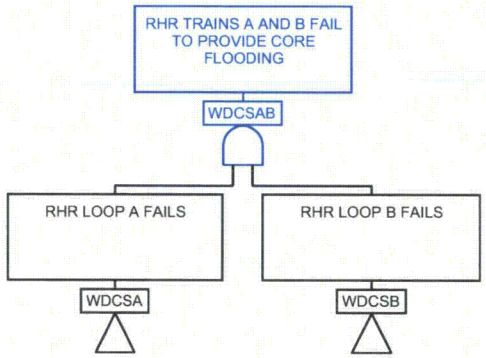
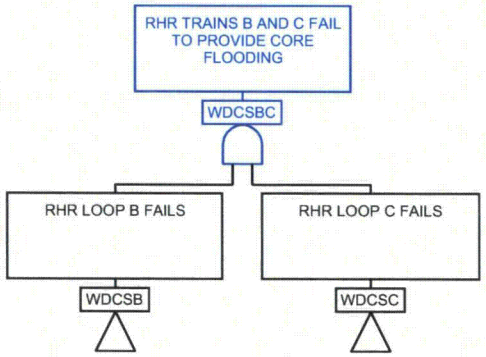
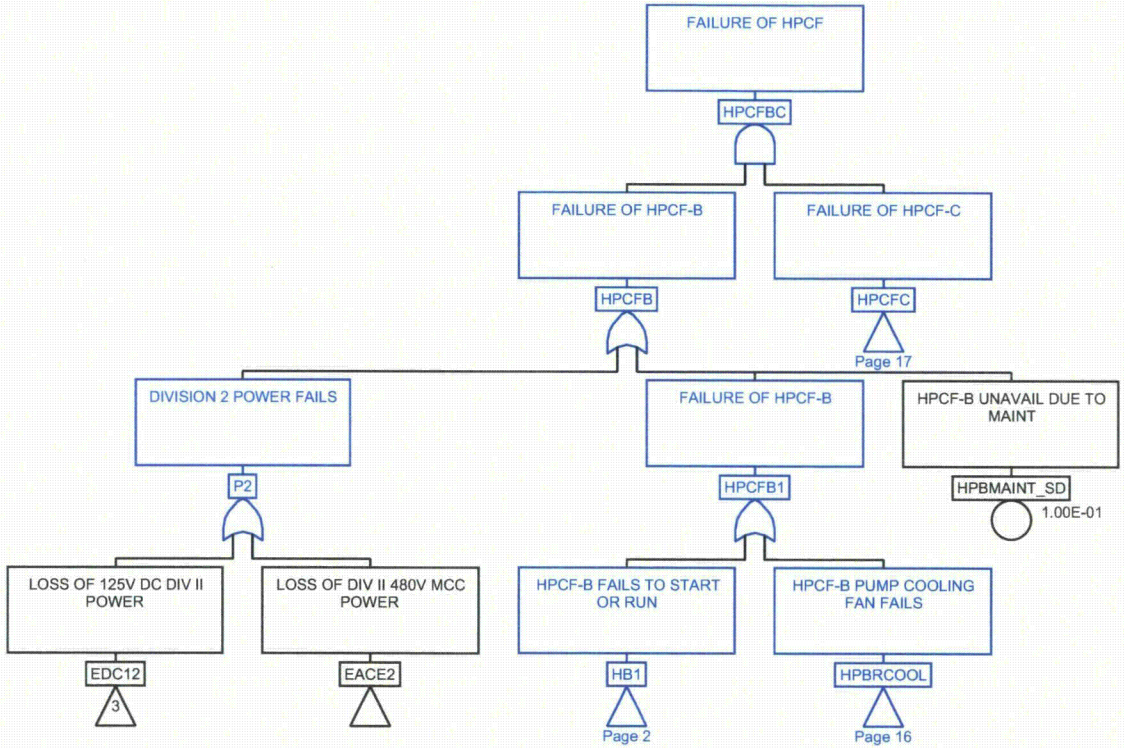
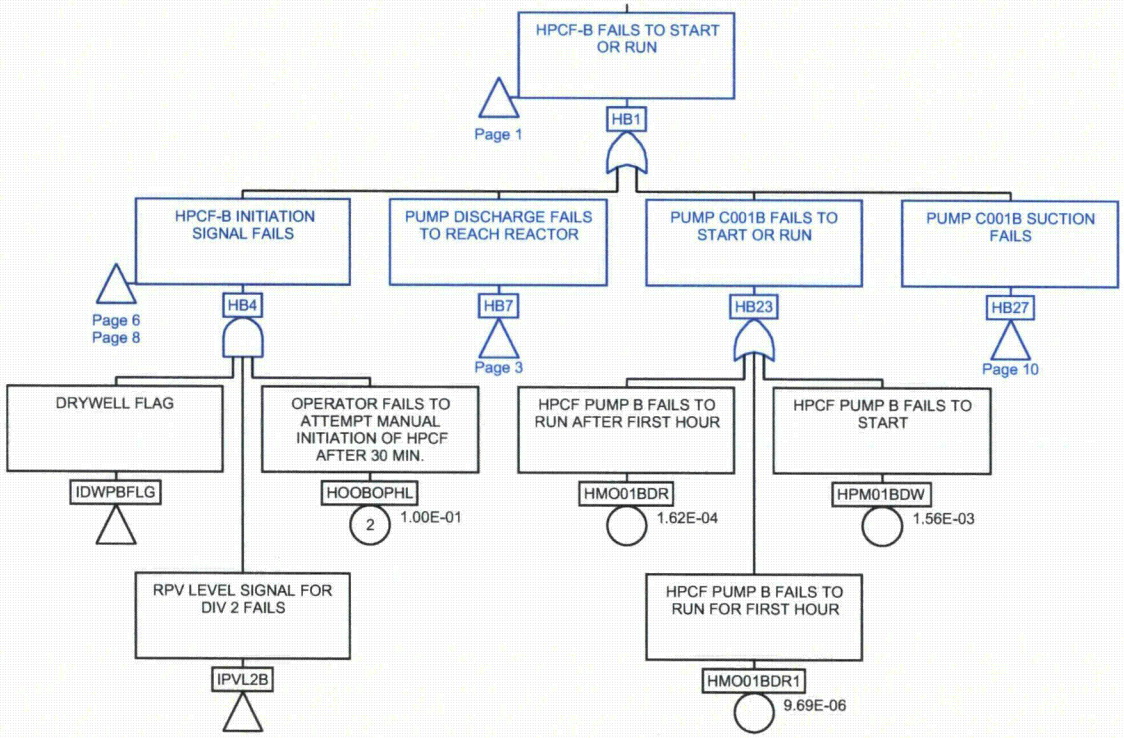

RHR TRAINS A AND B FAIL TO PROVIDE CORE FLOODING
WDCSAB
RHR LOOP A FAILS
RHR LOOP B FAILS
WDCSA
WDCSB


RHR TRAINS B AND C FAIL TO PROVIDE CORE FLOODING
WDCSBC
RHR LOOP B FAILS
RHR LOOP C FAILS
WDCSB
WDCSC



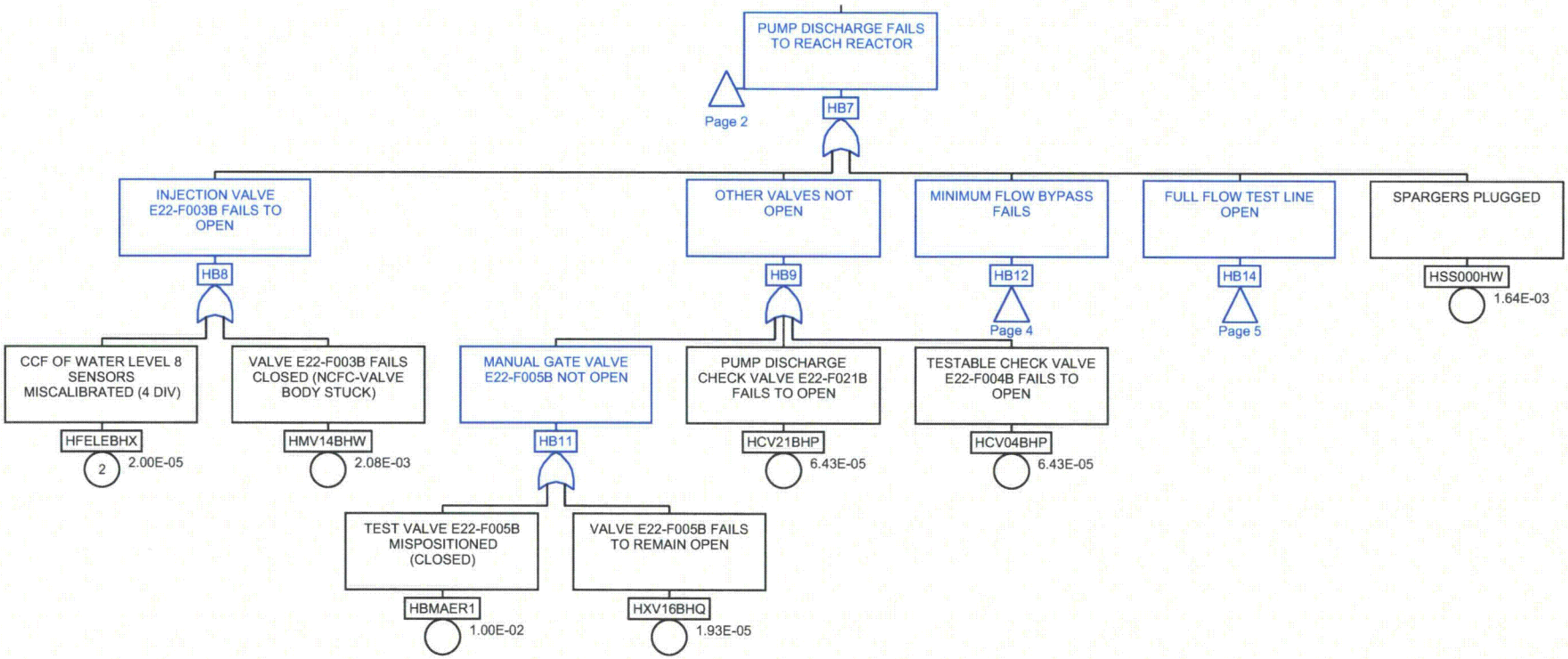
1 2 3 4

Figure G-14 High Pressure Core Flooding System



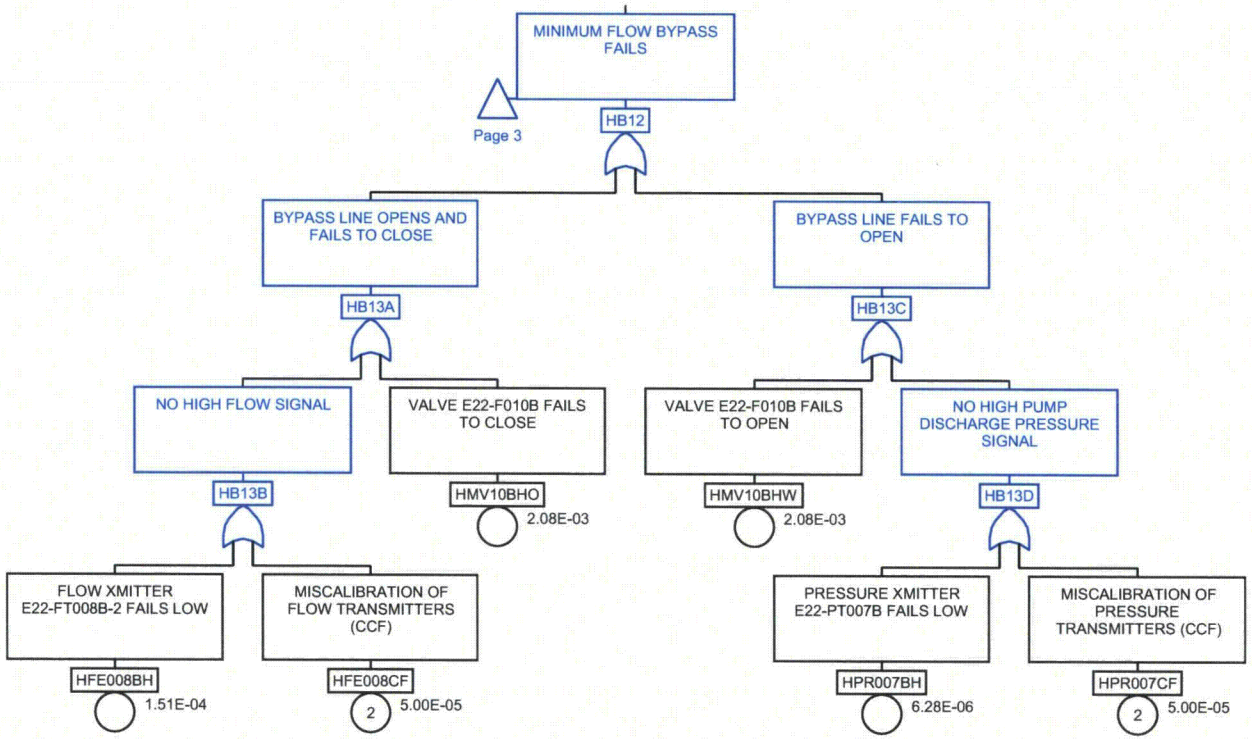
1 2 3 4

Figure G-14 High Pressure Core Flooding System



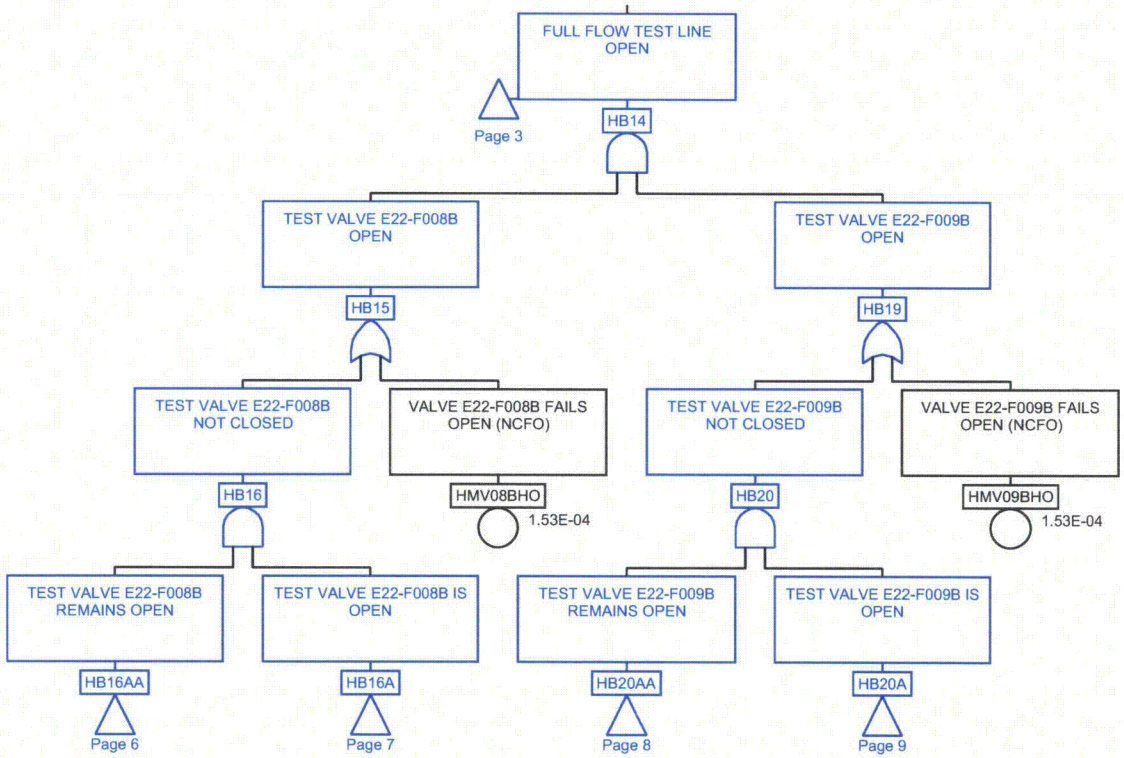
1 2 3 4 5 6 7

Figure G-14 High Pressure Core Flooding System



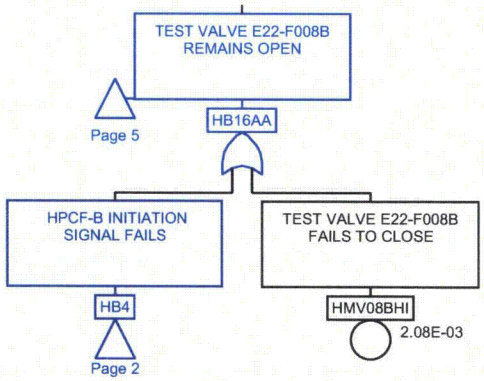
1 2 3 4 5

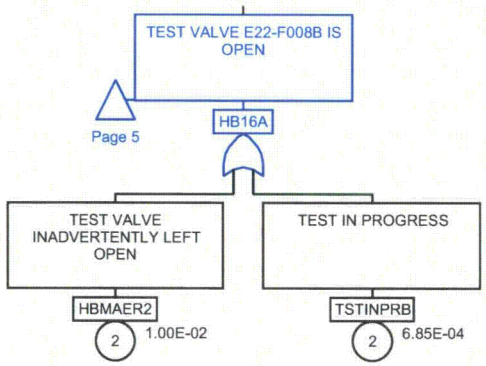
Figure G-14 High Pressure Core Flooding System



1 2 3 4

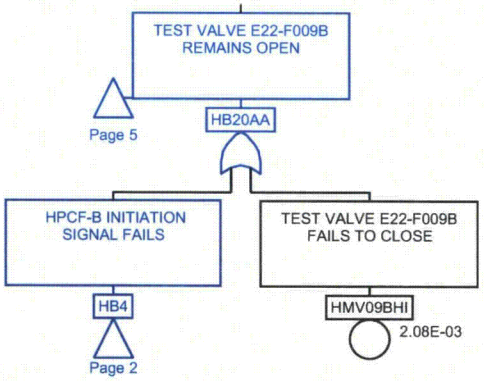
Figure G-14 High Pressure Core Flooding System

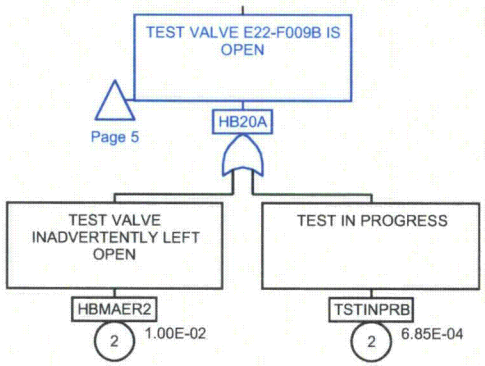

TEST VALVE E22-F008B
REMAINS OPEN
Page 5
HB16AA
HPCF-B INITIATION
SIGNAL FAILS
TEST VALVE E22-F008B
FAILS TO CLOSE
HB4
Page 2
HMV08BHI
2.08E-03



1 2

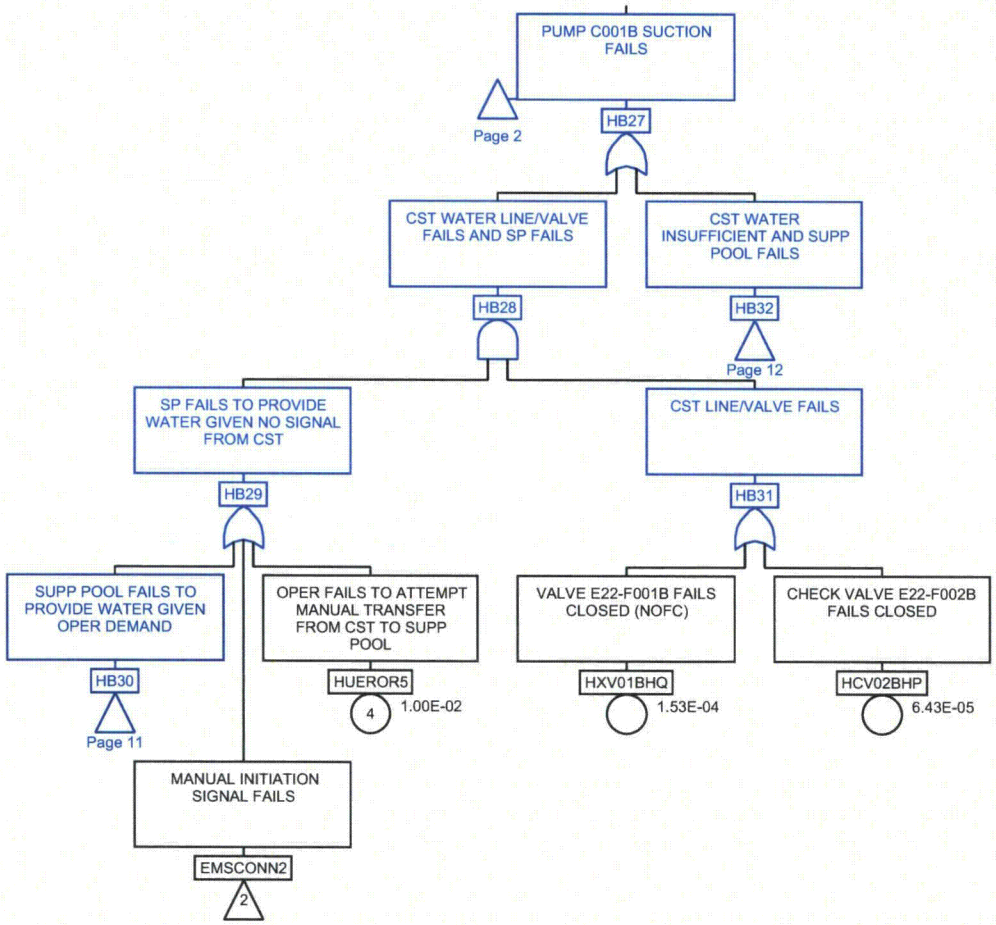
Figure G-14 High Pressure Core Flooding System

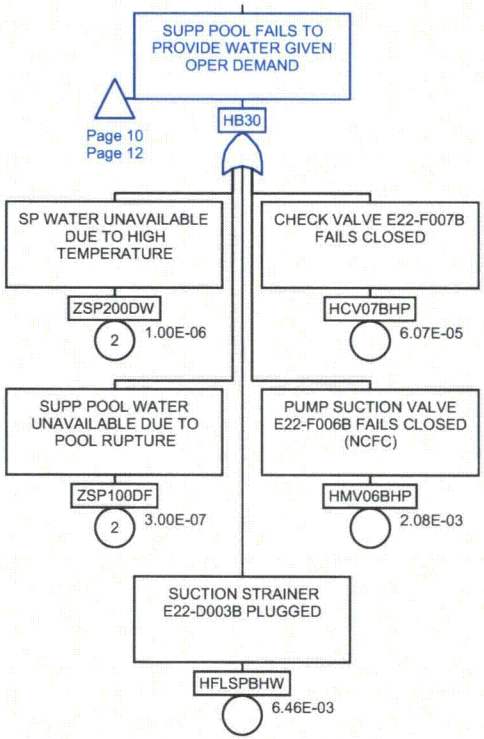

TEST VALVE E22-F009B
REMAINS OPEN
Page 5
HB20AA
HPCF-B INITIATION
SIGNAL FAILS
TEST VALVE E22-F009B
FAILS TO CLOSE
HB4
Page 2
HMV09BHI
2.08E-03

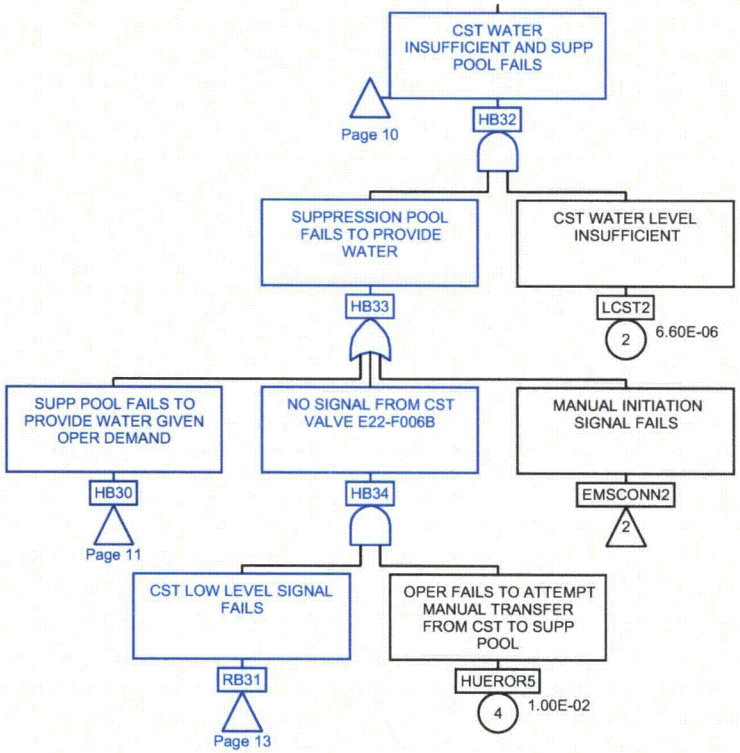


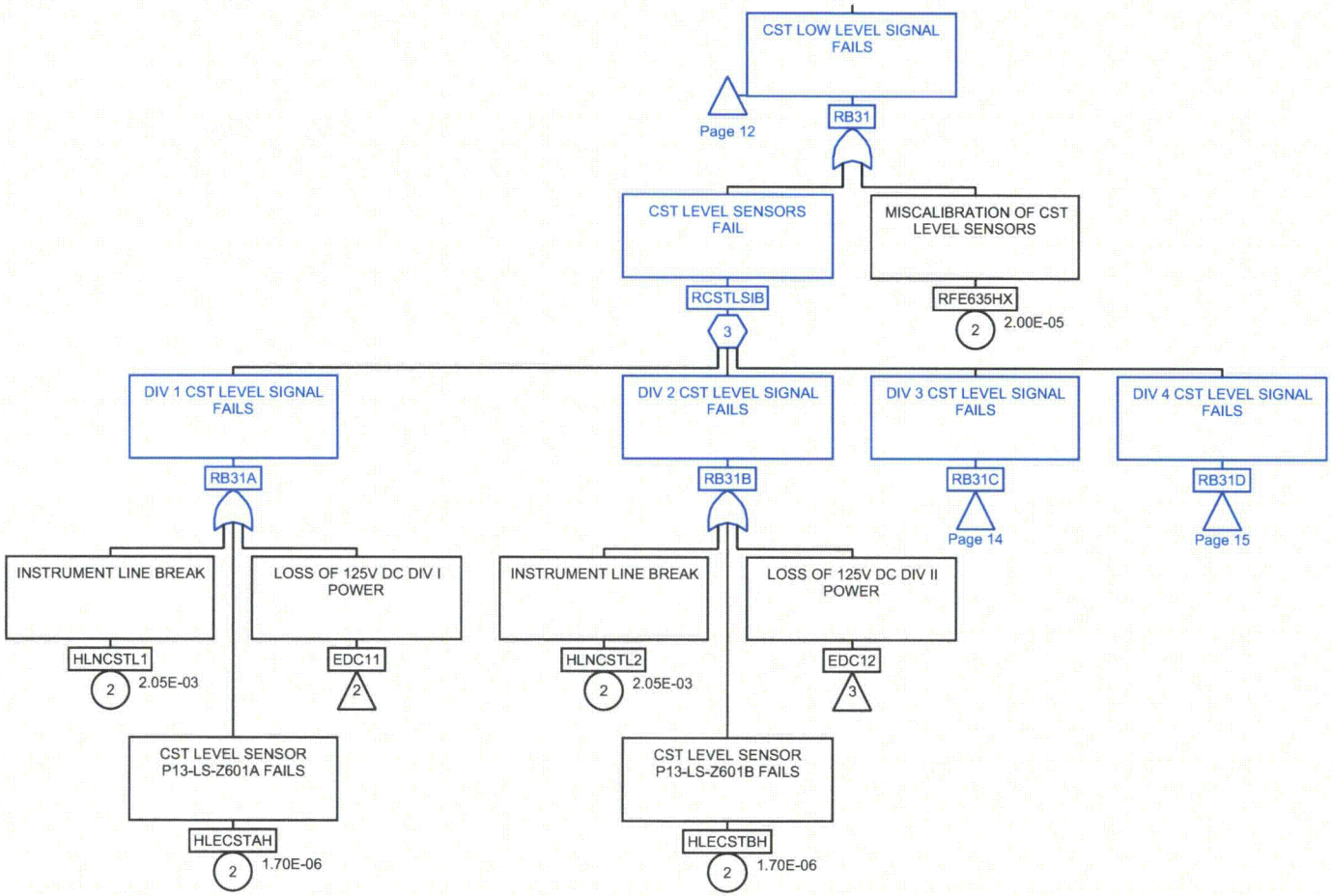
1 2

Figure G-14 High Pressure Core Flooding System


PUMP C001B SUCTION FAILS
Page 2
HB27
CST WATER LINE/VALVE FAILS AND SP FAILS
CST WATER INSUFFICIENT AND SUPP POOL FAILS
HB28
HB32
Page 12
SP FAILS TO PROVIDE WATER GIVEN NO SIGNAL FROM CST
CST LINE/VALVE FAILS
HB29
HB31
SUPP POOL FAILS TO PROVIDE WATER GIVEN OPER DEMAND
OPER FAILS TO ATTEMPT MANUAL TRANSFER FROM CST TO SUPP POOL
VALVE E22-F001B FAILS CLOSED (NOFC)
CHECK VALVE E22-F002B FAILS CLOSED
HB30
Page 11
HUEROR5
4
1.00E-02
HXV01BHQ
1.53E-04
HCV02BHP
6.43E-05
MANUAL INITIATION SIGNAL FAILS
EMSCONN2
2

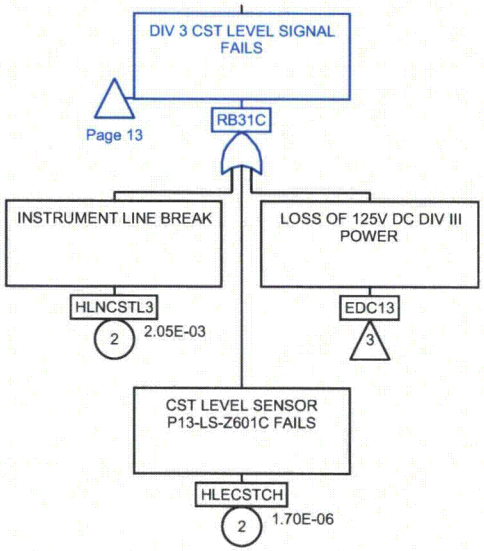

SUPP POOL FAILS TO PROVIDE WATER GIVEN OPER DEMAND
HB30
Page 10
Page 12
SP WATER UNAVAILABLE DUE TO HIGH TEMPERATURE
ZSP200DW
2
1.00E-06
CHECK VALVE E22-F007B FAILS CLOSED
HCV07BHP
6.07E-05
SUPP POOL WATER UNAVAILABLE DUE TO POOL RUPTURE
ZSP100DF
2
3.00E-07
PUMP SUCTION VALVE E22-F006B FAILS CLOSED (NCFC)
HMV06BHP
2.08E-03
SUCTION STRAINER E22-D003B PLUGGED
HFLSPBHW
6.46E-03


CST WATER INSUFFICIENT AND SUPP POOL FAILS
Page 10
HB32
SUPPRESSION POOL FAILS TO PROVIDE WATER
CST WATER LEVEL INSUFFICIENT
HB33
LCST2
2
6.60E-06
SUPP POOL FAILS TO PROVIDE WATER GIVEN OPER DEMAND
NO SIGNAL FROM CST VALVE E22-F006B
MANUAL INITIATION SIGNAL FAILS
HB30
Page 11
HB34
EMSCONN2
2
CST LOW LEVEL SIGNAL FAILS
OPER FAILS TO ATTEMPT MANUAL TRANSFER FROM CST TO SUPP POOL
RB31
Page 13
HUEROR5
4
1.00E-02



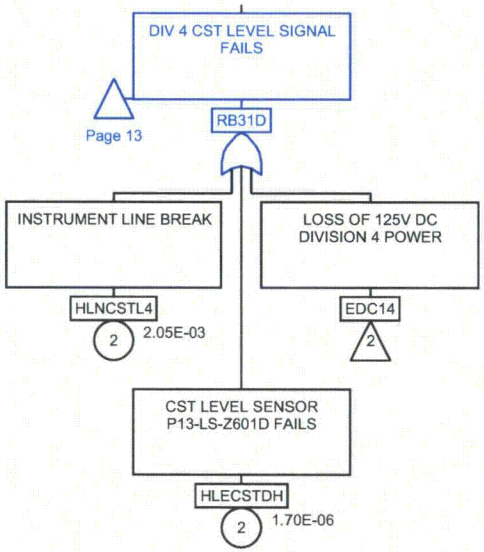
1 2 3 4 5

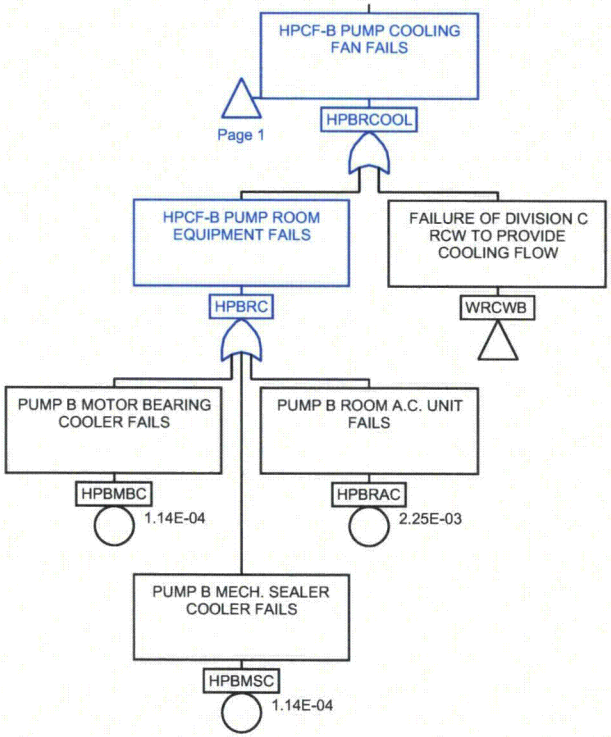
Figure G-14 High Pressure Core Flooding System

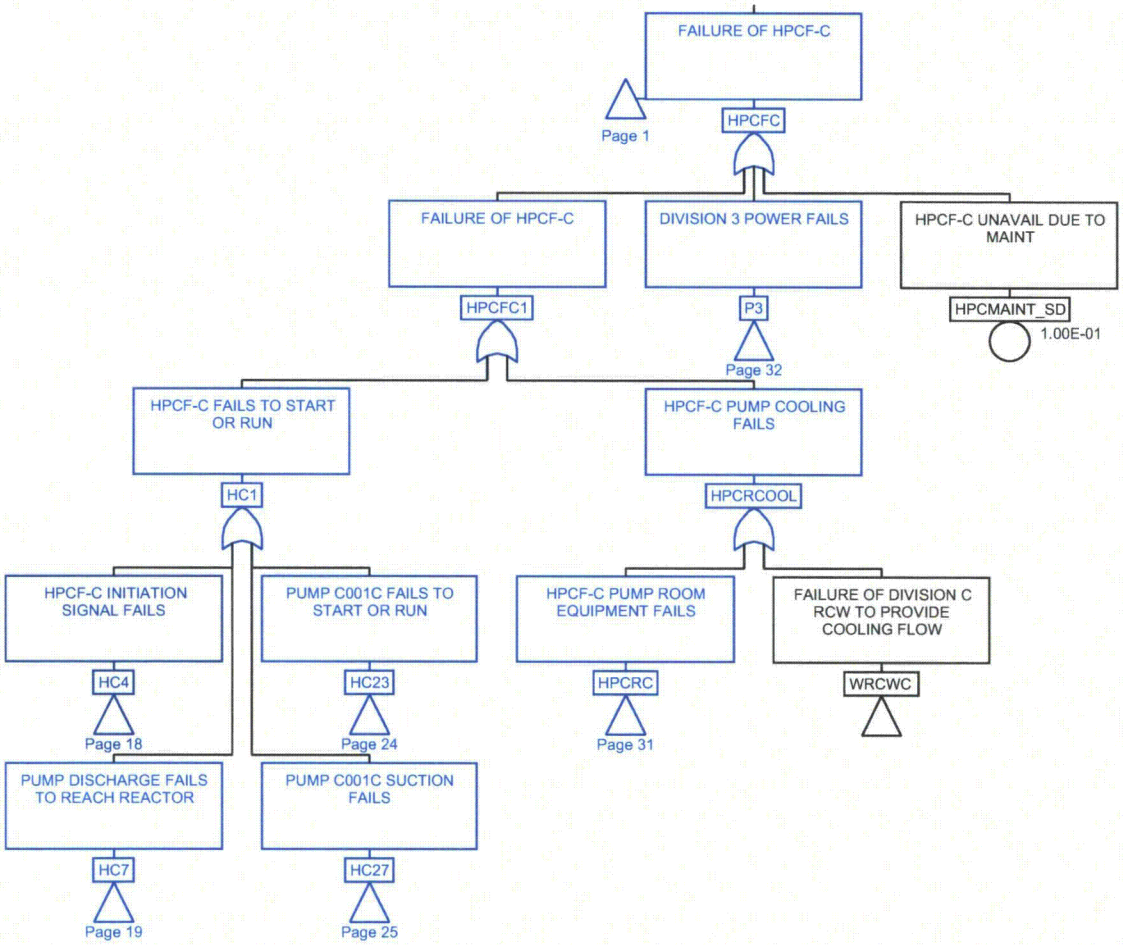


1 2

Figure G-14 High Pressure Core Flooding System


DIV 4 CST LEVEL SIGNAL FAILS
Page 13
RB31D
INSTRUMENT LINE BREAK
LOSS OF 125V DC DIVISION 4 POWER
HLNCSTL4
2
2.05E-03
EDC14
2
CST LEVEL SENSOR P13-LS-Z601D FAILS
HLECSTDH
2
1.70E-06


HPCF-B PUMP COOLING FAN FAILS
Page 1
HPBRCOOL
HPCF-B PUMP ROOM EQUIPMENT FAILS
FAILURE OF DIVISION C RCW TO PROVIDE COOLING FLOW
HPBRC
WRCWB
PUMP B MOTOR BEARING COOLER FAILS
PUMP B ROOM A.C. UNIT FAILS
HPBMBC
1.14E-04
HPBRAC
2.25E-03
PUMP B MECH. SEALER COOLER FAILS
HPBMSC
1.14E-04


FAILURE OF HPCF-C
Page 1
HPCFC
FAILURE OF HPCF-C
DIVISION 3 POWER FAILS
HPCF-C UNAVAIL DUE TO MAINT
HPCFC1
P3
Page 32
HPCMAINT_SD
1.00E-01
HPCF-C FAILS TO START OR RUN
HPCF-C PUMP COOLING FAILS
HC1
HPCRCOOL
HPCF-C INITIATION SIGNAL FAILS
PUMP C001C FAILS TO START OR RUN
HPCF-C PUMP ROOM EQUIPMENT FAILS
FAILURE OF DIVISION C RCW TO PROVIDE COOLING FLOW
HC4
Page 18
HC23
Page 24
HPCRC
Page 31
WRCWC
PUMP DISCHARGE FAILS TO REACH REACTOR
PUMP C001C SUCTION FAILS
HC7
Page 19
HC27
Page 25

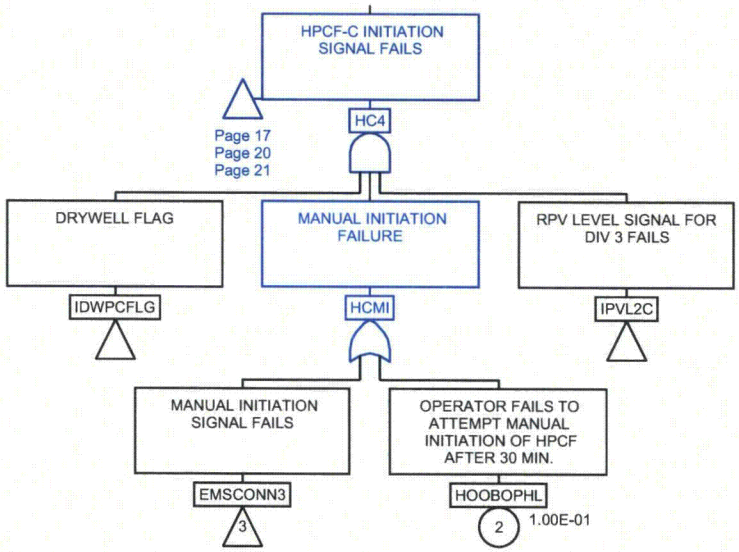
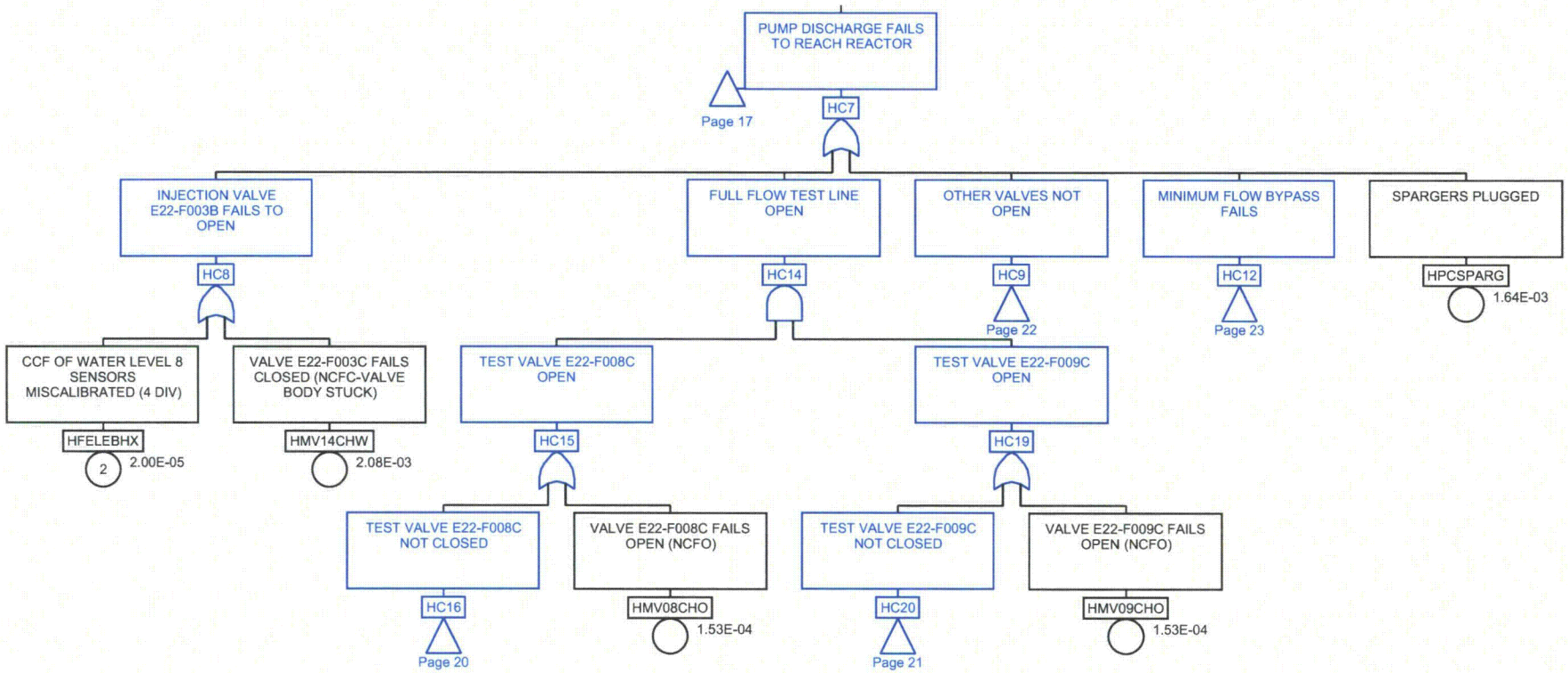
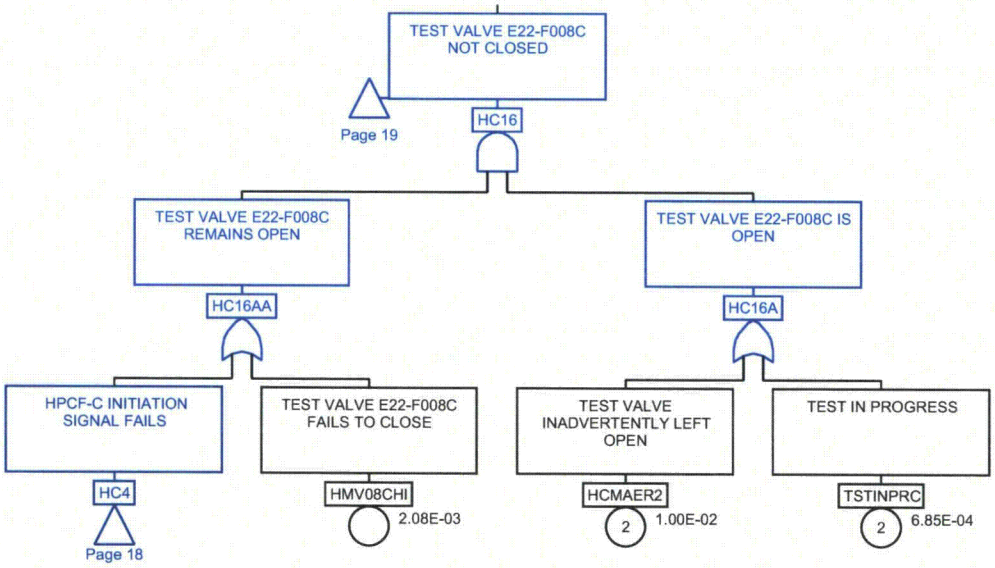


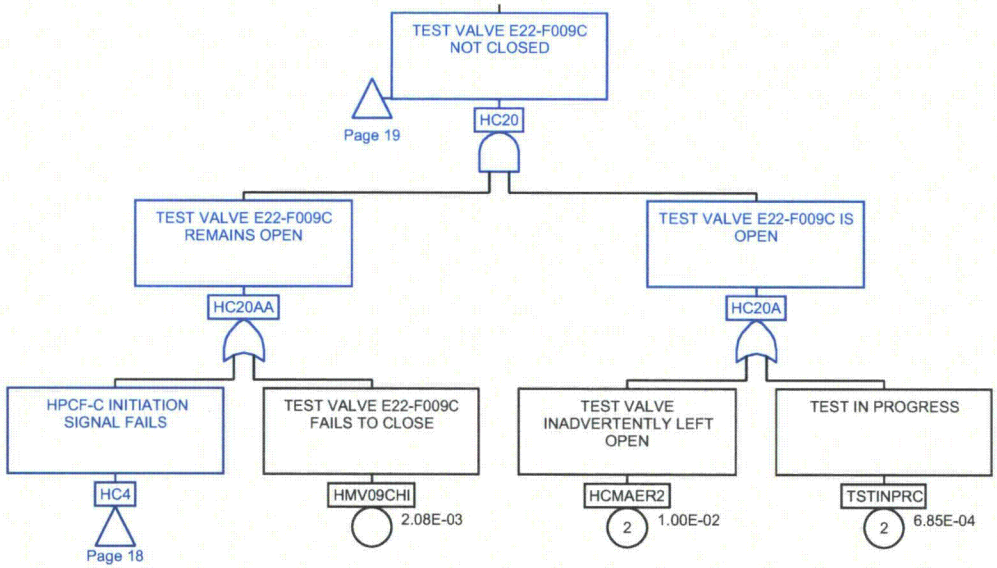
Figure G-14 High Pressure Core Flooding System


PUMP DISCHARGE FAILS TO REACH REACTOR
Page 17
HC7
INJECTION VALVE E22-F003B FAILS TO OPEN
HC8
FULL FLOW TEST LINE OPEN
HC14
OTHER VALVES NOT OPEN
HC9
Page 22
MINIMUM FLOW BYPASS FAILS
HC12
Page 23
SPARGERS PLUGGED
HPCSPARG
1.64E-03
CCF OF WATER LEVEL 8 SENSORS MISCALIBRATED (4 DIV)
HFELEBHX
2
2.00E-05
VALVE E22-F003C FAILS CLOSED (NCFC-VALVE BODY STUCK)
HMV14CHW
2.08E-03
TEST VALVE E22-F008C OPEN
HC15
TEST VALVE E22-F009C OPEN
HC19
TEST VALVE E22-F008C NOT CLOSED
HC16
Page 20
VALVE E22-F008C FAILS OPEN (NCFO)
HMV08CHO
1.53E-04
TEST VALVE E22-F009C NOT CLOSED
HC20
Page 21
VALVE E22-F009C FAILS OPEN (NCFO)
HMV09CHO
1.53E-04



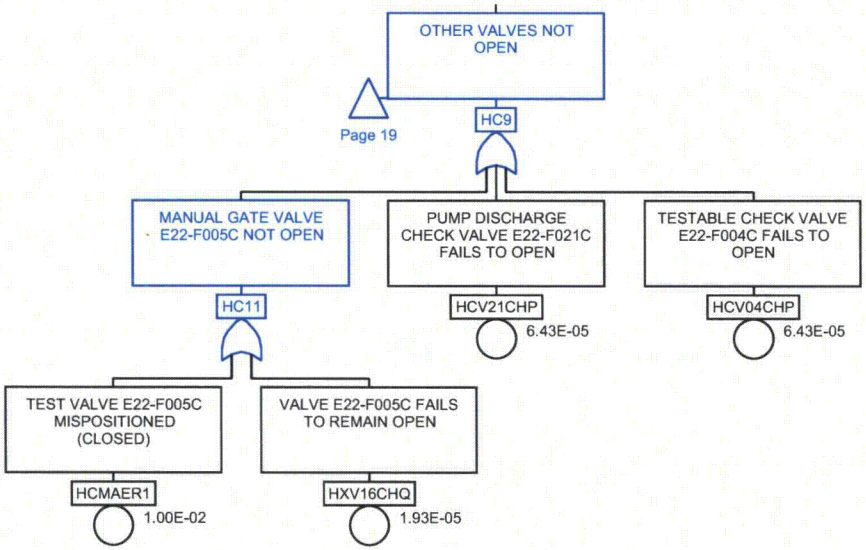
1 2 3 4

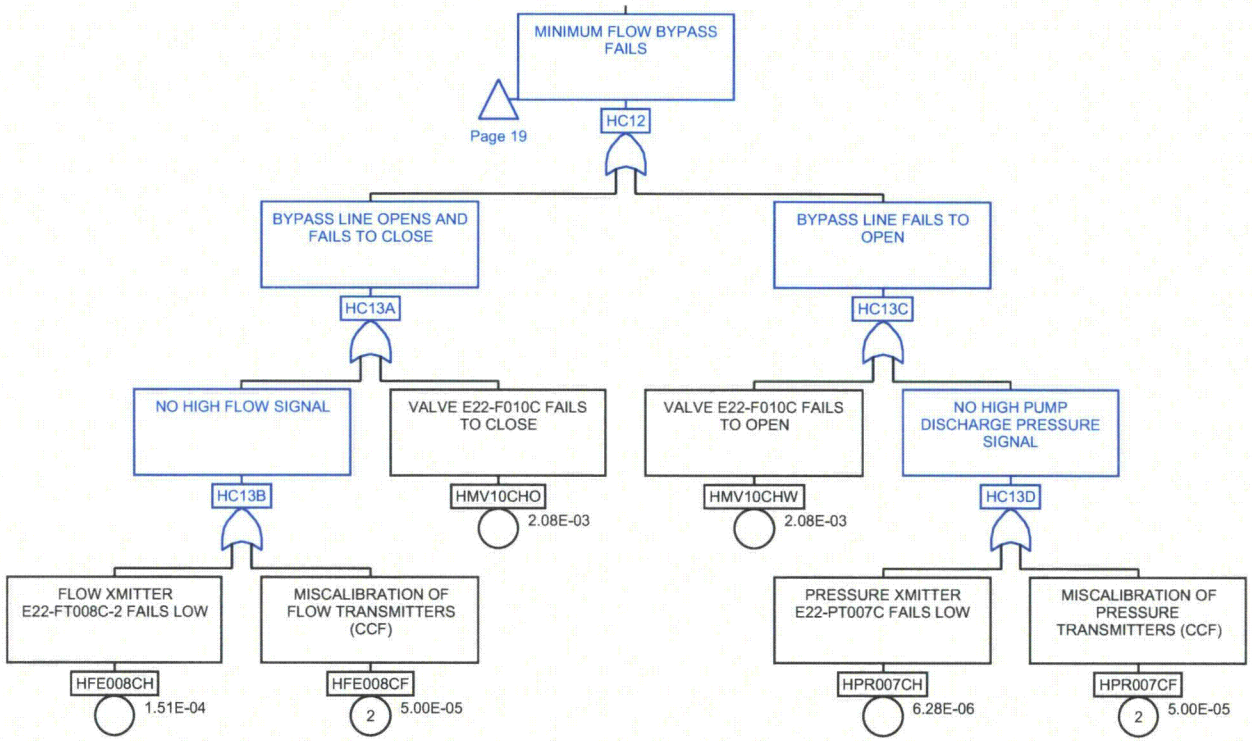
Figure G-14 High Pressure Core Flooding System

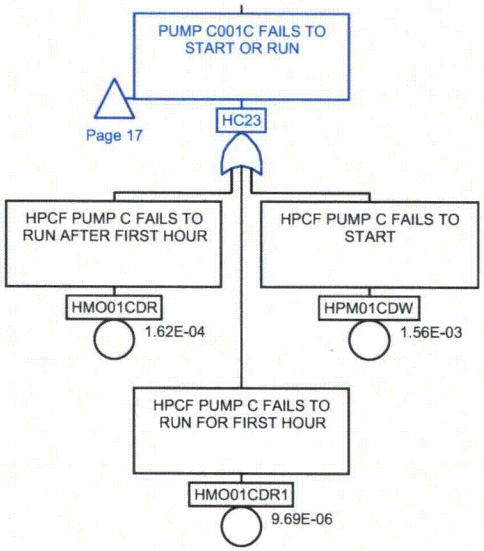


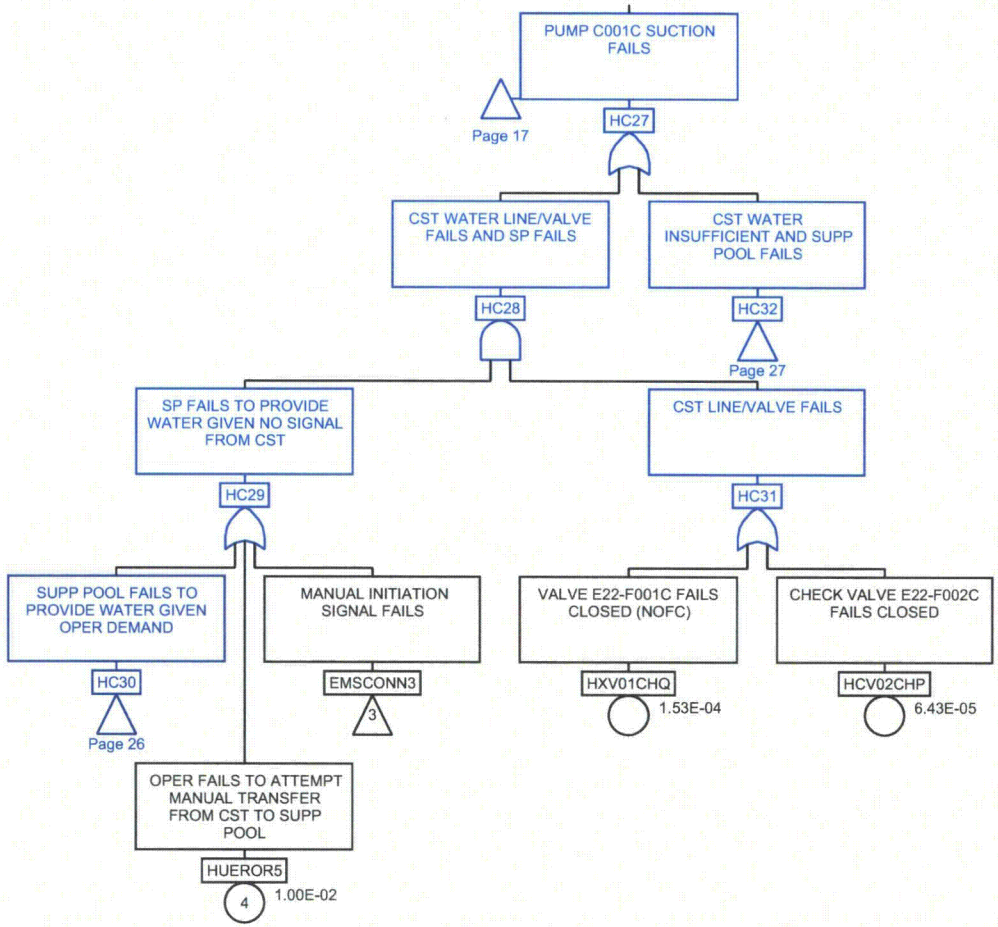
1 2 3 4

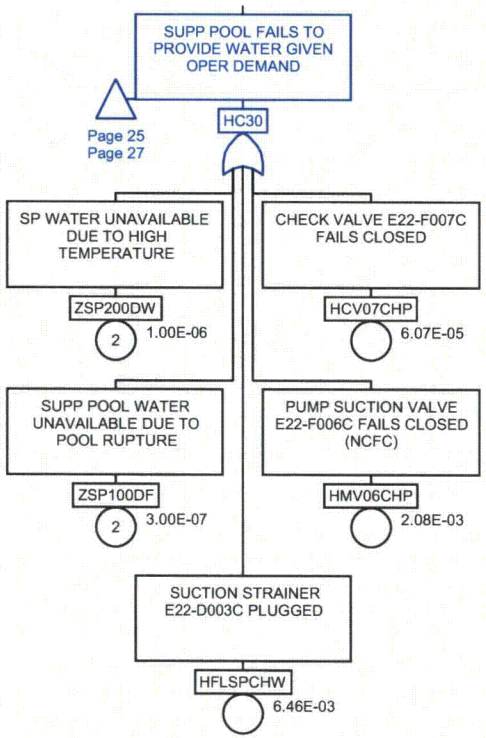
Figure G-14 High Pressure Core Flooding System


OTHER VALVES NOT OPEN
Page 19
HC9
MANUAL GATE VALVE E22-F005C NOT OPEN
PUMP DISCHARGE CHECK VALVE E22-F021C FAILS TO OPEN
TESTABLE CHECK VALVE E22-F004C FAILS TO OPEN
HC11
HCV21CHP
6.43E-05
HCV04CHP
6.43E-05
TEST VALVE E22-F005C MISPOSITIONED (CLOSED)
VALVE E22-F005C FAILS TO REMAIN OPEN
HCMAER1
1.00E-02
HXV16CHQ
1.93E-05


MINIMUM FLOW BYPASS FAILS
Page 19
HC12
BYPASS LINE OPENS AND FAILS TO CLOSE
BYPASS LINE FAILS TO OPEN
HC13A
HC13C
NO HIGH FLOW SIGNAL
VALVE E22-F010C FAILS TO CLOSE
VALVE E22-F010C FAILS TO OPEN
NO HIGH PUMP DISCHARGE PRESSURE SIGNAL
HC13B
HMV10CHO
2.08E-03
HMV10CHW
2.08E-03
HC13D
FLOW XMITTER E22-FT008C-2 FAILS LOW
MISCALIBRATION OF FLOW TRANSMITTERS (CCF)
PRESSURE XMITTER E22-PT007C FAILS LOW
MISCALIBRATION OF PRESSURE TRANSMITTERS (CCF)
HFE008CH
1.51E-04
HFE008CF
2
5.00E-05
HPR007CH
6.28E-06
HPR007CF
2
5.00E-05

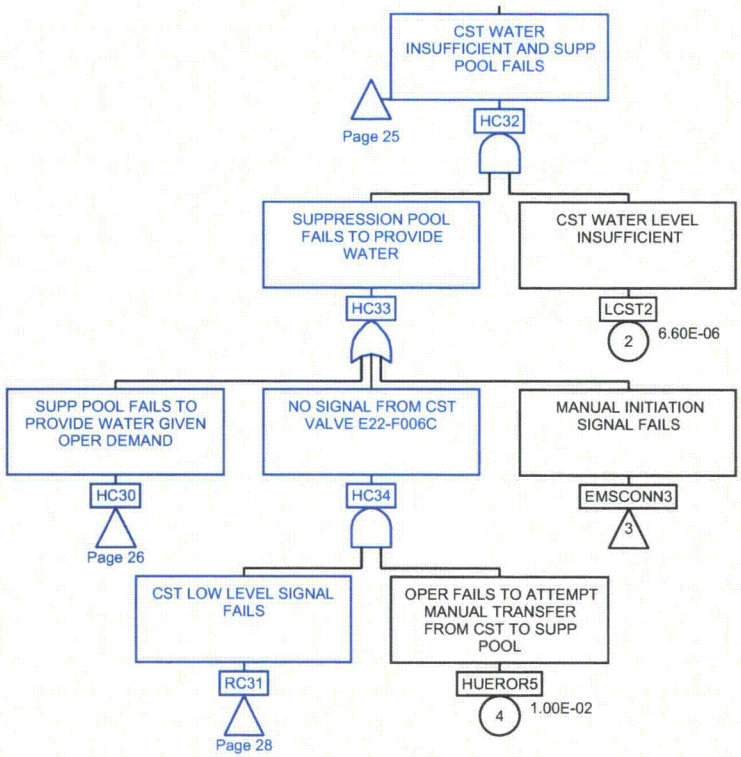

PUMP C001C FAILS TO START OR RUN
Page 17
HC23
HPCF PUMP C FAILS TO RUN AFTER FIRST HOUR
HPCF PUMP C FAILS TO START
HMO01CDR
1.62E-04
HPM01CDW
1.56E-03
HPCF PUMP C FAILS TO RUN FOR FIRST HOUR
HMO01CDR1
9.69E-06


PUMP C001C SUCTION FAILS
Page 17
HC27
CST WATER LINE/VALVE FAILS AND SP FAILS
CST WATER INSUFFICIENT AND SUPP POOL FAILS
HC28
HC32
Page 27
SP FAILS TO PROVIDE WATER GIVEN NO SIGNAL FROM CST
CST LINE/VALVE FAILS
HC29
HC31
SUPP POOL FAILS TO PROVIDE WATER GIVEN OPER DEMAND
MANUAL INITIATION SIGNAL FAILS
VALVE E22-F001C FAILS CLOSED (NOFC)
CHECK VALVE E22-F002C FAILS CLOSED
HC30
Page 26
EMSCONN3
3
HXV01CHQ
1.53E-04
HCV02CHP
6.43E-05
OPER FAILS TO ATTEMPT MANUAL TRANSFER FROM CST TO SUPP POOL
HUEROR5
4
1.00E-02



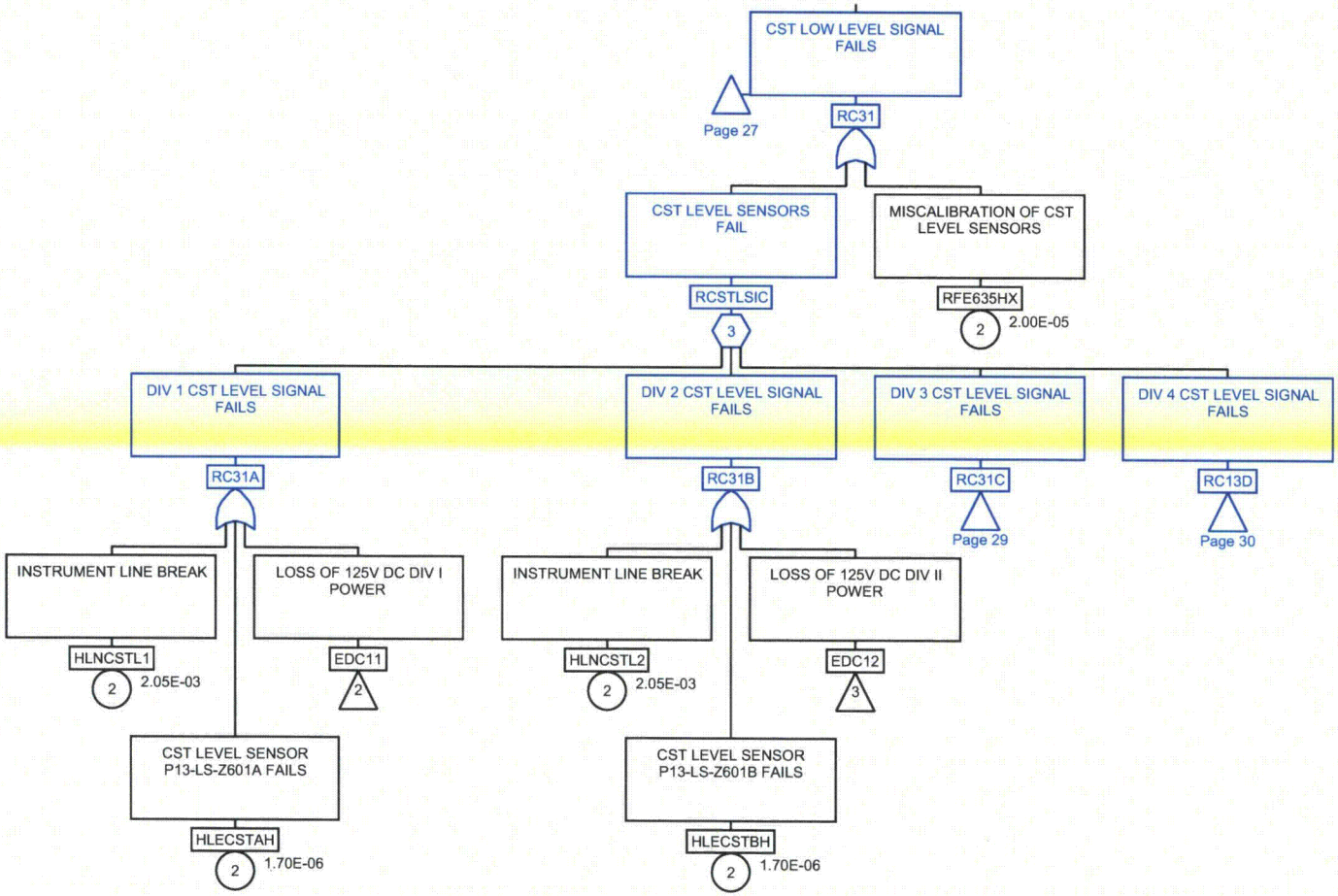
1 2

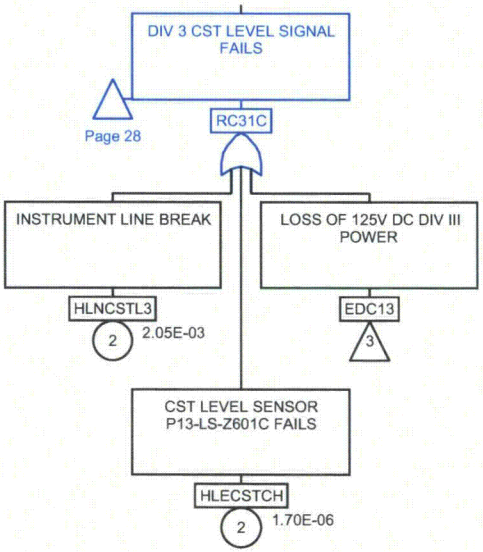
Figure G-14 High Pressure Core Flooding System



1 2 3

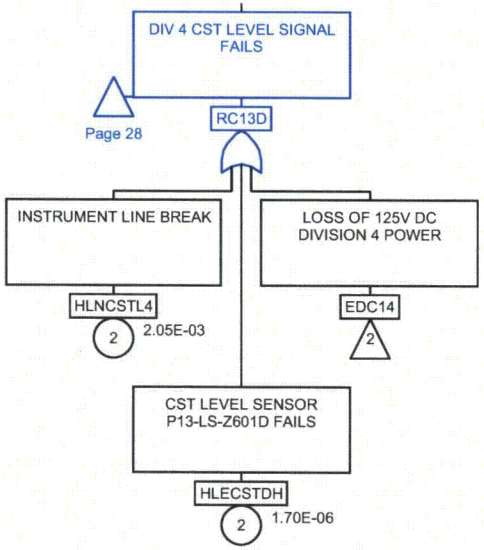
Figure G-14 High Pressure Core Flooding System

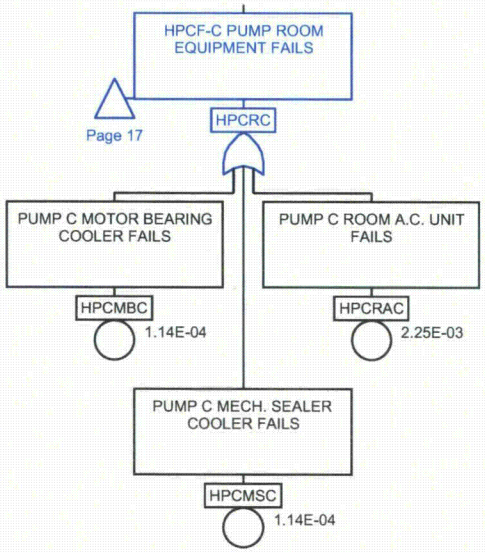

CST LOW LEVEL SIGNAL FAILS
Page 27
RC31
CST LEVEL SENSORS FAIL
MISCALIBRATION OF CST LEVEL SENSORS
RCSTLSIC
3
RFE635HX
2
2.00E-05
DIV 1 CST LEVEL SIGNAL FAILS
DIV 2 CST LEVEL SIGNAL FAILS
DIV 3 CST LEVEL SIGNAL FAILS
DIV 4 CST LEVEL SIGNAL FAILS
RC31A
RC31B
RC31C
Page 29
RC13D
Page 30
INSTRUMENT LINE BREAK
LOSS OF 125V DC DIV I POWER
INSTRUMENT LINE BREAK
LOSS OF 125V DC DIV II POWER
HLNCSTL1
2
2.05E-03
EDC11
2
HLNCSTL2
2
2.05E-03
EDC12
3
CST LEVEL SENSOR P13-LS-Z601A FAILS
CST LEVEL SENSOR P13-LS-Z601B FAILS
HLECSTAH
2
1.70E-06
HLECSTBH
2
1.70E-06



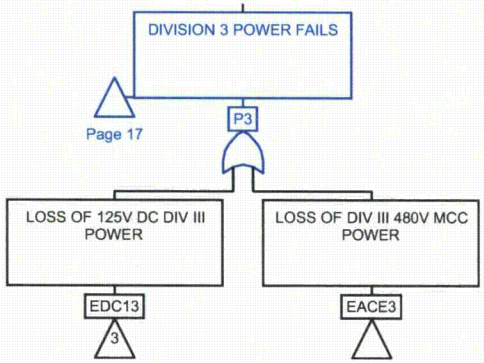
1 2

Figure G-14 High Pressure Core Flooding System


DIV 4 CST LEVEL SIGNAL FAILS
Page 28
RC13D
INSTRUMENT LINE BREAK
LOSS OF 125V DC DIVISION 4 POWER
HLNCSTL4
2
2.05E-03
EDC14
2
CST LEVEL SENSOR P13-LS-Z601D FAILS
HLECSTDH
2
1.70E-06


HPCF-C PUMP ROOM EQUIPMENT FAILS
Page 17
HPCRC
PUMP C MOTOR BEARING COOLER FAILS
PUMP C ROOM A.C. UNIT FAILS
HPCMBC
1.14E-04
HPCRAC
2.25E-03
PUMP C MECH. SEALER COOLER FAILS
HPCMSC
1.14E-04

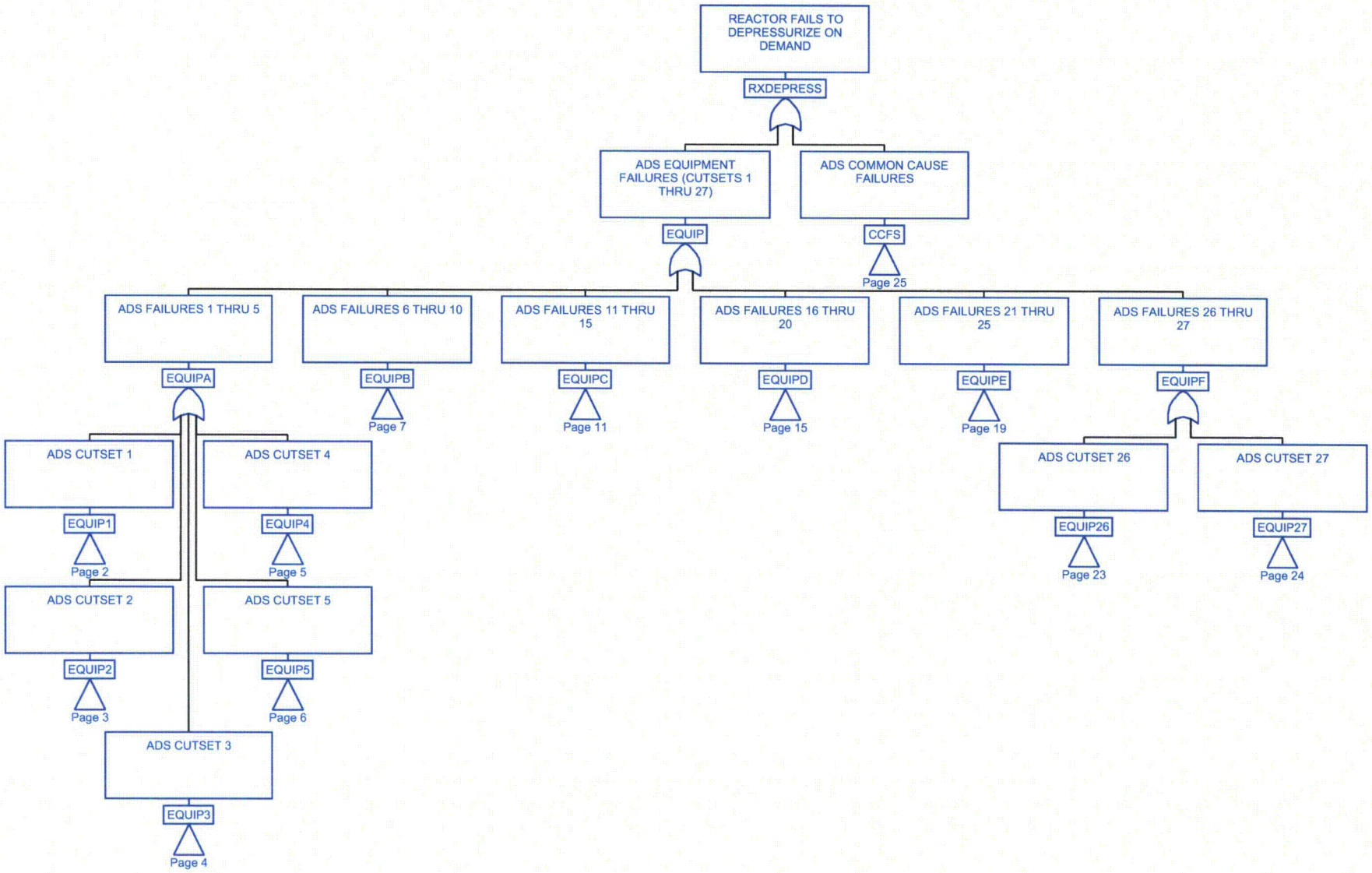
1 2


DIVISION 3 POWER FAILS
Page 17
P3
LOSS OF 125V DC DIV III POWER
LOSS OF DIV III 480V MCC POWER
EDC13
3
EACE3

Name	Page	Zone	Name	Page	Zone
EACE2	1	2	HB30	10	1
EACE3	32	2	HB30	11	2
EDC11	13	2	HB30	12	1
EDC11	28	2	HB31	10	4
EDC12	1	1	HB32	10	4
EDC12	13	4	HB32	12	3
EDC12	28	4	HB33	12	2
EDC13	14	2	HB34	12	2
EDC13	29	2	HB4	2	2
EDC13	32	1	HB4	6	1
EDC14	15	2	HB4	8	1
EDC14	30	2	HB7	2	3
EMSCONN2	10	2	HB7	3	4
EMSCONN2	12	3	HB8	3	2
EMSCONN3	18	2	HB9	3	4
EMSCONN3	25	2	HBMAER1	3	3
EMSCONN3	27	3	HBMAER2	7	1
HB1	1	3	HBMAER2	9	1
HB1	2	3	HC1	17	2
HB11	3	3	HC11	22	2
HB12	3	5	HC12	19	6
HB12	4	3	HC12	23	3
HB13A	4	2	HC13A	23	2
HB13B	4	2	HC13B	23	2
HB13C	4	4	HC13C	23	4
HB13D	4	5	HC13D	23	5
HB14	3	6	HC14	19	4
HB14	5	3	HC15	19	3
HB15	5	2	HC16	19	3
HB16	5	2	HC16	20	3
HB16A	5	2	HC16A	20	4
HB16A	7	2	HC16AA	20	2
HB16AA	5	1	HC19	19	5
HB16AA	6	2	HC20	19	5
HB19	5	4	HC20	21	3
HB20	5	4	HC20A	21	4
HB20A	5	4	HC20AA	21	2
HB20A	9	2	HC23	17	2
HB20AA	5	3	HC23	24	2
HB20AA	8	2	HC27	17	2
HB23	2	4	HC27	25	3
HB27	2	5	HC28	25	3
HB27	10	3	HC29	25	2
HB28	10	3	HC30	25	1
HB29	10	2	HC30	26	2

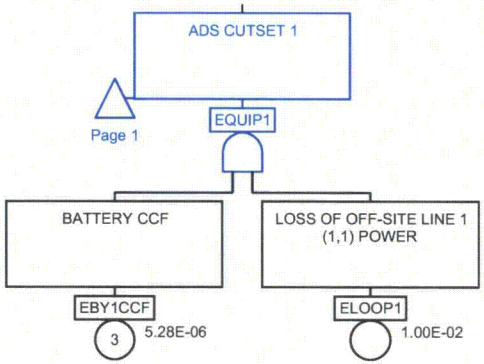
Name	Page	Zone	Name	Page	Zone
HC30	27	1	HLNCSTL2	13	3
HC31	25	4	HLNCSTL2	28	3
HC32	25	4	HLNCSTL3	14	1
HC32	27	3	HLNCSTL3	29	1
HC33	27	2	HLNCSTL4	15	1
HC34	27	2	HLNCSTL4	30	1
HC4	17	1	HMO01BDR	2	3
HC4	18	2	HMO01BDR1	2	4
HC4	20	1	HMO01CDR	24	1
HC4	21	1	HMO01CDR1	24	2
HC7	17	1	HMV06BHP	11	2
HC7	19	4	HMV06CHP	26	2
HC8	19	2	HMV08BHI	6	2
HC9	19	5	HMV08BHO	5	3
HC9	22	3	HMV08CHI	20	2
HCMAER1	22	1	HMV08CHO	19	4
HCMAER2	20	3	HMV09BHI	8	2
HCMAER2	21	3	HMV09BHO	5	5
HCMI	18	2	HMV09CHI	21	2
HCV02BHP	10	4	HMV09CHO	19	6
HCV02CHP	25	4	HMV10BHO	4	3
HCV04BHP	3	5	HMV10BHW	4	4
HCV04CHP	22	4	HMV10CHO	23	3
HCV07BHP	11	2	HMV10CHW	23	4
HCV07CHP	26	2	HMV14BHW	3	2
HCV21BHP	3	4	HMV14CHW	19	2
HCV21CHP	22	3	HOOBOPHL	2	2
HFE008BH	4	1	HOOBOPHL	18	3
HFE008CF	4	2	HPBMAINT_SD	1	5
HFE008CF	23	2	HPBMBC	16	1
HFE008CH	23	1	HPBMSC	16	2
HFELEBHX	3	1	HPBRAC	16	2
HFELEBHX	19	1	HPBRC	16	2
HFLSPBHW	11	2	HPBRCOOL	1	4
HFLSPCHW	26	2	HPBRCOOL	16	2
HLECSTAH	13	2	HPCFB	1	3
HLECSTAH	28	2	HPCFB1	1	4
HLECSTBH	13	4	HPCFBC	1	4
HLECSTBH	28	4	HPCFC	1	4
HLECSTCH	14	2	HPCFC	17	4
HLECSTCH	29	2	HPCFC1	17	3
HLECSTDH	15	2	HPCMAINT_SD	17	5
HLECSTDH	30	2	HPCMBC	31	1
HLNCSTL1	13	1	HPCMSC	31	2
HLNCSTL1	28	1	HPCRAC	31	2

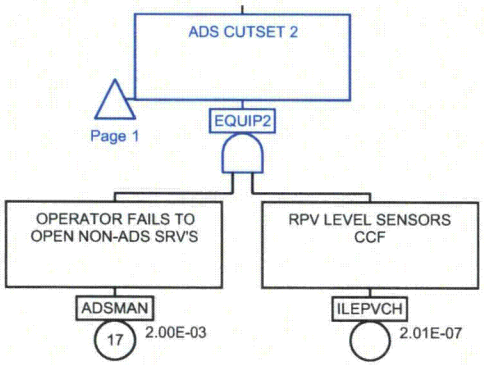
Name	Page	Zone	Name	Page	Zone	
HPCRC	17	3	RCSTLSIC	28	4	Shutdown Probabilistic Risk Assessment
HPCRC	31	2	RFE635HX	13	5	
HPCRCOOL	17	4	RFE635HX	28	5	
HPCSPARG	19	7	TSTINPRB	7	2	
HPM01BDW	2	4	TSTINPRB	9	2	
HPM01CDW	24	2	TSTINPRC	20	4	
HPR007BH	4	4	TSTINPRC	21	4	
HPR007CF	4	5	WRCWB	16	3	
HPR007CF	23	5	WRCWC	17	4	
HPR007CH	23	4	ZSP100DF	11	1	
HSS000HW	3	7	ZSP100DF	26	1	
HUEROR5	10	2	ZSP200DW	11	1	
HUEROR5	12	3	ZSP200DW	26	1	
HUEROR5	25	2				
HUEROR5	27	3				
HXV01BHQ	10	3				
HXV01CHQ	25	3				
HXV16BHQ	3	4				
HXV16CHQ	22	2				
IDWPBFLG	2	1				
IDWPCFLG	18	1				
IPVL2B	2	2				
IPVL2C	18	3				
LCST2	12	3				
LCST2	27	3				
P2	1	2				
P3	17	4				
P3	32	2				
RB31	12	2				
RB31	13	4				
RB31A	13	2				
RB31B	13	4				
RB31C	13	5				
RB31C	14	2				
RB31D	13	6				
RB31D	15	2				
RC13D	28	6				
RC13D	30	2				
RC31	27	2				
RC31	28	4				
RC31A	28	2				
RC31B	28	4				
RC31C	28	5				
RC31C	29	2				
RCSTLSIB	13	4				

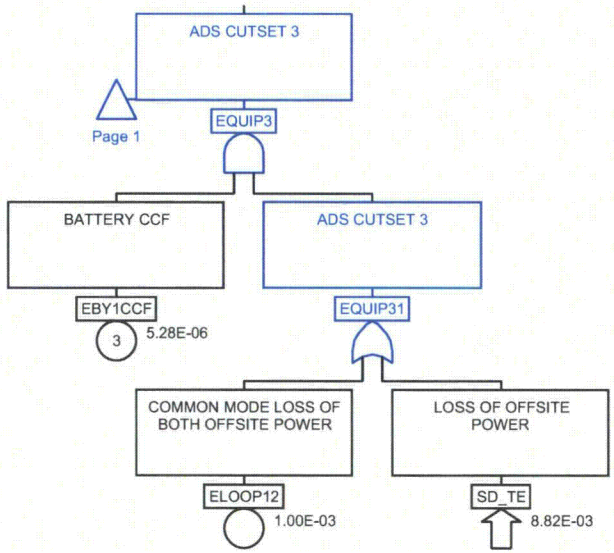


1 2 3 4 5 6 7

Figure G-15 Reactor Depressurization System

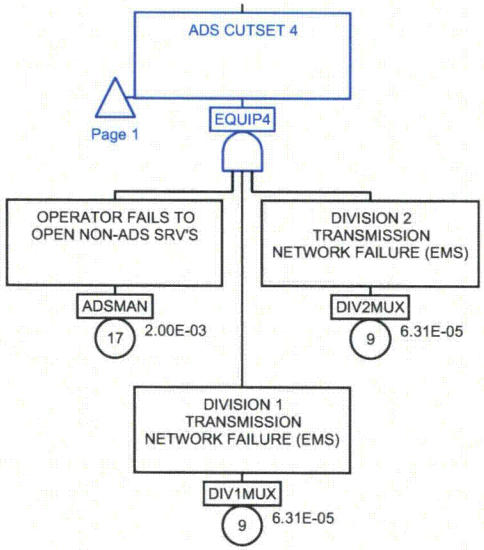

ADS CUTSET 1
Page 1
EQUIP1
BATTERY CCF
LOSS OF OFF-SITE LINE 1
(1,1) POWER
EBY1CCF
3
5.28E-06
ELOOP1
1.00E-02

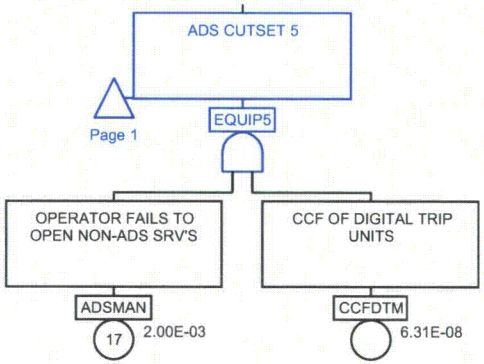

ADS CUTSET 2
Page 1
EQUIP2
OPERATOR FAILS TO OPEN NON-ADS SRV'S
RPV LEVEL SENSORS CCF
ADSMAN
17
2.00E-03
ILEPVCH
2.01E-07

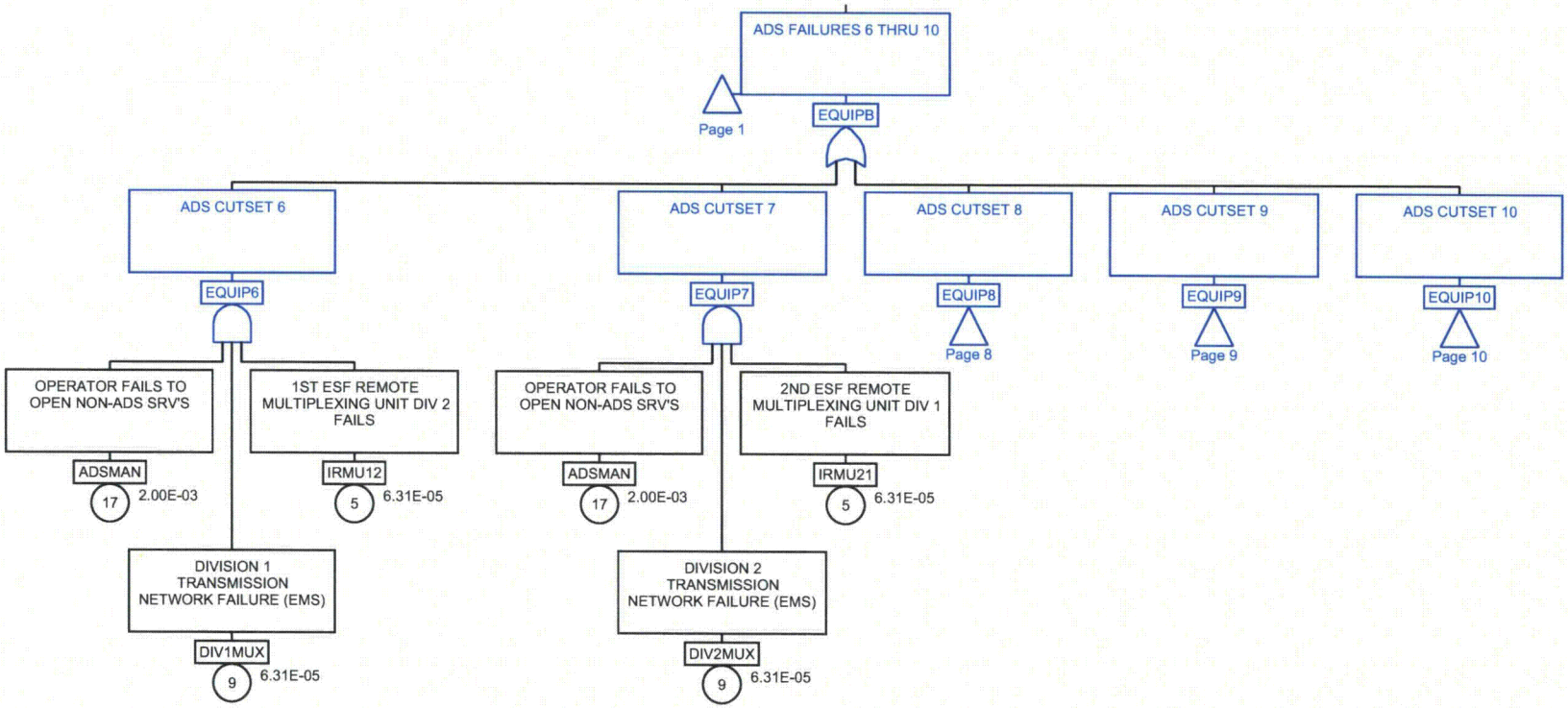


1 2

Figure G-15 Reactor Depressurization System

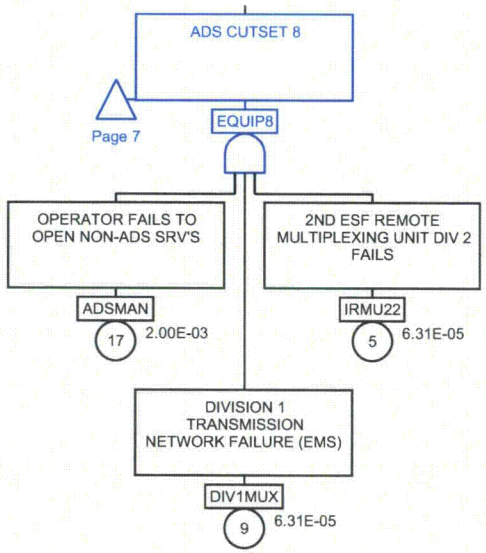

ADS CUTSET 4
Page 1
EQUIP4
OPERATOR FAILS TO OPEN NON-ADS SRV'S
DIVISION 2 TRANSMISSION NETWORK FAILURE (EMS)
ADSMAN
17
2.00E-03
DIV2MUX
9
6.31E-05
DIVISION 1 TRANSMISSION NETWORK FAILURE (EMS)
DIV1MUX
9
6.31E-05


ADS CUTSET 5
Page 1
EQUIP5
OPERATOR FAILS TO OPEN NON-ADS SRV'S
CCF OF DIGITAL TRIP UNITS
ADSMAN
17
2.00E-03
CCFDTM
6.31E-08



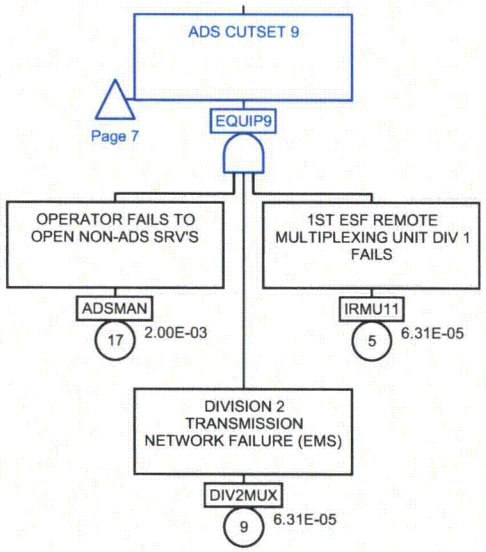
1 2 3 4 5 6

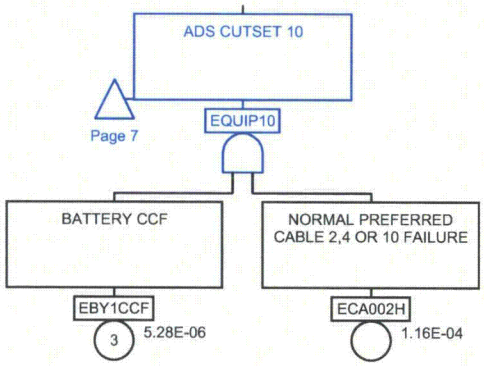
Figure G-15 Reactor Depressurization System

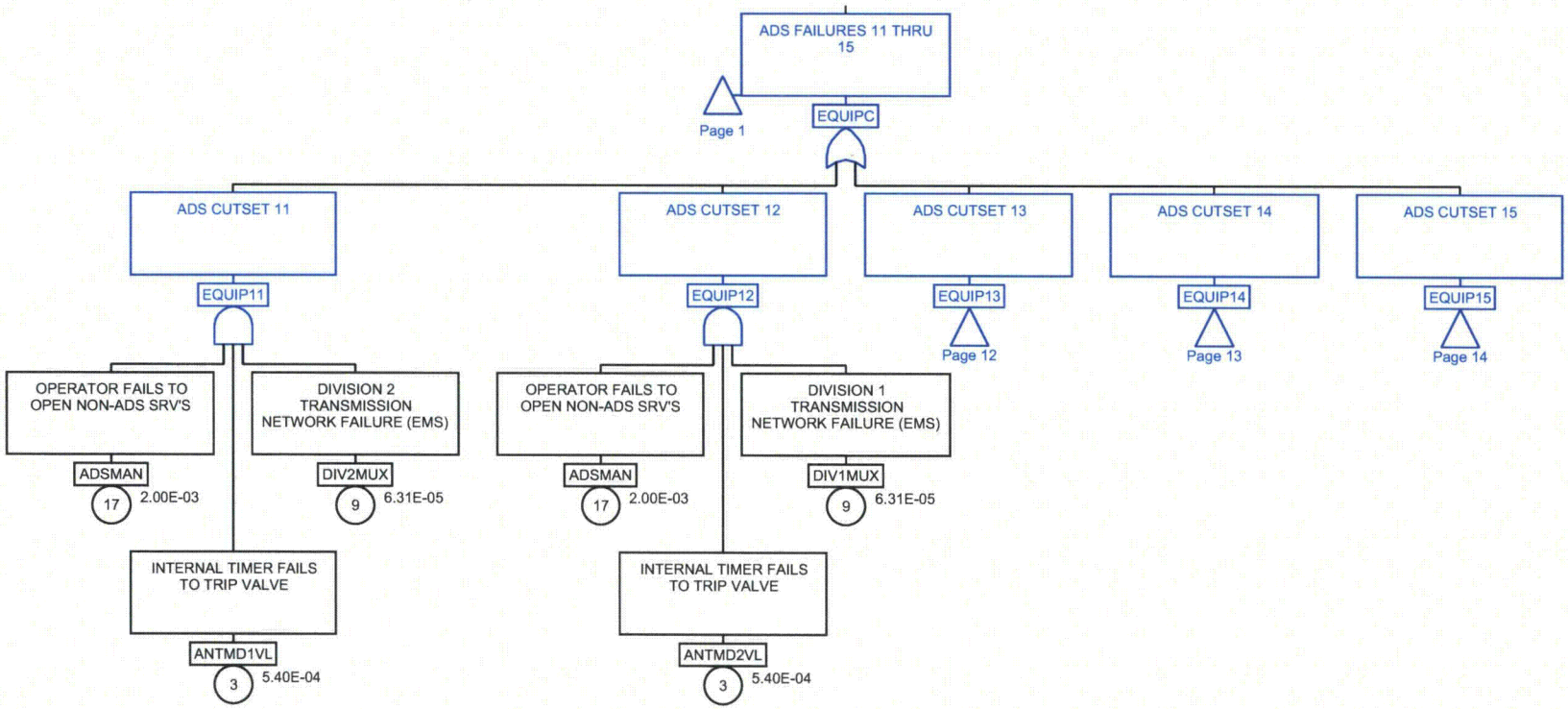


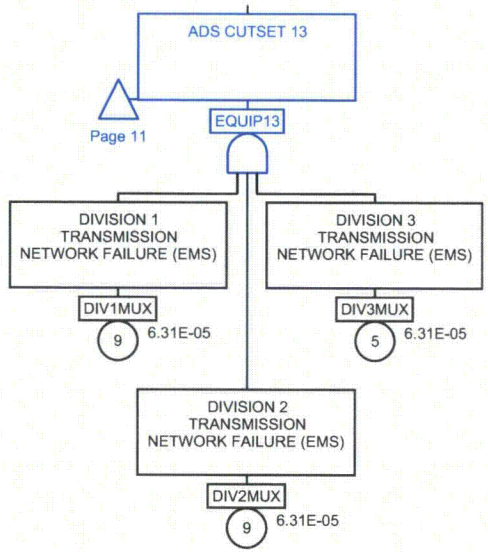
1 2

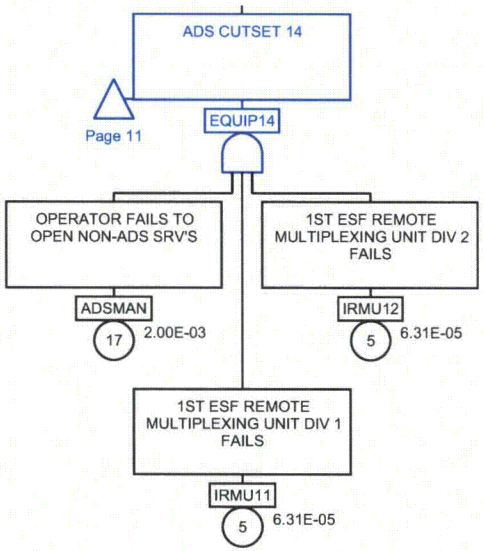
Figure G-15 Reactor Depressurization System

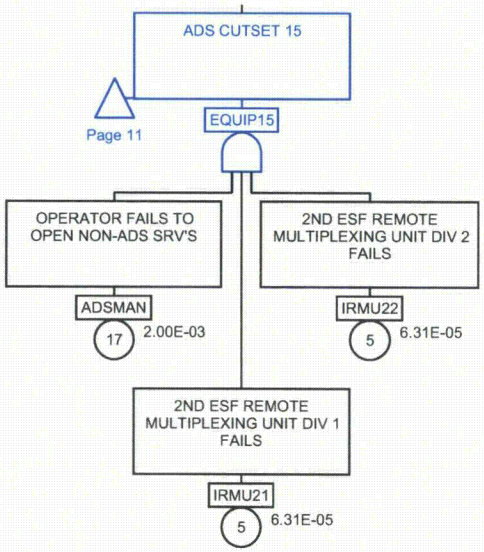

ADS CUTSET 9
Page 7
EQUIP9
OPERATOR FAILS TO OPEN NON-ADS SRV'S
1ST ESF REMOTE MULTIPLEXING UNIT DIV 1 FAILS
ADSMAN
17
2.00E-03
IRMU11
5
6.31E-05
DIVISION 2 TRANSMISSION NETWORK FAILURE (EMS)
DIV2MUX
9
6.31E-05


ADS CUTSET 10
Page 7
EQUIP10
BATTERY CCF
NORMAL PREFERRED
CABLE 2,4 OR 10 FAILURE
EBY1CCF
3
5.28E-06
ECA002H
1.16E-04


ADS FAILURES 11 THRU 15
Page 1
EQUIPC
ADS CUTSET 11
ADS CUTSET 12
ADS CUTSET 13
ADS CUTSET 14
ADS CUTSET 15
EQUIP11
EQUIP12
EQUIP13
EQUIP14
EQUIP15
Page 12
Page 13
Page 14
OPERATOR FAILS TO OPEN NON-ADS SRV'S
DIVISION 2 TRANSMISSION NETWORK FAILURE (EMS)
OPERATOR FAILS TO OPEN NON-ADS SRV'S
DIVISION 1 TRANSMISSION NETWORK FAILURE (EMS)
ADSMAN
17
2.00E-03
DIV2MUX
9
6.31E-05
ADSMAN
17
2.00E-03
DIV1MUX
9
6.31E-05
INTERNAL TIMER FAILS TO TRIP VALVE
INTERNAL TIMER FAILS TO TRIP VALVE
ANTMD1VL
3
5.40E-04
ANTMD2VL
3
5.40E-04

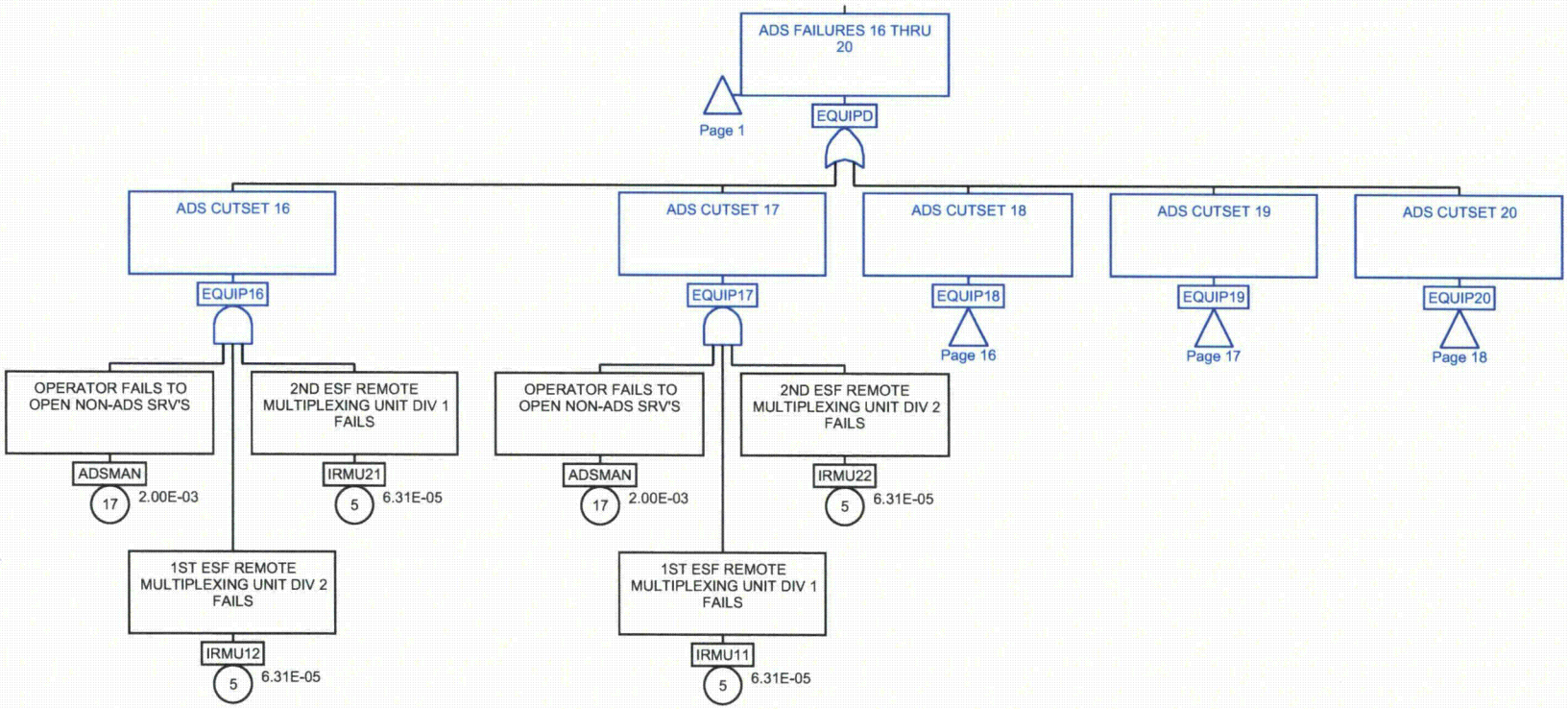

ADS CUTSET 13
Page 11
EQUIP13
DIVISION 1
TRANSMISSION
NETWORK FAILURE (EMS)
DIV1MUX
9
6.31E-05
DIVISION 3
TRANSMISSION
NETWORK FAILURE (EMS)
DIV3MUX
5
6.31E-05
DIVISION 2
TRANSMISSION
NETWORK FAILURE (EMS)
DIV2MUX
9
6.31E-05


ADS CUTSET 14
Page 11
EQUIP14
OPERATOR FAILS TO OPEN NON-ADS SRV'S
1ST ESF REMOTE MULTIPLEXING UNIT DIV 2 FAILS
ADSMAN
17
2.00E-03
IRMU12
5
6.31E-05
1ST ESF REMOTE MULTIPLEXING UNIT DIV 1 FAILS
IRMU11
5
6.31E-05



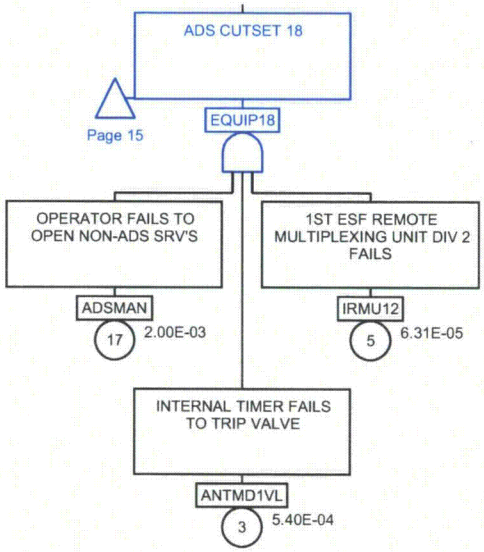
1 2

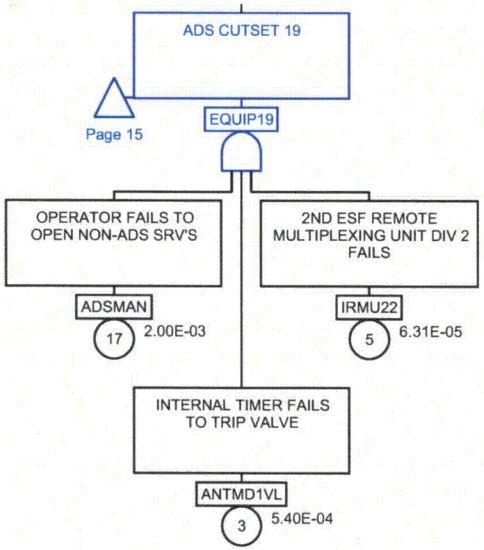
Figure G-15 Reactor Depressurization System

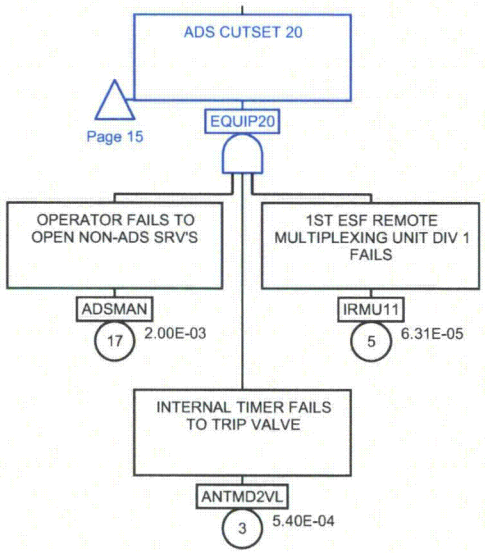


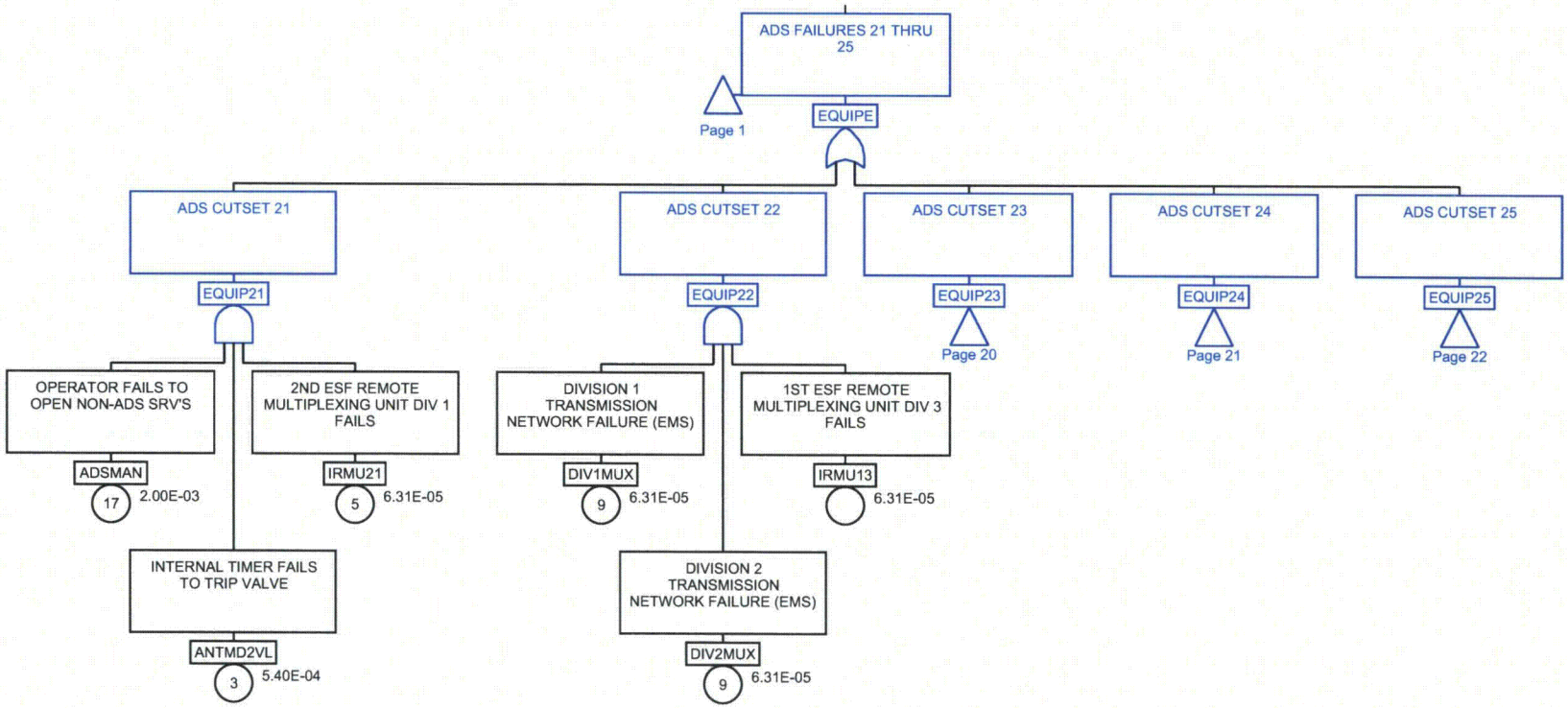
1 2 3 4 5 6

Figure G-15 Reactor Depressurization System


ADS CUTSET 18
Page 15
EQUIP18
OPERATOR FAILS TO OPEN NON-ADS SRV'S
1ST ESF REMOTE MULTIPLEXING UNIT DIV 2 FAILS
ADSMAN
17
2.00E-03
IRMU12
5
6.31E-05
INTERNAL TIMER FAILS TO TRIP VALVE
ANTMD1VL
3
5.40E-04

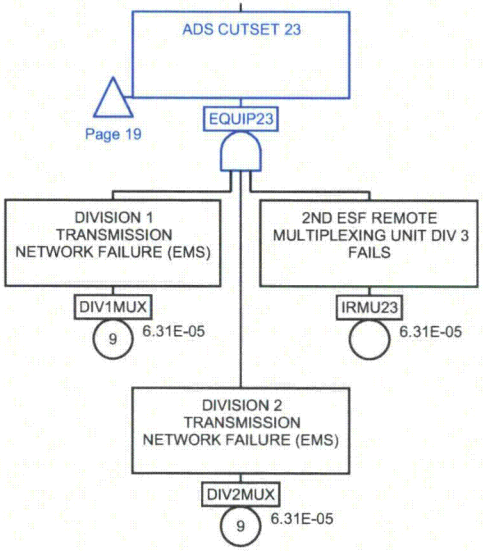

ADS CUTSET 19
Page 15
EQUIP19
OPERATOR FAILS TO OPEN NON-ADS SRV'S
2ND ESF REMOTE MULTIPLEXING UNIT DIV 2 FAILS
ADSMAN
17
2.00E-03
IRMU22
5
6.31E-05
INTERNAL TIMER FAILS TO TRIP VALVE
ANTMD1VL
3
5.40E-04


ADS CUTSET 20
Page 15
EQUIP20
OPERATOR FAILS TO OPEN NON-ADS SRV'S
1ST ESF REMOTE MULTIPLEXING UNIT DIV 1 FAILS
ADSMAN
17
2.00E-03
IRMU11
5
6.31E-05
INTERNAL TIMER FAILS TO TRIP VALVE
ANTMD2VL
3
5.40E-04



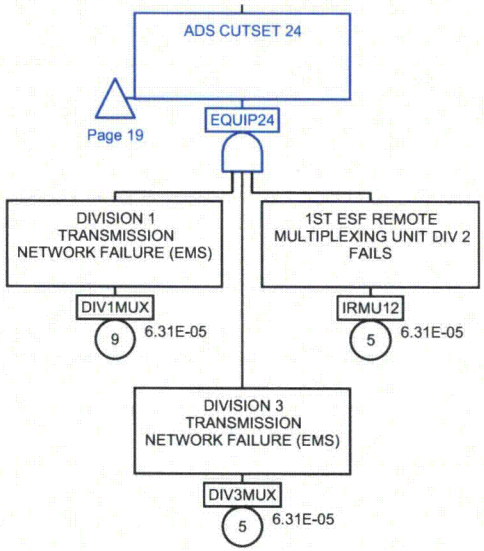
1 2 3 4 5 6

Figure G-15 Reactor Depressurization System



1 2

Figure G-15 Reactor Depressurization System


ADS CUTSET 24
Page 19
EQUIP24
DIVISION 1
TRANSMISSION
NETWORK FAILURE (EMS)
1ST ESF REMOTE
MULTIPLEXING UNIT DIV 2
FAILS
DIV1MUX
9
6.31E-05
IRMU12
5
6.31E-05
DIVISION 3
TRANSMISSION
NETWORK FAILURE (EMS)
DIV3MUX
5
6.31E-05

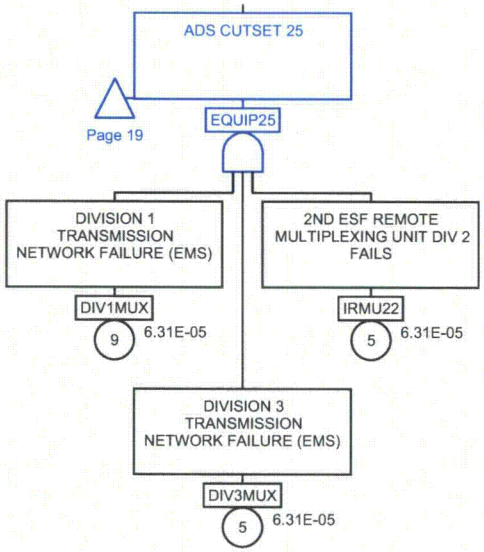
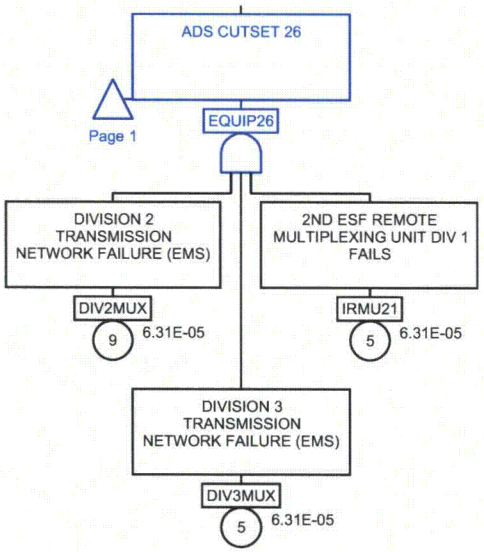


Figure G-15 Reactor Depressurization System



1 2

Figure G-15 Reactor Depressurization System

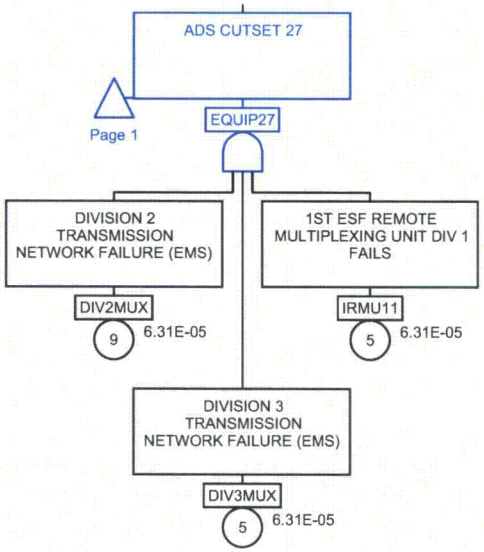
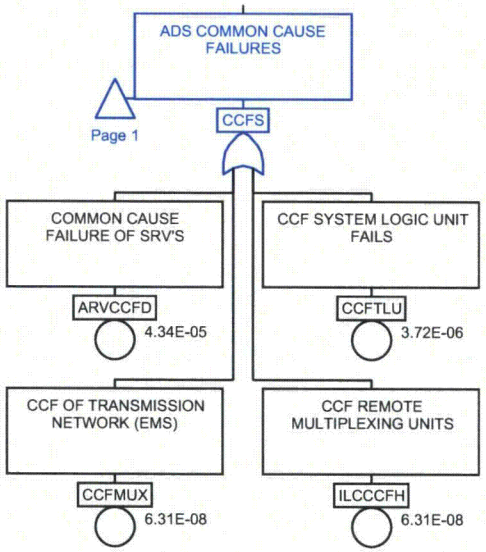
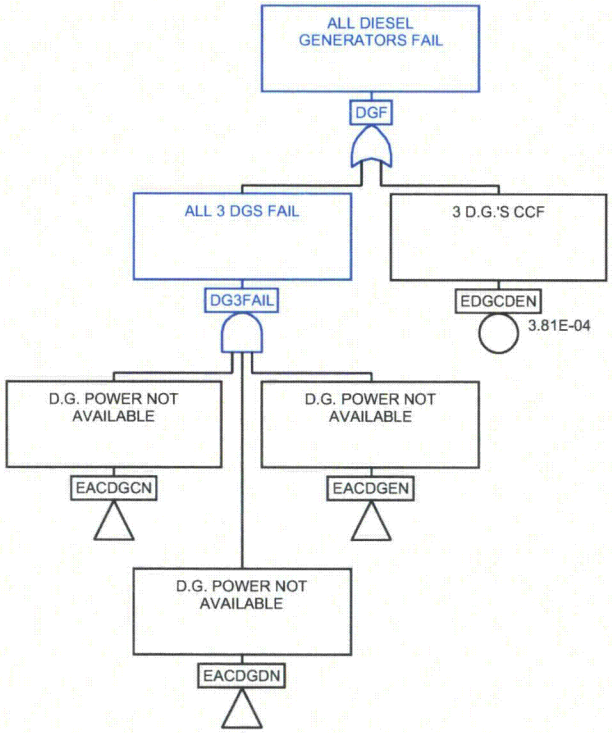


Figure G-15 Reactor Depressurization System


ADS COMMON CAUSE FAILURES
Page 1
CCFS
COMMON CAUSE FAILURE OF SRV'S
ARVCCFD
4.34E-05
CCF SYSTEM LOGIC UNIT FAILS
CCFTLU
3.72E-06
CCF OF TRANSMISSION NETWORK (EMS)
CCFMUX
6.31E-08
CCF REMOTE MULTIPLEXING UNITS
ILCCCFH
6.31E-08

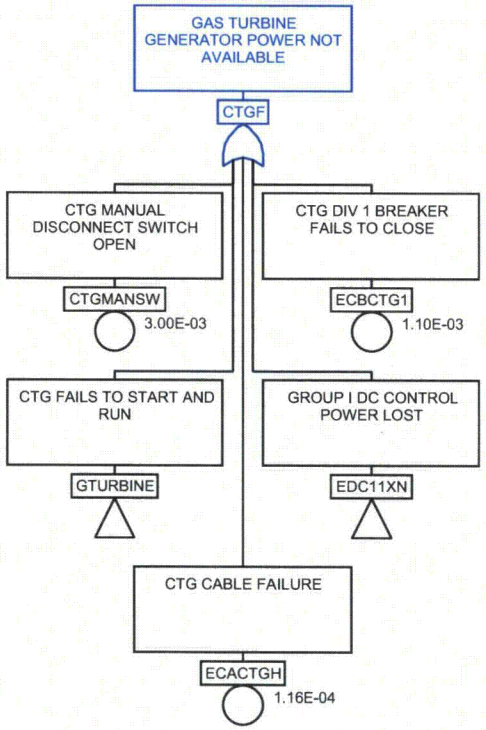
Name	Page	Zone	Name	Page	Zone	
ADSMAN	3	1	DIV2MUX	23	1	Shutdown Probabilistic Risk Assessment
ADSMAN	5	1	DIV2MUX	24	1	
ADSMAN	6	1	DIV3MUX	12	2	
ADSMAN	7	1	DIV3MUX	21	2	
ADSMAN	7	3	DIV3MUX	22	2	
ADSMAN	8	1	DIV3MUX	23	2	
ADSMAN	9	1	DIV3MUX	24	2	
ADSMAN	11	1	EBY1CCF	2	1	
ADSMAN	11	3	EBY1CCF	4	1	
ADSMAN	13	1	EBY1CCF	10	1	
ADSMAN	14	1	ECA002H	10	2	
ADSMAN	15	1	ELOOP1	2	2	
ADSMAN	15	3	ELOOP12	4	2	
ADSMAN	16	1	EQUIP	1	4	
ADSMAN	17	1	EQUIP1	1	1	
ADSMAN	18	1	EQUIP1	2	2	
ADSMAN	19	1	EQUIP10	7	7	
ANTMD1VL	11	2	EQUIP10	10	2	
ANTMD1VL	16	2	EQUIP11	11	2	
ANTMD1VL	17	2	EQUIP12	11	4	
ANTMD2VL	11	4	EQUIP13	11	5	
ANTMD2VL	18	2	EQUIP13	12	2	
ANTMD2VL	19	2	EQUIP14	11	6	
ARVCCFD	25	1	EQUIP14	13	2	
CCFDTM	6	2	EQUIP15	11	7	
CCFMUX	25	1	EQUIP15	14	2	
CCFS	1	5	EQUIP16	15	2	
CCFS	25	2	EQUIP17	15	4	
CCFTLU	25	2	EQUIP18	15	5	
DIV1MUX	5	2	EQUIP18	16	2	
DIV1MUX	7	2	EQUIP19	15	6	
DIV1MUX	8	2	EQUIP19	17	2	
DIV1MUX	11	4	EQUIP2	1	1	
DIV1MUX	12	1	EQUIP2	3	2	
DIV1MUX	19	3	EQUIP20	15	7	
DIV1MUX	20	1	EQUIP20	18	2	
DIV1MUX	21	1	EQUIP21	19	2	
DIV1MUX	22	1	EQUIP22	19	4	
DIV2MUX	5	2	EQUIP23	19	5	
DIV2MUX	7	4	EQUIP23	20	2	
DIV2MUX	9	2	EQUIP24	19	6	
DIV2MUX	11	2	EQUIP24	21	2	
DIV2MUX	12	2	EQUIP25	19	7	
DIV2MUX	19	4	EQUIP25	22	2	
DIV2MUX	20	2	EQUIP26	1	6	

Name	Page	Zone	Name	Page	Zone	
EQUIP26	23	2	IRMU22	14	2	Shutdown Probabilistic Risk Assessment
EQUIP27	1	7	IRMU22	15	4	
EQUIP27	24	2	IRMU22	17	2	
EQUIP3	1	2	IRMU22	22	2	
EQUIP3	4	2	IRMU23	20	2	
EQUIP31	4	2	RXDEPRESS	1	5	
EQUIP4	1	2	SD_TE	4	3	
EQUIP4	5	2				
EQUIP5	1	2				
EQUIP5	6	2				
EQUIP6	7	2				
EQUIP7	7	4				
EQUIP8	7	5				
EQUIP8	8	2				
EQUIP9	7	6				
EQUIP9	9	2				
EQUIPA	1	2				
EQUIPB	1	3				
EQUIPB	7	4				
EQUIPC	1	4				
EQUIPC	11	4				
EQUIPD	1	5				
EQUIPD	15	4				
EQUIPE	1	6				
EQUIPE	19	4				
EQUIPF	1	7				
ILCCCFH	25	2				
ILEPVCH	3	2				
IRMU11	9	2				
IRMU11	13	2				
IRMU11	15	4				
IRMU11	18	2				
IRMU11	24	2				
IRMU12	7	2				
IRMU12	13	2				
IRMU12	15	2				
IRMU12	16	2				
IRMU12	21	2				
IRMU13	19	4				
IRMU21	7	4				
IRMU21	14	2				
IRMU21	15	2				
IRMU21	19	2				
IRMU21	23	2				
IRMU22	8	2				



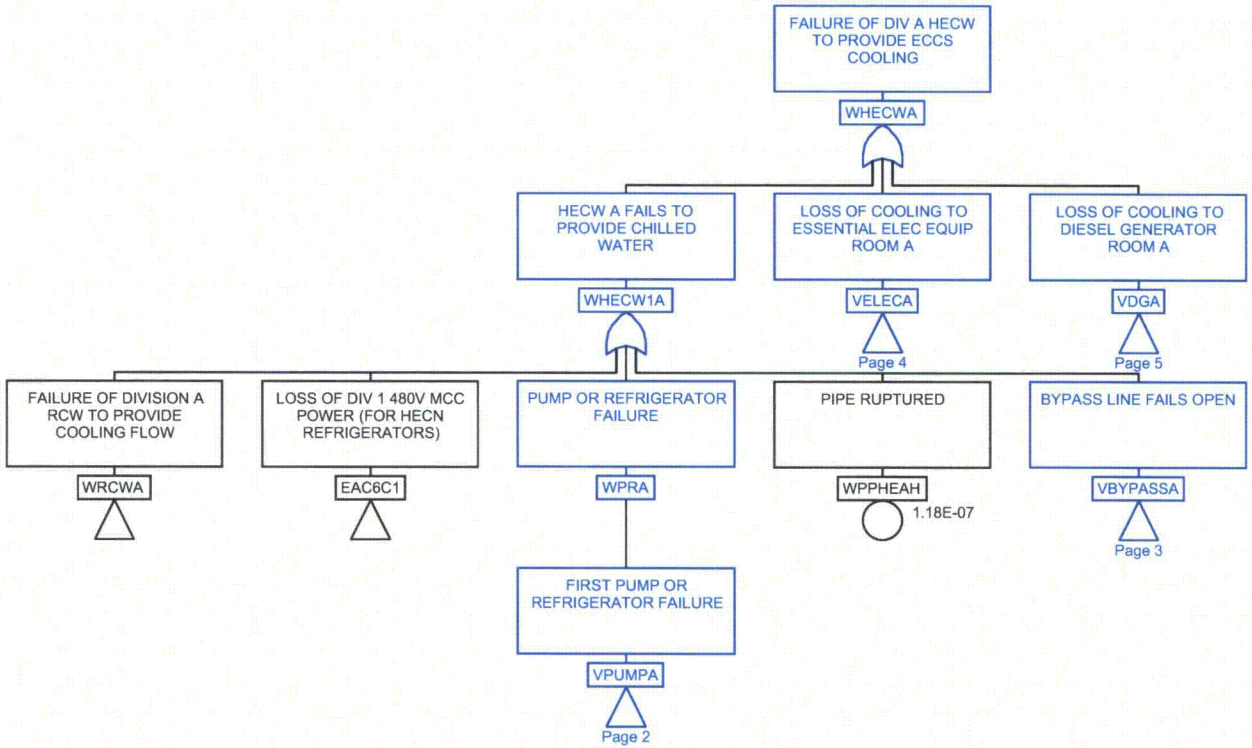
1 2

Figure G-16 Diesel Generators



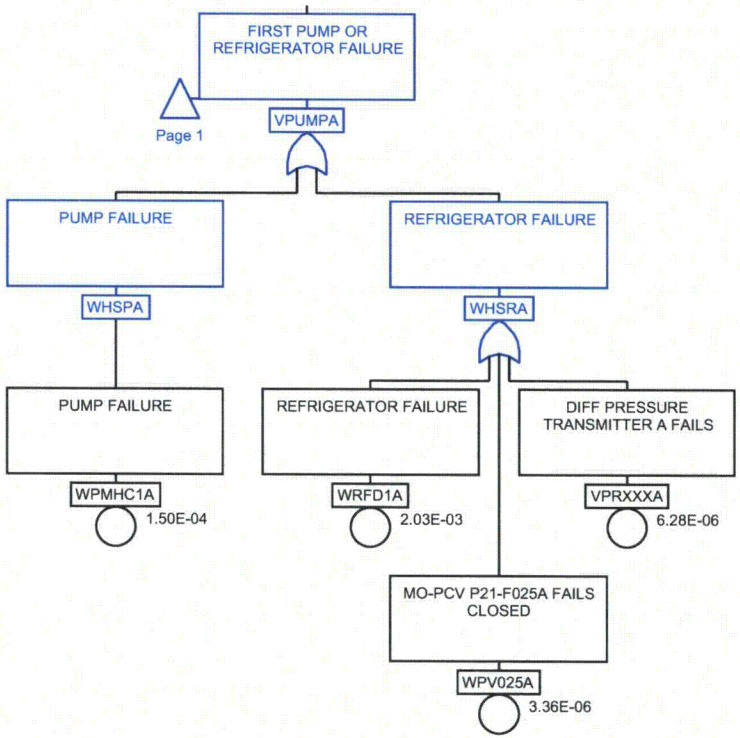
1 2

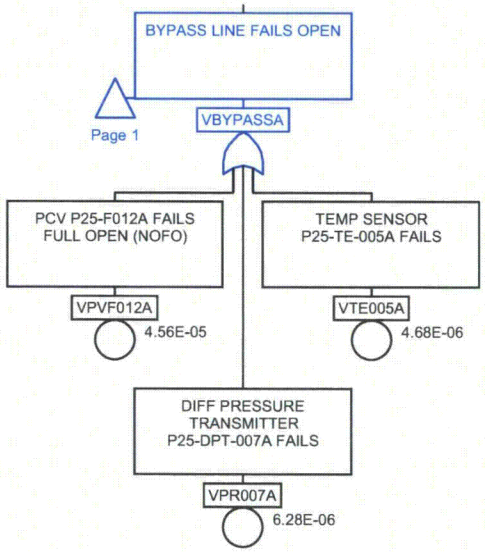
Figure G-17 Gas Turbine Generator (SDC)

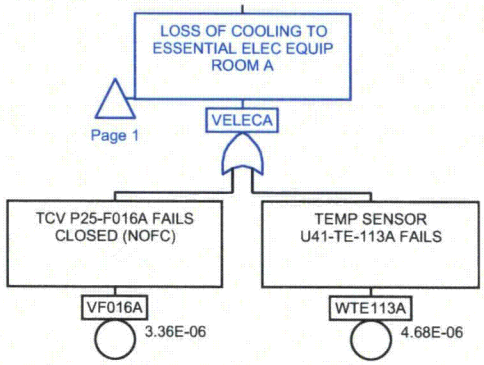


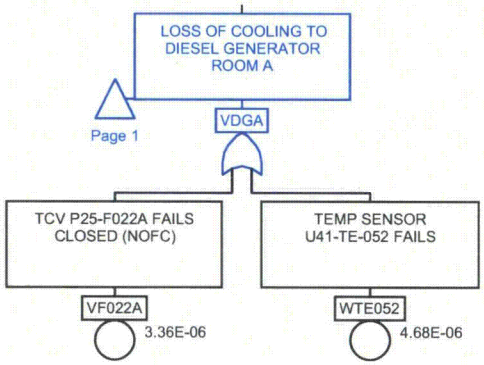
1 2 3 4 5

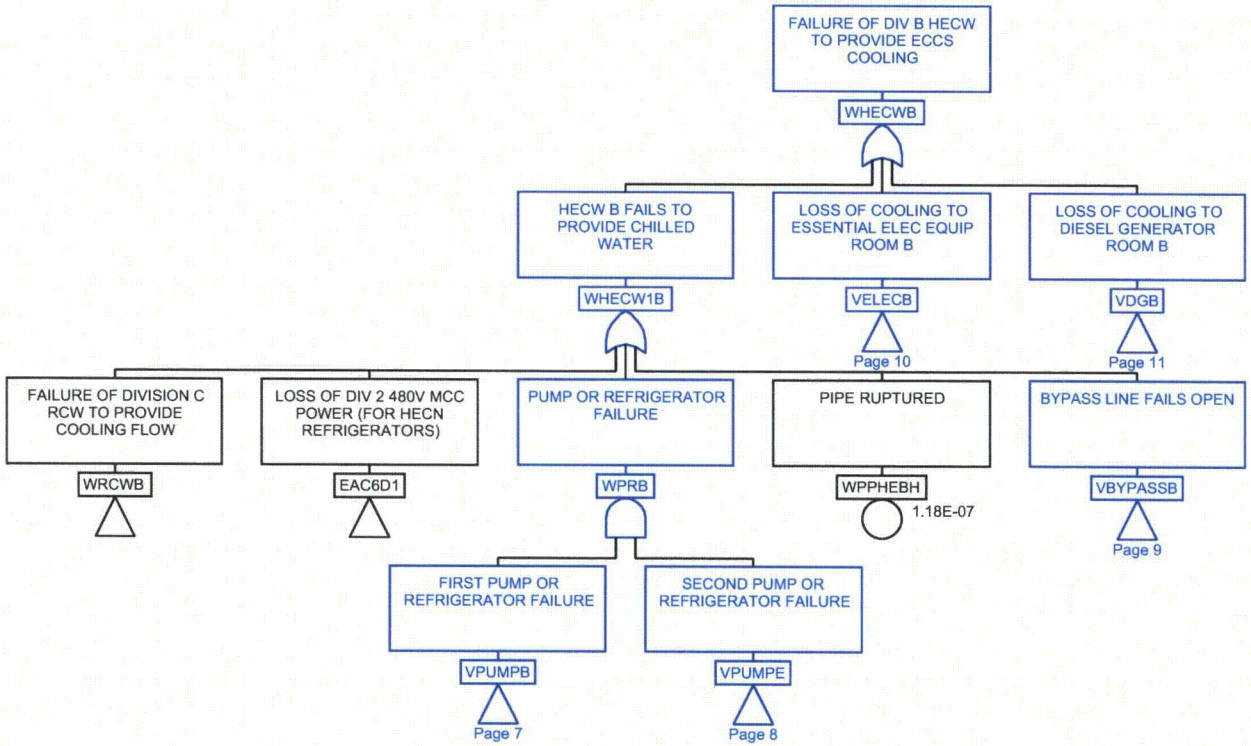
Figure G-18 HVAC Emergency Cooling Water System

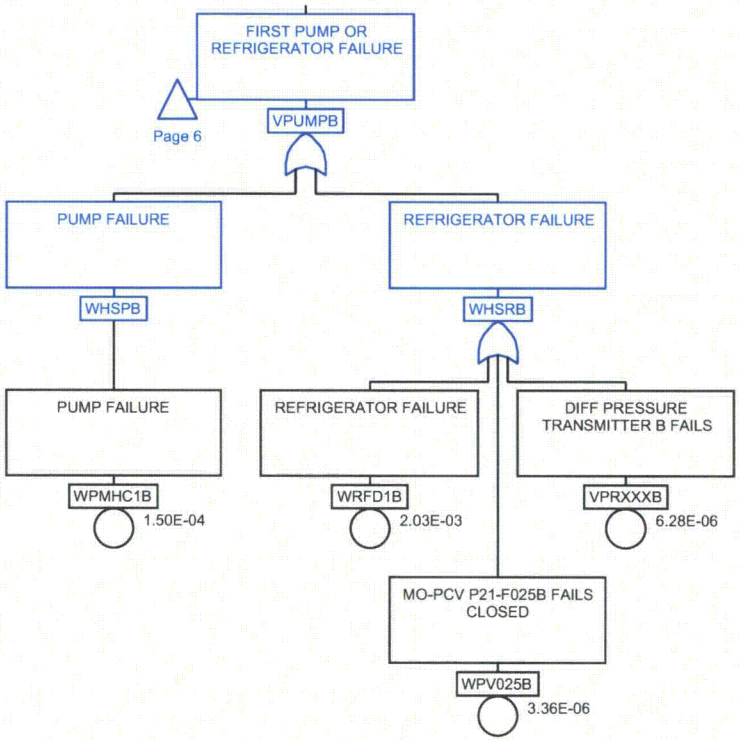

FIRST PUMP OR REFRIGERATOR FAILURE
Page 1
VPUMPA
PUMP FAILURE
REFRIGERATOR FAILURE
WHSPA
WHSRA
PUMP FAILURE
REFRIGERATOR FAILURE
DIFF PRESSURE TRANSMITTER A FAILS
WPMHC1A
1.50E-04
WRFD1A
2.03E-03
VPRXXXA
6.28E-06
MO-PCV P21-F025A FAILS CLOSED
WPV025A
3.36E-06

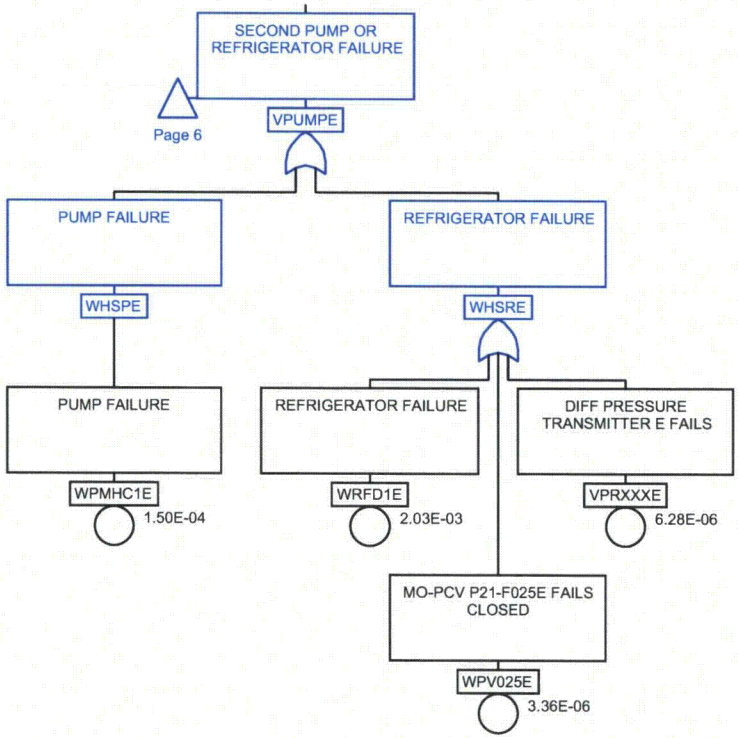

BYPASS LINE FAILS OPEN
Page 1
VBYPASSA
PCV P25-F012A FAILS
FULL OPEN (NOFO)
TEMP SENSOR
P25-TE-005A FAILS
VPVF012A
4.56E-05
VTE005A
4.68E-06
DIFF PRESSURE
TRANSMITTER
P25-DPT-007A FAILS
VPR007A
6.28E-06

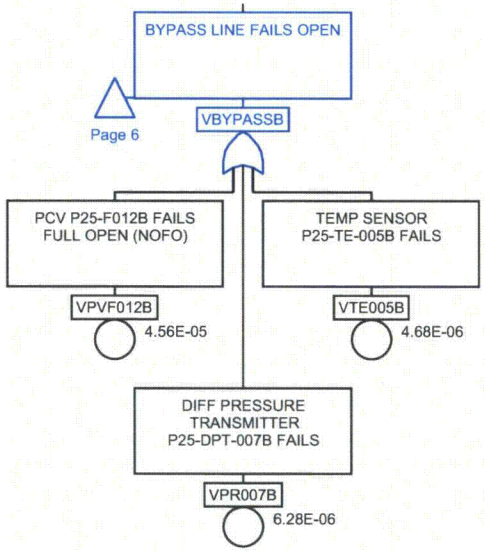

LOSS OF COOLING TO ESSENTIAL ELEC EQUIP ROOM A
Page 1
VELECA
TCV P25-F016A FAILS CLOSED (NOFC)
TEMP SENSOR U41-TE-113A FAILS
VF016A
3.36E-06
WTE113A
4.68E-06

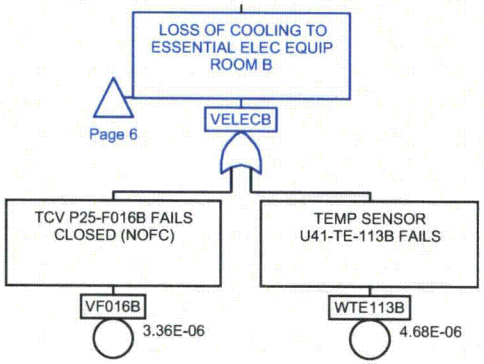

LOSS OF COOLING TO DIESEL GENERATOR ROOM A
Page 1
VDGA
TCV P25-F022A FAILS CLOSED (NOFC)
TEMP SENSOR U41-TE-052 FAILS
VF022A
3.36E-06
WTE052
4.68E-06

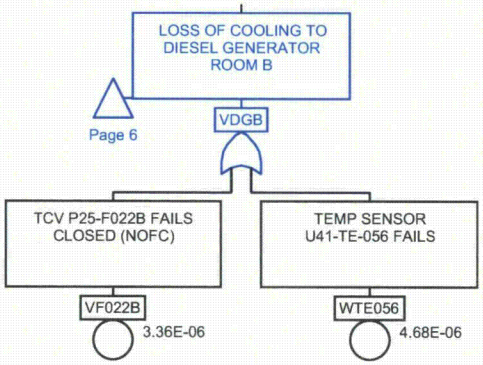

FAILURE OF DIV B HECW TO PROVIDE ECCS COOLING
WHECWB
HECW B FAILS TO PROVIDE CHILLED WATER
WHECW1B
LOSS OF COOLING TO ESSENTIAL ELEC EQUIP ROOM B
VELECB
Page 10
LOSS OF COOLING TO DIESEL GENERATOR ROOM B
VDGB
Page 11
FAILURE OF DIVISION C RCW TO PROVIDE COOLING FLOW
WRCWB
LOSS OF DIV 2 480V MCC POWER (FOR HECN REFRIGERATORS)
EAC6D1
PUMP OR REFRIGERATOR FAILURE
WPRB
PIPE RUPTURED
WPPHEBH
1.18E-07
BYPASS LINE FAILS OPEN
VBYPASSB
Page 9
FIRST PUMP OR REFRIGERATOR FAILURE
VPUMPB
Page 7
SECOND PUMP OR REFRIGERATOR FAILURE
VPUMPE
Page 8

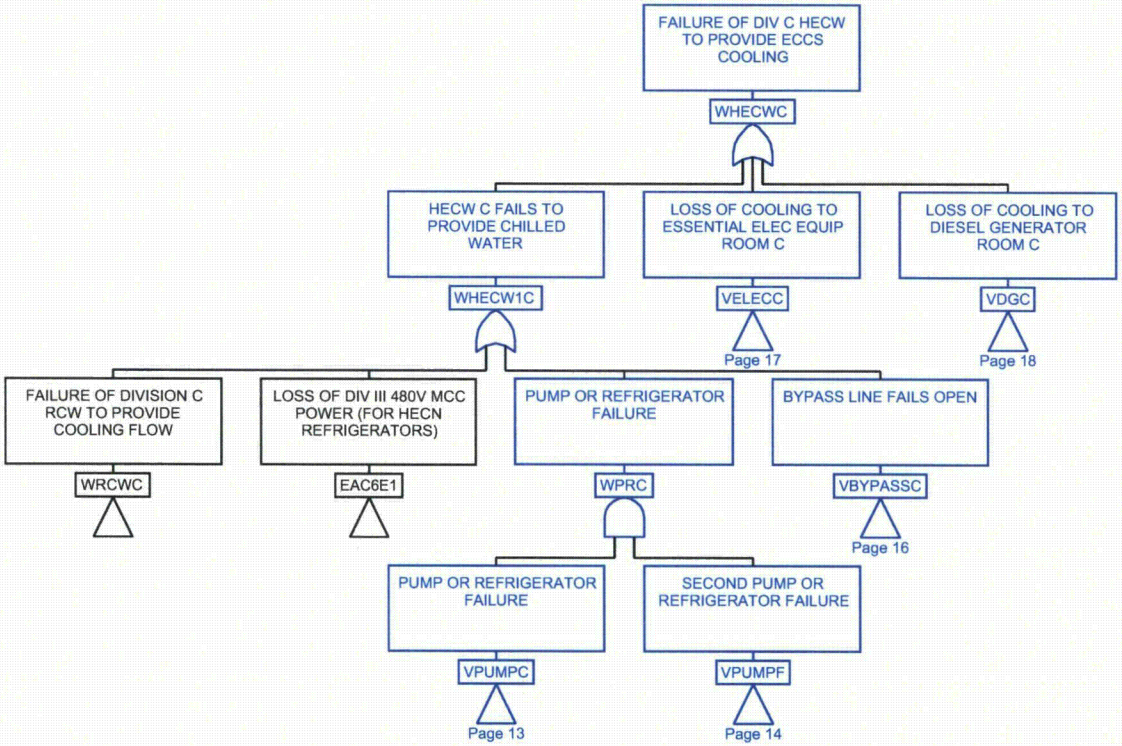

FIRST PUMP OR REFRIGERATOR FAILURE
Page 6
VPUMPB
PUMP FAILURE
REFRIGERATOR FAILURE
WHSPB
WHSRB
PUMP FAILURE
REFRIGERATOR FAILURE
DIFF PRESSURE TRANSMITTER B FAILS
WPMHC1B
1.50E-04
WRFD1B
2.03E-03
VPRXXXB
6.28E-06
MO-PCV P21-F025B FAILS CLOSED
WPV025B
3.36E-06


SECOND PUMP OR REFRIGERATOR FAILURE
Page 6
VPUMPE
PUMP FAILURE
REFRIGERATOR FAILURE
WHSPE
WHSRE
PUMP FAILURE
REFRIGERATOR FAILURE
DIFF PRESSURE TRANSMITTER E FAILS
WPMHC1E
1.50E-04
WRFD1E
2.03E-03
VPRXXXE
6.28E-06
MO-PCV P21-F025E FAILS CLOSED
WPV025E
3.36E-06

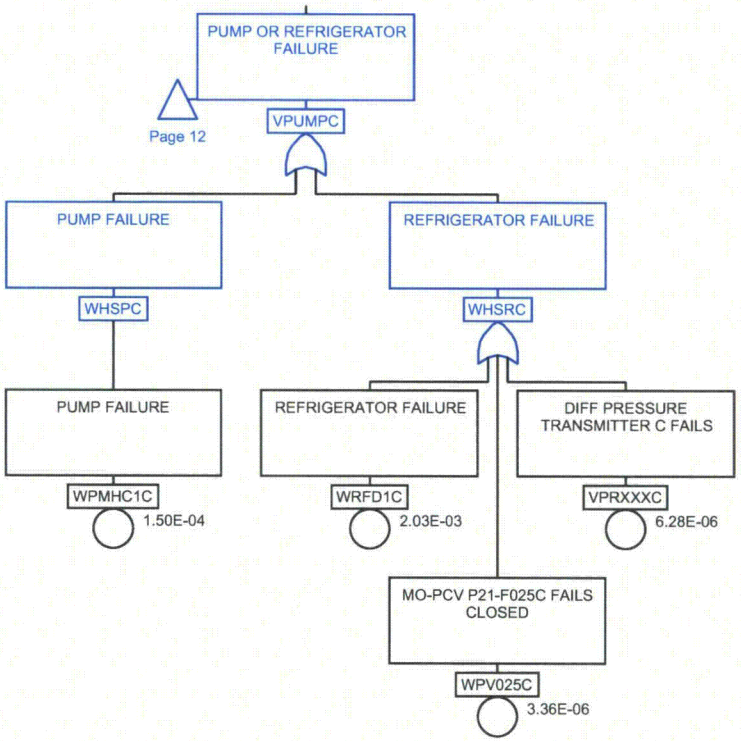

BYPASS LINE FAILS OPEN
Page 6
VBYPASSB
PCV P25-F012B FAILS
FULL OPEN (NOFO)
TEMP SENSOR
P25-TE-005B FAILS
VPVF012B
4.56E-05
VTE005B
4.68E-06
DIFF PRESSURE
TRANSMITTER
P25-DPT-007B FAILS
VPR007B
6.28E-06


LOSS OF COOLING TO ESSENTIAL ELEC EQUIP ROOM B
Page 6
VELECB
TCV P25-F016B FAILS CLOSED (NOFC)
TEMP SENSOR U41-TE-113B FAILS
VF016B
3.36E-06
WTE113B
4.68E-06


LOSS OF COOLING TO DIESEL GENERATOR ROOM B
Page 6
VDGB
TCV P25-F022B FAILS CLOSED (NOFC)
TEMP SENSOR U41-TE-056 FAILS
VF022B
3.36E-06
WTE056
4.68E-06

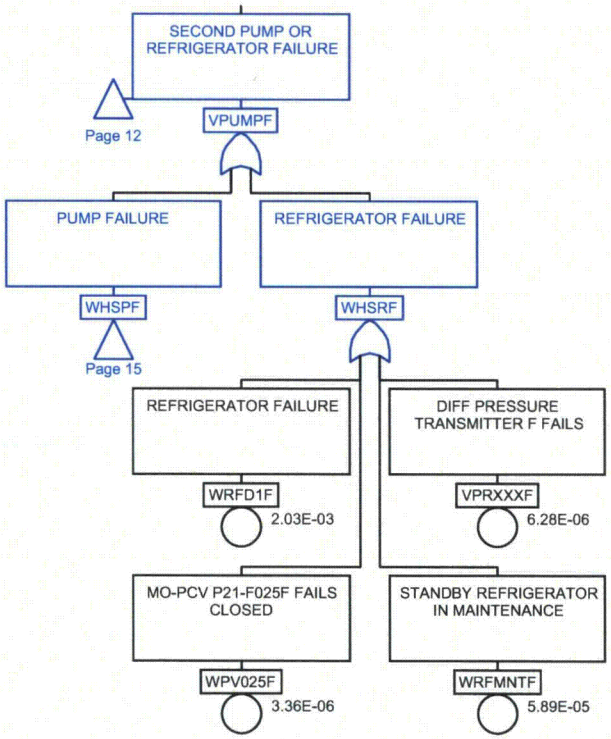

FAILURE OF DIV C HECW TO PROVIDE ECCS COOLING
WHECWC
HECW C FAILS TO PROVIDE CHILLED WATER
WHECW1C
LOSS OF COOLING TO ESSENTIAL ELEC EQUIP ROOM C
VELECC
Page 17
LOSS OF COOLING TO DIESEL GENERATOR ROOM C
VDGC
Page 18
FAILURE OF DIVISION C RCW TO PROVIDE COOLING FLOW
WRCWC
LOSS OF DIV III 480V MCC POWER (FOR HECN REFRIGERATORS)
EAC6E1
PUMP OR REFRIGERATOR FAILURE
WPRC
BYPASS LINE FAILS OPEN
VBYPASSC
Page 16
PUMP OR REFRIGERATOR FAILURE
VPUMPC
Page 13
SECOND PUMP OR REFRIGERATOR FAILURE
VPUMPF
Page 14

1 2 3 4



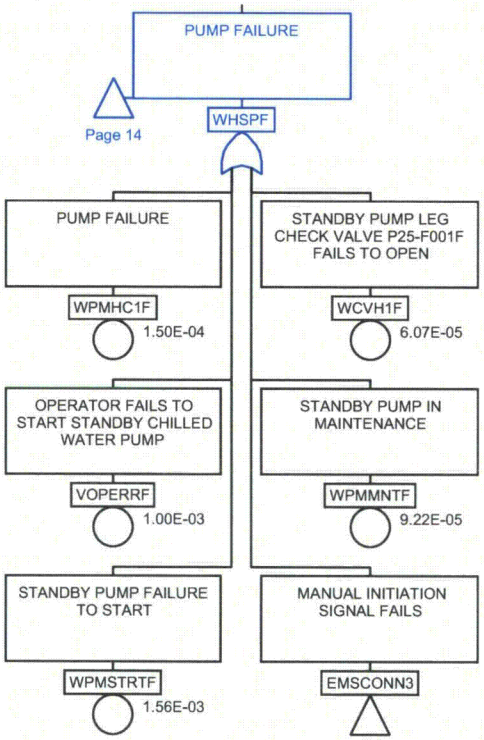
1 2 3

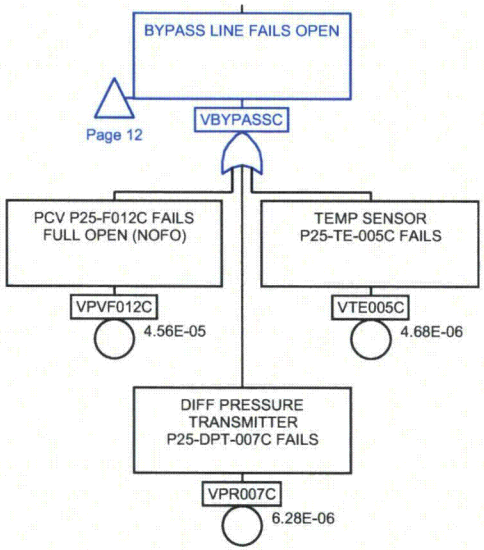
Figure G-18 HVAC Emergency Cooling Water System



1 2

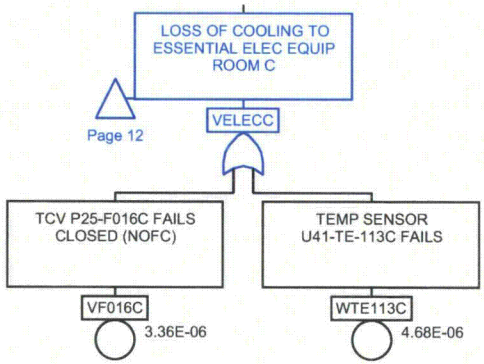
Figure G-18 HVAC Emergency Cooling Water System


PUMP FAILURE
Page 14
WHSPF
PUMP FAILURE
WPMHC1F
1.50E-04
STANDBY PUMP LEG CHECK VALVE P25-F001F FAILS TO OPEN
WCVH1F
6.07E-05
OPERATOR FAILS TO START STANDBY CHILLED WATER PUMP
VOPERRF
1.00E-03
STANDBY PUMP IN MAINTENANCE
WPMMNTF
9.22E-05
STANDBY PUMP FAILURE TO START
WPMSTRTF
1.56E-03
MANUAL INITIATION SIGNAL FAILS
EMSCONN3



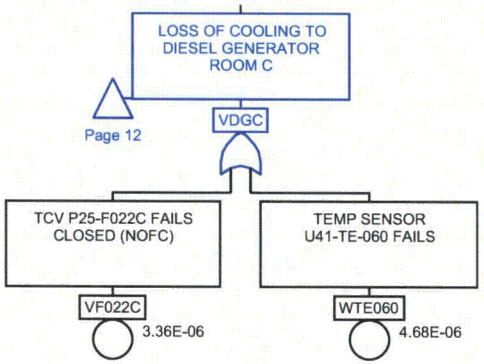
1 2

Figure G-18 HVAC Emergency Cooling Water System



1 2

Figure G-18 HVAC Emergency Cooling Water System



1 2

Figure G-18 HVAC Emergency Cooling Water System

Name	Page	Zone	Name	Page	Zone	
EAC6C1	1	2	VPUMPF	12	4	Shutdown Probabilistic Risk Assessment
EAC6D1	6	2	VPUMPF	14	2	
EAC6E1	12	2	VPVF012A	3	1	
EMSCONN3	15	2	VPVF012B	9	1	
VBYPASSA	1	5	VPVF012C	16	1	
VBYPASSA	3	2	VTE005A	3	2	
VBYPASSB	6	5	VTE005B	9	2	
VBYPASSB	9	2	VTE005C	16	2	
VBYPASSC	12	4	WCVH1F	15	2	
VBYPASSC	16	2	WHECW1A	1	3	
VDGA	1	5	WHECW1B	6	3	
VDGA	5	2	WHECW1C	12	3	
VDGB	6	5	WHECWA	1	4	
VDGB	11	2	WHECWB	6	4	
VDGC	12	5	WHECWC	12	4	
VDGC	18	2	WHSPA	2	1	
VELECA	1	4	WHSPB	7	1	
VELECA	4	2	WHSPC	13	1	
VELECB	6	4	WHSPE	8	1	
VELECB	10	2	WHSPF	14	1	
VELECC	12	4	WHSPF	15	2	
VELECC	17	2	WHSRA	2	3	
VF016A	4	1	WHSRB	7	3	
VF016B	10	1	WHSRC	13	3	
VF016C	17	1	WHSRE	8	3	
VF022A	5	1	WHSRF	14	2	
VF022B	11	1	WPMHC1A	2	1	
VF022C	18	1	WPMHC1B	7	1	
VOPERRF	15	1	WPMHC1C	13	1	
VPR007A	3	2	WPMHC1E	8	1	
VPR007B	9	2	WPMHC1F	15	1	
VPR007C	16	2	WPMMNTF	15	2	
VPRXXXA	2	3	WPMSTRTF	15	1	
VPRXXXB	7	3	WPPHEAH	1	4	
VPRXXXC	13	3	WPPHEBH	6	4	
VPRXXXE	8	3	WPRA	1	3	
VPRXXXF	14	3	WPRB	6	3	
VPUMPA	1	3	WPRC	12	3	
VPUMPA	2	2	WPV025A	2	3	
VPUMPB	6	3	WPV025B	7	3	
VPUMPB	7	2	WPV025C	13	3	
VPUMPC	12	3	WPV025E	8	3	
VPUMPC	13	2	WPV025F	14	2	
VPUMPE	6	4	WRCWA	1	1	
VPUMPE	8	2	WRCWB	6	1	

Name	Page	Zone	Name	Page	Zone	
WRCWC	12	1				Shutdown Probabilistic Risk Assessment
WRFD1A	2	2				
WRFD1B	7	2				
WRFD1C	13	2				
WRFD1E	8	2				
WRFD1F	14	2				
WRFMNTF	14	3				
WTE052	5	2				
WTE056	11	2				
WTE060	18	2				
WTE113A	4	2				
WTE113B	10	2				
WTE113C	17	2				