their activities are coordinated by plant personnel who developed procedures and interface with plant operations. Prior to this refueling outage, the maintenance department had been responsible for coordinating this testing. This responsibility was transferred to the Generation Test Department because their skills and work activities are more closely related to control logic and electrical protective device testing. The test procedures used were revised to enhance the scope of testing. Preventative Maintenance Procedure PMP 9.8-117, "1206 Connecticut Yankee - Haddam Line Trip Test," replaced the previous test procedure and became effective on April 30, 1993. Changes to the procedure included verifying a trip

signal from a transmission line protective device to each of the station service bus supply breakers. During the test Bus 1-3 supply breaker 3991 was to be racked into the test position and tripped open. Previously, the breaker failure trip signal had been interrupted at a test switch that prevented a trip of the on site 4160 Volt breakers or a trip of the remote substation 115 kV breakers.

Event Time Line

The tests of the Haddam transmission line protective devices were first performed with the recently revised procedure PMP 9.8-117 on June 22, 1993. This test was to include an actual trip of the Bus 1-3 supply breaker 3991, which was withdrawn from the switchgear to the test position. To support the test, station service power was supplied from offsite through the other 4160 Volt breaker, 3891, to Bus 1-2. The normally open bus tie, B-2T3, was closed to supply Bus 1-3 from Bus 1-2.

Section 6.2 of the test procedure verified the ability of the 12R-1T-2 breaker failure logic to trip the 3991 breaker. The test procedure initial conditions, procedure step 6.1.5, isolated all output trip functions from the logic. Then switch contacts 8 and 8c were closed to enable the 3991 breaker trip. At 09:15 the test technicians initiated the breaker failure logic by manually actuating a station service transformer T-399 differential current protective device (procedure step 6.2.3). Upon initiating a breaker failure signal, the 3891 breaker tripped open instead of the 3991 breaker. This resulted in a loss of offsite power because all power to the station was supplied through breaker 3891. Both emergency diesel generators started and energized safeguards electrical Buses 8 and 9. The shutdown cooling flow was restored in two minutes and spent fuel pool cooling was restored in twenty-five minutes. There was no noticeable increase in reactor coolant or spent pool temperatures. A planned radioactive liquid release was in progress and terminated with the loss of power. The sequence of events for the June 26 loss of offsite power are provided below:

07:44	Close Bus 1-2 to 1-3 tie breaker B-2T3, breaker 3991 in test position
09:15	Commenced breaker failure test, breaker 3891 tripped open, loss of all incoming power, offsite 115 kV lines remain energized, both emergency diesel generators start and energize Buses 8 and 9
09:17	Control room operators start A-RHR pump and C-CCW Pump
09:18	Control room operators start B-CCW pump
09:26	Service water cooling restored to both CCW heat exchangers
09:28	Control room operators shut breaker 3891, energized Bus 1-2
09:40	Restored spent fuel pool cooling
09:46	Promulgated declaration of Unusual Event
09:50	Completed actions under EOP 3.1-10
11:02	Shut breaker 3991, opened breaker B-2T3
11:12	Terminated Unusual Event

2.1.2 Corrective Actions

Root Cause

Licensee personnel examined the point-to-point wiring associated with contacts 8 and 8c of the 12R-1T-2 breaker failure lock-out relay, 86BF-A, and its associated test switch and identified that these contacts were inadvertently wired to the station service breaker 3891 trip circuit. Although this wiring should have been in the trip circuit for station service breaker 3991, it was functionally wired in parallel with the breaker 3891 trip circuit that is associated with contacts 9 and 9c of the lock-out relay. There was no other connection from the breaker failure logic to station service breaker 3991 trip circuit.

The licensee suspects that this wiring error had been made early in plant life, possibly before commercial operation. This is because of the type of wire, lack of circuit number labels, type of crimp lug, and the type of crimp tool used were different than those used for the other trip circuits. The wires were not included in laced bundles, but appear to have been installed following construction of the control boards. Specifically, the main control board wiring drawings specified that the two wires from terminal 8c of device "ON" and terminal 16 of device "OP" were to be connected to terminal 2 and 3, respectively, of device "PB" that is part of the breaker 3991 trip circuit (control circuit bus numbers 523P and 523T). Instead, the wires were taken to terminals 5 and 7 of device "AJ," which is in the breaker 3891 trip circuit (control circuit bus numbers 522P and 522T).

The licensee intends to correct the wiring error during the next refueling outage following a review of the 12R-1T-2 breaker failure circuit. Additionally, the licensee intends to test the revised circuit. However, because the breaker failure circuit is common to both sources of offsite power, there is a risk of causing additional losses of offsite power events while performing the post modification retest. For this reason, the licensee intends to evaluate and determine the optimum test configuration to minimize risk during testing. The circuit drawings were revised to reflect the as built configuration of the 12R-1T-2 breaker failure circuit and the breaker 3891 and 3991 trip circuits.

Justification for Operation

A technical evaluation was prepared to justify operation during the next cycle with the existing wiring configuration. This justification was based on the qualification of the Category 1E loss-of-Voltage relays to protect the on-site electrical distribution system from conditions occurring on the offsite supply system. These Category 1E protective devices operate to protect the emergency diesel generator from the offsite system. In the case of a loss of offsite power while the emergency diesel generator is operating in parallel with the system, voltage will decay rapidly, due to the high impedance of the generator. The bus

undervoltage relays will trip the safeguards bus free of offsite power within two seconds. Also, the generator impedance will limit fault currents to low levels. This provides a self limiting characteristic that protects the generator from external faults.

The Connecticut Light and Power Company, Transmission and Distribution Department has design jurisdiction over the 12R-1T-2 breaker failure logic. Representatives of that organization concurred in the plant operating for an additional cycle with the wiring configuration as-is. This was based on the low probability for back-feed from the plant electrical system into the 115 kV distribution system. The effect of the "2B"-emergency diesel generator monthly surveillance test concurrent with operation of the breaker failure circuit was acceptable due to the size of the generator, the plant and transmission system impedance and the ability of Class 1E protection devices to isolate the generator.

2.1.3 Conclusions

Event

The loss of offsite power was important to safety because shutdown cooling was temporarily lost and the loss of offsite power is a precursor to a station blackout. The actual event had minor significance due to the low decay heat generation rate and the condition of the emergency diesel generators that were both operable during the event. It occurred 39 days after the reactor had been shutdown for the refueling outage. Operator performance was good in restoring reactor core decay heat removal and spent fuel pool cooling in a short period of time. All safety-related equipment functioned as expected. The classification of this event by plant operators as an Unusual Event was appropriate.

This event was caused by a wiring error that probably occurred early in plant life. The team independently verified the root cause by observing the wiring error. The deficiency in wiring the breaker trip circuit had been identified as result of a recent initiative to improve upon the scope of transmission line periodic tests. The newly revised test procedure used to conduct this test provided adequate detail and did not contribute to the cause of this event. The test was successful in identifying long standing deficiencies in the plant configuration.

Corrective Action

The team concluded that the technical justification for not correcting the wiring error to the breaker trip circuit prior to the next refueling outage was acceptable. The purpose for tripping the station service supply breakers 3891 and 3991 is to provide isolation of a fault and therefore prevent back-feeding the fault from the station. Each safeguards electrical bus is isolated from the non-safety station service bus by two breakers in series and a qualified bus undervoltage protection circuit. The emergency diesel generator winding impedance will act to limit fault current. The limited fault current and the settings of the undervoltage protection act together to avoid sustaining damage to the generator. In addition, the 12R-1T-2 breaker failure trip is a backup to the primary and secondary breaker trip schemes

referenced in the final safety analysis report (FSAR) and is to protect non-safety-related transmission equipment. If a breaker failure were to occur, the logic would trip open the [illegible] on line breakers at their respective switchyards. Therefore, leaving the wiring error as-is has no effect on the reliability of offsite power sources.

The team concluded that the licensee's action to revise drawings to reflect the plant as-built conditions is appropriate when taken with their plans to verify, correct and test the 12R-1T-2 breaker failure protection logic during the next refueling outage.

2.2 LOSS OF OFFSITE POWER EVENT (June 26, 1993)

2.2.1 Description of Event

The plant was in Operational Mode 5 (cold shutdown) on June 26 with the reactor coolant system level in the pressurizer and the `B´ residual heat removal (RHR) pump in service for core decay heat removal. Licensee personnel completed preparations to perform a partial loss of normal power test in accordance with procedure SUR 5-1-18, "Test of Train A SIAS with Partial Loss of AC." The test is conducted each refueling outage. The objective of the test was to verify the proper operation of the Train A safety systems in response to a simulated safety injection actuation signal coincident with a loss of normal power. The test verifies that safety equipment is capable of starting and being powered from the `A´ emergency diesel generator. The initial station electrical lineup was established in the normal configuration that separates the two trains, allowing test personnel to de-energize the Train A side (Bus 1-2), while the Train B side (Bus 1-3) equipment remains powered by the offsite power source during the test (Figure 1).

Plant personnel aligned the Train A safety systems in a standby condition. In accordance with SUR 5.1-18, breaker 3891 was closed to supply power to Bus 1-2 and breaker 3991 was closed to supply power to Bus 1-3. The cross-tie breaker B-2T3 was open. At procedure step 6.2.5, plant personnel initiated a partial loss of power by opening the Bus 1-2 supply breaker, 3891, and simulated a low pressurizer pressure condition to initiate a Train A safety injection actuation signal (SIAS). When step 6.2.5 was performed, the Train A side de-energized as expected, but supply breaker 3991 to Bus 1-3 also opened which de-energized the Train B side. The plant experienced a complete loss of normal power (LNP) from the offsite distribution system at 19:17.

Event Time Line - Operator Response

Plant operators immediately identified the unexpected operation of breaker 3991, secured from testing, and entered Emergency Operating Procedure (EOP) 3.1-10, "Partial Loss of AC." Both emergency diesel generators automatically started and energized the emergency buses as expected. Plant operators restored shutdown cooling and component cooling. The operators manually started the `B´ RHR pump within 3 minutes of the LNP; however, the pump tripped after running less than a minute. The `A´ RHR pump was started and it ran satisfactorily. The reactor heat-up was less than 2 degrees fahrenheit (°F) during the time that shutdown cooling system was not operating.

The operators restored offsite power at 19:34 by closing breaker 3891 to power Bus 1-2, and then closing tie breaker B-2T3 to power Bus 1-3. Breaker 3991 was left open pending the completion of a review to determine the cause of its unintended operation. Emergency Buses 8 and 9 were transferred to the offsite supply at 19:40. The spent fuel pool cooling pumps were restarted within 44 minutes of the LNP. The spent fuel pool temperature increase was less than 5°F.

While completing actions to secure from the test, the operators classified the loss of offsite power as an Unusual Event emergency, and reported the event to the offsite state and local authorities at 19:36. The Unusual Event classification was reported to the NRC Duty Officer at 19:48, as required by 10 CFR 50.72. The operators exited EOP 3.1-10 at 20:01 after returning the spent fuel cooling system to normal. The sequence of events for the June 26 LNP are provided below.

19:17	Initiate simulated Train A SIAS and Partial LNP.
19:17	Breaker 3891 manually opened and 3991 unexpectedly opened - Result total LNP.
	Emergency Diesels start and Power Emergency Buses
19:20	`B´ RHR pump manually restarted.
19:21	`B´ RHR pump tripped; `A´ RHR pump started.
19:34	Breakers 3891 & B-2T3 closed to power Buses 1-2 & 1-3.
19:35	Unusual Event Notification sent.
19:40	Emergency Buses 8 & 9 transferred to offsite supply.
19:48	NRC Duty Officer notified of Unusual Event.
20:01	`B´ spent fuel pool cooling pump started.
20:01	Operators exit EOP 3.1 - 10.
20:42	NRC Duty Officer Notified of Unusual Event - Terminated.

Aside from the trip of the `B´ RHR pump, all other equipment operated as expected. While restoring the system lineups following the LNP, the operator attempted to close high pressure safety injection valves 861A and 861B, which opened in response to the SIAS. This was done prior to resetting the safety injection lock-in relays. The valves automatically re-opened

as designed. The operator realized his error, reset the safety injection lock-in relays. The operator then noticed that the breakers for the valves were open with the valves in the mid-position. The breakers were reset and the valves were closed without further problem.

Undervoltage Trip Scheme - Design & Operation

The loss of normal power event occurred as a result of an inadvertent operation of the undervoltage trip and lockout scheme on 4160 Volt Bus 1-3. The 4 kilovolt (kV) bus undervoltage trip scheme is shown on the simplified one line diagram in Figure 2, and in the logic diagram in Figure 3. The high side of potential transformers (PT) are connected to each phase of Buses 1-2 and 1-3 in a wye configuration. The low side of each PT is also connected in a wye configuration with the center phase connected to ground. The low side of the PT branches to several relay and instrumentation circuits.

One circuit from phase 3 (line 3V29) is protected with a 6 amp fuse and feeds a voltmeter, a test transformer, and undervoltage relay 27B. Relay 27B is connected across phases 1 and 3 and is used in the trip and lockout protection scheme for Bus 1-3. The test transformer is used to provide low voltage supply internal to the protection cabinets to power the pilot wire trip signals. The voltmeter is located on the main control board and displays Bus 1-3 voltage. The operator can switch the voltmeter to read across the different Bus 1-3 phases by manipulating a switch on the main control board. The selector switch consists of a multi-stacked series of contact wafers and also controls the readouts on voltmeters for Buses 1-2, 1-1A and 1-1B.

The trip and lockout scheme uses undervoltage relays (27A & 27B) on both 4160 Volt buses and works on a logic that requires that an undervoltage condition be sensed on both Buses 1-2 and 1-3 before a trip signal is generated to lockout the power supplies to the bus (See Figure 3) The 6 amp fuse protecting line 3V29 had blown, leaving the 27B relay in a de-energized condition at the start of the test on June 26. This condition was not annunciated or otherwise indicated in the control room, and was not known to plant personnel during the conduct of the test. The fuse had blown some time prior to June 26, but the undervoltage logic had not actuated to lockout Bus 1-3 as long as power was available on Bus 1-2. When the operators opened breaker 3891 to conduct the Train A LNP test, the trip and lockout logic for Bus 1-3 was completed when the 27B relay on Bus 1-2 de-energized, and the total loss of offsite power occurred.

The licensee could not identify exactly when the fuse had blown, but concluded that the failure most likely occurred earlier in the outage. The PT circuit was disturbed when the voltmeter associated with line 3V29 was relocated as part of a control board design change.

Investigation of Anomalous Voltmeter Indications

In the evaluation of this event, the licensee identified a missed opportunity to have identified the failed fuse in the PT circuit. This opportunity occurred on about June 15 when plant

operators noted an anomalous indication of the voltmeter following the restoration of a station service transformer T-399 to service after its replacement. Plant operators noted that the voltage reading on Bus 1-3 was about 200 Volts lower than that on Bus 1-2. The voltage reading should have been the same since both were powered from the 115 kV system.

The anomalous indication was discussed with Generation Test Services (GTS) personnel, who were responsible for the transformer work, the control board design changes, and for work related to the bus instrumentation and controls. The operator investigated the anomaly with a GTS technician. The investigation included the manipulation of the voltmeter selector switch to review the bus voltage indication on all three phases. The technician read nominal voltage on phase 1, about 95% of nominal on phase 2, and several hundred volts on phase 3 while troubleshooting the problem with the operator. The GTS technician erroneously diagnosed this indication as a likely problem with the selector switch, and not a blown fuse. The GTS technician stated that he needed to investigate the switch problem and correct it before plant restart, but he had prioritized follow-up of the problem for later in the outage. The drawings (Series 16103-32001, Sheets 5TA, 5TB, 5TC) were recently issued prior to this event as part of a program to upgrade plant records.

The AIT reviewed the PT circuit and concluded that the presence of the low impedance transformer in the circuit created voltage readings across the phases that tended to mask the blown fuse. The team concluded that the voltage readings were not obviously indicative of a blown fuse. The team noted further that neither the technician nor the operator submitted a trouble report for the anomalous voltage readings on June 15 in accordance with ACP 1.2-5.1, "PMMS Trouble Reporting System and Automated Work Order." This action would have entered the problem into the work control system to identify the defective equipment. However, the same technician who diagnosed the anomalous voltage indications with the operator on June 15 would also have been assigned to perform the follow-up repairs. The team concluded that had the equipment deficiency been incorporated in the work control program, it most likely would not have been identified as requiring repair prior to the conduct of SUR 5.1-18 and would not have prevented the June 26 LNP event from occurring.

Operator Use of the 4160 Volt Voltmeter

The team reviewed the circumstances involving an alleged reluctance by operators to use the selector switch for the voltmeter on the 4 kV buses due to an incident when the reactor tripped while manipulating the switch. The team confirmed that there was an event about 20 years ago during which the reactor tripped from the 4 kV bus undervoltage protection scheme. The licensee concluded at that time that the trip occurred due to the use of test equipment in use to monitor the protection scheme. The exact reason for the trip was not conclusively resolved, but there was no problem with the voltmeter selector switch either suspected or left uncorrected. Some operations and maintenance personnel were nonetheless

left with the impression that there might be a problem with the selector switch. The operating practice of routinely using the switch to monitor 4 kV bus voltage on all three phases was changed to only monitor a single phase. That practice persisted until July 1993 and the selector switch was not routinely used.

The team determined from interviews with licensee personnel that some operators and maintenance personnel had the impression that "there might be a problem with the voltmeter selector switch," but others were not aware of the issue. The team noted that operators would use the switch if necessary and as required to review the status of the electrical system. The licensee changed the operating practice during this inspection to require the operator manipulate the switch every day to record 4 kV phase voltages as part of the daily control board rounds and log keeping.

It is notable nonetheless that the general impression that "there might be a problem with the selector switch" did have a bearing on the decision by the Generation Test technician to not investigate further the low voltage reading noted by the operators on Bus 1-3 on June 14.

2.2.2 Corrective Action

The license replaced the blown fuse in the PT circuit on June 27 after identifying the cause for the June 26 loss of offsite power. The Train A LNP test was successfully re-performed on June 27. Surveillance procedure SUR 5.1-18 (and 5.1-19 for the Train B) were changed by Temporary Procedure Change 93-5-4 on June 27 to add prerequisite step that required the operator to verify that the fuses are good prior to performing the surveillance test. The licensee also changed the control room operators round sheet to require that the voltmeter selector switch be exercised during daily reading on the 4160 Volt buses.

2.2.3 Conclusions

Event

The loss of offsite power was important to safety because shutdown cooling was temporarily lost and the loss of offsite power is a precursor to station blackout. However, during this specific event the safety significance was low since both emergency diesel generators were operable and offsite power remained available. The event occurred 43 days after the reactor had been shutdown for the refueling outage, and thus decay heat levels were relatively low. The team concluded that the June 22 and the June 26 events were not related in that the corrective actions from the first event could not have precluded the second from occurring.

Operator performance was good in restoring shutdown cooling and spent fuel pool cooling in a short period of time. Except for the RHR pump and the high pressure safety injection valve breakers, plant equipment functioned as expected during the event. The breakers for valves SI-861A & B are a Westinghouse motor circuit protection breaker, Type HMCP, that has been the subject of a generic concern for setpoint. The HMCP's tripped after the safety

injection signal reversed the motor direction after the operator shut the valves. The licensee addressed the HMCP issue for these and similar breakers in a design change prior to restart from the outage. Further NRC follow-up of this issue is described in NRC Inspection Report 50-[illegible]

The root cause for this failure was positively identified as a blown fuse in Bus 1-3 trip and lockout logic scheme. The PT circuit fuse most likely failed during the modification activity which relocated the associated voltmeter as part of the changes resulting from the detailed control room design review. The team reviewed the licensee statement that plant operators were reluctant to use the voltmeter selector switch and concluded that it was not relevant to this event.

The team noted that more detailed troubleshooting of the anomalous voltmeter indications on June 15 could have identified the failed fuse. However, the symptoms presented to repair personnel on June 15 were reasonably diagnosed as a likely problem with a switch contact, which warranted a lower priority for further follow-up.

Corrective Actions

The surveillance activity was successful in detecting a problem in the Bus 1-3 undervoltage protection circuit. The team concluded that it is not reasonable to expect that the plant surveillance procedure would check for blown fuses prior to the conduct of a partial LNP test. The procedure revisions and the replacement of the blown fuse were acceptable corrective actions. The licensee requirement to operate the voltage selector switch on a daily basis will assist in identifying fuse failures and avoid unnecessary plant transients.

2.3 LOSS OF MOTOR-CONTROL-CENTER-5 (June 27, 1993)

2.3.1 Description of Event

Background

Motor-control-center-5 (MCC-5) and its associated automatic bus transfer scheme (ABT) are a design which is unique to the Haddam Neck Plant. The design is necessary because both trains of certain valves are required to mitigate the consequences of certain accidents assuming a single active failure. For example, MCC-5 supplies electrical power to the high and low pressure safety injection system injection valves. These valves are normally closed and must open for the high and low pressure injection systems to operate. For the low pressure safety injection (LPSI) system to satisfy it's design basis flow, assuming a single failure of one LPSI pump, both injection valves must open. Similar constraints exist with the high pressure safety injection system. To address this design constraint, MCC-5 was designed with an automatic bus transfer (ABT) scheme which switches the 480 Volt electrical source for MCC-5 from its preferred supply bus (manually selected) to the alternate bus in the redundant train upon loss of power to the preferred source (see Figure 4). The transfer

circuitry will also automatically transfer (MCC-5) back to the preferred bus if its voltage is subsequently restored. The automatic transfer circuitry contains appropriate interlocks to ensure that breakers 9C and 11C cannot be closed at the same time which would parallel the two emergency power sources. During original plant licensing, the NRC granted the licensee an exemption from assuming single failure of MCC-5. This exemption was required since a postulated single failure of the ABT would render both the high and low pressure emergency core cooling systems inoperable.

The MCC-5 ABT scheme is shown in Figure 4. The components making up the circuitry are two Westinghouse DB-25 480 Volt air circuit breakers with their associated integral components (identified with a 52 or 33 prefix), three Agastat timing relays (identified with a 62 prefix), a two-position preferred source selector switch, and several manual trip/close pushbuttons. The Agastat timing relays are used to detect voltage on Buses 5 and 6 and thus are the components that initiate the automatic transfer. The breaker control relays (52X) provide contacts to momentarily energize their corresponding breaker's closing coil and provide the anti-pump protection which prevents repeated breaker closure attempts. A functional description of the operation of the ABT transfer is provided in Attachment B and Figure 5 of this inspection report.

Time Line of Event

On June 27, 1993, the plant was in Mode 5 (cold shutdown) with the reactor coolant system level in the pressurizer and the shutdown cooling system in service for the train not being tested. The plant's procedures for conducting the partial loss of offsite power coincident with a safety injection actuation signal (SIAS) had been revised to include an integral test of the ABT of MCC-5 based on recommendations resulting from a probability risk assessment (PRA) study. Prior to this test, the MCC-5 automatic transfer function had not been formally tested.

Surveillance test procedure 5.1-18, "Test of Train A SIAS with a Partial Loss of AC," was successfully performed for the Train A. MCC-5 had transferred from Bus 5 to Bus 6 and back to Bus 5 when Bus 5 was energized by the emergency diesel generator. Following the successful completion of the Train A test, the licensee initiated testing the Train B using surveillance procedure 5.1-19, "Test of Train B SIAS with a Partial Loss of AC." An initial condition of this test is to select Bus 6 as the preferred source of power for MCC-5. Selecting Bus 6 as the preferred power source allows the ABT to transfer from Bus 6 to Bus 5 (energized by offsite power) when offsite power is secured on Bus 6. The ABT will transfer back to Bus 6, since it is the preferred source of power, when emergency diesel generator 2BB re-energizes Bus 6. At 18:48, breaker 3991 was opened to secure offsite power from Train B. Bus 6 (the preferred source), which was powering MCC-5, was de-energized and the automatic transfer to Bus 5 (alternate source of power for MCC-5) occurred as expected. Approximately 6 seconds later, after the Train B emergency diesel generator came up to speed, Bus 6 was re-energized. Because Bus 6 was selected as the preferred source, the breaker (9C) from Bus 5 powering MCC-5 tripped open, but the

breaker (11C) from Bus 6 did not close as expected. As a result, MCC-5 was without power. In an attempt to restore power to MCC-5, an operator located at the ABT in the switch-gear room selected Bus 5 (position 1) as the preferred source of power for MCC-5. MCC-5 remained de-energized. The operator then attempted unsuccessfully to close breaker 9C by pressing the manual close pushbutton on the breaker. Subsequently, the operator was able to mechanically close Breaker 9C using a portable operating handle which re-energized MCC-5 from Bus 5 at 18:52. MCC-5 had remained de-energized for approximately 4 minutes during this event. The surveillance test was terminated and offsite power was restored to Train B.

Trouble-Shooting Activities

Several repeated operations of the ABT, following the event, between Buses 5 and 6 would not reproduce the failure. Based on an erroneous assumption that the initial automatic transfer from Bus 6 to Bus 5 had not occurred, trouble-shooting activities concentrated on breaker 9C. Breaker 9C was removed from Bus 5 and preventive maintenance was performed on this breaker. The breaker's control relay (52X) was replaced during the preventative maintenance. Breaker 9C was reinstalled into the Bus 5 switch-gear and surveillance test 5.1-19 was completed with the MCC-5 ABT functioning as expected.

Following the arrival of the AIT, the licensee initiated a formal root cause evaluation of the MCC-5 ABT failure. Based on conflicting observations as to whether the transfer to Bus 5 did or did not occur during the event, the licensee investigation team examined computer alarm logs and bus voltage traces to ascertain the exact sequence of events. It was then concluded that the initial transfer to Bus 5 had occurred and the subsequent transfer back to Bus 6 had failed. This indicated that the initial troubleshooting activities had focused on the wrong breaker. A failure modes and effects analysis was performed by the licensee and independently verified by the AIT, which concluded that the suspect components were either breaker 11C's control relay, an associated Agastat relay or interconnecting wiring. Both the control relay and the Agastat relay were replaced on July 2, 1993 and set aside for further testing.

The licensee then performed a hand-over-hand wiring check, redlining, and connection integrity check evolution for the interconnections between all components in the MCC-5 ABT scheme in accordance with procedure ST 11.8-35, "Functional Test of MCC-5 Transfer Scheme," on July 4-5, 1993. The AIT witnessed these functional test activities. No wiring errors were identified.

While performing the above wiring check, the licensee's personnel observed that the plunger of the control relay (installed several days earlier) associated with Breaker 9C exhibited a sluggish drop out upon removal of control power from the relay. Since this was identical to one of the suspected component's possible failure modes, the control relay was removed for further testing. This failure mode has reoccurred during subsequent bench testing of this specific relay. Five new control relays from the warehouse were also tested and one relay

exhibited the sluggish dropout of the relay plunger. The AIT witnessed a number of bench tests of the 52X relays and observed that it appears their exists an attraction between the plunger and the fix parts of the solenoid. The failure of the 52X plunger to drop out promptly is one possible explanation for the failure of the ABT which occurred on June 27, 1993. If the breaker 11C, 52X relay plunger were to hold up for the 6 seconds required for the emergency diesel generator to re-energize Bus 6, then breaker 11C would not re-close. However, the failure of a 52X relay plunger has only been observed when control power is removed from the solenoid and not during an actual breaker opening. The operation of a breaker tripping open will be accompanied by a mechanical shock of the main breaker contacts opening which would tend to assist dropping out the 52X relay plunger. While the failure of the 52X relay plunger is one possible explanation for the MCC-5 ABT failure on July 27, 1993, it is by no means the positive root cause of this failure. Further testing of the 52X relays plunger sticking was ongoing by the licensee and the relay vendor at the conclusion of this inspection.

Following the completion of procedure ST 11.8-35, the ABT was again functionally tested by securing power to Buses 5 and 6 and verifying the ABT function. These test were conducted in accordance with surveillance test ST 11.7-126, "Functional Test of MCC5 Automatic Bus Transfer (ABT)," and the tests were witnessed by the AIT. Additional tests were conducted to verify that the 52X relays plungers, installed in breakers 9C and 11C, would not stick when control power was removed. The tests energized the 52X relays in breakers 9C and 11C for a long period of time and then removed the control power. These tests were witnessed by the AIT and the solenoid plungers were observed not to stick.

Root Cause

The root cause for this failure has not been positively identified. A formal root cause determination has been completed and (2) components have been identified as being the most likely cause of the failure. These components are an Agastat timing Relay, 62-6A, and the 11C breaker, 52X relay which is an integral part of a Westinghouse DB 25 breakers.

The licensee provided a "Test Plan for Evaluation of Suspect Components," as part of the root cause determination report. The plan provides for extensive cycle testing of the suspected components. Following the cycle testing, the plan requires physical examination of the suspect components. The plan is scheduled for completion within two week after reaching 100% power following startup from the current refueling outage. The plan was reviewed by the AIT and determined to be comprehensive.

2.3.2 Corrective Actions

The licensee's short term, long term and compensatory measures for the MCC-5 ABT failure were provided to the NRC in a letter " Commitments to Test Motor-Control-Center-5," dated July 15, 1993. The licensee has committed to complete the following actions prior to entering Mode 4:

1. Brief all on-shift licensed operators on the significance of a loss of MCC-5 and how to recognize and correct this situation in accordance with Emergency Operating Procedure 3.1-50.

2. Put in-place a procedure for ensuring that any time there is a transfer of MCC-5, a visual verification of the "dropout" of the 52X relay of the open MCC-5 feeder breaker is performed.

3. Place caution tags on each of the breaker trip pushbuttons in the "A" switch-gear room to preclude the potential for lockup of both breakers in the open position. During the inspection, it was identified that if the preferred source breaker was manually tripped, MCC-5 would be de-energized and no automatic transfer would occur. The caution tags were written to inform plant operators of this fact.

These actions were completed prior to the conclusion of this inspection and the actions were verified by the AIT.

The licensee also committed to conduct additional online testing of the ABT. These testing activities are contingent upon receiving approval by the NRC of an amendment to the Technical Specifications. The amendment is required to allow the temporary removal of the control power to breaker 9C. Removal of the control power to the breakers will render the ABT inoperable. The online testing activities are as follows:

1. Disconnect the direct current power to the 52X relay in 480 Volt, Bus 5, compartment 9C. The dropping of the relay will be witnessed visually when the power is disconnected. The frequency of this test will vary starting with weekly tests for four weeks, monthly tests for the next 4 months and then quarterly tests for the remainder of Cycle 18.

2. A functional test of MCC-5 will be conducted any time during Cycle 18 the plant is placed in Mode 5.

The licensee has also committed to the following long-term actions:

1. Conduct an investigation of potential design changes that would increase the reliability of the ABT scheme. Any modifications concluded to be appropriate would be implemented, if possible, during the next refueling outage.

2. Preventative maintenance will be performed on Breakers 9C and 11C each refueling outage in lieu of every other refueling outage as currently required.

3. The licensee will continue to work with the breaker vendor to investigate the root cause of the ABT failure.

2.3.3 Inappropriate Notification of Emergency Classification

The AIT reviewed the licensee's response to the loss of MCC-5 on June 27, 1993 as related to the implementation of the emergency plan. The event was correctly reported to the NRC as an Unusual Event, but was initially, erroneously reported to the State of Connecticut as an Alert. The team reviewed the circumstances involved in this mis-communication to understand how it occurred, and to determine what factors may have contributed to it, including equipment and personnel performance, training, and procedure adequacy.

Background

The Emergency Notification and Response System (ENRS) is a computer based system that automatically provides notification of an emergency event and its details to the licensee staff and offsite emergency response organizations. The ENRS uses pre-formatted electronic voice messages to describe each emergency classification. The pre-formatted messages are customized for each incident when the Shift Supervisor Staff Assistant (SSSA) enters event specific information into the system via a computer terminal. The SSSA also supplements the pre-formatted data with a voice message to briefly describe the incident. The entire message unit is then sent to the radio tower for broadcast to the radio-pagers. The ENRS facilitates data entry through a series of prompts and data input screens. The main data input screen is formatted to replicate the hard copy Incident Report Form from emergency plan implementing procedure (EPIP) 1.5-2 that is filled out by licensed operations and/or shift management personnel, and approved for release. Once reviewed for accuracy and approved, the message form is given to the SSSA, who translates the approved hard copy information into the ENRS to produce the electronic message. In addition to the above electronic voice features, the system also allows operations personnel to broadcast a message directly from the tower.

Event

On June 27, 1993, motor-control-center-5 failed to remain energized during surveillance testing. The operations shift supervisor and the duty officer recognized the loss of MCC-5 as an emergency action level and classified the event as an Unusual Event and entered the emergency plan implementing procedures as necessary to make the required notifications for this event. The event classification was erroneously reported to the state as an Alert at 19:14. Two subsequent emergency notification messages were broadcast over the ENRS in attempts to correct the error at 19:28 and 19:40. A fourth radio-pager message was sent at 19:45 directly over the broadcast tower in an attempt to stop emergency responders who might be in transit to the site or emergency response facilities.

The event was properly classified as an Unusual Event by the Shift Supervisor and the Duty Officer. The information was properly coded on the Incident Notification Form (INF), as approved by the Shift Supervisor. The duty SSSA incorrectly translated the Incident Classification from the form to the ENRS.

The data translation error was made when the SSSA failed to notice that he chose an "Alert" posture code and incident classification from the menu on the data input screen. The SSSA did not adequately verify the information as he was inputing into the ENRS, and in spite of three subsequent opportunities to check the inputs for accuracy and to discover the incorrect Alert classification coded into the electronic massage. It takes about 10 minutes for the SSSA to input the data into the ENRS. During this time the ALERT classification is clearly visible on the terminal screen. The SSSA could have discovered the misclassification at any time during that period had he checked his inputs for accuracy. The SSSA stated that he felt under pressure to process the notification within the 12 minutes required by the procedure, and assumed his inputs were accurate. By not checking the notification message for accuracy, the SSSA failed to meet two specific procedure requirements: (1) Step 6.1.5 of EPIP 1.5-2, "Notification and Communication" requires the SSSA, once the INF data has been input into the ENRS, to "review the entire INF and verify the information is accurate" prior to getting Shift Supervisor permission to release the radio-pager message; and, (2) Step 6.4.3 of NOP 2.16-10, "Operation of the ENRS and Centracom", requires the SSSA to "review the entire recorded INF message to ensure that all data is accurate" prior to releasing the radio-pager message.

The incorrect Alert classification was identified by others in the control room who heard the event notification being broadcast over the pager system. The SSSA received additional assistance to correct the mistake by (i) sending out an "update" message stating that the last event was an Unusual Event and that a response to the plant was not required; and, (ii) sending out a third notification that properly classified the LNP event as an "Unusual Event." Finally, a fourth message was sent out directly to the radio-tower from the Centracom to plant personnel informing them that they need not respond to the plant.

The SSSA provided erroneous meteorological information in the "Alert" notification to the state and local officials. He did this when the ENRS system prompted him for wind speed and direction during the data entry phase of constructing the notification message. All other information prompted by the ENRS was on his incident notification form except the meteorological (MET) data, which is not sent for Unusual Events. MET data is only provided for events classified as Alert or higher. The fact that ENRS was prompting him for MET data for an event he knew was an Unusual Event, should have caused the SSSA to question his inputs and cause him to discover the Alert classification.

The SSSA knew he had to provide all the information that ENRS prompted him for before the system would send the notification message. He did not have the necessary information on the INF. He should have either checked with the Shift Supervisor, or gotten the MET data himself. The SSSA rationalized that MET data is not needed for an Unusual Event message, so he made up the information to satisfy the ENRS prompt. The SSSA thought that it was not important that the MET data was accurate because he thought that the ENRS would not send the MET data as part of the Unusual Event message. The SSSA stated he was overly focused on getting the initial message out within the 12 minutes, and did so at the expense of assuring the accuracy of the information.

The team noted that the meteorological data for the "Alert Update" message sent out at 19:28 also had erroneous meteorological data. This message was prepared by the duty SSSA, with the assistance of an off-duty SSSA and the operations Shift Supervisor. The Shift Supervisor authorized the use of fictitious wind speed and direction in compiling the update message. The Shift Supervisor stated to the team that he did so because (i) it was an expediency to inform licensee and offsite authorities as quickly as possible that the first message was really an Unusual Event - it was important to correct the mis-communication as quickly as possible; and, (ii) the actual meteorological information was not important since the actual event involved no radiological release or other offsite impact.

The licensee's review of the response by state and local authorities to the Alert message at 19:05 was less than expected. The radio-pager message is the official prompt notification of plant events that have the potential to impact the public and which may demand prompt protective measures. State and local communities acknowledge receipt of the radio-pager message by a call-in process whereby they get more detailed information about the event in progress. The licensee noted that 9 of 18 local communities and 3 of 6 state agencies did not perform the call in verification in response to the Alert message at 19:14. The licensee has taken action to address this matter in a letter to the Connecticut State Office of Emergency Management (EP-93-464), dated July 6, 1993.

Corrective Action

The root cause for the mis-communication of the June 27 emergency message was personnel error in failing to follow procedures and exercising attention to detail in the completion of this task. The team concluded that procedures were adequate, and that training was not a

factor in the event. The licensee took actions to address a personnel performance issue. The licensee recognized the significance of using incorrect meteorological information on the ENRS messages. The licensee addressed the need for accuracy in this data with all SSSAs and will address this topic with operations personnel.

2.3.4 Equipment Failure History

The Nuclear Plant Reliability Data System was used to identify the failure history of Westinghouse DB type breakers control relays. The search identified approximately 28 reported failures of control relays since 1984. The cause of these failures was generally attributed to dirt, aging, mechanical misalignment, or mechanical binding due to burrs. However, a positive root cause was often not identified. Corrective actions generally included 52X relay replacement, repair or readjustment.

The team also reviewed two licensee event reports (LERs) pertaining to 52X relay failures:

> LER 84-023 from Haddam Neck Plant reported on six incidents of Westinghouse breakers failing to close when required. Five of those failures were directly attributed to 52X relay malfunctions. The sixth breaker failure possibly resulted from a 52X relay malfunction. The main cause of the control relay malfunctions was stated to be dust or dirt accumulation on the plunger and its latch arm assembly. Since the licensee concluded that the malfunctions presented a generic problem in the plant, the immediate action was to inspect and clean all 52X control relays. Westinghouse incorporated an improved description of the adjustment procedure necessary for the 52X relay's mechanical latch/linkage into DB-50 (reactor trip breakers) maintenance manuals but did not included similar information in the maintenance manuals for the DB-25 breakers, which use 52X relays.
>
> LER 92-002 from Oconee Nuclear Station reported the failure of 52X relays on the plant's emergency hydro units' field and field flashing breakers (Westinghouse DB-25s). The 52X relay did not reset until the hydro unit coasted down. A speed switch de-energizes the 52X coil and the plunger falls by gravity to reset the relay. The failure mode, failing to reset, was first discovered in June 1991 on commercial grade 52X relays. The cause of the specific failure mode was not known and the relays were replaced with safety grade relays. On January 28, 1992, a safety grade 52X relay failed to reset. As immediate corrective action the licensee inspected each 52X relay to ensure that they did reset following each shutdown. A design change has now been implemented to replace the electro-mechanical anti-pump scheme provided by the 52X relay with an electrical scheme.

2.3.5 Conclusions

Event

The safety significance of this event was determined to be high. MCC-5 and the associated ABT are required to provide power to the emergency core cooling system (ECCS) valves needed to mitigate the consequences of accidents. If MCC-5 is lost, the normally closed high and low pressure injection valves will not open. The actual risk to the health and safety of the public was low since the reactor was in cold shutdown and the ECCS systems were not required to be operable. However, the reliable operation of MCC-5 and the associate ABT is essential for plant safety.

The team concluded that the actions taken by the operators to restore power to MCC-5 were appropriate. The shutdown cooling system was not lost during this event. The licensee's failure to transmit the correct event notification was the result of an error by a non-licensed Shift Supervisor Staff Assistant (SSSA). The licensed Shift Supervisor had correctly classified this event as an Unusual Event. The SSSA erroneously selected the wrong classification while making the computer entry to transmit the notification and did not identify the error during verification of the message. Licensee actions to address a personnel performance issue and accurate meteorological information were appropriate.

The formal root cause analysis was thorough and identified the error in the original assumption that breaker 9C had failed to close during the event. The team independently verified that the components that were the most likely cause of this event were the breaker 11C 52X control relay, Agastat timing relay 62-6A, the breaker 9C auxiliary switch 52/b contacts, or interconnecting wiring. The hand-over-hand inspection, redlining and continuity check eliminated interconnecting wiring as a potential cause for this failure. Testing and design of the auxiliary relay switch on the 9C breaker eliminated it as a potential cause. The evaluation concluded the malfunction of the 52X relay or the Agastat timer relay was the most likely cause of this event. The team concluded that this event was a due to an intermittent equipment failure of a component(s) in the MCC-5 ABT or the associated breakers and was not the result of performance deficiencies by the plant staff, procedures, or maintenance of the equipment.

Assessment of Corrective Actions

The team also concluded that the short-term corrective actions taken by the licensee were comprehensive. While the root cause evaluation was unsuccessful in identifying a failed component which would account for this failure, it was successful in identifying the suspect components which were subsequently replaced. The compensatory measures taken are adequate to assure reliable operation of the currently installed ABT equipment. The licensee's investigation and proposed actions to address the sticking plunger in the Westinghouse 52X control relay were appropriate.

The long term corrective actions are also appropriate. The commitment to conduct additional testing of the suspected components is essential to exhaust all avenues for determining a root cause for this failure. The proposed engineering evaluation of the ABT design is important to optimize the reliability of this safety significant system. Reducing the breaker preventative maintenance interval to each refueling outage will also enhance breaker performance.

An apparent discrepancy was noted between the Updated Final Safety Analysis Report (UFSAR), Section 8.3.1, and the install configuration of the plants electrical system. The UFSAR states in part that "The Class 1E system has the redundancy, capacity, capability, and reliability to supply power to all safety-related loads. This system ensures a safe plant shutdown to mitigate accident effects, even in the event of a single failure." This statement does not appear to be accurate as related to single failures and MCC-5. The UFSAR does not explicitly discuss single failure vulnerabilities of MCC-5. The licensee stated at the exit meeting that the UFSAR would be reviewed and if appropriate, changes would be made.

The team questioned the applicability of 10CFR 50.46 (d), which explicitly states that the performance of the ECCS system must include in particular Criterion 35 of Appendix A, which requires that the ECCS safety function be accomplished assuming a single failure. The current design of the ECCS system does not satisfy the requirement of Criterion 35 due to the single failure vulnerabilities of MCC-5. The team noted that the Haddam Neck Plant was licensed prior to Appendix A and does not need to meet these criteria. However, the team could not determine if an exemption from 10CFR 50.46 (d) was required in addition to the exemption granted for the single failure of MCC-5 during original plant licensing. This issue is currently under review by the NRC.

3.0 EXIT MEETING

The team met with those denoted in Attachment A, on July 27, 1993, to discuss the preliminary inspection findings which are detailed in this report. The exit meeting was open for public observation and the NRC answered public questions following the exit meeting. The slides used at the exit meeting are provided as Attachment D of this inspection report.

ATTACHMENT A
PERSONS CONTACTED

Connecticut Yankee Atomic Power

* E. Annino	Sr. Analyst - CY
P. Ballote	Generation Test Technician
W. Barton	Engineer
M. Bain	CY Eng. Manager
* W. Becker	Supervisor - ED
M. Brothers	Engineering Supervisor
A. Castagno	NU - Manager Nuclear Information
* D. Dube	PRA Supervisor - NUSCO
* C. Gladding	CY Engineering Manager
* W. Kadlec	Generation Test Supervisor
J. LaPlatney	Operations Manager
T. McDonald	Maintenance Manager
* B. McKenna	Engineer
* R. Morse	Maintenance Engineer
* T. Nichols	CY Maintenance
E. Perkins	Nuclear Licensing Engineer
* G. Pittman	CYPSD - Corp. Eng.
D. Ray	Unit Director
R. Rogozinski	Procurement Engineering Supervisor
* M. Samek	Supervisor - CYPSD
* B. Solomon	Assistant Engineer - Licensing
* J. Stetz	Vice President - Haddam Neck Station
* R. Trejo	Sr. Nuclear Information Rep. - CY
R. Willis	Shift Supervisor

U. S. Nuclear Regulatory Commission

* J. Andersen	NRC Project Manager
* C. Miller	NRC Deputy Director, DRS
* P. Habighorst	Resident Inspector - Haddam Neck
* T. Ulses	NRC Reactor Engineer

Asterisk (*) denotes those present at the exit meeting.

ATTACHMENT B

MCC-5 ABT FUNCTIONAL DESCRIPTION

A typical transfer would occur in the following sequence with the assumption that Bus 6 is the preferred source and is initially energized and connected to MCC-5 through Breaker 11C (See Figure 5):

1. The automatic transfer starts when Bus 6 becomes de-energized. Agastat 62-6A senses the loss of voltage on the bus and trips Breaker 11C after a one second delay through its contacts 6-2.

2. If Bus 5 is energized, the control relay 52X for Breaker 9C picks up through contacts 6-2 of Agastat 62-5B and contacts 52/b of Breaker 11C.

3. The closing coil 52CC for Breaker 9C is energized through contacts from 52X. Breaker 9C closing mechanically causes the 52X contacts to then open.

4. The transfer has thus taken place and the 52X control relay for Breaker 9C remains energized as long as voltage remains on Bus 5 and Breaker 11C remains open or in the test or racked-out position. The control relay is in the anti-pump position and prevents further attempts to energize its close coil 52CC.

If Voltage is restored to Bus 6, a retransfer will occur in the following sequence since it is the preferred source:

1. When voltage is restored, Agastat 62-6A picks up and Breaker 9C's trip coil is energized through contacts 5-3 of 62-6A and contacts A11-B11 of the selector switch.

2. When Breaker 9C opens, the control relay for Breaker 11C is energized through contacts 6-4 of Agastat relay 62-6A and Breaker 9C contacts 52/b.

3. The closing coil 52CC for Breaker 11C is then energized through contacts from 52X. The control relay for Breaker 9C also becomes de-energized when Breaker 11C closes.

4. The retransfer has taken place and the 52X relay for Breaker 11C now remains energized.

ATTACHMENT C

AUGMENTED INSPECTION TEAM CHARTER

UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
475 ALLENDALE ROAD
KING OF PRUSSIA, PENNSYLVANIA 19406-1415

JUN 2 9 1993

Docket No. 50-213

MEMORANDUM FOR: Marvin W. Hodges, Director, Division of Reactor Safety

FROM: Thomas T. Martin, Regional Administrator

SUBJECT: AUGMENTED INSPECTION TEAM CHARTER FOR REVIEW OF UNUSUAL EVENTS DURING ELECTRICAL TESTING AT HADDAM NECK

On June 22, 26 and 27, 1993, Haddam Neck station declared Unusual Events (UEs) as a result of problems experienced during electrical system testing. Due to the nature of these events, I have determined that an Augmented Inspection Team (AIT) inspection should be conducted to review the causes, safety implications, and associated licensee actions which led to (or resulted in) the repeated loss of offsite power, and loss of power to a vital motor control center (MCC-5).

The Division of Reactor Safety (DRS) is assigned the responsibility for the overall conduct of this Augmented Inspection. Jim Trapp, Team Leader, DRS, is appointed as Augmented Inspection Team Leader. Other AIT members are identified in Enclosure 2. The Division of Reactor Projects (DRP) is assigned the responsibility for resident and clerical support, as necessary; and the coordination with other NRC offices, as appropriate. Further, the Division of Reactor Safety, in coordination with DRP, is responsible for the timely issuance of the inspection report, the identification and processing of potentially generic issues, and the identification and completion of any enforcement action warranted as a result of the team's review.

Enclosure 1 represents the charter for the Augmented Inspection Team and details the scope of the inspection. The inspection shall be conducted in accordance with NRC Management Directive (MD) 8.3, NRC Inspection Manual 0325, Inspection Procedure 93800, Regional Office Instruction 1010.1, and this memorandum. Concerns have been identified with the repetitive loss of offsite power, the apparent i- -t of non-safety related protective features on vital power supplies, a possible lack of redunc /ith respect to safety-related loads powered by MCC-5, and the miscommunication of the June 27 event classification to the state. An AIT to review these events is appropriate since they involve significant system interactions and unknown underlying root causes. The NRC staff needs to fully understand the causes of these events, and determine whether further actions will be required.

Thomas T. Martin
Regional Administrator

Enclosures:
1. Augmented Inspection Team Charter
2. Team Membership

cc w/encls:
J. Taylor, EDO
J. Sniezek, OEDO
T. Murley, NRR
J. Partlow, NRR
J. Calvo, NRR
C. Rossi, NRR
J. Stolz, PD I-4, NRR
F. Miraglia, NRR
C. McCracken, NRR
F. Rosa, NRR
W. Russell, NRR
J. Wiggins, NRR
A. Thadani, NRR
B. Grimes, NRR
J. Roe, NRR
E. Jordan, AEOD
D. Ross, AEOD
D. Wheeler, OEDO
W. Kane, DRA, RI
D. Cooper, DRP, RI
W. Lanning, DRP, RI
R. Blough, DRP, RI
L. Doerflein, DRP, RI
T. Shedlosky, DRP, RI
C. Hehl, DRSS, RI
S. Shankman, DRSS, RI
W. Raymond, SRI, Haddam Neck
A. Wang, PD I-4, NRR
F. Burrows, EELB, NRR
J. Durr, DRS, RI
L. Bettenhausen, DRS, RI
J. Trapp, DRS, RI
K. Abraham, PAO, RI
M. Miller, SLO, RI

ENCLOSURE 1

Haddam Neck Station

Review of Unusual Events During Electrical Testing at Haddam Neck

Augmented Inspection Team (AIT) Charter

The general objectives of this AIT are to:

1. Conduct a thorough and systematic review of the circumstances surrounding the June 22 and June 26 loss of off-site power events, and the June 27 loss of power to safety bus MCC-5 event.

2. Develop a detailed sequence of events for each loss of off-site power and the loss of bus MCC-5.

3. Collect, analyze, and document relevant factual information to determine the causes, conditions, and circumstances pertaining to each event.

4. Evaluate the licensee's review of and response to each event and the implemented corrective actions, including providing the state an inappropriate EAL on June 27, 1993.

5. Assess the safety significance of each event and communicate to Regional and Headquarters management the facts and safety concerns related to problems identified, including single failure vulnerabilities and impact of non-safety related equipment on safety systems.

6. Evaluate the knowledge and performance of licensee staff during these events.

7. Evaluate the maintenance testing and any changes made to the design which may have contributed to this failure.

8. Prepare a report documenting the results of this review for signature of the Regional Administrator within thirty days of the completion of the inspection.

ENCLOSURE 2

Haddam Neck AIT Membership

Jim Trapp, AIT Leader, Division of Reactor Safety (DRS), Region 1 (RI)

William Raymond, Senior Resident Inspector, Haddam Neck, DRP, RI

Thomas Shedlosky, Project Engineer, DRP, RI

Fred Burrows, NRR

Other NRC personnel, consultants, or contractors will be engaged in this AIT, as needed.

ATTACHMENT D

AUGMENTED INSPECTION TEAM

EXIT MEETING SLIDES

HADDAM NECK
AUGMENTED INSPECTION TEAM
PUBLIC EXIT MEETING AGENDA

JULY 27, 1993

1. EXIT MEETING BETWEEN NRC AND LICENSEE.

2. NRC ADDRESS PUBLIC QUESTIONS REGARDING TEAM FINDINGS.

EVENTS

- LOSS OF OFFSITE POWER ON JUNE 22, 1993

- LOSS OF OFFSITE POWER ON JUNE 26, 1993

- LOSS OF MOTOR CONTROL CENTER 5 ON JUNE 27, 1993

HADDAM NECK
LOSS OF OFFSITE POWER
JUNE 22, 1993 EVENT

EVENT DESCRIPTION

- PLANT ELECTRICAL SYSTEM CONFIGURED TO SUPPORT BREAKER FAILURE TESTING OF TIE BREAKER 389T399.

- TEST UNEXPECTEDLY OPENS BREAKER 3891 AND ISOLATES OFFSITE POWER FROM THE PLANT.

- THE EMERGENCY DIESEL GENERATORS AUTOMATICALLY SUPPLY POWER TO THE PLANT.

ROOT CAUSE

- WIRING ERROR WHICH OCCURRED DURING OR SHORTLY FOLLOWING PLANT CONSTRUCTION.

CORRECTIVE ACTIONS

- TECHNICAL JUSTIFICATION DEVELOPED FOR LEAVING PLANT CONFIGURATION AS IS.

- REVIEW BREAKER TRIP CIRCUIT WIRING DURING THE NEXT REFUELING OUTAGE.

HADDAM NECK
LOSS OF OFFSITE POWER
JUNE 22, 1993 EVENT
CONTINUED

ASSESSMENT OF EVENT

- PLANT EQUIPMENT FUNCTION AS EXPECTED FOLLOWING THE EVENT.
- OPERATOR RESPONSE TO THE EVENT WAS GOOD.
- NOTIFICATION OF AN UNUSUAL EVENT WAS APPROPRIATE.
- TECHNICAL JUSTIFICATION ADEQUATELY SUPPORTS LEAVING WIRING ERROR AS IS.
- REVIEW OF TRIP LOGIC WIRING DURING THE NEXT REFUELING OUTAGE IS APPROPRIATE.

HADDAM NECK
LOSS OF OFFSITE POWER
JUNE 26, 1993 EVENT

EVENT DESCRIPTION

- SURVEILLANCE TEST BEING PERFORMED WHICH SIMULATES PARTIAL LOSS OF OFFSITE POWER.
- WHEN BREAKER 3891 WAS OPENED BREAKER 3991 UNEXPECTEDLY OPENED.
- THE EMERGENCY DIESEL GENERATORS AUTOMATICALLY SUPPLY POWER TO THE PLANT.

ROOT CAUSE

- BLOWN FUSE IN VOLTAGE SENSING CIRCUIT.

CORRECTIVE ACTIONS

- REPLACED FUSE.
- REVISED TEST PROCEDURE.

HADDAM NECK
LOSS OF OFFSITE POWER
JUNE 26, 1993 EVENT
CONTINUED

ASSESSMENT OF EVENT

- GENERALLY PLANT EQUIPMENT FUNCTION AS EXPECTED FOLLOWING THE EVENT.
- OPERATOR RESPONSE TO THE EVENT WAS GOOD.
- NOTIFICATION OF AN UNUSUAL EVENT WAS APPROPRIATE.
- THIS EVENT ROOT CAUSE IS UNRELATED TO FIRST EVENT.
- THE IDENTIFIED VOLTMETER DEFICIENCY SHOULD HAVE BEEN INCLUDED IN THE WORK CONTROL SYSTEM.
- CAUSE OF FUSE FAILURE MOST LIKELY MAINTENANCE ON ASSOCIATED EQUIPMENT.
- THE CORRECTIVE ACTIONS TAKEN FOR THIS EVENT WERE APPROPRIATE.

HADDAM NECK
LOSS OF MOTOR CONTROL CENTER 5
JUNE 27, 1993 EVENT

EVENT DESCRIPTION

- SURVEILLANCE TEST BEING PERFORMED WHICH SIMULATES PARTIAL LOSS OF OFFSITE POWER.
- MCC-5 TRANSFERRED TO BUS 5 FOLLOWING LOSS OF POWER ON BUS 6.
- MCC-5 IS DE-ENERGIZED WHEN AUTOMATIC BUS TRANSFER FAILS TO TRANSFER BACK TO BUS 6.
- OPERATORS MANUALLY CLOSE BREAKER TO ENERGIZE MCC-5 FROM BUS 5.
- AN ERRONEOUS EVENT CLASSIFICATION OF AN ALERT IS SENT TO THE STATE AND TOWNS.

ROOT CAUSE

- NOT POSITIVELY IDENTIFIED. TWO SUSPECTED COMPONENTS HAVE BEEN IDENTIFIED.

LOSS OF MOTOR CONTROL CENTER 5
JUNE 27, 1993 EVENT
CONTINUED

CORRECTIVE ACTIONS

SHORT TERM

- REPLACED SUSPECT COMPONENTS.
- PERFORMED A FORMAL ROOT CAUSE EVALUATION.
- CONDUCTED A WIRING CHECK OF ABT SYSTEM.

COMPENSATORY MEASURES

- ADDITIONAL ABT TESTING.
- CAUTION TAG ON BREAKERS 9C AND 11C.
- CONDUCT OPERATOR TRAINING.

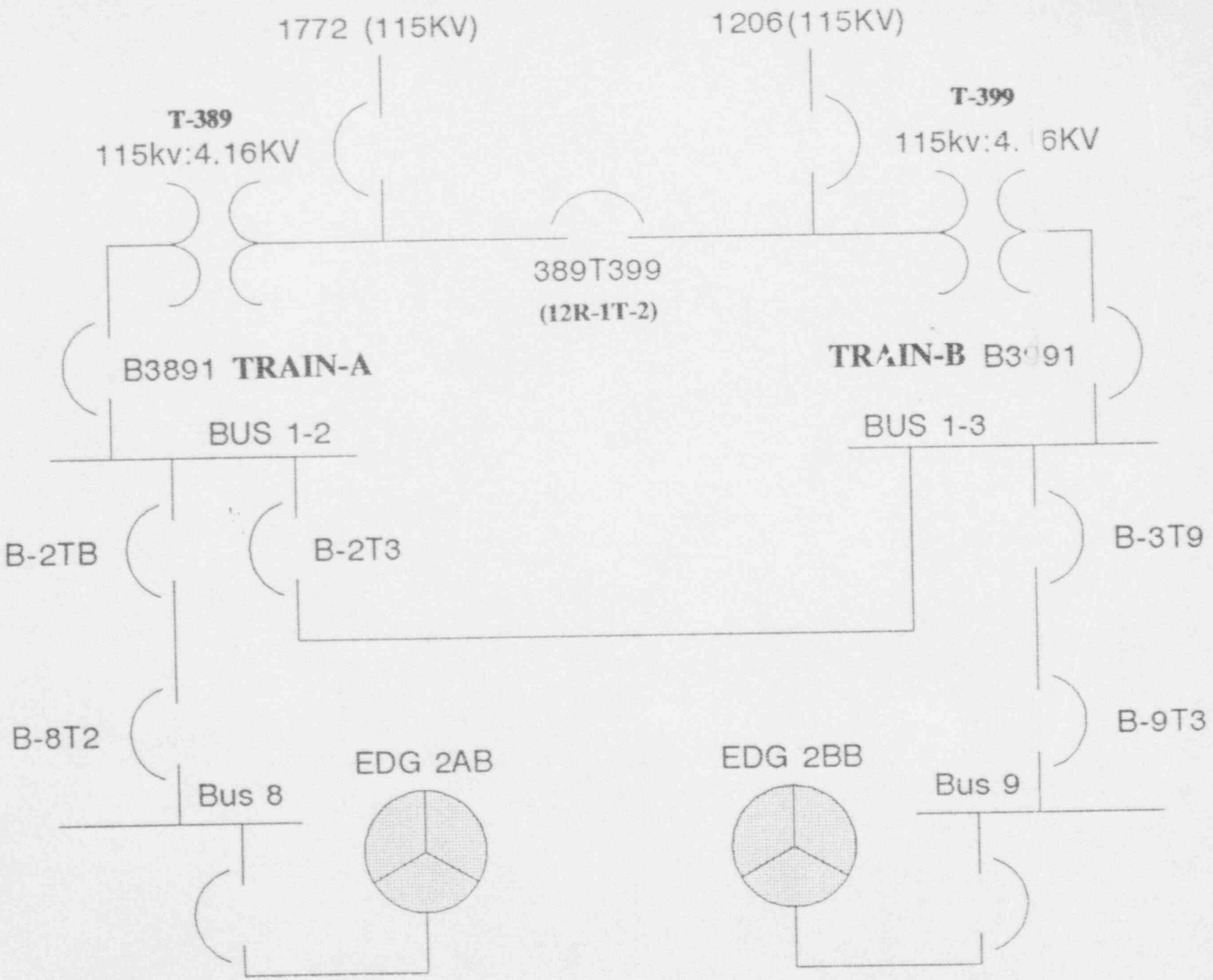
LONG TERM

- EVALUATE AUTOMATIC BUS TRANSFER SYSTEM DESIGN.
- CONDUCT PREVENTATIVE MAINTENANCE ON 9C AND 11C BREAKERS EACH REFUELING OUTAGE.

LOSS OF MOTOR CONTROL CENTER 5
JUNE 27, 1993 EVENT
CONTINUED

ASSESSMENT OF EVENT

- THE FUNCTION OF MCC-5 IS VERY SIGNIFICANT TO OVERALL PLANT SAFETY.
- TEAM INDEPENDENTLY VERIFIED MOST LIKELY CAUSE OF FAILURE.
- THE EVENT CLASSIFICATION ERROR WAS AN INDIVIDUAL PERFORMANCE ISSUE.
- TROUBLE-SHOOTING AND TESTING CONDUCTED WAS APPROPRIATE.
- ACTIONS TAKEN TO RESTORE MCC-5 WERE APPROPRIATE.
- THE FORMAL ROOT CAUSE EVALUATION WAS THOROUGH.
- SHORT TERM CORRECTIVE ACTIONS TAKEN WERE APPROPRIATE.
- COMPENSATORY MEASURES ARE APPROPRIATE.
- ENGINEERING EVALUATION OF DESIGN.



SIMPLIFIED ELECTRICAL SYSTEM DIAGRAM

FIGURE 1

BUS 1-3 PT CIRCUIT & UNDERVOLTAGE TRIP SCHEME

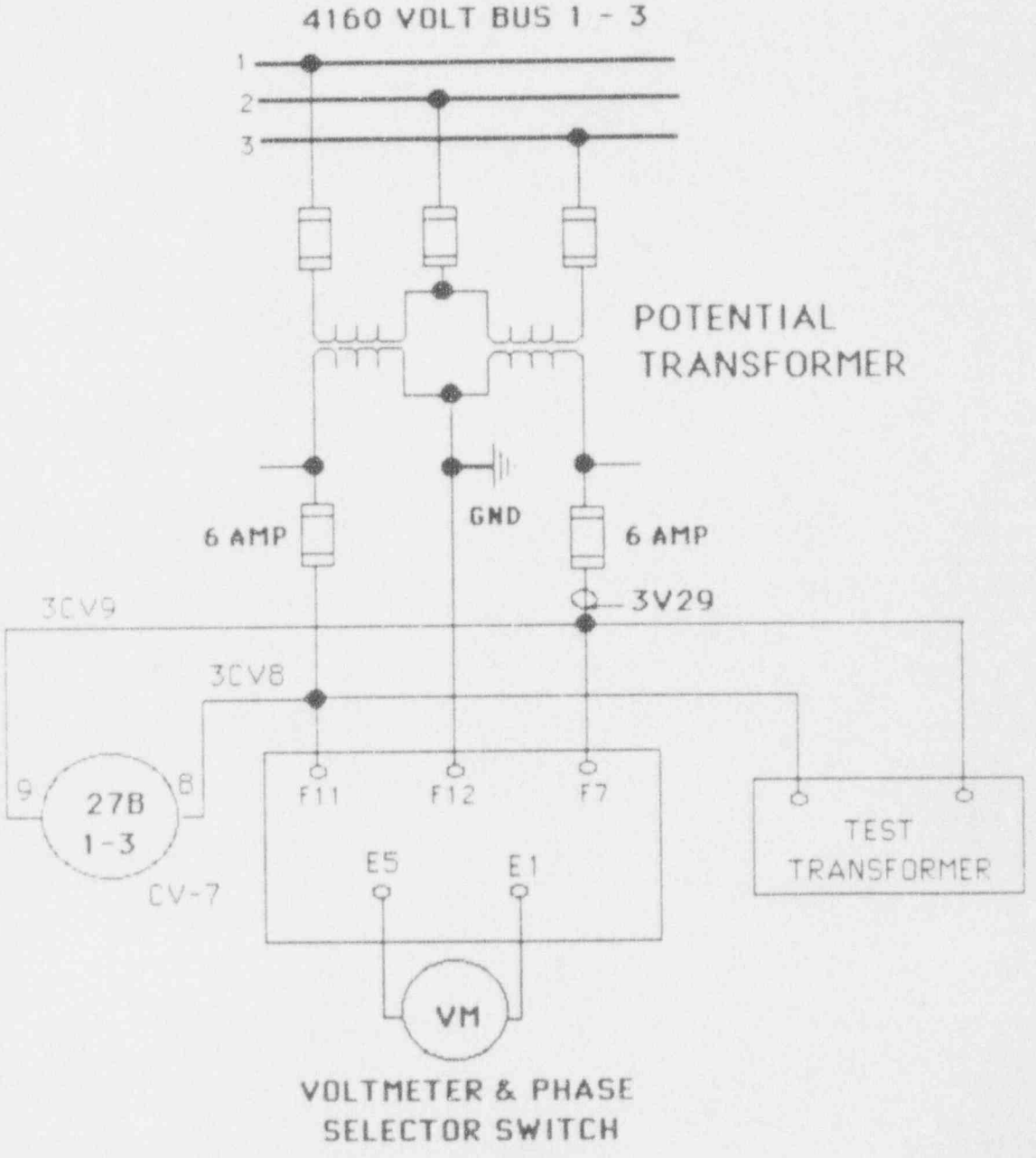
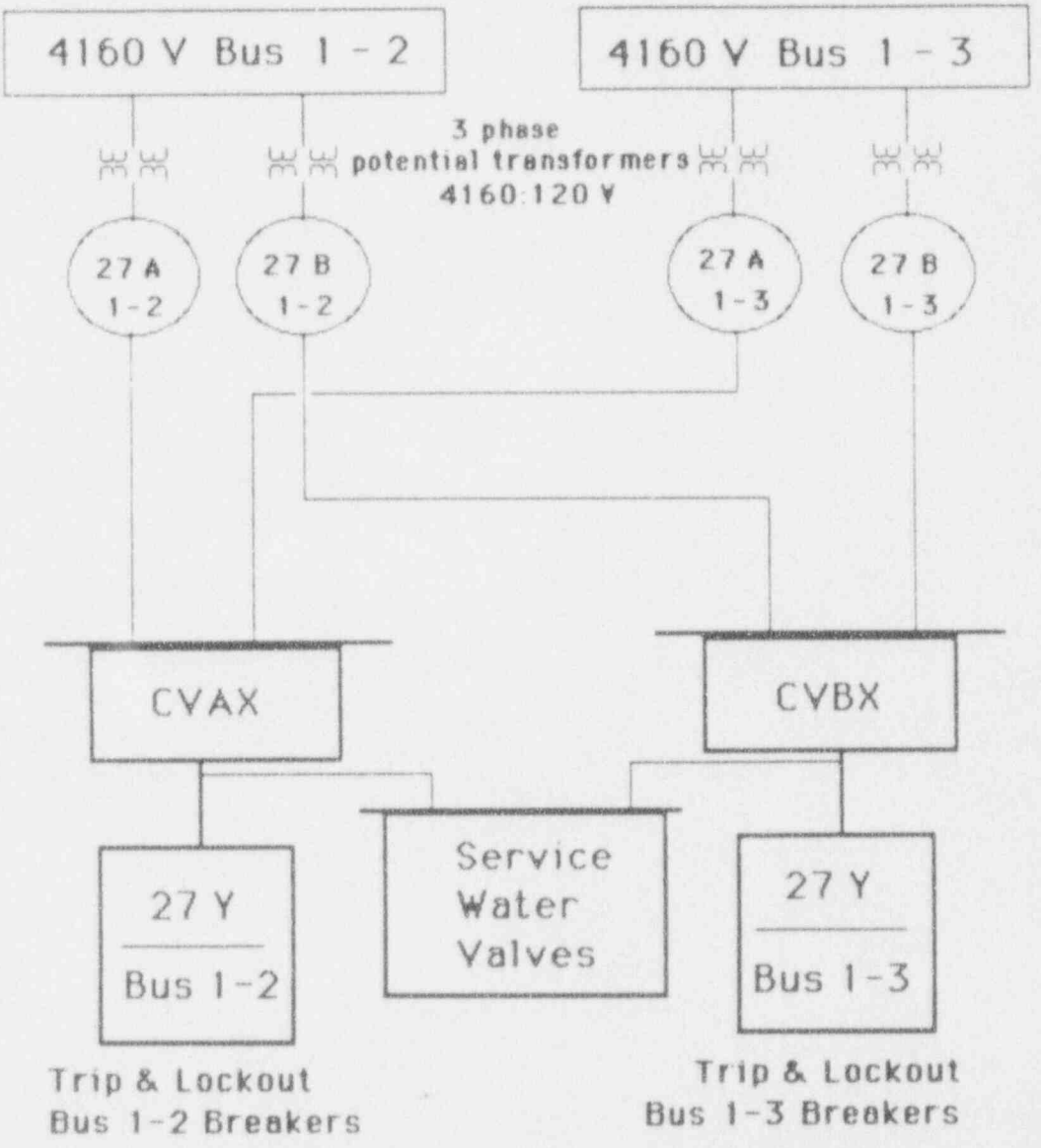


FIGURE 2

BUS 1-2/1-3 UNDERVOLTAGE LOGIC

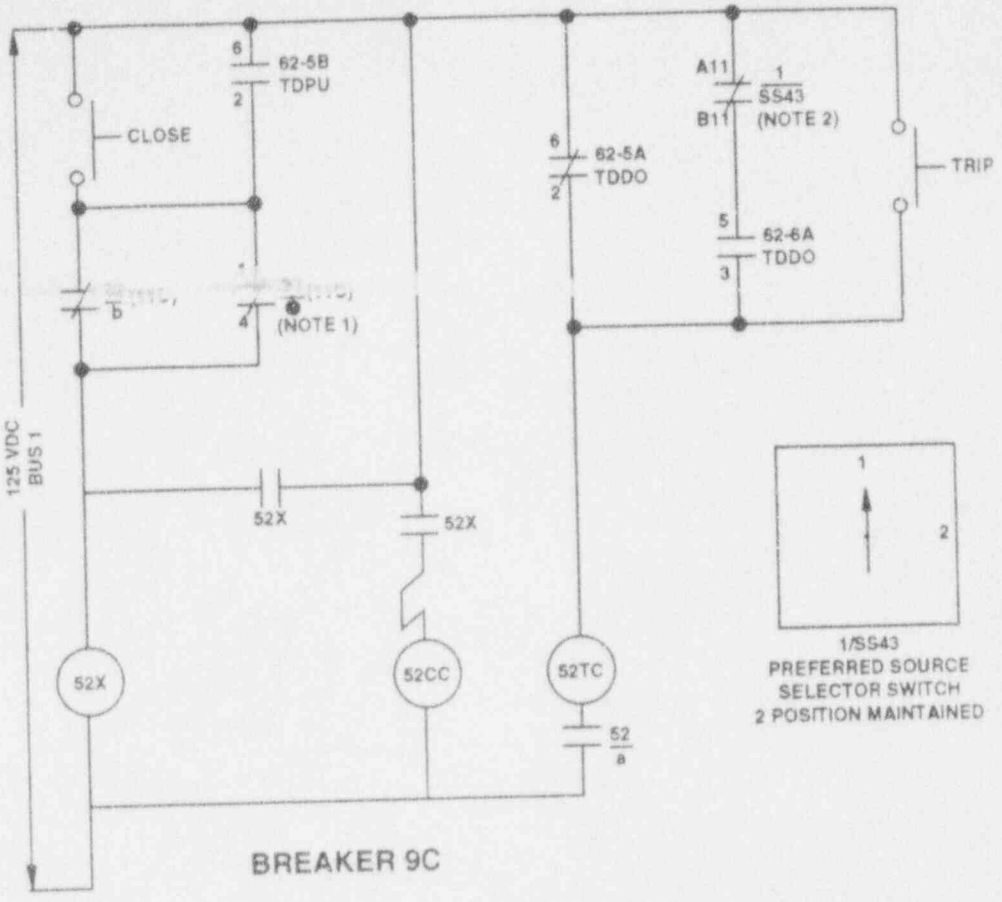


JUNE 26 LOSS OF POWER EVENT

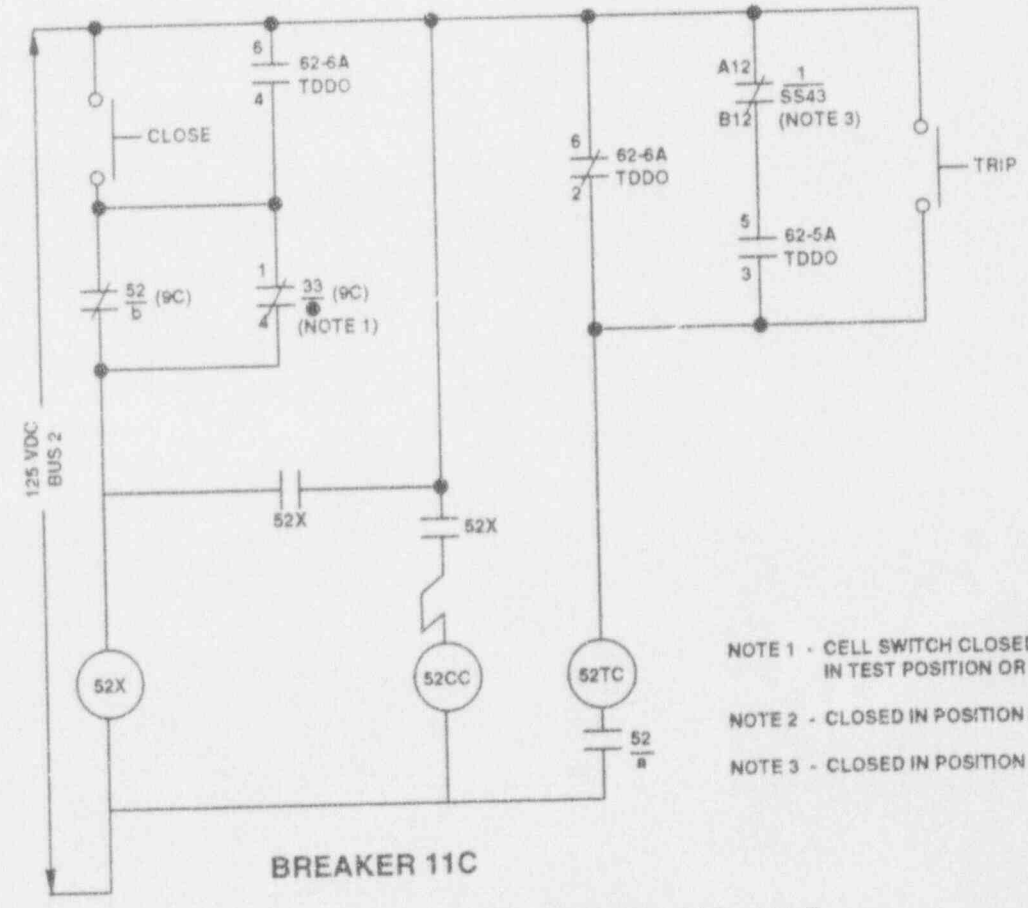
FIGURE 3

MCC-5 SIMPLIFIED DIAGR

FIGURE 4



BREAKER 9C



BREAKER 11C

NOTE 1 - CELL SWITCH CLOSED WHEN BREAKER IN TEST POSITION OR RACKED OUT.

NOTE 2 - CLOSED IN POSITION 2.

NOTE 3 - CLOSED IN POSITION 1.

ABT LOGIC DIAGRAM

FIGURE 5

Appendix D.2

NORTHEAST UTILITIES

THE CONNECTICUT LIGHT AND POWER COMPANY
WESTERN MASSACHUSETTS ELECTRIC COMPANY
HOLYOKE WATER POWER COMPANY
NORTHEAST UTILITIES SERVICE COMPANY
NORTHEAST NUCLEAR ENERGY COMPANY

MEMO

August 30, 1993
PSCY-93-199

TO: Distribution

FROM: George R. Townsend
CY Project Services Department
Berlin, N028 (Ext. 5059)

SUBJECT: CY EWR No. 93-MS104 "MCC-5 Automatic Bus Transfer (ABT) Re-Design"

Attachments: 1. Proposed Sketches SK-JBL-1; -2 (Preliminary design; not final)
2. NUSCO Drawings 16103-32001, Sheets 6AP, 6AQ, 6DG

The purpose of this memo is to discuss the status of the re-design effort of the MCC-5 ABT scheme and list projected project milestones.

Several meetings have been held between Engineering Department - Electrical, CYPSD Electrical, CY Engineering, Generation Test, CY Maintenance, and Probabilistic Risk Assessment (PRA) to re-design the scheme. Three criteria governed the re-design. They are:

1. Do not need needlessly trip a feeder breaker to MCC-5 that could be called upon to subsequently re-close. This unnecessarily challenges the operation of the breaker.

2. Do not have a "preferred" source that the scheme will always seek. The scheme should seek a stable power source, and once obtained, should remain there.

3. Keep the scheme relatively simple. This includes design, installation, and maintainability.

The attached sketches are the result of these meetings. The main features and functions of the scheme are:

A. 480V Bus 5 breaker 9C (supply from Bus 5 to MCC-5) will be the "selected" (the word "preferred" is intentionally not used) breaker to normally supply MCC-5.

B. Assuming a total loss of off-site power, breaker 9C will remain closed. Once the emergency diesel generators start:

- if Bus 5 is energized before Bus 6, MCC-5 remains supplied from Bus 5. There is no needless tripping of breaker 9C and subsequent re-closing, since the breaker remained closed.

- if Bus 6 is energized before Bus 5, breaker 9C will trip and 480V bus 6 breaker 11C (supply from Bus 6 to MCC-5) will close and energize MCC-5, and remain in this alignment. The only way there would be a re-transfer back to Bus 5 is if there was a loss of power on Bus 6 while Bus 5 was energized, or if operators took manual control to re-transfer.

C. Assuming a loss of power on Bus 5 only, breaker 9C would trip and breaker 11C would close.

D. Assuming a loss of power on Bus 6 only, breaker 9C would remain closed and aligned to MCC-5.

E. The scheme allows a one-second time delay when transferring from one source to another. This provides sufficient time delay to allow voltage transients to subside.

F. The "arming" of the automatic transfer scheme can be defeated via a cut-off switch to allow for manual control of breakers 9C and 11C, or during maintenance of one of the breakers.

G. The scheme will prevent manually closing one of the breakers while the other is closed.

H. Assuming a loss of 125 VDC Bus 'A', breaker 9C would remain in the closed position (assuming there is no MCC-5 fault) and the automatic transfer scheme would be disabled. Assuming a subsequent loss of off-site power, emergency diesel generator 'A' would be unable to energize 4160V Bus 8 and 480V Bus 5, thus rendering MCC-5 de-energized until manual actions could be taken to open breaker 9C and close breaker 11C. This scenario is also a vulnerability in the present scheme and has been addressed as an extremely low probability by PRA. Attempts to design around this single failure vulnerability would be very difficult and costly.

The new components required for the proposed scheme are:

QTY	DEVICE
1	Agastat general purpose relay (43A)
2	Westinghouse type W2 control switches (for breakers 9C and 11C)
1	White indicating light (to indicate status of the automatic transfer feature)

The existing transfer selector switch located on compartment 10A of the 480V bus line-up would be re-used and re-labeled as 43ACO (cut-off switch for the automatic transfer scheme).

Existing timing relay 62-5B would no longer be required. Existing timing relays 62-5A and 62-6A (timing range 0.1 - 1 sec.) may be replaced with new timers (timing range 0.5 - 5 sec.) pending further discussions.

Existing and spare cell switch contacts on breakers 9C and 11C will be utilized in the new scheme. All wiring will take place within 480V switchgear compartments 9C, 10A, and 11C. Compartment 10A would house all the new devices.

Existing annunciator window G-1-9-2U "MCC-5 Auto Transfer" would no longer be required.

It is felt that the proposed scheme adequately meets the three criteria. Other design considerations included control of breakers 9C and 11C from the control room, interlocks with safety injection signal, and a stand-alone ABT switch that is not dependent on DC power. These were considered to be too complicated and/or costly.

The PRA group is presently analyzing the proposed scheme for reliability compared to the existing scheme and for the effects on overall core-melt frequency.

The proposed schedule for this EWR is as follows:

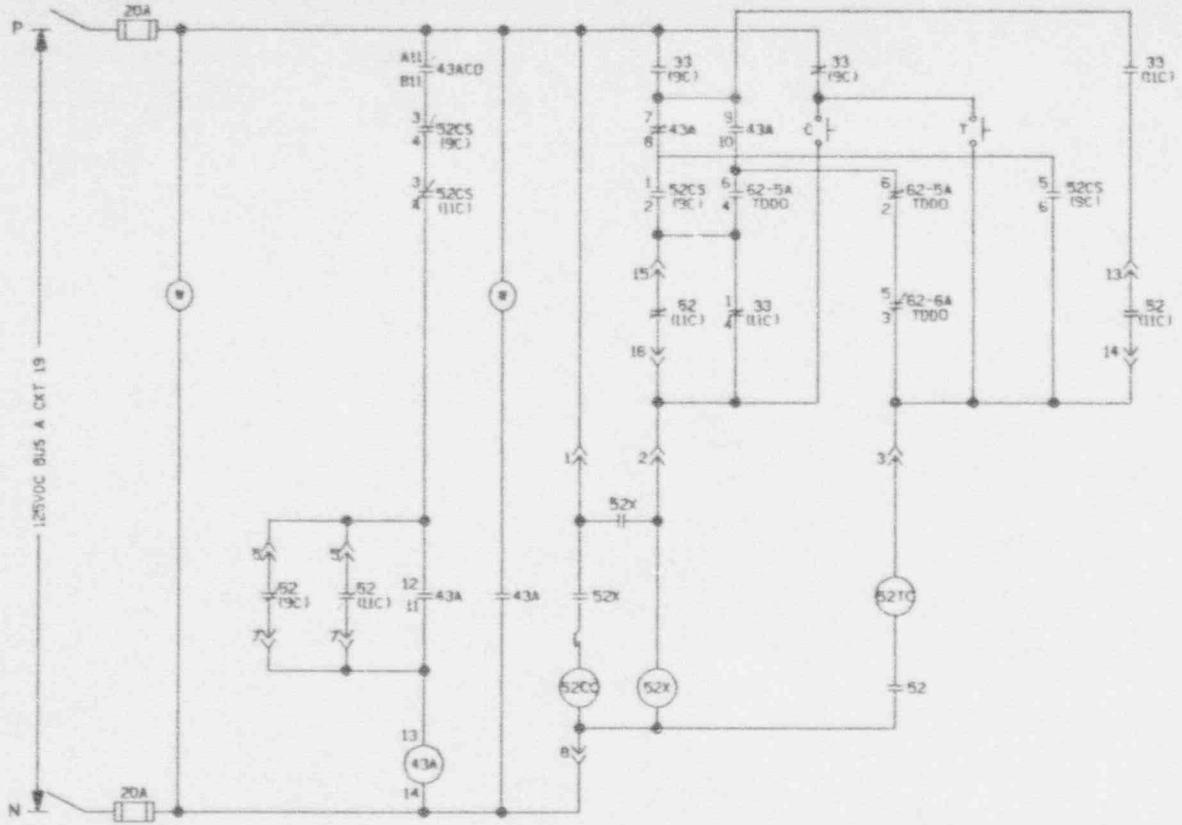
Finalize design of scheme	September 17, 1993
Drawings (Electrical and Civil) complete	October 4, 1993
PDCR to plant	October 15, 1993
Material on-site	October 22, 1993

If there are any questions regarding the proposed scheme or schedule, please contact John Lawson, extension 3151 or myself.

GRT:mpd

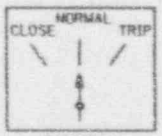
Distribution

W. H. Becker	Berlin, W010
M. H. Brothers	Connecticut Yankee
R. V. Caminati	Connecticut Yankee
D. A. Dube	Berlin, W141
J. Fortier	Connecticut Yankee
C. G. Gladding	Connecticut Yankee
W. F. Kadlec	Connecticut Yankee
J. B. Lawson	Berlin, W010
G. W. Loftus	Berlin, N028
B. P. McKenna	Connecticut Yankee
R. Morse	Connecticut Yankee
G. R. Pitman	Berlin, N028
D. J. Ray	Connecticut Yankee
J. Rothert	Berlin W-141
M. F. Samek	Berlin, N028



NOTES:

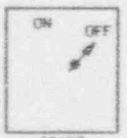
1) BREAKERS 9C AND 11C SHOWN IN OPEN RACKED-OUT POSITION
2) 43A RELAY SHOWN IN DE-ENERGIZED STATE
3) TIMERS SHOWN IN DE-ENERGIZED STATE



52CS(9C)

CONTACTS	POSITION		
	CLOSE	NORMAL	TRIP
1-2	X		
3-4		X	
5-6			X

SPRING RETURN TO NORMAL



43ACO

CONTACTS	POSITION	
	ON	OFF
A11-B11	X	

TWO POSITION MAINTAINED

Preliminary; not final

Q.A.

C.A.D.

NOTE: MANUAL REVISIONS TO THIS DOCUMENT WHEN AS-BUILT ARE PROHIBITED. REFER TO GED 3.01 FOR MANUAL REVISIONS DURING CONSTRUCTION.

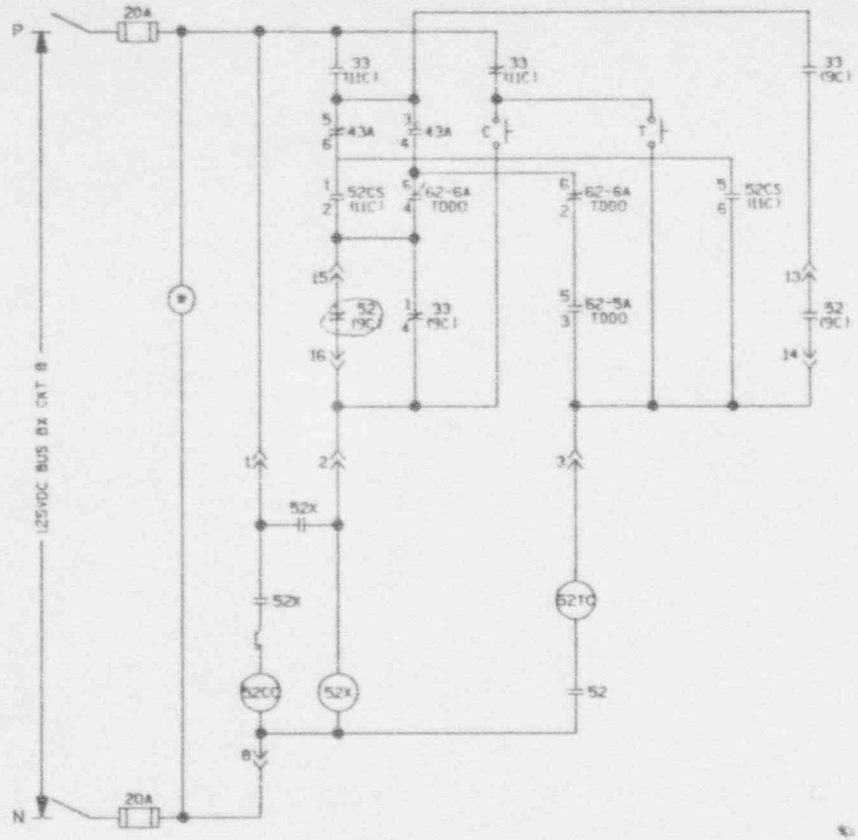
REVISIONS DURING CONSTRUCTION	P.A.*

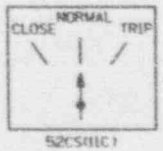
NORTHEAST UTILITIES SERVICE CO.
FOR CONN. YANKEE ATOMIC POWER CO.

TITLE: SCHEMATIC DIAGRAM
PROPOSAL FOR
480V BUS 5 BKR 9C SUPPLY TO MCC 5
HADDAM, CONNECTICUT

BY	BAB	CHKD.	APP.	APP.
DATE	9-90	DATE	DATE	DATE
SCALE	N/A	DWG. NO.		
P.A.*	N/A		SK-JBL-1	

P.A.* NO.	DATE	REVISIONS	BY	CHK'D	APP'D	APP'D





CONTACTS	POSITION		
	CLOSE	NORMAL	TRIP
1-2	X		
3-4		X	
5-6			X

SPRING RETURN TO NORMAL

NOTES:

1) BREAKERS 9C AND 11C SHOWN IN OPEN RACKED-OUT POSITION
2) 43A RELAY SHOWN IN DE-ENERGIZED STATE
3) TIMERS SHOWN IN DE-ENERGIZED STATE

Preliminary, not final

Q.A.

C.A.D.

NOTE: MANUAL REVISIONS TO THIS DOCUMENT WHEN AS-BUILT ARE PROHIBITED. REFER TO GED 3.01 FOR MANUAL REVISIONS DURING CONSTRUCTION.

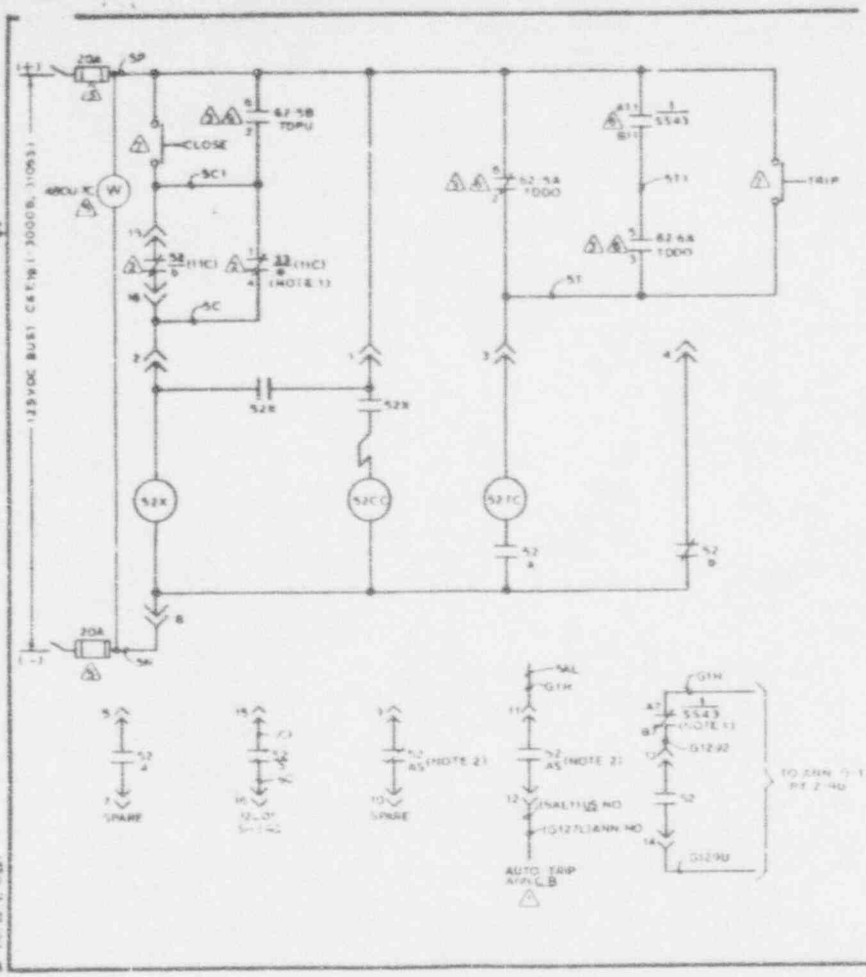
REVISIONS DURING CONSTRUCTION	P.A.*

NORTHEAST UTILITIES SERVICE CO.
FOR CONN. YANKEE ATOMIC POWER CO.

TITLE: SCHEMATIC DIAGRAM
PROPOSAL FOR
480V BUS 6 BKR 11C SUPPLY TO MCC 5
HADDAM, CONNECTICUT

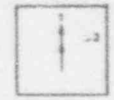
BY	BAB	CHKD.	APP.	APP.
DATE	9-93	DATE	DATE	DATE
SCALE	N/A	DWG. NO.	SK-JBL-2	
P.A.*	N/A			

BY	P.A.*	NO.	DATE	REVISIONS	BY	CHK	APP'D



CONTACTS	POSITION		LOCATION
	1	2	
A11 - B11		X	THIS DWG
A12 - B12	X		△4
A1 - B1		X	SPARE
A5 - B5		X	SPARE
A6 - B6	X		△4
A7 - B7		X	THIS DWG
C11 - D11	X		SPARE
C12 - D12		X	SPARE
C1 - D1	X		SPARE
C5 - D5	X		SPARE
C6 - D6		X	SPARE
C7 - D7	X		SPARE

1/SS 43 △5



WESTINGHOUSE CO W2
505A621G01
2 POSITION MAINTAINED

NOTES

1. CELL SW CLOSED WHEN BKR 11C IN TEST POSITION OR RACKED OUT
2. OPERATES ON OVERCURRENT (MANUAL RESET)

REFERENCE DRAWINGS

△7 16103-31034 W/D EXT CONN DIAG 480V SWGR UNITS 8 & 9
16103-30004 SH1 480V ONE LINE BUS 4, 5, 6, 7
△1 16103-32112 SH 62 SCHEM DIAG ANN G1
△2 16103-31035 W/D EXT CONN DIAG 480V SWGR UNIT 10
△2 16103-31036 W/D EXT CONN DIAG 480V SWGR UNITS 11 & 12
△4 16103-32001 SH6DG POT CKTS BUS 4, 5, 6 & 7
△4 16103-32001 SH6AD SCHEM DIAG 480V BUS 6 BKR 11C SUPPLYS MCC5
△5 16103-31033 EXT CONN 480V SWGR UNIT 7

SUPERSEDES STONE & WEBSTER DWG 10899 ESK-6AF NUSCO DWG 16103-32001 SH6AF

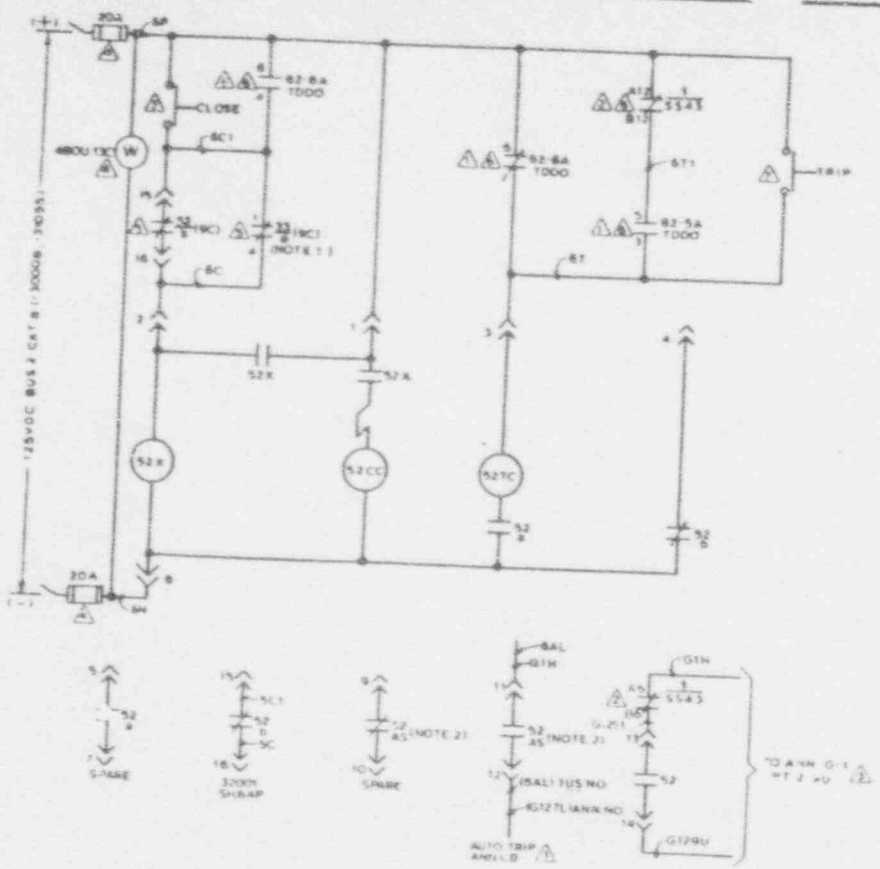
REVISIONS DURING CONSTRUCTION	P & B

	NO	DATE	REVISIONS
N/A	4	2-92	AS BUILT PER PDCE 89405 DCR CY-S-475-89
N/A	3	5-4-85	AS BUILT PER DCR CY-P-133-84
N/A	2	3-84	DWG UPDATE PER DCR-CY-P-004-84
N/A	1	9-83	DWG SUBMITTAL PER DSR CY-S-011-83

NORTHEAST UTILITIES SERVICE CO.
CONN YANKEE ATOMIC POWER CO.

SCHEMATIC DIAGRAM
480V BUS 5 BKR 9C SUPPLY TO MCC5
HADDAM CONN

DR: CM RAUZA — DATE 9-29-83
DWG NO 16103-32001 SH 6AP



NOTES

1. CELL SW CLOSED WHEN BKR 9C IN TEST POSITION OR RACKED OUT
2. OPERATES ON OVERCURRENT/MANUAL RESET

REFERENCE DRAWINGS

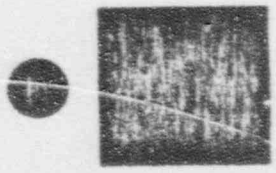
- 16103-31035 EXT CONN 480V SWGR UNIT 10
- 16103-30004 SH1 480V ONE LINE BUS 4,5,6,7
- 16103-31036 EXT CONN DIAG 480V SWGR UNIT 11-12
- 16103-32001 SH6DG POT CKTS BUS 4,5,6 & 7
- 5903-32001 SH6AP SCHM DIAG 480V MCC5 BUS 5 BUS 9C
- 16103-32112 SH 62 SCHEM DIAG ANN G1
- 16103-31037 EXT CONN 480V SWGR UNIT 13
- 16103-31034 EXT CONN 480V SWGR UNITS 8 & 9

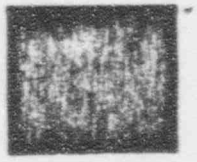
SUPERSEDES STONE & WEBSTER DWG 10699
ESK-6AF NUSCO DWG 16103-32001 SH6AF

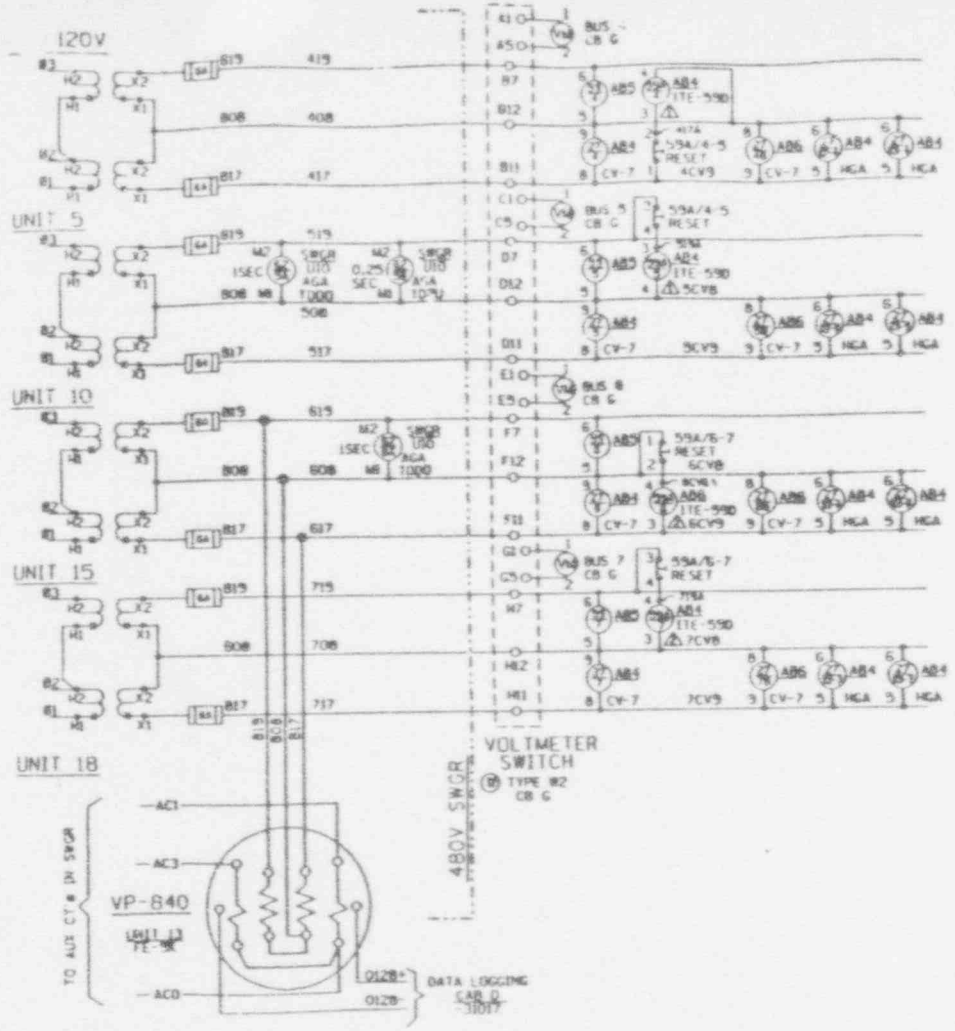
REVISIONS DURING CONSTRUCTION

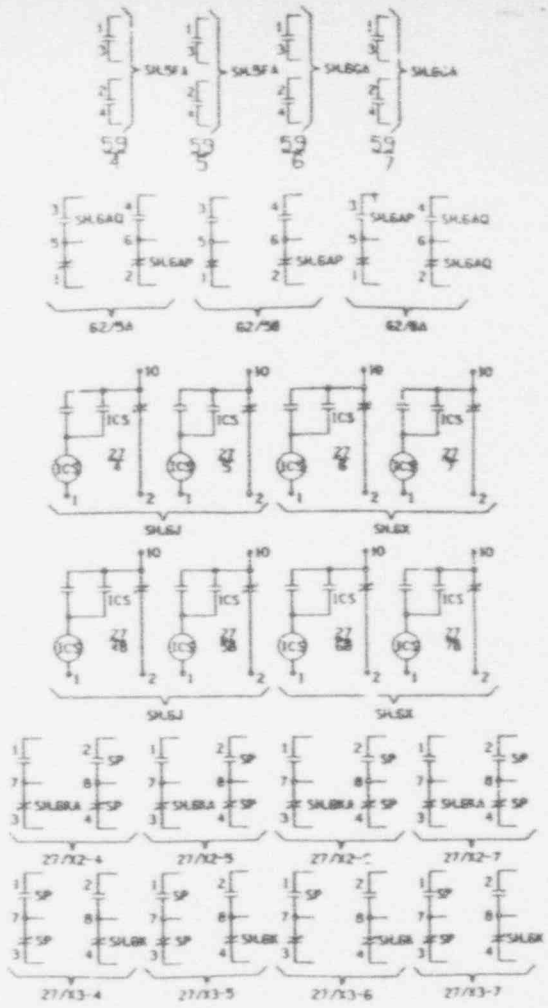
N/A	Y	3	AS BUILT PER DCR C1-P-133-84	XX	
N/A	1	4	AS BUILT PER DCR C1-P-133-84	XX	
N/A	2	3	DWG UPDATE PER DCR C1-P-104-84	XX	
N/A	1	2	DWG SUBMITTAL PER DWGS 11178-8		

NORTHEAST UTILITIES SERVICE CO
CONN YANKEE ATOMIC POWER CO
SCHEMATIC DIAGRAM
480V BUS 6 BKR 11C SUPPLY TO MCC5
HADDAM CONN









REFERENCE DRAWINGS:

16103-30004 SH.1 480V ONE LINE BUS 4,5,6,7
-31031 WIRING 480V SWGR UNIT NO.5
-31035 WIRING 480V SWGR UNIT NO.10
-31037 WIRING 480V SWGR UNIT NO.13
-31039 WIRING 480V SWGR UNIT NO.15
-31041 WIRING 480V SWGR UNIT NO.18
-31083 SH.4 WIRING AUX BD NO.4
-31083 SH.5 WIRING AUX BD NO.5
-31083 SH.6 WIRING AUX BD NO.6
-31083 SH.8 WIRING AUX BD NO.8
⚠ -32001 SH.6JA - 480V UNDV. "A"
⚠ -32001 SH.6XA - 480V UNDV. "B"

NOTES:

REDRAWN FROM NUSCO DWG. 16103-32001 SH.6DG, REV. 4

C.A.D.

NOTE: MANUAL REVISIONS TO THIS DOCUMENT WHICH AS-BUILT ARE PROHIBITED. REFER TO GED LOG FOR MANUAL REVISIONS DURING CONSTRUCTION.

Q.A.

REVISIONS DURING CONSTRUCTION | P.A.*

NORTHEAST UTILITIES SERVICE CO.
FOR CONN. YANKEE ATOMIC POWER CO.

TITLE: 480V AC ELEMENTARY POTENTIAL CKTS. BUS 4,5,6,7
HADDAM, CONN.

DRAWN JWT | DES. | SUP. | APP. REP
DATE 10-27-78 | DATE 10-31-78 | DATE | DATE 2-7-79
SCALE NONE | DWG. NO. 16103-32001 SH.6DG
P.A.* NONE

REVISIONS

NA 6 | NA 5 | P.A.* NO.

Ref. D.3

FORM A

PDCR SUMMARY
(Scope of Plant Design Change)

PDCR No. 1434 Rev. No. 1

PDCR Short Form follows: Yes ☐ No ☒

TITLE:
MCC-5 Automatic Bus Transfer Re-Design

PLANT: Connecticut Yankee	***SYSTEM NAME/NO.:*** 480V AC
LEAD DISCIPLINE: CY-Electrical Design Engineering	***PA NO.:*** EWR 93-MS104
PROJECT ENGINEER: G. Townsend/G. Silberquit	***PLANT ENGINEER:*** B. McKenna

☒ QA (Cat. I, RWQA, FPQA, ATWS QA, SBQA) ☐ Non-QA

1. PROPOSED PLANT DESIGN CHANGE (OR REVISION) (Reference Instruction 4.1.1)

Re-design the 480V MCC-5 Automatic Bus Transfer (ABT) scheme. The major features of the new scheme are:

- 480V Bus 5 breaker 9C (supply from Bus 5 to MCC-5) will be the selected breaker to normally supply MCC-5.
- Upon a total loss of offsite power, MCC-5 will be energized from the first available source and remain aligned to it, unless the source is subsequently lost or operators take manual control to re-transfer.

No additional relays or switches will be added to the present ABT breaker control scheme; spare contacts from existing devices will be utilized. One additional terminal block will be installed in compartment 10A.

Timing relays 62-5A and 62-6A will be replaced with similar type relays with the exception that the timing range is different.

399YY7X.07M

Existing timing relay 62-5B will be removed from service. Existing SS43 selector switch will be removed from service. Existing electrical 'close' and 'trip' pushbuttons mounted on the 9C & 11C breaker compartments will be removed from service.

Main control board annunciator window G-1-2-9U "MCC-5 Auto Transfer" will be re-labeled "MCC-5 Transfer to Bus 6".

2. REASON FOR PROPOSED PLANT DESIGN CHANGE (OR REVISION) (Reference Instruction 4.1.2)

Testing of the present scheme that was performed during the Cycle 17 refueling outage uncovered vulnerabilities and design deficiencies. (Reference PIR No. 93-139 "Loss of MCC-5"). Specifically, the present scheme allows for the tripping of a "preferred" circuit breaker and subsequent re-closing. This places unnecessary challenges to the breaker operation. Additionally, the scheme allows for a fast transfer from one division source to another, which could result in undesirable transients. Also, the "preferred" source design needlessly trips a stable source and challenges breaker operation.

As a result of the above PIR No. 93-139, and in order to conclude the Cycle 17 refueling outage, operational testing of the existing control scheme was committed to be performed during Cycle 18 [Design Input 7]. Recent performance on February 15 & 16, 1994 of this test found unsatisfactory ABT responses:

1) The breakers failed to automatically energize MCC-5 with the selector swith in Position No.2 (Reference PIR 94-28, "Failure of MCC-5 ABT.) *Failure of the scheme in this configuration was identified in the Root Cause Analysis performed as a result of PIR 93-139*, and,

2) The scheme failed to energize MCC-5 with the selector switch in Position No.1.

The original design proposed by revision No. 0 of this PDCR was subsequently reviewed to identify those minimum [and therefore simpiest] features needed for the transfer scheme to perform its design function, and delete from this modification those aspects [currently installed aswellas proposed in Revision No. 0] which are not considered required, taking into account operational, surveillance and maintenance requirements.

The new scheme will be more reliable in that there are less challenges to breaker operations. The new scheme also reduces the overall core melt frequency and, thus, has a positive impact on corporate nuclear safety goals.

FORM B

PLANT DESIGN CHANGE RECORD

PDCR No. 1434 Rev. No. 1

3. DESIGN CHANGE DESCRIPTION (Reference Instructions 4.2.2 and 4.2.3)

Attach documentation for each part below, including a copy of a project description if appropriate.

Ensure Director of Nuclear Training is notified and provided with appropriate information.

3A. BASES OF CURRENT DESIGN (See Instruction 4.2.3.1)

The existing scheme utilizes a selector switch mounted on the door of compartment 10A of the 480V Bus switchgear line-up in Switchgear Room 'A'. The three timing relays used in the scheme are located in compartment 10A.

480V Bus 5 breaker 9C is chosen via the selector switch as the "preferred" source to energize MCC-5. 480V Bus 6 breaker 11C is the alternate source. Upon a loss of offsite power breaker 9C would trip one second later. The emergency diesel generators would automatically start on the loss of offsite power. If Bus 5 becomes energized before Bus 6 then breaker 9C would re-close and breaker 11C would remain open. If Bus 6 is energized before Bus 5 then breaker 11C would close. Upon the subsequent energizing of Bus 5, breaker 11C would open and 0.25 seconds later breaker 9C would close.

Bus 6 breaker 11C can be chosen as the "preferred" source via the selector switch, and thus, Bus 5 breaker 9C would be the alternate source. (Note: This is not the normal alignment.) Under this alignment, upon a loss of offsite power, breaker 11C would trip one second later. The emergency diesel generators would automatically start on the loss of offsite power. If Bus 6 becomes energized before Bus 5 then breaker 11C would re-close and breaker 9C would remain open. If Bus 5 is energized before Bus 6, then breaker 9C would close. Upon the subsequent energizing of Bus 6, breaker 9C would open and breaker 11C would close simultaneously. This portion of the transfer scheme is not desired since the bus transfer would most likely take place during an out-of-phase condition.

Mounted on each circuit breaker compartment door are two pushbutton switches that are used to electrically control the circuit breaker.

An electrical breaker interlock scheme prevents the closure of one breaker while the other breaker is closed. In addition, an interlock exists which maintains a breaker close signal on one breaker while the other breaker is in the test or racked-out position.

3B. METHOD OF CHANGE (See Instruction 4.2.3.2)

The existing selector switch located on compartment 10A of the 480V Bus switchgear line-up will no longer be required, will be disconnected and either abandoned-in-place or removed. Any wiring that needs to be used from this selector switch will be landed on a new terminal block.

Existing timing relay 62-5B located in compartment 10A will no longer be required and will be disconnected and either abandoned-in-place or removed.

The existing 62-6A & 62-5A time-delay relays will be replaced with similar devices that have a different setting range. Spare contacts from these devices will be used to achieve the desired control scheme.

All wiring will take place within 480V switchgear compartments 9C, 10A, and 11C.

Existing annunciator window G-1-2-9U "MCC-5 Auto Transfer" will be relabeled "MCC-5 Transfer to Bus 6," signifying that an automatic *or manual* MCC-5 feeder transfer has occurred.

3C. DESIGN INPUTS (See Instruction 4.2.3.3)

1. Connecticut Yankee Updated Final Safety Analysis Report, sections 8.3.1.1.2 "480V System Description," 8.3.1.4 "Independence of Redundant Systems."

2. IEEE 344-1987, Recommended Practice for Seismic Qualification of Class 1E Equipment for Nuclear Power Generating Stations.

3. IEEE 383-1974, Standard for Type Test of Class 1E Electric Cables, Field Splices, and Connections for Nuclear Power Generating Stations.

4. NUSCO Calculation No. PA 76-633-40-GE, Rev. 5 "CY-Degraded Voltage Setpoints."

5. Electrical Separation Study: CY ISAP Topic #1.64 "System Dependencies on Motor Control Center 5," Rev. 0, Attachment A, dated March 1990.

6. NUSCO Calculation No. PA 78-741-01-GE, Rev. 3, "CY-Diesel Generator Automatic Loading Analysis," Attachment "P" - Motor Starting Study.

7. NU to USNRC Correspondence, "Commitments to Test Motor-Control-Center 5," COTRAP #B14550, dated July 15, 1993.

8. Root Cause Determination, "MCC-5 Auto-Bus Transfer Failure," associated with PIR 93-139, dated August 2, 1993.

9. USNRC AIT Report Regarding Two Loss of Offsite Power Events and the Loss of Motor Control Center 5," USNRC Report No. 50-213/93-80, dated August 16, 1993.

10. Haddam Neck Technical Specification Revision to section 3/4.8.3, COTRAP #B14572, dated August 18, 1993

11. Plant Procedure, Special Test ST 11.7-126, rev. 1, "Functional Test of MCC-5 ABT", performed under Maintenance AWO 93-11505 & 94-1445.

3D. DETAILED DESIGN (See Instruction 4.2.3.4)

The most obvious change resulting from this modification is the removal of the Preferred Source selector switch. It is the intention of this modification to administratively align Bus 5 as the normal source bus for MCC-5 (see below). By removing this switch, the ability to automatically re-transfer MCC-5 back to Bus-5 after it is aligned to Bus 6 is removed. The transfer scheme will seek to align MCC-5 to whichever Bus re-energizes first, as a result of a total loss-of-offsite power. The only means to disable the control scheme for the MCC-5 feeder breakers is to de-energize the DC control power associated with the 9C and/or 11C breaker. This will also be discussed later. All other facets of this modification, except for the rewording of the annunciator window, shall be transparent to the operator.

The new scheme does not utilize a "preferred" source in which the scheme always aligns to the preferred source as long as it is available. The new scheme will administratively align MCC-5 to Division 'A' 480V Bus 5 breaker 9C, since the 'A' electrical division is normally less loaded than the 'B' electrical division (Ref. Design Input 4), and it is preferred from a PRA perspective in that there are currently no cases where redundant equipment (notably MOVs) are powered by MCC-5 and 'A' electrical division MCC-13 (Ref. Design Input 5). This selected alignment will be administratively controlled and documented in applicable plant procedures.

With breakers 9C and 11C in the racked-in position and the 9C breaker closed, the breakers and breaker control scheme is considered in the 'normal configuration'.

Two of the existing time-delay drop-out timing relays will be replaced for the new scheme. The 62-5A relay is connected to a 480-120V potential transformer (PT) on Bus 5, and the 62-6A relay is connected to a 480-120V PT on Bus 6. The new relays are similar to the existing ones, with the one exception that the timing range is changed from 0.1-1.0 seconds to 0.5-5.0 seconds. A 1.0 second time delay will continue to be utilized on the 62-5A relay. The 62-6A will be set at .75 second, thereby assuring that the ABT scheme remains aligned to Bus 5 with no breaker operation, when responding to the expected total loss of offsite power event. A basis of this design is that a total loss of offsite power will result in the simultaneous loss of both Bus 5 & Bus 6.

The timing relays are picked-up when the respective 480V bus is energized. When the bus is de-energized, the relay coil drops out after reaching the preset time delay. (The one-second time delay for an automatic bus transfer from Bus 5 to Bus 6 is sufficient to allow voltage transients to subside.) Upon re-energizing of the bus, the relay coil picks up immediately. The 120VAC relay coil is rated to pick up at 85% voltage and to drop out at approximately 50% voltage. This drop-out rating, in combination with the one-second time delay, is sufficient to ensure that nuisance transfers will not take place during worst-case motor starting transients (Ref. Design Input 6).

With the new scheme in-service, and assuming a total loss of off-site power, breaker 9C will remain closed. Upon a total loss of offsite power, both the 62-5A and 62-6A relays will begin timing out. At time equal to .75 seconds after the initial loss of power, the 62-6A relay will drop-out and transmit a trip signal to the 11C breaker. The 62-6A contact in the 9C breaker

trip circuit will open, thereby blocking any trip of the 9C breaker. At time equals 1 second after the initial loss of power, the 62-5A relay will drop-out, its contact in the 9C breaker's trip circuit will close, but because of the series open contact of the 62-6A, the trip circuit will not power the 9C trip coil, thereby assuring that the 9C breaker remains closed. Once the emergency diesel generators start:

- If Bus 5 is energized before Bus 6, MCC-5 remains supplied from Bus 5. There is no needless tripping of breaker 9C and subsequent re-closing, since the breaker remained closed.

- If Bus 6 is energized before Bus 5, breaker 9C will trip and 480V Bus 6 breaker 11C (supply from Bus 6 to MCC-5) will close and energize MCC-5, and remain in this alignment. The only way there would be an automatic transfer back to Bus 5 is if there was a loss of power on Bus 6 while Bus 5 was energized. A subsequent total loss of AC to Bus 5 and Bus 6 after MCC-5 was aligned to Bus 6 will result in both breakers tripping open [after the appropriate time delay], and the control scheme is set to re-energize MCC-5 from whichever bus re-energizes first.

Note: If Division "A" were to lose power first (Time T = 0) and Division "B" lost power after .25 sec. (.25< T ≤1 sec.), then at T = 1 sec. breaker 9C would trip and breaker 11C would close. Assuming Bus 5 is energized before Bus 6, breaker 11C would trip and breaker 9C would re-close.

Assuming a loss of power on Bus 5 only, breaker 9C would trip one second later and breaker 11C would close.

Assuming a loss of power on Bus 6 only, breaker 9C would remain closed.

When steps are taken to restore the normal line-up [MCC-5 fed from Bus 5], the operator would take manual control by disabling the breakers' control scheme.

The scheme will prevent manually closing one of the breakers while the other is closed, by using breaker interlocks in the control schemes. The scheme will include a feature to maintain a breaker close signal on one breaker when the other breaker is in the test or racked-out position.

The proposed design contains no direct, external electrical control of the breakers. Utilizing the mechanical breaker control to trip the 11C breaker will then automatically close the 9C breaker, as it is currently designed. Because there would be no time delay in this operation, MCC-5 is susceptible to extreme voltage excursions through this transfer, levels of which could possibly overstress the energized loads. Station procedures will be revised, therefore, to identify the steps necessary to realign MCC-5 to Bus 5 after being transferred to Bus 6, or whenecer it is desired to remove a breaker from service. These steps will instruct the operator to first de-energize the DC control power for the breaker that will be closed (transferred to), trip open the breaker to be removed from service, and after an obvious time delay (approximately one (1) second), manually close the desired breaker, and then restore the DC control power previously disabled. This delay in re-energizing MCC-5 allows all residual voltages to decay to an acceptable level prior to being re-excited.

Assuming a loss of 125 VDC Bus 'A', breaker 9C would remain in the closed position (assuming there is no MCC-5 fault). Assuming a subsequent loss of off-site power, emergency diesel generator 'A' would be unable to automatically energize 4160V Bus 8 (due to no 125 VDC control power for the diesel generator breaker) and therefore, at 480V Bus 5, thus rendering MCC-5 de-energized until manual actions could be taken to open breaker 9C and close breaker 11C. This scenario is also a single failure vulnerability in the present scheme and has been addressed as an extremely low probability by Probabilistic Risk Assessment Group.

As with the existing scheme, relay and breaker auxiliary contacts from both divisions are used in a common circuit for the scheme to operate properly.

All wiring will be qualified to the flame test requirements of IEEE 383-1974 (Design Input 3).

The following disciplines provided support in this design change: CY Design Engineering, CY Systems Engineering, CY Electrical Maintenance, Generation Test Services, and Probabilistic Risk Assessment Group. Northeast Utilities Memorandum PSCY-93-199 dated August 30, 1993 to distribution from G. R. Townsend, "CY EWR No. 93-MS104 'MCC-5 Automatic Bus Transfer (ABT) Re-Design'" (copy attached) also documents the early development of this re-design effort for Revision No. 0 of the PDCR.

Drawings issued for this modification are listed in Attachment 3D.

3E. IMPLEMENTATION PLAN (See Instruction 4.2.3.5)

The installation will be performed in accordance with approved design drawings and using NUSCO Specification SP-EE-076, "Standard Specification for Electrical Installations at all Northeast Utilities Generating Plants," Rev. 5, as a guide.

CY Electrical Maintenance or their designee is responsible for all installations, removals, and wiring. Panel re-work shall be performed in accordance with existing plant procedures and design drawings.

Wires that are abandoned in-place will be done so and labeled in accordance with CY Procedure ACP 1.0-35 "Permanently Lifted Leads."

All work will be performed with the reactor plant in Mode 5.

3F. TEST PLAN (See Instruction 4.2.3.6)

CY Electrical Maintenance or their designee is responsible for all electrical testing associated with this PDCR.

The new installed cables shall be tested for continuity.

The new scheme will be tested in accordance with CY Procedure ACP 1.2-3.8 "Electrical Wiring Verification, Functional Testing, and Scheme Verification," and special test procedure ST 11.7-126, "Functional Test of MCC-5 ABT".

Post installation testing shall be performed first by replicating the signals into the control scheme to show that it functions as expected. MCC-5 shall be jumpered to an un-affected source of power during the performance of this testing so as to minimize the impact testing has on plant operations. An integrated test will then be performed to validate the modified control scheme to verifying that given a loss of Bus 5 and/or Bus 6: No breaker action occurs when Bus 5 is re-energized first; MCC-5 will automatically transfer to Bus 6 when it is available before Bus 5; and to verify that MCC-5 does not automatically re-transfer back to Bus 5 once it is aligned to Bus 6, unless Bus 6 subsequently becomes de-energized following an initial transfer.

Distribute copies of the completed form in accordance with Section 4.1.4.

3G. QUALITY QUESTIONS (See instruction 4.2.3.7)

Does this plant design change involve systems, components, or structures that are:

	Yes	No
QA Category I	☒	☐
Radwaste QA	☐	☒
Fire Protection QA	☐	☒
ATWS QA	☐	☒
Station Blackout QA	☐	☒

Initiate and complete MEPL Determination Form(s) per NEO 6.01 if necessary.

	Yes	No
MEPL Determination Required	☐	☒

IF yes, list determination number(s):

Verify MEPL determination completed prior to construction.

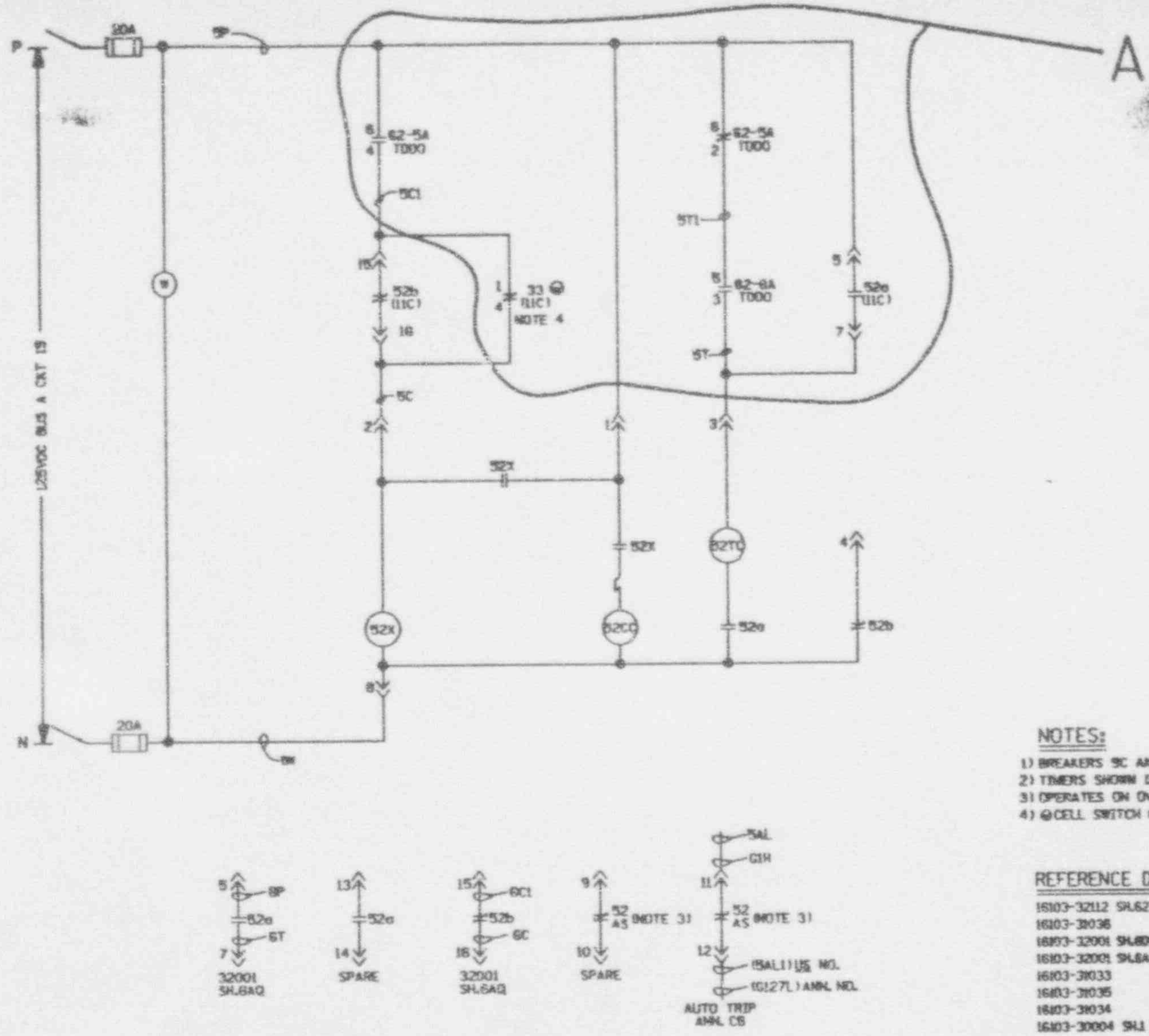
4. EARLY APPROVAL FOR CONSTRUCTION (Reference Instruction 4.10.1)

Yes ☐ N/A ☒

If yes, describe the allowed scope of work. Attach the safety assessment and note any restrictions on construction as a result of incomplete design, design reviews, design verification, and/or safety evaluation.

Approved _____ Date _____

NUPOC Director



NOTES:

1) BREAKERS 5C AND 11C SHOWN IN OPEN RACKED-OUT POSITION
2) TIMERS SHOWN IN DE-ENERGIZED STATE
3) OPERATES ON OVERCURRENT (MANUAL RESET)
4) @CELL SWITCH CLOSED WHEN 11C BREAKER IS IN TEST OR RACKED-OUT

REFERENCE DRAWINGS:

16103-32112 SH.62	SCHEM. DIA. ANN G1
16103-31036	WIRING DIA. EXT. CONN. DIA. 480V SWGR UNITS 11 & 12
16103-32001 SH.6DG	POT CIRCUITS BUS 4,5,6 & 7
16103-32001 SH.6AQ	SCHEM. DIA. 480V BUS 6 BKR 6C SUPPLY TO MCC5
16103-31033	EXT. CONN. 480V SWGR UNIT 7
16103-31035	WIRING DIA. EXT. CONN. DIA. 480V SWGR UNIT 10
16103-31034	WIRING DIA. EXT. CONN. DIA. 480V SWGR UNITS 8 & 9
16103-30004 SH.1	480V ONE LINE BUS 4,5,6,7

PAGE 13 OF 25 A

AFTER CHANGES

Q.A.

REDRAWN FROM 16103-32001 SH.6AP REV.4

C.A.D.

NOTE: MANUAL REVISIONS TO THIS DOCUMENT WHEN AS-BUILT ARE PROHIBITED. REFER TO GED 3.01 FOR MANUAL REVISIONS DURING CONSTRUCTION.

REVISIONS DURING CONSTRUCTION — ESR EWR# 93-MS104

A — ISSUE FOR CONSTRUCTION PER DCY-S-0576-93 — LC

MCC-5 AUTOXFER PROJECT

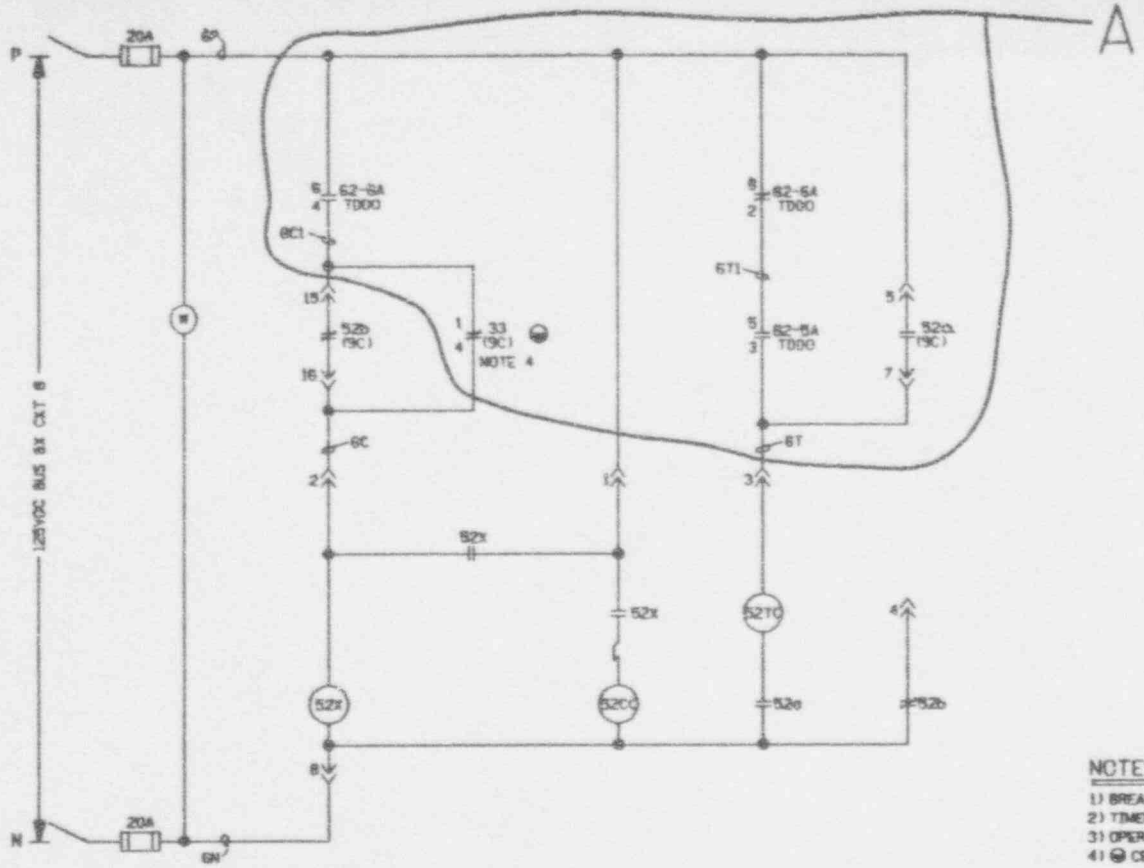
NORTHEAST UTILITIES SERVICE CO.

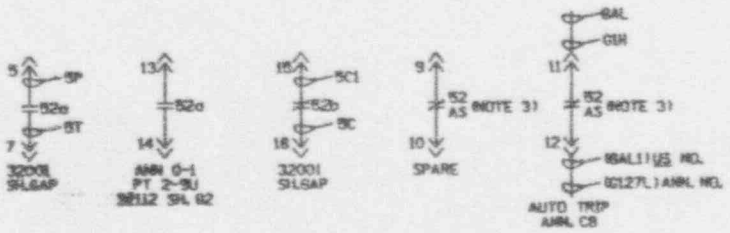
FOR CONN. YANKEE ATOMIC POWER CO.

TITLE: SCHEMATIC DIAGRAM 480V BUS 5 BKR 5C SUPPLY TO MCC 5 HADDAM, CONNECTICUT

DWG. NO. 16103-32001 SH.6AP

REVISIONS





NOTES:

1) BREAKERS 9C AND 11C SHOWN IN OPEN RACKED-OUT POSITION
2) TIMERS SHOWN IN DE-ENERGIZED STATE
3) OPERATES ON OVERCURRENT (MANUAL RESET)
4) ⊖ CELL SWITCH CLOSED WHEN 9C BREAKER IS IN TEST OR RACKED-OUT

REFERENCE DRAWINGS:

16103-32112 SH.62	SCHEM. DIA. ANN 01
16103-31036	WIRING DIA. EXT. CONN. DIA. 480V SWGR UNITS 11 & 12
16103-32001 SH.6DG	POT CIRCUITS BUS 4,5,6 & 7
16103-32001 SH.6AQ	SCHEM. DIA. 480V BUS 6 BKR 11C SUPPLY TO MCC5
16103-31033	EXT. CONN. 480V SWGR UNIT 7
16103-31035	WIRING DIA. EXT. CONN. DIA. 480V SWGR UNIT 10
16103-31034	WIRING DIA. EXT. CONN. DIA. 480V SWGR UNITS 8 & 9
16103-30004 SH.1	480V ONE LINE BUS 4,5,6,7

A

PAGE 15 OF 25

AFTER CHANGES

Q.A.

RETRAWN FROM 16103-32001 SH.6AQ REV.4

C.A.D.

NOTE: MANUAL REVISIONS TO THIS DOCUMENT WHEN CAD-BUILT ARE PROHIBITED. REFER TO GED 3.01 FOR MANUAL REVISIONS DURING CONSTRUCTION.

REVISIONS DURING CONSTRUCTION								DRAWN EWR●93-MS104
A	ISSUE FOR CONSTRUCTION PER ECY-5-0576-93							
BASIS AUTHORIZED CHANGE(S)								

NORTHEAST UTILITIES SERVICE CO.
FOR CONN. YANKEE ATOMIC POWER CO.

TITLE: SCHEMATIC DIAGRAM 480V BUS 6 BKR 11C SUPPLY TO MCC 5 HADDAM, CONNECTICUT

BY	CHKD.	APP.	APP.
DATE 9-93	DATE	DATE	DATE
SCALE N/A	DWG. NO. 16103-32001 SH.6AQ		

NO.	P.A.*	NO.	DATE	REVISIONS	BY	CHKD	APP'D	APP'D

P.A.* N/A

FIGURE 7.2 - SAFETY EVALUATION FORMAT

(Use Attachment 8.A for Guidance)

Safety Evaluation Number N/A Revision No. N/A

Plant Change Number 1434 Revision No. 1

Plant Change Title CY-MCC-5 Automatic Bus Transfer Re-Design

1.0 SUMMARY INFORMATION

1.1 Safety Evaluation Conclusions

This Safety Evaluation concludes that the re-design of the MCC-5 Automatic Bus Transfer (ABT) scheme is not an unreviewed safety question and it is safe.

1.2 Description of the Change

The plant design change performs a re-design of the control schemes for 480V Bus 5 breaker 9C and 480V Bus 6 breaker 11C. These two breakers and their control schemes comprise the ABT scheme for supplying power to Class 1E 480V Motor Control Center MCC-5. The major features of the new scheme are:

- 480V Bus 5 breaker 9C (supply from Bus 5 to MCC-5) will be the selected breaker to normally supply MCC-5.
- Upon a total loss of offsite power, MCC-5 will be energized from the first available source and remain aligned to it, unless the source is subsequently lost or operators take manual control to re-transfer.

Timing relays 62-5A and 62-6A will be replaced with similar type relays with the exception that the timing range is different.

The existing selector switch will be no longer be required.

Existing timing relay 62-5B will no longer be required.

Existing annunciator window G-1-9-2U "MCC-5 Auto Transfer" will be relabeled "MCC-5 Transfer to Bus 6," signifying that MCC-5 been transferred to Bus 6, the off-normal position.

All wiring will take place within 480V switchgear compartments 9C, 10A, and 11C.

The new scheme will normally align MCC-5 to Division "A" 480V Bus 5 breaker 9C

through adminisratively control, since the "A" electrical division is normally less loaded than the "B" electrical division, and it is preferred from a probabilistic risk assessment perspective (Reference 1.5.2).

With breakers 9C and 11C in the racked-in position, and breaker 9C closed, the MCC-5 ABT Scheme is considered in its normal configuration.

Assuming a total loss of off-site power, breaker 9C will remain closed. (See Note below for exception.) Once the emergency diesel generators start and energize their respective 4 kV & 480 V Buses:

- If Bus 5 is energized before Bus 6, MCC-5 remains supplied from Bus 5. There is no needless tripping of Breaker 9C and subsequent reclosing, since the breaker remained closed.

- If Bus 6 is energized before Bus 5, breaker 9C will trip and 480V Bus 6 Breaker 11C (supply from Bus 6 to MCC-5) will close and energize MCC-5, and remain in this alignment. The only way there would be a re-transfer back to Bus 5 is if there was a loss of power on Bus 6 while Bus 5 was energized; or if operators took the steps to manually transfer back to Bus 5.

  Note: If Division "A" were to lose power first (Time T = 0) and Division "B" lost power within the following one second ($0 \leq T \leq 1$ sec) then at T = 1 second breaker 9C would trip and breaker 11C would close. Assuming Bus 5 is energized before Bus 6 then breaker 11C would trip and breaker 9C would re-close. Only in this low probability scenario would the new scheme work like the existing scheme in which a breaker opens and subsequently re-closes.

Assuming a loss of power on Bus 5 only, breaker 9C would trip one second later and breaker 11C would close.

Assuming a loss of power on Bus 6 only, breaker 9C would remain closed and aligned to MCC-5.

The scheme will prevent manually closing one of the breakers while the other is closed, by using breaker interlocks in the control schemes.

All of the re-work will be performed in Switchgear Room 'A' which is a non-harsh environment, thus there are no EEQ concerns.

All new safety-related components will be seismically qualified by either test or analysis.

1.3 Aspects of the Change Evaluated

The electrical aspects of the change are being evaluated compared to the existing scheme.

1.4 Malfunctions Evaluated

The equipment malfunction evaluated is a breaker failing to close when called upon to energize MCC-5.

1.5 References

1.5.1 CY PDCR 1434, Rev. 1, "MCC-5 Automatic Bus Transfer Re-Design."

1.5.2 Electrical Separation Study, Connecticut Yankee ISAP Topic #1.64, "System Dependencies on Motor Control Center 5," by D. A. Dube, NUSCO Probabilistic Risk Assessment.

2. UNREVIEWED SAFETY QUESTION DETERMINATION

2.1 Impact on Previously Evaluated Accidents

2.1.1 List of Accidents Evaluated

The list of Licensing Basis Accidents for CY as shown in Figure A.3 of NEO 3.12, Rev. 7 has been considered. From this list, a loss of offsite power event is evaluated.

Although it is not a Licensing Basis Accident, a loss of DC power event is also evaluated.

2.1.2 Effect on the Probability of Occurrence of Previously Evaluated Accidents (A.4.1)

There is no increase in the probability of occurrence of previously evaluated accidents as a result of this change.

The re-designed control scheme for breakers 9C and 11C does not create or result in an accident.

2.1.3 Effect on the Probability of Occurrence of a Previously Evaluated Malfunction of Equipment Important to Safety (A.4.2)

The new scheme does not initially trip breaker 9C on a total loss of offsite power. Thus, the breaker is not challenged to re-close. As described in Section 1.2, breaker 9C will trip only if Bus 6 becomes reenergized before Bus 5. With the existing scheme, the Breaker supplying MCC-5 will always trip upon the loss of power and will re-close if it's bus is re-energized first. Since the new scheme does not challenge breaker operation for every loss of power scenario, there is actually a decrease in the probability of occurrence of a breaker failing to close to energize MCC-5.

2.1.4 Effect on the Consequences of the Previously Evaluated Accidents (A.4.3)

The result of this modification does not change the consequences of the previously evaluated accidents. A postulated loss of offsite power event would automatically start both emergency diesel generators. If one diesel generator were to fail, MCC-5 would automatically align to the associated 480V bus of the diesel generator that did not fail.

Assuming a loss of 125 VDC Bus "A," breaker 9C would remain in the closed position (assuming there is no MCC-5 fault) and the automatic transfer scheme would be disabled. Assuming a subsequent loss of off-site power, emergency diesel generator "A" would be unable to energize 4160V Bus 8 (due to no control power for the diesel generator breaker) and 480V Bus 5, thus rendering MCC-5 deenergized until manual actions could be taken to open breaker 9C and close breaker 11C. This scenario is also a vulnerability in the present scheme and has been addressed as an extremely low probability by the Probabilistic Risk Assessment Group (Reference 1.5.2). Thus, the consequences of a loss of 125VDC Bus "A" remain unchanged.

2.2 Effect on the Consequences of a Previously Evaluated Malfunction of Equipment Important to Safety (A.4.4)

This modification does not change the consequences of a breaker failing to close when called upon to energize MCC-5. If a breaker did not close, the alternate breaker would close provided that the alternate bus is energized. The new scheme will not automatically close a breaker until the other one is open. For example, if breaker 9C is initially closed, and there is a subsequent loss of power on Bus 5 only, then breaker 9C would automatically trip after one second, and breaker 11C would automatically close. If breaker 11C failed to close, operators would be alerted in the Control Room that MCC-5 is not energized and they would manually close breaker 11C in Switchgear Room "A," as with the present scheme. If power was restored to Bus 5 before breaker 11C is closed, then breaker 9C would automatically close.

2.3 Potential for a New Unanalyzed Accident

2.3.1 Possibility of an Accident of a Different Type than Previously Evaluated (A.4.5)

The change does not create an accident of a different type than previously evaluated. The re-design of the ABT scheme does not create a new accident.

2.3.2 Possibility of a Malfunction of a Different Type than Previously Evaluated (A.4.6)

The change does not create a malfunction of a different type than previously evaluated. The same breakers are used in the new scheme and the new control scheme is designed to place less challenges on breaker operation compared to the existing scheme.

2.4 Impact on the Margin of Safety (A.4.7)

The margin of safety as defined in the basis for any technical specification is not reduced in that the parameters of the protective boundaries are unchanged as a result of this plant change.

If any bus is removed from service during the change, the work will be performed within the time frame of the applicable technical specification LCO action statements.

3. SAFETY DETERMINATION

3.1 Qualitative Safety Determination

Based on this Safety Evaluation, the proposed change is not an unreviewed safety question and it is safe, in that it does not cause an increase in risk to the public.

4.0 Approval

Prepared By: _____ _____

G. J. Silberquit, Senior Engineer Date
CY Design Engineering

Approved By: _____ _____

G. R. Townsend, Supervisor Date
CY Design Engineering

Approved By: _____ _____

C. J. Gladding, Manager Date
CY Design Engineering

INTER OFFICE MEMO App-D.4

TO: JOHN CALDERONE — DEPT.-LOCATION: ENG-CY

FROM: JOHN ROTHORT — DEPT.-LOCATION: PRA - BERLIN

SUBJECT: EDG FAST START TIMES — DATE: 03/09/94

MESSAGE

John

Please provide me with chronological EDG 'A' and 'B' fast start data (date and fast start times) through January 1, 1990 (if possible). This data is needed to support the MCC-5 ABT redesign effort.

Thanks

ORIGINATOR DO NOT WRITE BELOW THIS LINE — SIGNED John Rothort

REPLY

Completed 3/9/94

DEPT.-LOCATION: Eng — SIGNED: Kathy Wilson — DATE: 3/9/94

FORM NO. 06 445 REV. 5-77

SEND PARTS 1 & 3 WITH CARBON INTACT - PART 3 WILL BE RETURNED WITH REPLY

EDG-2A Fast Start

Rep- D.4

Dates	Start Times	
1990 2/13	5.08	
8/7	5.08	
↑ N/A		
→ A Governor replaced		
1991 2/12	5.75	
8/15	4.72	– Faster
10/19	5.49	
1992 2/11	5.25	
8/12	4.98	– Faster
1993 2/9	6.61	
6/8	5.17	
6/8	3.05	
6/8	3.7	
6/10	—	
6/22	—	
6/26	—	
6/27	—	
6/29	—	
8/10	4.83	– Faster
1994 2/8	5.29	

EDG-2B Fast Start

App-D.4

	Dates	Start times	
1990	5/24	4.76	
1991	5/30	4.78	- FASTER
	11/27	5.3	
992	5/26	4.7	- FASTER
	11/24	5.27	
993	5/26	4.59	- FASTER
	6/22	—	
	4/26	—	
	4/27	—	
	4/29	—	
	7/2	—	
	7/6	—	
	11/23	5.03	
994	Not taken yet.		

Circled Data supports assumption of 50/50 split of A versus B starting
Feb (D4A) corresponds to May (D4B) and August (D4A) corresponds to Nov. (D4B)
from 16 month testing history available

JZK
04/12/94