INEEL
Idaho National Engineering and Environmental Laboratory
BECHTEL BWXT IDAHO, LLC

P.O. Box 1625
2525 North Fremont Ave.
Idaho Falls, Idaho 83415
(208) 526-0111

FAX TRAMSMITTAL

Date: 1/13/00

To: GLENN KELLEY **Phone:** 301-415-1075

Company: NRC **Fax:** 301-415-3577

From: SOLI KHERICHA **Phone:** 208-526-9254

Fax Number: (208)526-2930

Number of pages INCLUDING Cover page 11

NOTE/MESSAGE

LOSP (Grid Related & Plant Centered)
ET, FT, Cut. SETS

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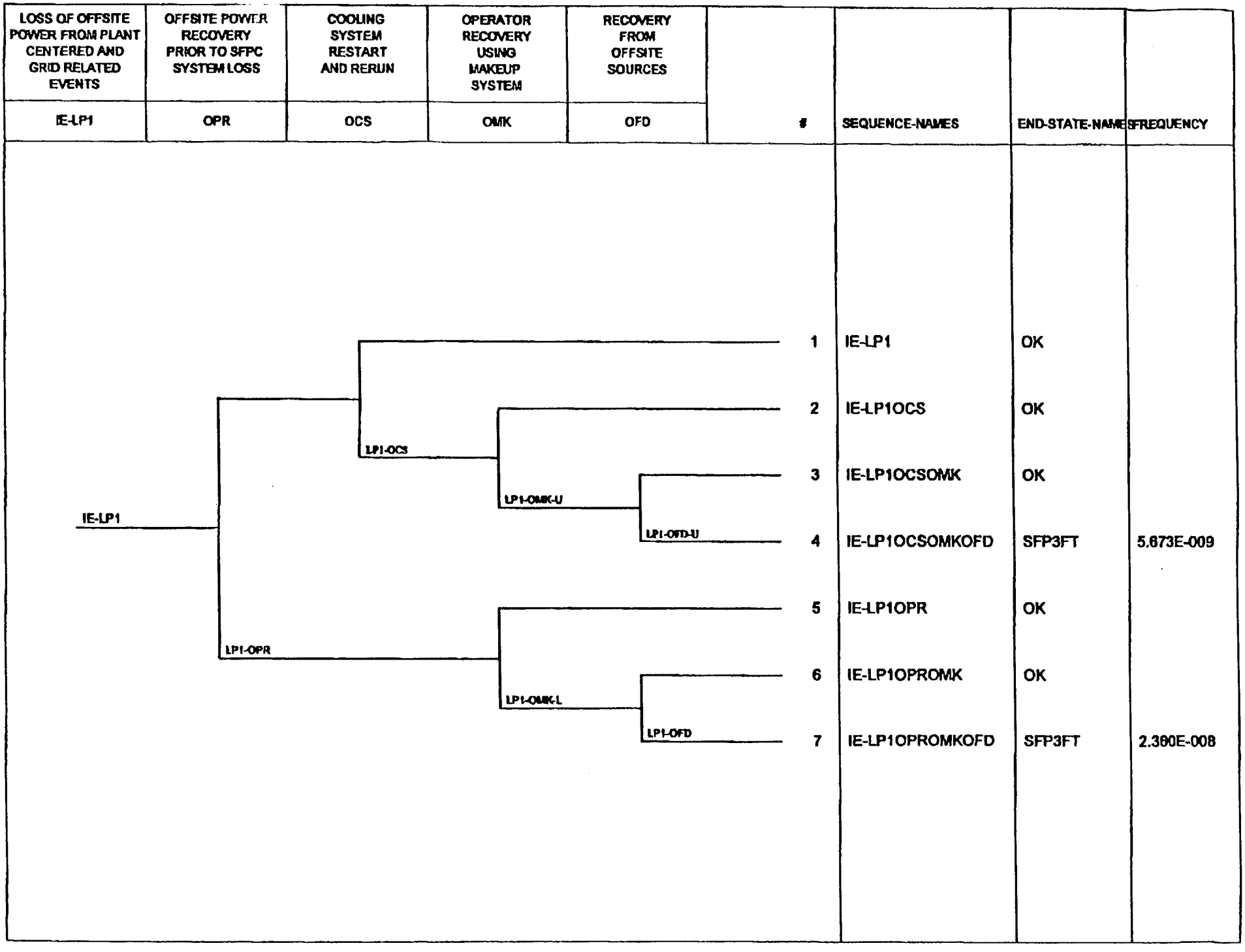
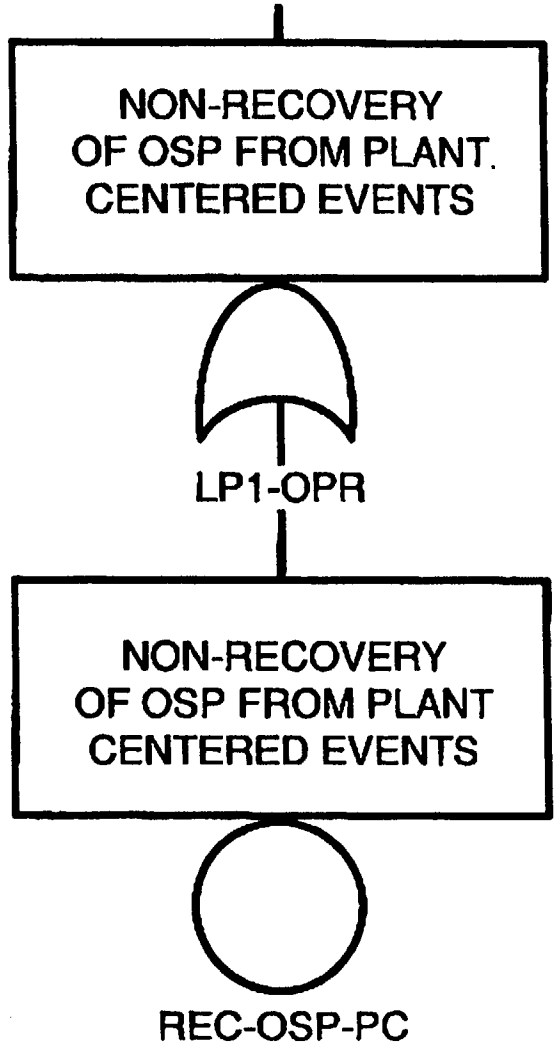
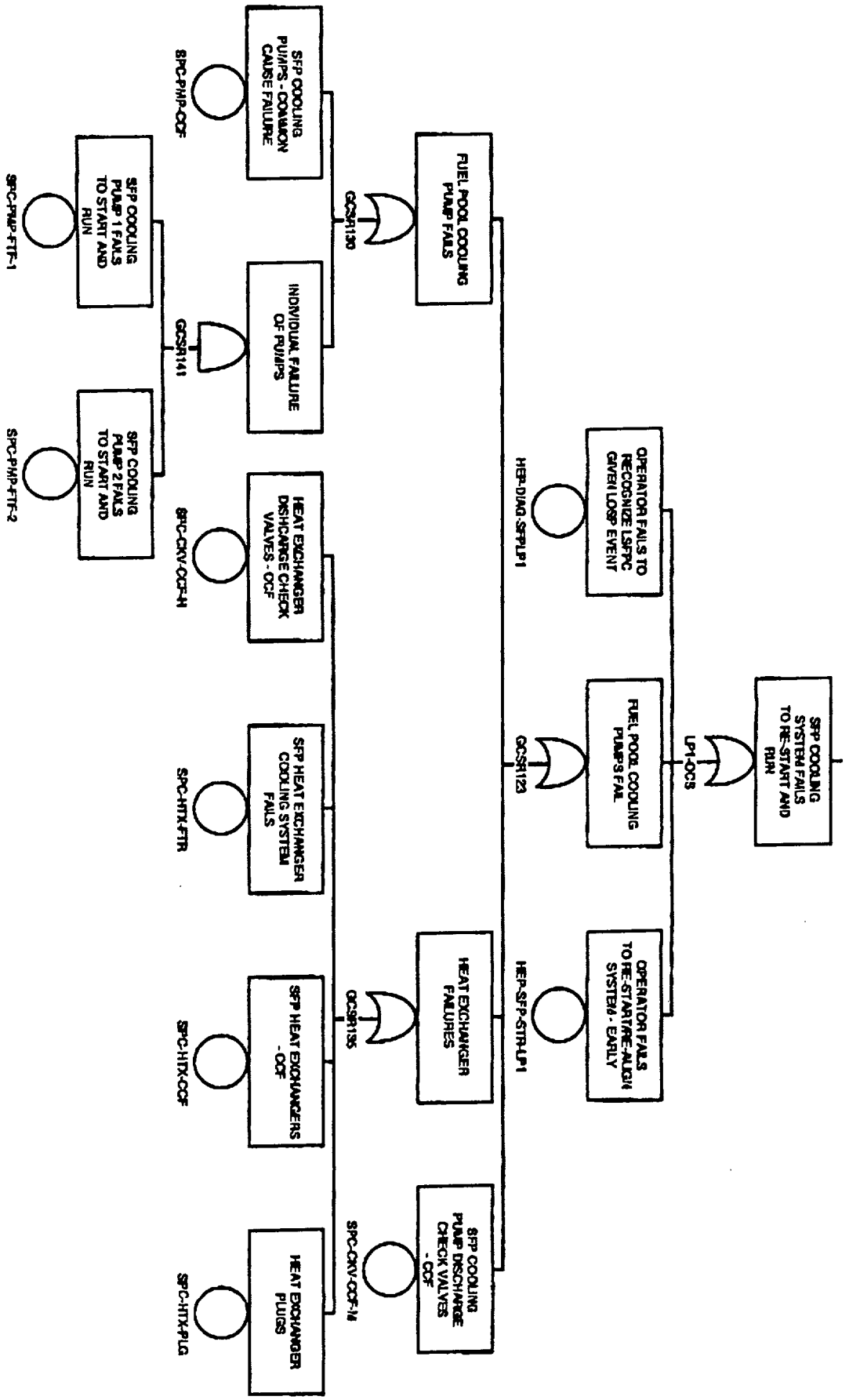
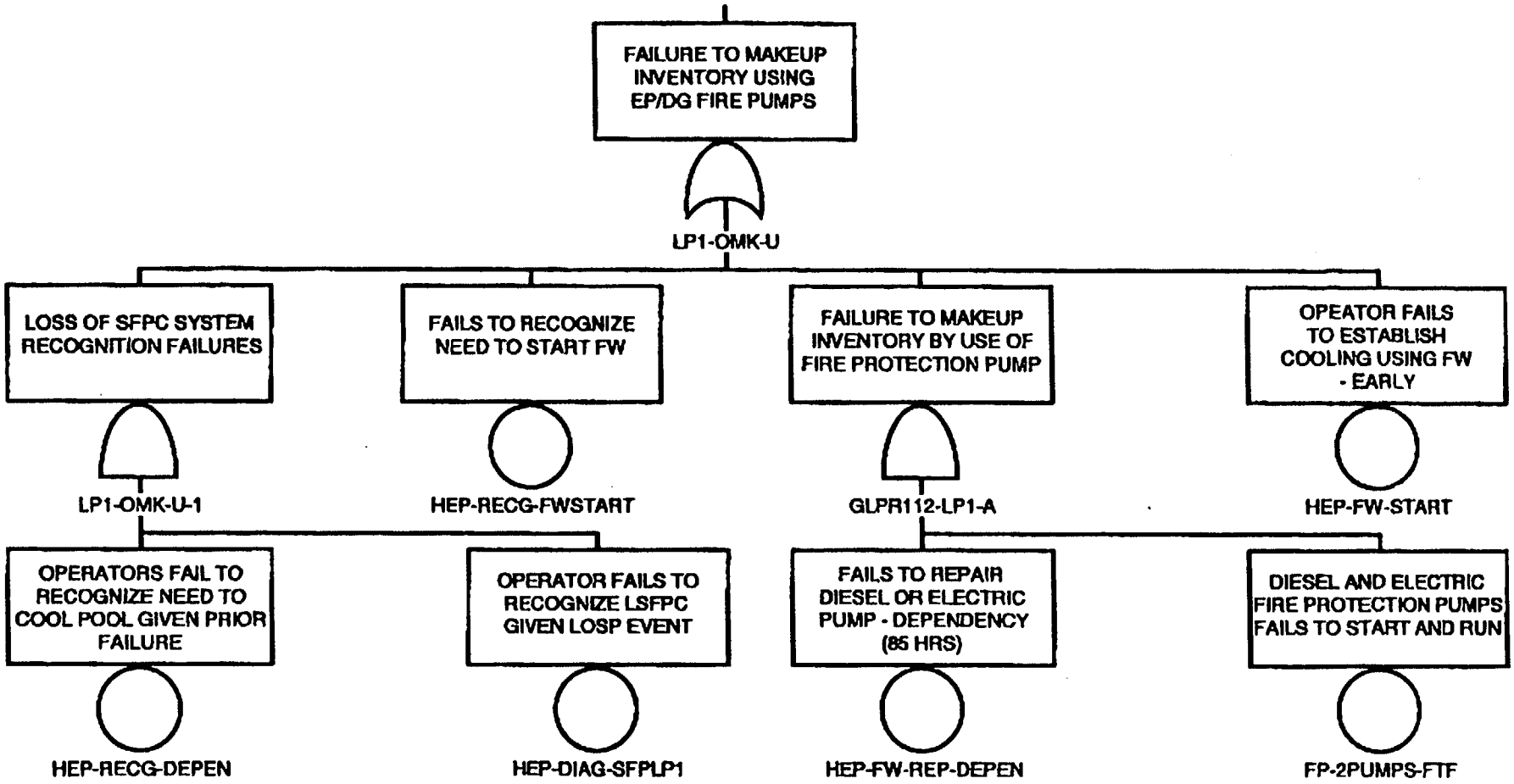
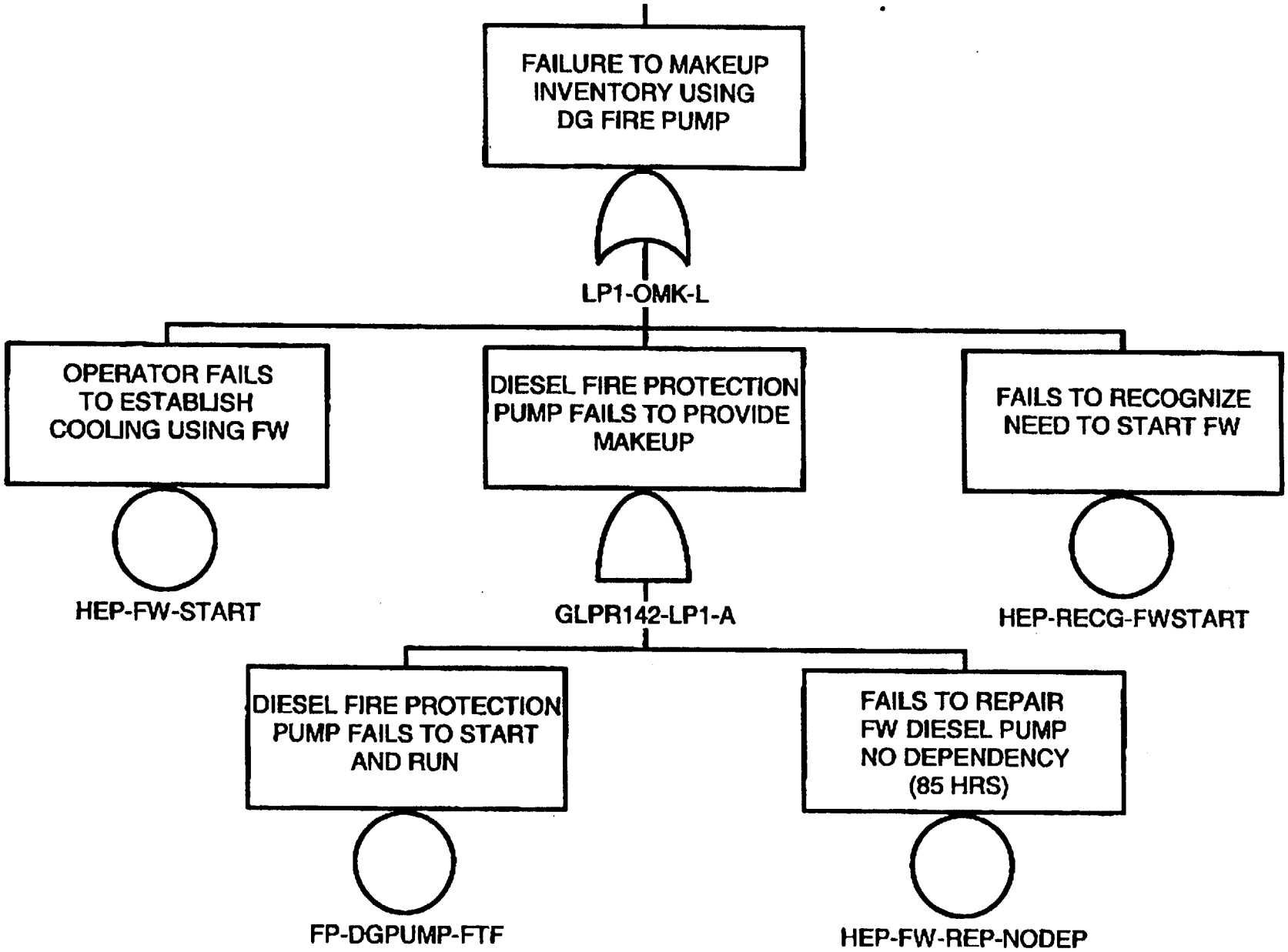
1/12

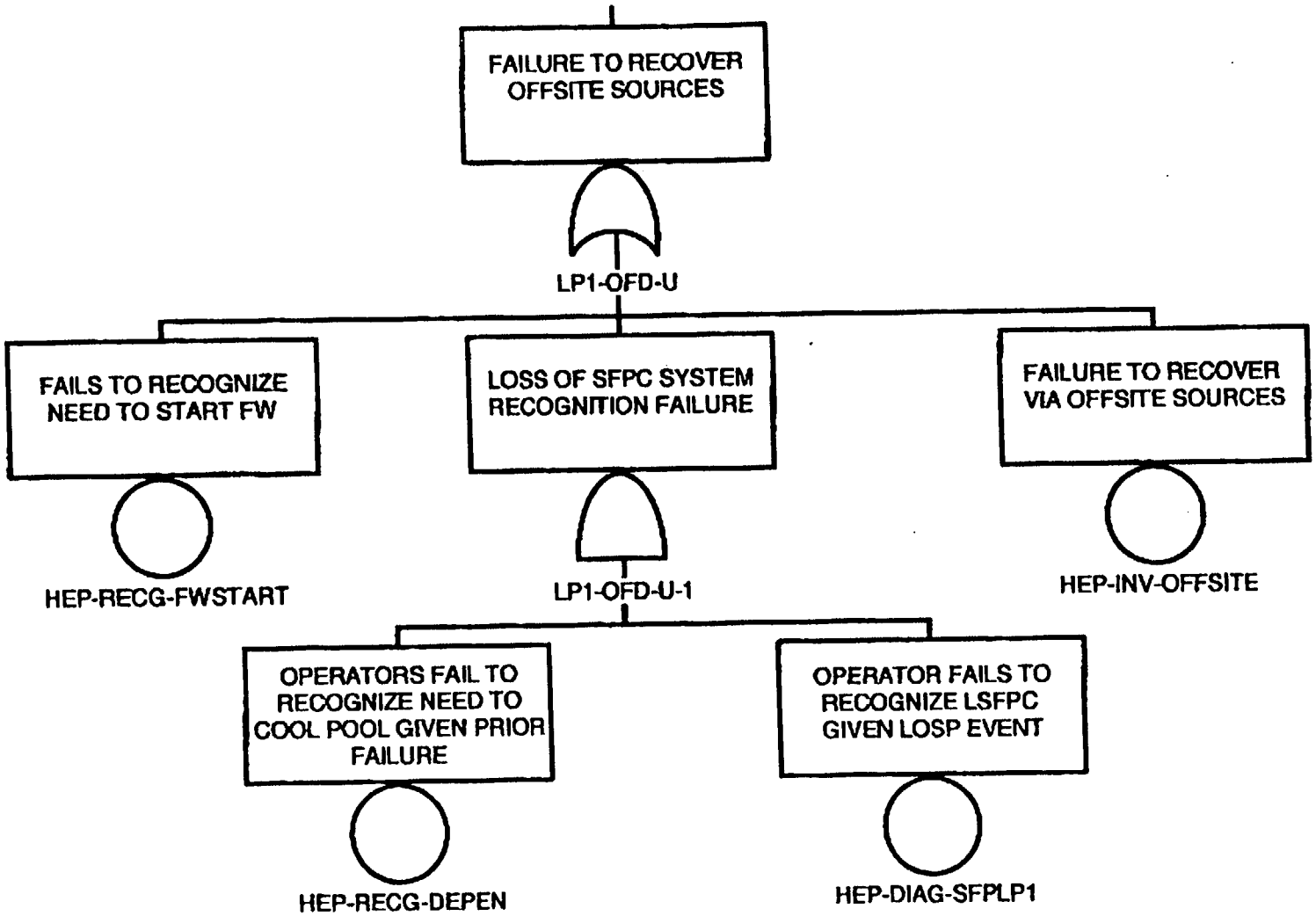

LOSS OF OFFSITE POWER FROM PLANT CENTERED AND GRID RELATED EVENTS
OFFSITE POWER RECOVERY PRIOR TO SFPC SYSTEM LOSS
COOLING SYSTEM RESTART AND RERUN
OPERATOR RECOVERY USING MAKEUP SYSTEM
RECOVERY FROM OFFSITE SOURCES
IE-LP1
OPR
OCS
OMK
OFD
#
SEQUENCE-NAMES
END-STATE-NAME
FREQUENCY
IE-LP1
LP1-OPR
LP1-OCS
LP1-OMK-U
LP1-OFD-U
LP1-OMK-L
LP1-OFD
1 IE-LP1 OK
2 IE-LP1OCS OK
3 IE-LP1OCSOMK OK
4 IE-LP1OCSOMKOFD SFP3FT 5.673E-009
5 IE-LP1OPR OK
6 IE-LP1OPROMK OK
7 IE-LP1OPROMKOFD SFP3FT 2.380E-008

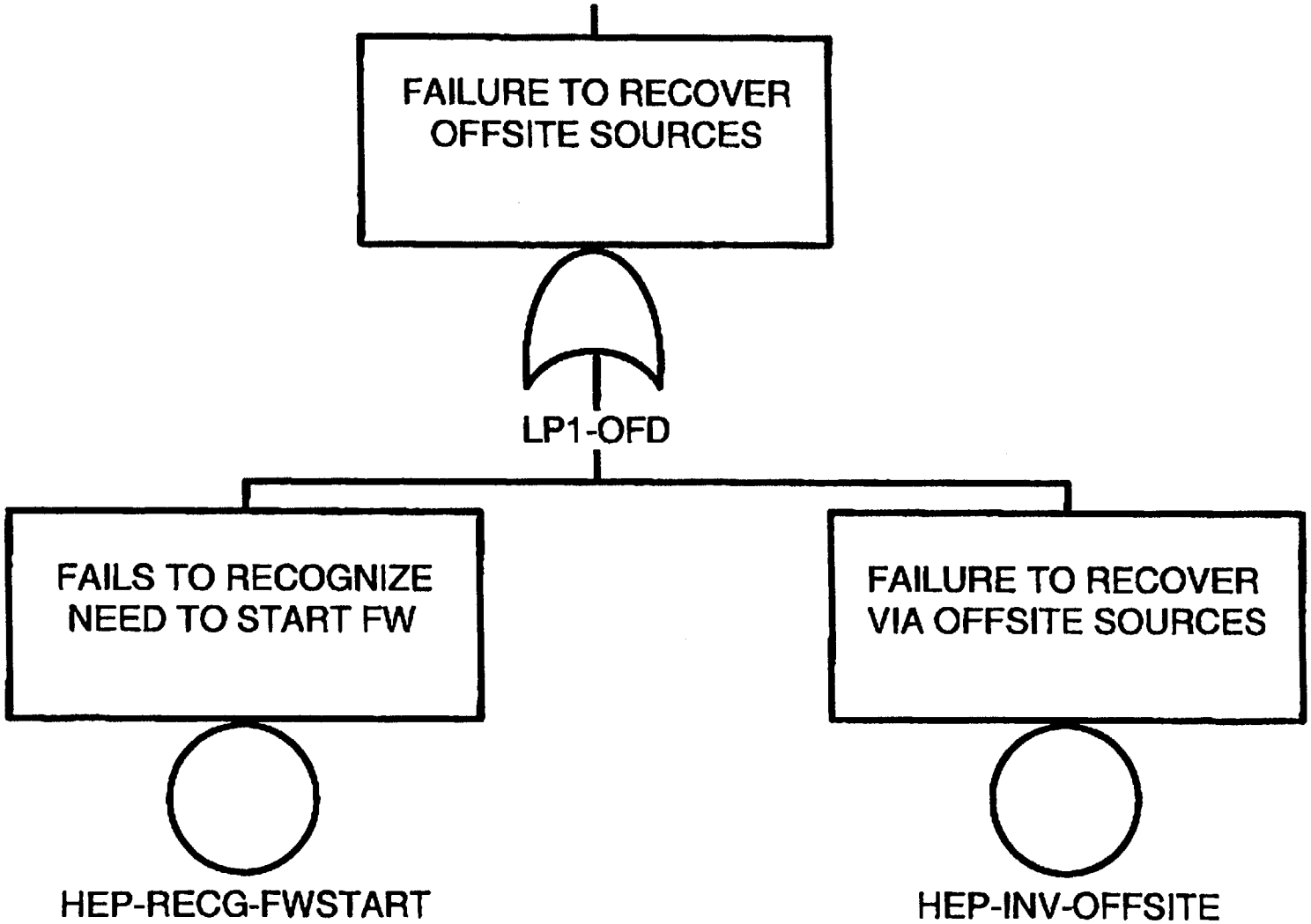

NON-RECOVERY
OF OSP FROM PLANT.
CENTERED EVENTS
LP1-OPR
NON-RECOVERY
OF OSP FROM PLANT
CENTERED EVENTS
REC-OSP-PC


SFP COOLING SYSTEM FAILS TO RE-START AND RUN
LP1-OCS
OPERATOR FAILS TO RECOGNIZE LSFPC GIVEN LOSP EVENT
HEP-DIAG-SFP-LP1
FUEL POOL COOLING PUMPS FAIL
GCSR123
OPERATOR FAILS TO RE-START/RE-ALIGN SYSTEM - EARLY
HEP-SFP-STR-LP1
FUEL POOL COOLING PUMP FAILS
GCSR130
INDIVIDUAL FAILURE OF PUMPS
GCSR141
SFP COOLING PUMPS - COMMON CAUSE FAILURE
SPC-PMP-CCF
SFP COOLING PUMP 1 FAILS TO START AND RUN
SPC-PMP-FTF-1
SFP COOLING PUMP 2 FAILS TO START AND RUN
SPC-PMP-FTF-2
HEAT EXCHANGER DISCHARGE CHECK VALVES - CCF
SPC-CKV-CCF-H
SFP HEAT EXCHANGER COOLING SYSTEM FAILS
SPC-HTX-FTR
HEAT EXCHANGER FAILURES
GCSR135
SFP HEAT EXCHANGERS - CCF
SPC-HTX-CCF
SFP COOLING PUMP DISCHARGE CHECK VALVES - CCF
SPC-CKV-CCF-M
HEAT EXCHANGER PLUGS
SPC-HTX-PLG


FAILURE TO MAKEUP INVENTORY USING EP/DG FIRE PUMPS
LP1-OMK-U
LOSS OF SFPC SYSTEM RECOGNITION FAILURES
FAILS TO RECOGNIZE NEED TO START FW
FAILURE TO MAKEUP INVENTORY BY USE OF FIRE PROTECTION PUMP
OPEATOR FAILS TO ESTABLISH COOLING USING FW - EARLY
LP1-OMK-U-1
HEP-RECG-FWSTART
GLPR112-LP1-A
HEP-FW-START
OPERATORS FAIL TO RECOGNIZE NEED TO COOL POOL GIVEN PRIOR FAILURE
OPERATOR FAILS TO RECOGNIZE LSFPC GIVEN LOSP EVENT
FAILS TO REPAIR DIESEL OR ELECTRIC PUMP - DEPENDENCY (85 HRS)
DIESEL AND ELECTRIC FIRE PROTECTION PUMPS FAILS TO START AND RUN
HEP-RECG-DEPEN
HEP-DIAG-SFPLP1
HEP-FW-REP-DEPEN
FP-2PUMPS-FTF


FAILURE TO MAKEUP INVENTORY USING DG FIRE PUMP
LP1-OMK-L
OPERATOR FAILS TO ESTABLISH COOLING USING FW
HEP-FW-START
DIESEL FIRE PROTECTION PUMP FAILS TO PROVIDE MAKEUP
GLPR142-LP1-A
FAILS TO RECOGNIZE NEED TO START FW
HEP-RECG-FWSTART
DIESEL FIRE PROTECTION PUMP FAILS TO START AND RUN
FP-DGPUMP-FTF
FAILS TO REPAIR FW DIESEL PUMP NO DEPENDENCY (85 HRS)
HEP-FW-REP-NODEP


FAILURE TO RECOVER OFFSITE SOURCES
LP1-OFD-U
FAILS TO RECOGNIZE NEED TO START FW
HEP-RECG-FWSTART
LOSS OF SFPC SYSTEM RECOGNITION FAILURE
LP1-OFD-U-1
FAILURE TO RECOVER VIA OFFSITE SOURCES
HEP-INV-OFFSITE
OPERATORS FAIL TO RECOGNIZE NEED TO COOL POOL GIVEN PRIOR FAILURE
HEP-RECG-DEPEN
OPERATOR FAILS TO RECOGNIZE LSFPC GIVEN LOSP EVENT
HEP-DIAG-SFPLP1


FAILURE TO RECOVER OFFSITE SOURCES
LP1-OFD
FAILS TO RECOGNIZE NEED TO START FW
FAILURE TO RECOVER VIA OFFSITE SOURCES
HEP-RECG-FWSTART
HEP-INV-OFFSITE

SEQUENCE CUT SETS (QUANTIFICATION) REPORT

Family : NRC-SFP Sequence : 4
Analysis : RANDOM Event Tree : IE-LP1
Case : CURRENT Init. Event : IE-LP1
Mincut Upper Bound : 5.673E-009

Cut No.	% Total	% Cut Set	Prob/ Freq.	CURRENT CUT SETS
1	70.5	70.5	4.0E-009	HEP-DIAG-SFPLP1, HEP-RECG-DEPEN
2	87.2	16.6	9.4E-010	HEP-RECG-FWSTART, SPC-PMP-CCF
3	93.9	6.8	3.8E-010	HEP-RECG-FWSTART, SPC-HTX-FTR
4	95.3	1.4	7.9E-011	FP-2PUMPS-FTF, HEP-FW-REP-DEPEN, HEP-INV-OFFSITE, SPC-PMP-CCF
5	96.2	0.9	5.1E-011	HEP-RECG-FWSTART, SPC-CKV-CCF-M
6	96.8	0.6	3.5E-011	HEP-RECG-FWSTART, SPC-HTX-PLG
7	97.4	0.6	3.2E-011	FP-2PUMPS-FTF, HEP-FW-REP-DEPEN, HEP-INV-OFFSITE, SPC-HTX-FTR
8	97.9	0.5	3.0E-011	HEP-RECG-FWSTART, SPC-CKV-CCF-H
9	98.5	0.5	3.0E-011	HEP-RECG-FWSTART, SPC-HTX-CCF
10	98.9	0.4	2.4E-011	HEP-RECG-FWSTART, SPC-PMP-FTF-1, SPC-PMP-FTF-2
11	99.3	0.4	2.4E-011	HEP-FW-START, HEP-INV-OFFSITE, SPC-PMP-CCF
12	99.5	0.2	9.6E-012	HEP-FW-START, HEP-INV-OFFSITE, SPC-HTX-FTR
13	99.6	0.1	8.0E-012	HEP-RECG-FWSTART, HEP-SFP-STR-LP1
14	99.7	0.1	4.3E-012	FP-2PUMPS-FTF, HEP-FW-REP-DEPEN, HEP-INV-OFFSITE, SPC-CKV-CCF-M
15	99.8	0.1	3.0E-012	FP-2PUMPS-FTF, HEP-FW-REP-DEPEN, HEP-INV-OFFSITE, SPC-HTX-PLG
16	99.8	0.0	2.6E-012	FP-2PUMPS-FTF, HEP-FW-REP-DEPEN, HEP-INV-OFFSITE, SPC-CKV-CCF-H
17	99.9	0.0	2.6E-012	FP-2PUMPS-FTF, HEP-FW-REP-DEPEN, HEP-INV-OFFSITE, SPC-HTX-CCF
18	99.9	0.0	2.0E-012	FP-2PUMPS-FTF, HEP-FW-REP-DEPEN, HEP-INV-OFFSITE, SPC-PMP-FTF-1, SPC-PMP-FTF-2
19	99.9	0.0	1.6E-012	HEP-DIAG-SFPLP1, HEP-RECG-FWSTART
20	99.9	0.0	1.3E-012	HEP-FW-START, HEP-INV-OFFSITE, SPC-CKV-CCF-M
21	100.0	0.0	8.8E-013	HEP-FW-START, HEP-INV-OFFSITE, SPC-HTX-PLG
22	100.0	0.0	7.6E-013	HEP-FW-START, HEP-INV-OFFSITE, SPC-CKV-CCF-H
23	100.0	0.0	7.6E-013	HEP-FW-START, HEP-INV-OFFSITE, SPC-HTX-CCF
24	100.0	0.0	6.7E-013	FP-2PUMPS-FTF, HEP-FW-REP-DEPEN, HEP-INV-OFFSITE, HEP-SFP-STR-LP1
25	100.0	0.0	6.1E-013	HEP-FW-START, HEP-INV-OFFSITE, SPC-PMP-FTF-1, SPC-PMP-FTF-2
26	100.0	0.0	2.0E-013	HEP-FW-START, HEP-INV-OFFSITE, HEP-SFP-STR-LP1
27	100.0	0.0	1.3E-013	FP-2PUMPS-FTF, HEP-DIAG-SFPLP1, HEP-FW-REP-DEPEN, HEP-INV-OFFSITE
28	100.0	0.0	4.0E-014	HEP-DIAG-SFPLP1, HEP-FW-START, HEP-INV-OFFSITE

SEQUENCE CUT SETS (QUANTIFICATION) REPORT

Family : NRC-SFP Sequence : 7
Analysis : RANDOM Event Tree : IE-LP1
Case : CURRENT Init. Event : IE-LP1
Mincut Upper Bound : 2.360E-008

Cut No.	% Total	% Cut Set	Prob/ Freq.	CURRENT CUT SETS
1	67.8	67.8	1.6E-008	HEP-RECG-FWSTART, REC-OSP-PC
2	98.3	30.5	7.2E-009	FP-DGPUMP-FTF, HEP-FW-REP-NODEP, HEP-INV-OFFSITE, REC-OSP-PC
3	100.0	1.7	4.0E-010	HEP-FW-START, HEP-INV-OFFSITE, REC-OSP-PC

BASIC EVENTS PROBABILITY REPORT

Family: NRC-SFP

Case: CURRENT

Event Number	Primary Name	Calc Type	Mean Probability	Lamda	Tau
1	FP-2PUMPS-FTF	1	6.700E-004	+0.000E+000	+0.000E+000
2	FP-DGPUMP-FTF	1	1.800E-001	+0.000E+000	+0.000E+000
3	HEP-DIAG-SFPLP1	1	1.000E-006	+0.000E+000	+0.000E+000
4	HEP-FW-REP-DEPEN	1	5.000E-002	+0.000E+000	+0.000E+000
5	HEP-FW-REP-NODEP	1	1.000E-003	+0.000E+000	+0.000E+000
6	HEP-FW-START	1	1.000E-005	+0.000E+000	+0.000E+000
7	HEP-INV-OFFSITE	1	5.000E-002	+0.000E+000	+0.000E+000
8	HEP-RECG-DEPEN	1	5.000E-002	+0.000E+000	+0.000E+000
9	HEP-RECG-FWSTART	1	2.000E-005	+0.000E+000	+0.000E+000
10	HEP-SFP-STR-LP1	1	5.000E-006	+0.000E+000	+0.000E+000
11	REC-OSP-PC	1	1.000E-002	+0.000E+000	+0.000E+000
12	SPC-CKV-CCF-H	1	1.900E-005	+0.000E+000	+0.000E+000
13	SPC-CKV-CCF-M	1	3.200E-005	+0.000E+000	+0.000E+000
14	SPC-HTX-CCF	1	1.900E-005	+0.000E+000	+0.000E+000
15	SPC-HTX-FTR	1	2.400E-004	+0.000E+000	+0.000E+000
16	SPC-HTX-PLG	1	2.200E-005	+0.000E+000	+0.000E+000
17	SPC-PMP-CCF	1	5.900E-004	+0.000E+000	+0.000E+000
18	SPC-PMP-FTF-1	1	3.900E-003	+0.000E+000	+0.000E+000
19	SPC-PMP-FTF-2	1	3.900E-003	+0.000E+000	+0.000E+000

JAN 13 '00 03:31PM SSSSSSSSSSSSSS P.11/11