Entergy

Entergy Operations, Inc.
1448 S.R. 333
Russellville, AR 72802
Tel 501 858 5000

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1CAN040001

U. S. Nuclear Regulatory Commission
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Subject: Arkansas Nuclear One - Unit 1
Docket No. 50-313
License No. DPR-51
License Renewal Information (TAC Nos. MA8054 and MA8055)

Gentlemen:

By letter dated January 31, 2000 (1CAN010003), Entergy Operations submitted a License Renewal Application (LRA) with its supporting Applicant's Environmental Report-Operating License Renewal Stage (ER) for Arkansas Nuclear One, Unit 1 (ANO-1). The NRC documented receipt of the application in correspondence dated February 4, 2000 (1CNA020003), determined the application acceptable and sufficient for docketing in correspondence dated February 28, 2000 (1CNA020004), and provided a schedule for conduct of review of the application in correspondence dated March 7, 2000 (1CNA030003).

During conversations with the ANO-1 NRC technical and environmental project managers, corrections to the LRA/ER and information concerning the severe accident mitigation alternative (SAMA) section of the ER have been discussed. The purpose of this submittal is to provide the corrections to the LRA/ER and the requested SAMA information.

In the LRA Section 2.4.6.1 under "Bulk Fuel Oil Storage Tank Foundation" on page 2-88, the reference to Safety Analysis Report (SAR) Section 9.5.4.2 should have been ANO-2 SAR Section 9.5.4.2. Sections 3.1.1 and 3.1.3 of the LRA reference Sections 4.7 and 4.16 of Appendix B, respectively. Sections 3.1.1 and 3.1.3 should have referenced Sections 4.6 and 4.13 of Appendix B, respectively. Also, corrections are being made to the portion of Table 3.4-9, entitled "Chilled Water System," located on page 3-74 of the LRA (see attached).

In the ER Section 2.2 under "Lake Dardanelle" on page 2-6, the third paragraph references the commercial fishing industry. It should have referenced recreational fishing. For additional clarification, in Table 7.2-1 on page 7-2, the two Petroleum Storage Tank Registrations and the Hazardous Materials Certificate of Registration are issued annually.

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The following addresses the requested information concerning the section 4.13 (SAMA) of the ER. The ANO-1 probabilistic safety assessment (PSA) model has undergone two major revisions since the development of the ANO-1 PSA model in support of the Individual Plant Examination (IPE). The original PSA model was based upon the plant design that existed as of August 31, 1988. Since that time, several significant changes to the plant design have occurred as well as several changes to the assumptions in the ANO-1 PSA model. These changes are discussed below.

On September 14, 1993, a freeze date was established for a revision to the ANO-1 PSA model. This revision captured several changes to the plant and implemented changes to the transient and loss-of-coolant accident (LOCA) sequences.

- To better capture the full range of LOCA sizes, the medium break LOCAs were added into the list of initiating events. The range of break sizes, which had been identified as small, was split into small and medium break LOCAs. The ranges of break size for small and medium size breaks are:

  Small break LOCA - 3/8-inch up to and including 1.9-inch diameter breaks

  Medium break LOCA - 1.9-inch up to and including 4.3-inch diameter breaks

- Sequences TQU and TQX (transient induced LOCAs with successful primary-to-secondary heat removal) were modified to address different break sizes. New sequences were created to replace the old TQU and TQX sequences. The new sequences are TQSU, TQSX, TQMU, and TQMX. Sequences TQSU and TQSX address the range of breaks that would be classified as small (i.e., reactor coolant pump seals and electromatic relief valve). Sequences TQMU and TQMX address the range of break sizes that would be classified as medium (i.e., safety relief valves).

- Installation of a third totally independent alternate alternating current (AAC) diesel generator was credited in the ANO-1 PSA model.

- The instrument air system was modified to include new compressors C28A and C28B. This provided the instrument air system with additional redundancy. Although the instrument air system is not considered risk significant, the additional compressors further reduce the risk significance of the system.

In March of 1998, a freeze date was established for a second revision to the ANO-1 PSA model. This revision captured several changes to the plant and modified some assumptions made in the model.

- The direct current (DC) power system was revised to contain four battery chargers (two for each train of power). The previous design contained three chargers (one for each train with one swing). In addition to the chargers, the design now includes four

inverters (two for each train). This modification was captured in the ANO-1 PSA model.

- A data analysis and initiating event frequency review was performed during this update to the ANO-1 model. While changes were made to the failure rates of many components, the most significant effect on the core damage frequency (CDF) is due to a change in frequencies for the LOCA initiators. NUREG/CR-5750 was utilized to obtain the new values for small, medium, and large break LOCAs. These new values of 5.00E-04 (small) and 4.50E-05 (medium and large) are much smaller than previously assumed values. The effect of this change reduced the impact of the LOCA sequences to the overall CDF.

- The ANO-1 battery life (after a loss of all AC power) was assumed to be two hours in the original PSA model. This assumption comes from the ANO-1 licensing basis for the battery life. However, due to the ability of the black batteries to allow load shedding, a reanalysis determined that the red and green batteries would have a life of five hours after loss of all AC. The battery life was credited to last five hours in the latest revision to the model.

- For small and medium break LOCA injection sequences, CV-1275 (stop-check valve) on the suction leg of the makeup tank was determined to cause air binding of the makeup pumps if operations failed to close the valve before the makeup tank is drained. This failure mode was modeled.

- The success criterion for high pressure injection (HPI) injection was modified to credit an additional success path (two pumps operating and two injection lines available). Previously only a single success criterion existed which credited only one HPI pump with three injection lines.

- The ANO-1 PSA model has been reconstructed in some instances to remove asymmetries and allow for more flexibility in applications. The following systems: service water, HPI, intermediate cooling water, AC power, DC power, instrument air, and power conversion system, have been revised to allow operator selection of the appropriate system lineup depending upon the application.

- The emergency feedwater system was previously modeled to rely on the "Q" condensate storage tank only as a source of water for cooling the steam generators. However, this latest revision of the model included the assured source, service water, as a supply of water as well.

- A new basic event (SXV1SW12XK) was incorporated into the service water logic for loop 1 failures (SWLOOP1 and SWLOOP1Y). Service water loop 1 and 2 both have the ability to return to either the emergency cooling pond or the circulating water discharge flume. However, the addition of valve SW-12 precludes loop 1 from going to the circulating water discharge flume if the valve is closed. This valve does not

affect loop 2 for normal discharge to the circulating water discharge flume. The purpose for SW-12 is to allow for isolation of the service water supply and return header for maintenance during a refueling outage without having to isolate the entire service water system.

While other changes have been made to the ANO-1 PSA model, the information above captures those that are considered to be the most significant. In addition, attached are listings of the dominant contributors to risk for the level 1 and level 2 analyses.

Should you have any questions concerning this submittal, please contact me.

Very truly yours,

Jimmy D. Vandergrift
Director, Nuclear Safety Assurance

JDV/nbm
Attachments

cc: Mr. Ellis W. Merschoff
Regional Administrator
U. S. Nuclear Regulatory Commission
Region IV
611 Ryan Plaza Drive, Suite 400
Arlington, TX 76011-8064

NRC Senior Resident Inspector
Arkansas Nuclear One
P.O. Box 310
London, AR 72847

Mr. Christopher Nolan
NRR Project Manager Region IV/ANO-1
U. S. Nuclear Regulatory Commission
NRR Mail Stop 04-D-03
One White Flint North
11555 Rockville Pike
Rockville, MD 20852

Mr. Bob Prato
U. S. Nuclear Regulatory Commission
NRR Mail Stop O-12G15
One White Flint North
11555 Rockville Pike
Rockville, MD 20852

Mr. Tom Kenyon
U. S. Nuclear Regulatory Commission
NRR Mail Stop O-11F1
One White Flint North
11555 Rockville Pike
Rockville, MD 20852

Corrected Portion of Table 3.4-9 Chilled Water System (from page 3-74 of the LRA)

Component Commodity Grouping	Intended Function	Material	Environment	Aging Effect	Program/Activity
Heat exchangers (evaporators)	Heat transfer	Copper Brass Bronze	Gas-freon(2) Treated water(3)	Fouling	Auxiliary Systems Chemistry Monitoring
Heat exchangers (condensers)	Heat transfer	Copper Brass Bronze	Gas-freon(2)	None	None
Heat exchangers (condensers)	Pressure boundary	Copper Brass Bronze	Gas-freon(2)	None	None

Cutsets with Descriptions Report
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#       Inputs  Description     Rate    Exposure        Event Prob
Probability

1       %A      LARGE BREAK LOCA <IE>           4.50E-05        4.50E-
05      3.45E-06
        AX                      1.00E+00        1.00E+00
        XHF1ALPRAD      OPERATOR FAILS TO ATTEMPT LPR WITHIN 30 MINUTE
S OF L LOCA             7.67E-02        7.67E-02
2       %T8     TOTAL LOSS OF SW FLOW <IE>              1.00E-03
1.00E-03        2.12E-06
        QHF1RCPTRP      OPERATOR FAILS TO TRIP RCPS ON 30 MINUTES
        2.12E-03        2.12E-03
3       %S      SMALL BREAK LOCA <IE>           5.00E-04        5.00E-
04      2.58E-07
        SX                      1.00E+00        1.00E+00
        XHF1SMALLX      OPERATOR FAILS TO BEGIN HPR FOLLOWING S-LOCA
        5.17E-04        5.17E-04
4       %S      SMALL BREAK LOCA <IE>           5.00E-04        5.00E-
04      1.70E-07
        HMM1CCF001      HPI PUMPS COMMON CAUSE FAILURE TO RUN <module>
                3.39E-04        3.39E-04
5       %T14    LOSS OF AC BUS A4 <IE>          3.94E-04        3.94E-
04      1.34E-07
        QHF1RCPTRP      OPERATOR FAILS TO TRIP RCPS ON 30 MINUTES
        2.12E-03        2.12E-03
        RECB56  OPS. FAILS TO ALIGN POWER TO B56                4.00E-
01      4.00E-01
        RECB5OR6        OPS. FAILS TO CROSSTIE POWER SUPPLY
4.00E-01        4.00E-01
6       %T16    LOSS OF AC BUS B6 <IE>          1.04E-03        1.04E-
03      9.22E-08
        QHF1HPITR1      OPERATOR FAILS TO THROTTLE HPI TO PREVENT RCS
PRESSURE RELIEF         7.24E-02        7.24E-02
        RECB56  OPS. FAILS TO ALIGN POWER TO B56                4.00E-
01      4.00E-01
        RRZ1P1000T      ERV (PSV-1000) FAILS TO RESEAT AFTER STEAM
3.06E-03        1.00E+00        3.06E-03
7       %S      SMALL BREAK LOCA <IE>           5.00E-04        5.00E-
04      8.22E-08
        LMM100BWST      BWST FAILS TO PROVIDE FLOW <module>
1.64E-04        1.64E-04
8       %T11    LOSS OF DC BUS D01 <IE>         3.94E-04        3.94E-
04      6.62E-08
        DTM100D06M      BATTERY D06 IN MAINTENANCE              1.68E-
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04      1.68E-04
9       %R      SGTR <IE>                7.00E-03        7.00E-03
6.15E-08
        DBD100D11F      DC BUS 00D11 FAULT      3.66E-07        2.40E+
01      8.78E-06
10      %S      SMALL BREAK LOCA <IE>           5.00E-04        5.00E-
04      5.96E-08
        LMM1CCF001      MOTOR-DRIVEN PUMP COMMON CAUSE FAILURE <module
>               3.96E-04        3.96E-04
        SX                      1.00E+00        1.00E+00
        RECLPIRBSX      OPERATOR FAILS TO OPEN VALVES TO CONNECT RBS S
UCTION TO VESSEL VIA RECIRC HDR         3.01E-01        3.01E-01
11      %T16    LOSS OF AC BUS B6 <IE>          1.04E-03        1.04E-
03      5.73E-08
        QMM1P7BTRA      LOSS OF FLOW THRU P7B TRAIN (TYPE-1) <module>
        3.22E-03        3.22E-03
        RECB56  OPS. FAILS TO ALIGN POWER TO B56                4.00E-
01      4.00E-01
        RECSGOVERF      FLAG - SG OVERFILL RECOVERY             1.00E+
00      1.00E+00
        SGOFREC OPERATOR FAILS TO PREVENT SG OVERFILL WITH MFW
4.28E-02        4.28E-02
12      %T11    LOSS OF DC BUS D01 <IE>         3.94E-04        3.94E-
04      5.54E-08
        EDG1DG2XXF      DIESEL GENERATOR DG2 FAILS TO RUN       2.46E-
03      2.40E+01        5.73E-02
        EDG2DGAACF      XSESEL GENERATOR AAC FAILS TO RUN       2.46E-
03      2.40E+01        5.73E-02
        RECSGOVERF      FLAG - SG OVERFILL RECOVERY             1.00E+
00      1.00E+00
        SGOFREC OPERATOR FAILS TO PREVENT SG OVERFILL WITH MFW
4.28E-02        4.28E-02
13      %T16    LOSS OF AC BUS B6 <IE>          1.04E-03        1.04E-
03      5.34E-08
        QHF1P7BTNL      OPERATORS FAIL TO CORRECTLY RESTORE P7B AFTER
MAINTENANCE             3.00E-03        3.00E-03
        RECB56  OPS. FAILS TO ALIGN POWER TO B56                4.00E-
01      4.00E-01
        RECSGOVERF      FLAG - SG OVERFILL RECOVERY             1.00E+
00      1.00E+00
        SGOFREC OPERATOR FAILS TO PREVENT SG OVERFILL WITH MFW
4.28E-02        4.28E-02
14      %T16    LOSS OF AC BUS B6 <IE>          1.04E-03        1.04E-
03      4.98E-08
        QMM1TMAEFW      TRIP MODULE FOR CHANNEL A EFW ACTUATION FAILS
        2.80E-03        2.80E-03
        RECB56  OPS. FAILS TO ALIGN POWER TO B56                4.00E-
01      4.00E-01
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        RECSGOVERF      FLAG - SG OVERFILL RECOVERY             1.00E+
00      1.00E+00
        SGOFREC OPERATOR FAILS TO PREVENT SG OVERFILL WITH MFW
4.28E-02        4.28E-02
15      %T16    LOSS OF AC BUS B6 <IE>          1.04E-03        1.04E-
03      3.51E-08
        QMM1P7BTRF      LOSS OF FLOW THRU P7B TRAIN (TYPE-2) <module>
        1.97E-03        1.97E-03
        RECB56  OPS. FAILS TO ALIGN POWER TO B56                4.00E-
01      4.00E-01
        RECSGOVERF      FLAG - SG OVERFILL RECOVERY             1.00E+
00      1.00E+00
        SGOFREC OPERATOR FAILS TO PREVENT SG OVERFILL WITH MFW
4.28E-02        4.28E-02
16      %T11    LOSS OF DC BUS D01 <IE>         3.94E-04        3.94E-
04      3.49E-08
        LMM1MPP34B      TRAIN B MOTOR-DRIVEN PUMP FAILS <module>
        5.17E-03        5.17E-03
        RECB5OR6        OPS. FAILS TO CROSSTIE POWER SUPPLY
4.00E-01        4.00E-01
        RECSGOVERF      FLAG - SG OVERFILL RECOVERY             1.00E+
00      1.00E+00
        TBX                     1.00E+00        1.00E+00
        SGOFREC OPERATOR FAILS TO PREVENT SG OVERFILL WITH MFW
4.28E-02        4.28E-02
17      %T13    LOSS OF AC BUS A3 <IE>          3.94E-04        3.94E-
04      3.49E-08
        LMM1MPP34B      TRAIN B MOTOR-DRIVEN PUMP FAILS <module>
        5.17E-03        5.17E-03
        RECB5OR6        OPS. FAILS TO CROSSTIE POWER SUPPLY
4.00E-01        4.00E-01
        RECSGOVERF      FLAG - SG OVERFILL RECOVERY             1.00E+
00      1.00E+00
        TBX                     1.00E+00        1.00E+00
        SGOFREC OPERATOR FAILS TO PREVENT SG OVERFILL WITH MFW
4.28E-02        4.28E-02
18      %T10    LOSS OF SW PUMP GREEN TRAIN <IE>                3.16E-
02      3.16E-02        3.06E-08
        ETM1A3XXXX      4160V SWGR A3 IN TEST OR MAINTENANCE
5.66E-05        5.66E-05
        RECB5OR6        OPS. FAILS TO CROSSTIE POWER SUPPLY
4.00E-01        4.00E-01
        RECSGOVERF      FLAG - SG OVERFILL RECOVERY             1.00E+
00      1.00E+00
        SGOFREC OPERATOR FAILS TO PREVENT SG OVERFILL WITH MFW
4.28E-02        4.28E-02
19      %T16    LOSS OF AC BUS B6 <IE>          1.04E-03        1.04E-
03      3.03E-08
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        DBT1DSCD06      BATTERY D06 DISCHARGED PRIOR TO RECOVERY OF OF
FSITE PWR-2HRS          1.00E+00        1.00E+00
        QMM1P7BTRA      LOSS OF FLOW THRU P7B TRAIN (TYPE-1) <module>
        3.22E-03        3.22E-03
        RECB56  OPS. FAILS TO ALIGN POWER TO B56                4.00E-
01      4.00E-01
        RECSGOVER2      FLAG - SG OVERFILL RECOVERY             1.00E+
00      1.00E+00
        SGOFREC2        OPERATOR FAILS TO PREVENT SG OVERFILL WITH EFW
                2.26E-02        2.26E-02
20      %T7     SPURIOUS HPI ACTUATION <IE>             3.60E-03
3.60E-03        2.93E-08
        RMM101SRVT      Either SRV fails to reclose after steam relief
                1.58E-02        1.58E-02
        TQMX                    1.00E+00        1.00E+00
        XHF1MEDXXX      OPERATOR FAILS TO BEGIN HPR FOLLOWING M-LOCA
        5.17E-04        5.17E-04
21      %T11    LOSS OF DC BUS D01 <IE>         3.94E-04        3.94E-
04      2.93E-08
        DBT1DSCD06      BATTERY D06 DISCHARGED PRIOR TO RECOVERY OF OF
FSITE PWR-2HRS          1.00E+00        1.00E+00
        EDG1DG2XXF      DIESEL GENERATOR DG2 FAILS TO RUN       2.46E-
03      2.40E+01        5.73E-02
        EDG2DGAACF      XSESEL GENERATOR AAC FAILS TO RUN       2.46E-
03      2.40E+01        5.73E-02
        RECSGOVER2      FLAG - SG OVERFILL RECOVERY             1.00E+
00      1.00E+00
        SGOFREC2        OPERATOR FAILS TO PREVENT SG OVERFILL WITH EFW
                2.26E-02        2.26E-02
22      %T16    LOSS OF AC BUS B6 <IE>          1.04E-03        1.04E-
03      2.82E-08
        DBT1DSCD06      BATTERY D06 DISCHARGED PRIOR TO RECOVERY OF OF
FSITE PWR-2HRS          1.00E+00        1.00E+00
        QHF1P7BTNL      OPERATORS FAIL TO CORRECTLY RESTORE P7B AFTER
MAINTENANCE             3.00E-03        3.00E-03
        RECB56  OPS. FAILS TO ALIGN POWER TO B56                4.00E-
01      4.00E-01
        RECSGOVER2      FLAG - SG OVERFILL RECOVERY             1.00E+
00      1.00E+00
        SGOFREC2        OPERATOR FAILS TO PREVENT SG OVERFILL WITH EFW
                2.26E-02        2.26E-02
23      %R      SGTR <IE>               7.00E-03        7.00E-03
2.71E-08
        LMM1CV1404      MOTOR-OPERATED VALVES CV1404/1410/1050 FAIL TO
 DELIVER FLOW<module>           6.91E-03        6.91E-03
        PRY1V2698T      SG A MSSV PSV-2698 FAILS TO RECLOSE     7.94E-
03      1.00E+00        7.91E-03
        RX                      1.00E+00        1.00E+00
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        RECDHMANR       OPERATOR FAILS TO MANUALLY OPEN CV-1404 AFTER
FAILURE TO OPEN REMOTELY                4.72E-01        4.72E-01
        RECGAGSTM       OPERATOR FAILS TO GAG MSSV AFTER IT FAILS TO R
ESEAT           1.50E-01        1.50E-01
24      %T8     TOTAL LOSS OF SW FLOW <IE>              1.00E-03
1.00E-03        2.69E-08
        QAV102888R      AIR-OPERATED VALVE CV-2888 TRANSFERS OPEN
1.12E-06        2.40E+01        2.69E-05
25      %T16    LOSS OF AC BUS B6 <IE>          1.04E-03        1.04E-
03      2.63E-08
        DBT1DSCD06      BATTERY D06 DISCHARGED PRIOR TO RECOVERY OF OF
FSITE PWR-2HRS          1.00E+00        1.00E+00
        QMM1TMAEFW      TRIP MODULE FOR CHANNEL A EFW ACTUATION FAILS
        2.80E-03        2.80E-03
        RECB56  OPS. FAILS TO ALIGN POWER TO B56                4.00E-
01      4.00E-01
        RECSGOVER2      FLAG - SG OVERFILL RECOVERY             1.00E+
00      1.00E+00
        SGOFREC2        OPERATOR FAILS TO PREVENT SG OVERFILL WITH EFW
                2.26E-02        2.26E-02
26      %T8     TOTAL LOSS OF SW FLOW <IE>              1.00E-03
1.00E-03        2.58E-08
        QMM1P7ATRA      LOSS OF FLOW THRU P7A TRAIN (TYPE-1) <module>
        8.01E-03        8.01E-03
        QMM1P7BTRA      LOSS OF FLOW THRU P7B TRAIN (TYPE-1) <module>
        3.22E-03        3.22E-03
27      %R      SGTR <IE>               7.00E-03        7.00E-03
2.54E-08
        LMM1CV1404      MOTOR-OPERATED VALVES CV1404/1410/1050 FAIL TO
 DELIVER FLOW<module>           6.91E-03        6.91E-03
        PRY1V2699T      SG A MSSV PSV-2699 FAILS TO RECLOSE
7.42E-03        7.42E-03
        RX                      1.00E+00        1.00E+00
        RECDHMANR       OPERATOR FAILS TO MANUALLY OPEN CV-1404 AFTER
FAILURE TO OPEN REMOTELY                4.72E-01        4.72E-01
        RECGAGSTM       OPERATOR FAILS TO GAG MSSV AFTER IT FAILS TO R
ESEAT           1.50E-01        1.50E-01
28      %S      SMALL BREAK LOCA <IE>           5.00E-04        5.00E-
04      2.48E-08
        LMM1CCF002      MOTOR-OPERATED VALVES CV1407/8 COMMON CAUSE FA
ILURE <module>          5.94E-05        5.94E-05
        RECHPIMAN6      OPERATOR FAILS TO OPEN CV1407/08 OR CLOSE CV13
00/01 IF FAIL TO OP REMOTELY MU SU              8.37E-01        8.37E-
01
29      %T8     TOTAL LOSS OF SW FLOW <IE>              1.00E-03
1.00E-03        2.40E-08
        QHF1P7BTNL      OPERATORS FAIL TO CORRECTLY RESTORE P7B AFTER
MAINTENANCE             3.00E-03        3.00E-03
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        QMM1P7ATRA      LOSS OF FLOW THRU P7A TRAIN (TYPE-1) <module>
        8.01E-03        8.01E-03
30      %M      MEDIUM BREAK LOCA <IE>          4.50E-05        4.50E-
05      2.33E-08
        MX                      1.00E+00        1.00E+00
        XHF1MEDXXX      OPERATOR FAILS TO BEGIN HPR FOLLOWING M-LOCA
        5.17E-04        5.17E-04
31      %T7     SPURIOUS HPI ACTUATION <IE>             3.60E-03
3.60E-03        2.24E-08
        LMM1CCF001      MOTOR-DRIVEN PUMP COMMON CAUSE FAILURE <module
>               3.96E-04        3.96E-04
        RMM101SRVT      Either SRV fails to reclose after steam relief
                1.58E-02        1.58E-02
        TQMX                    1.00E+00        1.00E+00
32      %T8     TOTAL LOSS OF SW FLOW <IE>              1.00E-03
1.00E-03        2.24E-08
        QMM1P7ATRA      LOSS OF FLOW THRU P7A TRAIN (TYPE-1) <module>
        8.01E-03        8.01E-03
        QMM1TMAEFW      TRIP MODULE FOR CHANNEL A EFW ACTUATION FAILS
        2.80E-03        2.80E-03
33      %T11    LOSS OF DC BUS D01 <IE>         3.94E-04        3.94E-
04      2.20E-08
        RECB5OR6        OPS. FAILS TO CROSSTIE POWER SUPPLY
4.00E-01        4.00E-01
        RECSGOVERF      FLAG - SG OVERFILL RECOVERY             1.00E+
00      1.00E+00
        SMM1AV3841      P34B LUBE OIL COOLER SW VALVES FAIL <module>
        3.26E-03        3.26E-03
        TBX                     1.00E+00        1.00E+00
        SGOFREC OPERATOR FAILS TO PREVENT SG OVERFILL WITH MFW
4.28E-02        4.28E-02
34      %T13    LOSS OF AC BUS A3 <IE>          3.94E-04        3.94E-
04      2.20E-08
        RECB5OR6        OPS. FAILS TO CROSSTIE POWER SUPPLY
4.00E-01        4.00E-01
        RECSGOVERF      FLAG - SG OVERFILL RECOVERY             1.00E+
00      1.00E+00
        SMM1AV3841      P34B LUBE OIL COOLER SW VALVES FAIL <module>
        3.26E-03        3.26E-03
        TBX                     1.00E+00        1.00E+00
        SGOFREC OPERATOR FAILS TO PREVENT SG OVERFILL WITH MFW
4.28E-02        4.28E-02
35      %T1     REACTOR/TURBINE TRIP <IE>               1.11E+00
1.11E+00        2.13E-08
        ETM1A4XXXX      4160V SWGR A4 IN TEST OR MAINTENANCE
5.66E-05        5.66E-05
        QHF1RCPTRP      OPERATOR FAILS TO TRIP RCPS ON 30 MINUTES
        2.12E-03        2.12E-03
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        RECB56  OPS. FAILS TO ALIGN POWER TO B56                4.00E-
01      4.00E-01
        RECB5OR6        OPS. FAILS TO CROSSTIE POWER SUPPLY
4.00E-01        4.00E-01
36      %T11    LOSS OF DC BUS D01 <IE>         3.94E-04        3.94E-
04      2.02E-08
        HHF10P36CL      TRAIN P36C MAINTENANCE RESTORATION FAILURE
        3.00E-03        3.00E-03
        RECB5OR6        OPS. FAILS TO CROSSTIE POWER SUPPLY
4.00E-01        4.00E-01
        RECSGOVERF      FLAG - SG OVERFILL RECOVERY             1.00E+
00      1.00E+00
        SGOFREC OPERATOR FAILS TO PREVENT SG OVERFILL WITH MFW
4.28E-02        4.28E-02
37      %T11    LOSS OF DC BUS D01 <IE>         3.94E-04        3.94E-
04      2.02E-08
        LHF1LHE004      TRAIN B LPR MAINTENANCE RESTORATION FAILURES
        3.00E-03        3.00E-03
        RECB5OR6        OPS. FAILS TO CROSSTIE POWER SUPPLY
4.00E-01        4.00E-01
        RECSGOVERF      FLAG - SG OVERFILL RECOVERY             1.00E+
00      1.00E+00
        TBX                     1.00E+00        1.00E+00
        SGOFREC OPERATOR FAILS TO PREVENT SG OVERFILL WITH MFW
4.28E-02        4.28E-02
38      %T13    LOSS OF AC BUS A3 <IE>          3.94E-04        3.94E-
04      2.02E-08
        HHF10P36CL      TRAIN P36C MAINTENANCE RESTORATION FAILURE
        3.00E-03        3.00E-03
        RECB5OR6        OPS. FAILS TO CROSSTIE POWER SUPPLY
4.00E-01        4.00E-01
        RECSGOVERF      FLAG - SG OVERFILL RECOVERY             1.00E+
00      1.00E+00
        SGOFREC OPERATOR FAILS TO PREVENT SG OVERFILL WITH MFW
4.28E-02        4.28E-02
39      %T13    LOSS OF AC BUS A3 <IE>          3.94E-04        3.94E-
04      2.02E-08
        LHF1LHE004      TRAIN B LPR MAINTENANCE RESTORATION FAILURES
        3.00E-03        3.00E-03
        RECB5OR6        OPS. FAILS TO CROSSTIE POWER SUPPLY
4.00E-01        4.00E-01
        RECSGOVERF      FLAG - SG OVERFILL RECOVERY             1.00E+
00      1.00E+00
        TBX                     1.00E+00        1.00E+00
        SGOFREC OPERATOR FAILS TO PREVENT SG OVERFILL WITH MFW
4.28E-02        4.28E-02
40      %T1     REACTOR/TURBINE TRIP <IE>               1.11E+00
1.11E+00        2.02E-08
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        QHF1RCPTRP      OPERATOR FAILS TO TRIP RCPS ON 30 MINUTES
        2.12E-03        2.12E-03
        SMM1CCFP4X      COMMON CAUSE FAILURE OF SW PUMP TRAINS
8.57E-06        8.57E-06
41      %T11    LOSS OF DC BUS D01 <IE>         3.94E-04        3.94E-
04      1.95E-08
        RECB5OR6        OPS. FAILS TO CROSSTIE POWER SUPPLY
4.00E-01        4.00E-01
        RECSGOVERF      FLAG - SG OVERFILL RECOVERY             1.00E+
00      1.00E+00
        UHF1THPIAD      OPERATOR FAILS TO ATTEMPT HPI COOLING
2.89E-03        2.89E-03
        SGOFREC OPERATOR FAILS TO PREVENT SG OVERFILL WITH MFW
4.28E-02        4.28E-02
42      %T13    LOSS OF AC BUS A3 <IE>          3.94E-04        3.94E-
04      1.95E-08
        RECB5OR6        OPS. FAILS TO CROSSTIE POWER SUPPLY
4.00E-01        4.00E-01
        RECSGOVERF      FLAG - SG OVERFILL RECOVERY             1.00E+
00      1.00E+00
        UHF1THPIAD      OPERATOR FAILS TO ATTEMPT HPI COOLING
2.89E-03        2.89E-03
        SGOFREC OPERATOR FAILS TO PREVENT SG OVERFILL WITH MFW
4.28E-02        4.28E-02
43      %T7     SPURIOUS HPI ACTUATION <IE>             3.60E-03
3.60E-03        1.92E-08
        HMM1CCF001      HPI PUMPS COMMON CAUSE FAILURE TO RUN <module>
                3.39E-04        3.39E-04
        RMM101SRVT      Either SRV fails to reclose after steam relief
                1.58E-02        1.58E-02
44      %S      SMALL BREAK LOCA <IE>           5.00E-04        5.00E-
04      1.86E-08
        LXV100BW1K      MANUAL VALVE BW1 TRANSFERS CLOSED       1.94E-
07      1.92E+02        3.72E-05
45      %T16    LOSS OF AC BUS B6 <IE>          1.04E-03        1.04E-
03      1.85E-08
        DBT1DSCD06      BATTERY D06 DISCHARGED PRIOR TO RECOVERY OF OF
FSITE PWR-2HRS          1.00E+00        1.00E+00
        QMM1P7BTRF      LOSS OF FLOW THRU P7B TRAIN (TYPE-2) <module>
        1.97E-03        1.97E-03
        RECB56  OPS. FAILS TO ALIGN POWER TO B56                4.00E-
01      4.00E-01
        RECSGOVER2      FLAG - SG OVERFILL RECOVERY             1.00E+
00      1.00E+00
        SGOFREC2        OPERATOR FAILS TO PREVENT SG OVERFILL WITH EFW
                2.26E-02        2.26E-02
46      %A      LARGE BREAK LOCA <IE>           4.50E-05        4.50E-
05      1.78E-08
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        LMM1CCF001      MOTOR-DRIVEN PUMP COMMON CAUSE FAILURE <module
>               3.96E-04        3.96E-04
47      %T2     LOSS OF POWER CONVERSION SYSTEM <IE>            2.20E-
01      2.20E-01        1.71E-08
        QAV102888R      AIR-OPERATED VALVE CV-2888 TRANSFERS OPEN
1.12E-06        2.40E+01        2.69E-05
        UHF1THPIAD      OPERATOR FAILS TO ATTEMPT HPI COOLING
2.89E-03        2.89E-03
48      %T2     LOSS OF POWER CONVERSION SYSTEM <IE>            2.20E-
01      2.20E-01        1.64E-08
        QMM1P7ATRA      LOSS OF FLOW THRU P7A TRAIN (TYPE-1) <module>
        8.01E-03        8.01E-03
        QMM1P7BTRA      LOSS OF FLOW THRU P7B TRAIN (TYPE-1) <module>
        3.22E-03        3.22E-03
        UHF1THPIAD      OPERATOR FAILS TO ATTEMPT HPI COOLING
2.89E-03        2.89E-03
49      %T16    LOSS OF AC BUS B6 <IE>          1.04E-03        1.04E-
03      1.63E-08
        EXCESSMFWA      EXCESSIVE MAIN FEEDWATER TO SG A
5.00E-01        5.00E-01
        QCV1FW13BN      CHECK VALVE FW-13B FAILS TO OPEN        7.84E-
05      1.00E+00        7.84E-05
        RECB56  OPS. FAILS TO ALIGN POWER TO B56                4.00E-
01      4.00E-01
50      %T11    LOSS OF DC BUS D01 <IE>         3.94E-04        3.94E-
04      1.59E-08
        EDG1DG2XXF      DIESEL GENERATOR DG2 FAILS TO RUN       2.46E-
03      2.40E+01        5.73E-02
        EDG2DGTMAA      DG AAC IN TEST & MAINTENANCE            1.64E-
02      1.64E-02
        RECSGOVERF      FLAG - SG OVERFILL RECOVERY             1.00E+
00      1.00E+00
        SGOFREC OPERATOR FAILS TO PREVENT SG OVERFILL WITH MFW
4.28E-02        4.28E-02
51      %T16    LOSS OF AC BUS B6 <IE>          1.04E-03        1.04E-
03      1.58E-08
        QTM1P7BTRN      P7B IN MAINTENANCE              8.89E-04
8.89E-04
        RECB56  OPS. FAILS TO ALIGN POWER TO B56                4.00E-
01      4.00E-01
        RECSGOVERF      FLAG - SG OVERFILL RECOVERY             1.00E+
00      1.00E+00
        SGOFREC OPERATOR FAILS TO PREVENT SG OVERFILL WITH MFW
4.28E-02        4.28E-02
52      %T8     TOTAL LOSS OF SW FLOW <IE>              1.00E-03
1.00E-03        1.58E-08
        QMM1P7ATRA      LOSS OF FLOW THRU P7A TRAIN (TYPE-1) <module>
        8.01E-03        8.01E-03
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        QMM1P7BTRF      LOSS OF FLOW THRU P7B TRAIN (TYPE-2) <module>
        1.97E-03        1.97E-03
53      %T11    LOSS OF DC BUS D01 <IE>         3.94E-04        3.94E-
04      1.56E-08
        LMM1CV1277      MOTOR-OPERATED VALVE CV1277 FAILS TO PROVIDE F
LOW <module>            2.31E-03        2.31E-03
        RECB5OR6        OPS. FAILS TO CROSSTIE POWER SUPPLY
4.00E-01        4.00E-01
        RECSGOVERF      FLAG - SG OVERFILL RECOVERY             1.00E+
00      1.00E+00
        TBX                     1.00E+00        1.00E+00
        SGOFREC OPERATOR FAILS TO PREVENT SG OVERFILL WITH MFW
4.28E-02        4.28E-02
54      %T11    LOSS OF DC BUS D01 <IE>         3.94E-04        3.94E-
04      1.56E-08
        LMM1CV1406      MOTOR-OPERATED VALVES CV1406 FAILS TO DELIVER
FLOW<module>            2.31E-03        2.31E-03
        RECB5OR6        OPS. FAILS TO CROSSTIE POWER SUPPLY
4.00E-01        4.00E-01
        RECSGOVERF      FLAG - SG OVERFILL RECOVERY             1.00E+
00      1.00E+00
        TBX                     1.00E+00        1.00E+00
        SGOFREC OPERATOR FAILS TO PREVENT SG OVERFILL WITH MFW
4.28E-02        4.28E-02
55      %T13    LOSS OF AC BUS A3 <IE>          3.94E-04        3.94E-
04      1.56E-08
        LMM1CV1277      MOTOR-OPERATED VALVE CV1277 FAILS TO PROVIDE F
LOW <module>            2.31E-03        2.31E-03
        RECB5OR6        OPS. FAILS TO CROSSTIE POWER SUPPLY
4.00E-01        4.00E-01
        RECSGOVERF      FLAG - SG OVERFILL RECOVERY             1.00E+
00      1.00E+00
        TBX                     1.00E+00        1.00E+00
        SGOFREC OPERATOR FAILS TO PREVENT SG OVERFILL WITH MFW
4.28E-02        4.28E-02
56      %T13    LOSS OF AC BUS A3 <IE>          3.94E-04        3.94E-
04      1.56E-08
        LMM1CV1406      MOTOR-OPERATED VALVES CV1406 FAILS TO DELIVER
FLOW<module>            2.31E-03        2.31E-03
        RECB5OR6        OPS. FAILS TO CROSSTIE POWER SUPPLY
4.00E-01        4.00E-01
        RECSGOVERF      FLAG - SG OVERFILL RECOVERY             1.00E+
00      1.00E+00
        TBX                     1.00E+00        1.00E+00
        SGOFREC OPERATOR FAILS TO PREVENT SG OVERFILL WITH MFW
4.28E-02        4.28E-02
57      %T11    LOSS OF DC BUS D01 <IE>         3.94E-04        3.94E-
04      1.56E-08
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        LMM1CV1408      MOTOR-OPERATED VALVE CV1408 FAILS TO OPEN <mod
ule>            2.31E-03        2.31E-03
        RECB5OR6        OPS. FAILS TO CROSSTIE POWER SUPPLY
4.00E-01        4.00E-01
        RECSGOVERF      FLAG - SG OVERFILL RECOVERY             1.00E+
00      1.00E+00
        SGOFREC OPERATOR FAILS TO PREVENT SG OVERFILL WITH MFW
4.28E-02        4.28E-02
58      %T13    LOSS OF AC BUS A3 <IE>          3.94E-04        3.94E-
04      1.56E-08
        LMM1CV1408      MOTOR-OPERATED VALVE CV1408 FAILS TO OPEN <mod
ule>            2.31E-03        2.31E-03
        RECB5OR6        OPS. FAILS TO CROSSTIE POWER SUPPLY
4.00E-01        4.00E-01
        RECSGOVERF      FLAG - SG OVERFILL RECOVERY             1.00E+
00      1.00E+00
        SGOFREC OPERATOR FAILS TO PREVENT SG OVERFILL WITH MFW
4.28E-02        4.28E-02
59      %T2     LOSS OF POWER CONVERSION SYSTEM <IE>            2.20E-
01      2.20E-01        1.53E-08
        QHF1P7BTNL      OPERATORS FAIL TO CORRECTLY RESTORE P7B AFTER
MAINTENANCE             3.00E-03        3.00E-03
        QMM1P7ATRA      LOSS OF FLOW THRU P7A TRAIN (TYPE-1) <module>
        8.01E-03        8.01E-03
        UHF1THPIAD      OPERATOR FAILS TO ATTEMPT HPI COOLING
2.89E-03        2.89E-03
60      %M      MEDIUM BREAK LOCA <IE>          4.50E-05        4.50E-
05      1.53E-08
        HMM1CCF001      HPI PUMPS COMMON CAUSE FAILURE TO RUN <module>
                3.39E-04        3.39E-04
61      %S      SMALL BREAK LOCA <IE>           5.00E-04        5.00E-
04      1.48E-08
        LMM1CCF007      MOTOR-OPERATED VALVES CV1405/6 COMMON CAUSE FA
ILURE <module>          5.94E-05        5.94E-05
        SX                      1.00E+00        1.00E+00
        RECDHMANSX      OPERATOR FAILS TO OPEN CV1405/06 ON FAILURE TO
 REMOTELY OPEN (SX)             5.00E-01        5.00E-01
62      %T11    LOSS OF DC BUS D01 <IE>         3.94E-04        3.94E-
04      1.48E-08
        HMM1CV1300      CV1300 FAILS TO CLOSE           2.19E-03
2.19E-03
        RECB5OR6        OPS. FAILS TO CROSSTIE POWER SUPPLY
4.00E-01        4.00E-01
        RECSGOVERF      FLAG - SG OVERFILL RECOVERY             1.00E+
00      1.00E+00
        SGOFREC OPERATOR FAILS TO PREVENT SG OVERFILL WITH MFW
4.28E-02        4.28E-02
63      %T13    LOSS OF AC BUS A3 <IE>          3.94E-04        3.94E-
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04      1.48E-08
        HMM1CV1300      CV1300 FAILS TO CLOSE           2.19E-03
2.19E-03
        RECB5OR6        OPS. FAILS TO CROSSTIE POWER SUPPLY
4.00E-01        4.00E-01
        RECSGOVERF      FLAG - SG OVERFILL RECOVERY             1.00E+
00      1.00E+00
        SGOFREC OPERATOR FAILS TO PREVENT SG OVERFILL WITH MFW
4.28E-02        4.28E-02
64      %T16    LOSS OF AC BUS B6 <IE>          1.04E-03        1.04E-
03      1.44E-08
        QHF1RCPTRP      OPERATOR FAILS TO TRIP RCPS ON 30 MINUTES
        2.12E-03        2.12E-03
        RECB56  OPS. FAILS TO ALIGN POWER TO B56                4.00E-
01      4.00E-01
        RECSW   OPS. FAILS TO START SW PUMP             1.00E+00
1.00E+00
        SWSWINGREC      OPERATOR FAILS TO START AND ALIGN OP SW INCLUD
ING AVAILABLE POWER SOURCE (NON-T3              1.63E-02        1.63E-
02
65      %T11    LOSS OF DC BUS D01 <IE>         3.94E-04        3.94E-
04      1.44E-08
        LTM1TRAINB      TRAIN B IS IN MAINTENANCE               2.13E-
03      2.13E-03
        RECB5OR6        OPS. FAILS TO CROSSTIE POWER SUPPLY
4.00E-01        4.00E-01
        RECSGOVERF      FLAG - SG OVERFILL RECOVERY             1.00E+
00      1.00E+00
        TBX                     1.00E+00        1.00E+00
        SGOFREC OPERATOR FAILS TO PREVENT SG OVERFILL WITH MFW
4.28E-02        4.28E-02
66      %T13    LOSS OF AC BUS A3 <IE>          3.94E-04        3.94E-
04      1.44E-08
        LTM1TRAINB      TRAIN B IS IN MAINTENANCE               2.13E-
03      2.13E-03
        RECB5OR6        OPS. FAILS TO CROSSTIE POWER SUPPLY
4.00E-01        4.00E-01
        RECSGOVERF      FLAG - SG OVERFILL RECOVERY             1.00E+
00      1.00E+00
        TBX                     1.00E+00        1.00E+00
        SGOFREC OPERATOR FAILS TO PREVENT SG OVERFILL WITH MFW
4.28E-02        4.28E-02
67      %S      SMALL BREAK LOCA <IE>           5.00E-04        5.00E-
04      1.44E-08
        HMM1CCF005      COMMON CAUSE FAILURE OF HPI INJECTION MOVS
        5.94E-05        5.94E-05
        RECHPMAN2       OPERATOR FAILS TO OPEN MU-23,24 ON LOSS OF 2/4
 HPI LINES   SU MU              4.84E-01        4.84E-01
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68      %T10    LOSS OF SW PUMP GREEN TRAIN <IE>                3.16E-
02      3.16E-02        1.43E-08
        ETM1A3XXXX      4160V SWGR A3 IN TEST OR MAINTENANCE
5.66E-05        5.66E-05
        QMM1P7ATRA      LOSS OF FLOW THRU P7A TRAIN (TYPE-1) <module>
        8.01E-03        8.01E-03
69      %T2     LOSS OF POWER CONVERSION SYSTEM <IE>            2.20E-
01      2.20E-01        1.43E-08
        QMM1P7ATRA      LOSS OF FLOW THRU P7A TRAIN (TYPE-1) <module>
        8.01E-03        8.01E-03
        QMM1TMAEFW      TRIP MODULE FOR CHANNEL A EFW ACTUATION FAILS
        2.80E-03        2.80E-03
        UHF1THPIAD      OPERATOR FAILS TO ATTEMPT HPI COOLING
2.89E-03        2.89E-03
70      %T16    LOSS OF AC BUS B6 <IE>          1.04E-03        1.04E-
03      1.41E-08
        DBT1DSCD06      BATTERY D06 DISCHARGED PRIOR TO RECOVERY OF OF
FSITE PWR-2HRS          1.00E+00        1.00E+00
        EXCESSMFWA      EXCESSIVE MAIN FEEDWATER TO SG A
5.00E-01        5.00E-01
        QHF1C2648L      MISCALIBRATION OF CV-2648 CONTROLLER SETPOINTS
                3.00E-03        3.00E-03
        RECB56  OPS. FAILS TO ALIGN POWER TO B56                4.00E-
01      4.00E-01
        RECSGOVER2      FLAG - SG OVERFILL RECOVERY             1.00E+
00      1.00E+00
        SGOFREC2        OPERATOR FAILS TO PREVENT SG OVERFILL WITH EFW
                2.26E-02        2.26E-02
71      %T14    LOSS OF AC BUS A4 <IE>          3.94E-04        3.94E-
04      1.40E-08
        QHF1HPITR1      OPERATOR FAILS TO THROTTLE HPI TO PREVENT RCS
PRESSURE RELIEF         7.24E-02        7.24E-02
        RECB56  OPS. FAILS TO ALIGN POWER TO B56                4.00E-
01      4.00E-01
        RECB5OR6        OPS. FAILS TO CROSSTIE POWER SUPPLY
4.00E-01        4.00E-01
        RRZ1P1000T      ERV (PSV-1000) FAILS TO RESEAT AFTER STEAM
3.06E-03        1.00E+00        3.06E-03
72      %T11    LOSS OF DC BUS D01 <IE>         3.94E-04        3.94E-
04      1.37E-08
        HMM1P36CFR      TRAIN P36C FAILS TO RUN <module>
2.03E-03        2.03E-03
        RECB5OR6        OPS. FAILS TO CROSSTIE POWER SUPPLY
4.00E-01        4.00E-01
        RECSGOVERF      FLAG - SG OVERFILL RECOVERY             1.00E+
00      1.00E+00
        SGOFREC OPERATOR FAILS TO PREVENT SG OVERFILL WITH MFW
4.28E-02        4.28E-02
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73      %T13    LOSS OF AC BUS A3 <IE>          3.94E-04        3.94E-
04      1.37E-08
        HMM1P36CFR      TRAIN P36C FAILS TO RUN <module>
2.03E-03        2.03E-03
        RECB5OR6        OPS. FAILS TO CROSSTIE POWER SUPPLY
4.00E-01        4.00E-01
        RECSGOVERF      FLAG - SG OVERFILL RECOVERY             1.00E+
00      1.00E+00
        SGOFREC OPERATOR FAILS TO PREVENT SG OVERFILL WITH MFW
4.28E-02        4.28E-02
74      %T11    LOSS OF DC BUS D01 <IE>         3.94E-04        3.94E-
04      1.36E-08
        HMM1P36CFS      TRAIN P36C FAILS TO START <module>
2.02E-03        2.02E-03
        RECB5OR6        OPS. FAILS TO CROSSTIE POWER SUPPLY
4.00E-01        4.00E-01
        RECSGOVERF      FLAG - SG OVERFILL RECOVERY             1.00E+
00      1.00E+00
        SGOFREC OPERATOR FAILS TO PREVENT SG OVERFILL WITH MFW
4.28E-02        4.28E-02
75      %T13    LOSS OF AC BUS A3 <IE>          3.94E-04        3.94E-
04      1.36E-08
        HMM1P36CFS      TRAIN P36C FAILS TO START <module>
2.02E-03        2.02E-03
        RECB5OR6        OPS. FAILS TO CROSSTIE POWER SUPPLY
4.00E-01        4.00E-01
        RECSGOVERF      FLAG - SG OVERFILL RECOVERY             1.00E+
00      1.00E+00
        SGOFREC OPERATOR FAILS TO PREVENT SG OVERFILL WITH MFW
4.28E-02        4.28E-02
76      %T8     TOTAL LOSS OF SW FLOW <IE>              1.00E-03
1.00E-03        1.36E-08
        QMM1P7BTRA      LOSS OF FLOW THRU P7B TRAIN (TYPE-1) <module>
        3.22E-03        3.22E-03
        QTD1C2613F      CV-2613 TIME DELAY PREMATURE (OPENS CV-2613 TO
O EARLY)        1.00E-04        1.00E+00        3.60E-02
        RECP7AMAN       OPERATOR FAILS TO RECOVER P7A MAN AFTER EARLY
STM ADM OPENING (-T3)           1.17E-01        1.17E-01
77      %T8     TOTAL LOSS OF SW FLOW <IE>              1.00E-03
1.00E-03        1.36E-08
        QMM1P7BTRA      LOSS OF FLOW THRU P7B TRAIN (TYPE-1) <module>
        3.22E-03        3.22E-03
        QTD1C2663F      CV-2663 TIME DELAY PREMATURE (OPENS CV-2663 TO
O EARLY)        1.00E-04        1.00E+00        3.60E-02
        RECP7AMAN       OPERATOR FAILS TO RECOVER P7A MAN AFTER EARLY
STM ADM OPENING (-T3)           1.17E-01        1.17E-01
78      %T11    LOSS OF DC BUS D01 <IE>         3.94E-04        3.94E-
04      1.31E-08
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        DBT100D06F      BATTERY 00D06 NO OUTPUT (HOURLY)        1.39E-
06      2.40E+01        3.34E-05
79      %T16    LOSS OF AC BUS B6 <IE>          1.04E-03        1.04E-
03      1.27E-08
        DBT1DSCD06      BATTERY D06 DISCHARGED PRIOR TO RECOVERY OF OF
FSITE PWR-2HRS          1.00E+00        1.00E+00
        EXCESSMFWA      EXCESSIVE MAIN FEEDWATER TO SG A
5.00E-01        5.00E-01
        QMM1SGBP7B      LOSS OF FLOW TO SGB FROM P7B            2.71E-
03      2.71E-03
        RECB56  OPS. FAILS TO ALIGN POWER TO B56                4.00E-
01      4.00E-01
        RECSGOVER2      FLAG - SG OVERFILL RECOVERY             1.00E+
00      1.00E+00
        SGOFREC2        OPERATOR FAILS TO PREVENT SG OVERFILL WITH EFW
                2.26E-02        2.26E-02
80      %T8     TOTAL LOSS OF SW FLOW <IE>              1.00E-03
1.00E-03        1.26E-08
        QHF1P7BTNL      OPERATORS FAIL TO CORRECTLY RESTORE P7B AFTER
MAINTENANCE             3.00E-03        3.00E-03
        QTD1C2613F      CV-2613 TIME DELAY PREMATURE (OPENS CV-2613 TO
O EARLY)        1.00E-04        1.00E+00        3.60E-02
        RECP7AMAN       OPERATOR FAILS TO RECOVER P7A MAN AFTER EARLY
STM ADM OPENING (-T3)           1.17E-01        1.17E-01
81      %T8     TOTAL LOSS OF SW FLOW <IE>              1.00E-03
1.00E-03        1.26E-08
        QHF1P7BTNL      OPERATORS FAIL TO CORRECTLY RESTORE P7B AFTER
MAINTENANCE             3.00E-03        3.00E-03
        QTD1C2663F      CV-2663 TIME DELAY PREMATURE (OPENS CV-2663 TO
O EARLY)        1.00E-04        1.00E+00        3.60E-02
        RECP7AMAN       OPERATOR FAILS TO RECOVER P7A MAN AFTER EARLY
STM ADM OPENING (-T3)           1.17E-01        1.17E-01
82      %R      SGTR <IE>               7.00E-03        7.00E-03
1.25E-08
        DCF1D0112R      FUSE D0112 TRANSFERS OPEN       6.38E-07
2.40E+01        1.53E-05
        RECMANDCR       OPERATOR FAILS TO OPEN BRKR LOCALLY AT A1 FROM
 UAT AND CLOSE BKR FROM SUT1  R         1.17E-01        1.17E-01
83      %T11    LOSS OF DC BUS D01 <IE>         3.94E-04        3.94E-
04      1.18E-08
        EDG1DG2XXF      DIESEL GENERATOR DG2 FAILS TO RUN       2.46E-
03      2.40E+01        5.73E-02
        EDGOPER-R       OPERATOR FAILS TO START DG AAC          1.22E-
02      1.22E-02
        RECSGOVERF      FLAG - SG OVERFILL RECOVERY             1.00E+
00      1.00E+00
        SGOFREC OPERATOR FAILS TO PREVENT SG OVERFILL WITH MFW
4.28E-02        4.28E-02
```

```
84      %T8     TOTAL LOSS OF SW FLOW <IE>              1.00E-03
1.00E-03        1.18E-08
        QMM1TMAEFW      TRIP MODULE FOR CHANNEL A EFW ACTUATION FAILS
        2.80E-03        2.80E-03
        QTD1C2613F      CV-2613 TIME DELAY PREMATURE (OPENS CV-2613 TO
O EARLY)        1.00E-04        1.00E+00        3.60E-02
        RECP7AMAN       OPERATOR FAILS TO RECOVER P7A MAN AFTER EARLY
STM ADM OPENING (-T3)           1.17E-01        1.17E-01
85      %T8     TOTAL LOSS OF SW FLOW <IE>              1.00E-03
1.00E-03        1.18E-08
        QMM1TMAEFW      TRIP MODULE FOR CHANNEL A EFW ACTUATION FAILS
        2.80E-03        2.80E-03
        QTD1C2663F      CV-2663 TIME DELAY PREMATURE (OPENS CV-2663 TO
O EARLY)        1.00E-04        1.00E+00        3.60E-02
        RECP7AMAN       OPERATOR FAILS TO RECOVER P7A MAN AFTER EARLY
STM ADM OPENING (-T3)           1.17E-01        1.17E-01
86      %S      SMALL BREAK LOCA <IE>           5.00E-04        5.00E-
04      1.13E-08
        ETM1A4XXXX      4160V SWGR A4 IN TEST OR MAINTENANCE
5.66E-05        5.66E-05
        RECB56  OPS. FAILS TO ALIGN POWER TO B56                4.00E-
01      4.00E-01
87      %S      SMALL BREAK LOCA <IE>           5.00E-04        5.00E-
04      1.13E-08
        ETM1B6XXXX      480V LCC B6 IN TEST OR MAINTENANCE
5.66E-05        5.66E-05
        RECB56  OPS. FAILS TO ALIGN POWER TO B56                4.00E-
01      4.00E-01
88      %T8     TOTAL LOSS OF SW FLOW <IE>              1.00E-03
1.00E-03        1.13E-08
        QTK1CS41BG      TANK CST-41B LEAKAGE    4.83E-06        2.40E+
01      1.16E-04
        RECEFWSRC       OPERATOR FAILS TO SWITCH EFW FROM T41B TO T41
        9.76E-02        9.76E-02
89      %T16    LOSS OF AC BUS B6 <IE>          1.04E-03        1.04E-
03      1.12E-08
        QAV102888R      AIR-OPERATED VALVE CV-2888 TRANSFERS OPEN
1.12E-06        2.40E+01        2.69E-05
        RECB56  OPS. FAILS TO ALIGN POWER TO B56                4.00E-
01      4.00E-01
90      %S      SMALL BREAK LOCA <IE>           5.00E-04        5.00E-
04      1.10E-08
        LSM10SUMPP      CONTAINMENT SUMP PLUGGED        2.20E-05
1.00E+00        2.20E-05
        SX                      1.00E+00        1.00E+00
91      %S      SMALL BREAK LOCA <IE>           5.00E-04        5.00E-
04      1.09E-08
        LMM1MPP34B      TRAIN B MOTOR-DRIVEN PUMP FAILS <module>
```

```
        5.17E-03        5.17E-03
        LTM1TRAINA      TRAIN A IS IN MAINTENANCE                4.20E-
03      4.20E-03
        SX                      1.00E+00        1.00E+00
92      %T16    LOSS OF AC BUS B6 <IE>          1.04E-03        1.04E-
03      1.07E-08
        QMM1P7ATRA      LOSS OF FLOW THRU P7A TRAIN (TYPE-1) <module>
        8.01E-03        8.01E-03
        QMM1P7BTRA      LOSS OF FLOW THRU P7B TRAIN (TYPE-1) <module>
        3.22E-03        3.22E-03
        RECB56  OPS. FAILS TO ALIGN POWER TO B56                 4.00E-
01      4.00E-01
93      %T2     LOSS OF POWER CONVERSION SYSTEM <IE>             2.20E-
01      2.20E-01        1.00E-08
        QMM1P7ATRA      LOSS OF FLOW THRU P7A TRAIN (TYPE-1) <module>
        8.01E-03        8.01E-03
        QMM1P7BTRF      LOSS OF FLOW THRU P7B TRAIN (TYPE-2) <module>
        1.97E-03        1.97E-03
        UHF1THPIAD      OPERATOR FAILS TO ATTEMPT HPI COOLING
2.89E-03        2.89E-03
94      %T16    LOSS OF AC BUS B6 <IE>          1.04E-03        1.04E-
03      1.00E-08
        QHF1P7BTNL      OPERATORS FAIL TO CORRECTLY RESTORE P7B AFTER
MAINTENANCE             3.00E-03        3.00E-03
        QMM1P7ATRA      LOSS OF FLOW THRU P7A TRAIN (TYPE-1) <module>
        8.01E-03        8.01E-03
        RECB56  OPS. FAILS TO ALIGN POWER TO B56                 4.00E-
01      4.00E-01
95      %T8     TOTAL LOSS OF SW FLOW <IE>              1.00E-03
1.00E-03        9.66E-09
        QHF1P7ATNL      OPERATORS FAIL TO CORRECTLY RESTORE EQUIP IN E
FW TRAIN A              3.00E-03        3.00E-03
        QMM1P7BTRA      LOSS OF FLOW THRU P7B TRAIN (TYPE-1) <module>
        3.22E-03        3.22E-03
96      %T8     TOTAL LOSS OF SW FLOW <IE>              1.00E-03
1.00E-03        9.41E-09
        QMM1P7BTRA      LOSS OF FLOW THRU P7B TRAIN (TYPE-1) <module>
        3.22E-03        3.22E-03
        QTM1P7ATRN      TRAIN A IN MAINTENANCE          2.92E-03
2.92E-03
97      %T16    LOSS OF AC BUS B6 <IE>          1.04E-03        1.04E-
03      9.33E-09
        QMM1P7ATRA      LOSS OF FLOW THRU P7A TRAIN (TYPE-1) <module>
        8.01E-03        8.01E-03
        QMM1TMAEFW      TRIP MODULE FOR CHANNEL A EFW ACTUATION FAILS
        2.80E-03        2.80E-03
        RECB56  OPS. FAILS TO ALIGN POWER TO B56                 4.00E-
01      4.00E-01
```

```
98      %T8     TOTAL LOSS OF SW FLOW <IE>              1.00E-03
1.00E-03        9.00E-09
        QHF1P7ATNL      OPERATORS FAIL TO CORRECTLY RESTORE EQUIP IN E
FW TRAIN A              3.00E-03        3.00E-03
        QHF1P7BTNL      OPERATORS FAIL TO CORRECTLY RESTORE P7B AFTER
MAINTENANCE             3.00E-03        3.00E-03
99      %S      SMALL BREAK LOCA <IE>           5.00E-04        5.00E-
04      8.81E-09
        EMM1B6XXXX      480V LCC B6 FAULT MODULE                4.41E-
05      4.41E-05
        RECB56  OPS. FAILS TO ALIGN POWER TO B56                4.00E-
01      4.00E-01
100     %T8     TOTAL LOSS OF SW FLOW <IE>              1.00E-03
1.00E-03        8.76E-09
        QHF1P7BTNL      OPERATORS FAIL TO CORRECTLY RESTORE P7B AFTER
MAINTENANCE             3.00E-03        3.00E-03
        QTM1P7ATRN      TRAIN A IN MAINTENANCE          2.92E-03
2.92E-03

Report Summary:
        Filename: C:\SAMALE~1\COREDAMA.CUT
        Print date: 03/21/1900 1:17 PM
        Not sorted
        Printed the first 100
```

Level 2 dominant sequences
Level 2 results quantified to 1E-08 binned into PDSs

```
#       Inputs  Description     Event Prob      Probability

PDS - VIAI

1       %A      LARGE BREAK LOCA <IE>   4.50E-05        3.45E-06
        AX              1.00E+00
        XHF1ALPRAD      OPERATOR FAILS TO ATTEMPT LPR WITHIN 30 MINUTE
S OF L LOCA     7.67E-02

PDS - IKI

1       %T8     TOTAL LOSS OF SW FLOW <IE>              1.00E-03
1.00E-03        2.12E-06
        QHF1RCPTRP      OPERATOR FAILS TO TRIP RCPS ON 30 MINUTES
        2.12E-03        2.12E-03
2       %T1     REACTOR/TURBINE TRIP <IE>               1.11E+00
1.11E+00        2.02E-08
        QHF1RCPTRP      OPERATOR FAILS TO TRIP RCPS ON 30 MINUTES
        2.12E-03        2.12E-03
        SMM1CCFP4X      COMMON CAUSE FAILURE OF SW PUMP TRAINS
8.57E-06        8.57E-06


PDS - IICI

1       %S      SMALL BREAK LOCA <IE>           5.00E-04        5.00E-
04      2.58E-07
        SX                      1.00E+00        1.00E+00
        XHF1SMALLX      OPERATOR FAILS TO BEGIN HPR FOLLOWING S-LOCA
        5.17E-04        5.17E-04
2       %S      SMALL BREAK LOCA <IE>           5.00E-04        5.00E-
04      5.96E-08
        LMM1CCF001      MOTOR-DRIVEN PUMP COMMON CAUSE FAILURE <module
>               3.96E-04        3.96E-04
        SX                      1.00E+00        1.00E+00
        RECLPIRBSX      OPERATOR FAILS TO OPEN VALVES TO CONNECT RBS S
UCTION TO VESSEL VIA RECIRC HDR         3.01E-01        3.01E-01
3       %T7     SPURIOUS HPI ACTUATION <IE>             3.60E-03
3.60E-03        2.93E-08
        RMM101SRVT      Either SRV fails to reclose after steam relief
                1.58E-02        1.58E-02
        TQMX                    1.00E+00        1.00E+00
        XHF1MEDXXX      OPERATOR FAILS TO BEGIN HPR FOLLOWING M-LOCA
        5.17E-04        5.17E-04
4       %M      MEDIUM BREAK LOCA <IE>          4.50E-05        4.50E-
05      2.33E-08
```

Level 2 dominant sequences

```
        MX                      1.00E+00        1.00E+00
        XHF1MEDXXX      OPERATOR FAILS TO BEGIN HPR FOLLOWING M-LOCA
        5.17E-04        5.17E-04
5       %T7     SPURIOUS HPI ACTUATION <IE>             3.60E-03
3.60E-03        2.24E-08
        LMM1CCF001      MOTOR-DRIVEN PUMP COMMON CAUSE FAILURE <module
>               3.96E-04        3.96E-04
        RMM101SRVT      Either SRV fails to reclose after steam relief
                1.58E-02        1.58E-02
        TQMX                    1.00E+00        1.00E+00
6       %S      SMALL BREAK LOCA <IE>           5.00E-04        5.00E-
04      1.09E-08
        LMM1MPP34B      TRAIN B MOTOR-DRIVEN PUMP FAILS <module>
        5.17E-03        5.17E-03
        LTM1TRAINA      TRAIN A IS IN MAINTENANCE               4.20E-
03      4.20E-03
        SX                      1.00E+00        1.00E+00

PDS - ICI

1       %S      SMALL BREAK LOCA <IE>           5.00E-04        5.00E-
04      1.70E-07
        HMM1CCF001      HPI PUMPS COMMON CAUSE FAILURE TO RUN <module>
                3.39E-04        3.39E-04
2       %T14    LOSS OF AC BUS A4 <IE>          3.94E-04        3.94E-
04      1.34E-07
        QHF1RCPTRP      OPERATOR FAILS TO TRIP RCPS ON 30 MINUTES
        2.12E-03        2.12E-03
        RECB56  OPS. FAILS TO ALIGN POWER TO B56                4.00E-
01      4.00E-01
        RECB5OR6        OPS. FAILS TO CROSSTIE POWER SUPPLY
4.00E-01        4.00E-01
3       %T16    LOSS OF AC BUS B6 <IE>          1.04E-03        1.04E-
03      9.22E-08
        QHF1HPITR1      OPERATOR FAILS TO THROTTLE HPI TO PREVENT RCS
PRESSURE RELIEF         7.24E-02        7.24E-02
        RECB56  OPS. FAILS TO ALIGN POWER TO B56                4.00E-
01      4.00E-01
        RRZ1P1000T      ERV (PSV-1000) FAILS TO RESEAT AFTER STEAM
3.06E-03        1.00E+00        3.06E-03
4       %T1     REACTOR/TURBINE TRIP <IE>               1.11E+00
1.11E+00        2.13E-08
        ETM1A4XXXX      4160V SWGR A4 IN TEST OR MAINTENANCE
5.66E-05        5.66E-05
        QHF1RCPTRP      OPERATOR FAILS TO TRIP RCPS ON 30 MINUTES
        2.12E-03        2.12E-03
        RECB56  OPS. FAILS TO ALIGN POWER TO B56                4.00E-
01      4.00E-01
```

```
        RECB5OR6        OPS. FAILS TO CROSSTIE POWER SUPPLY
4.00E-01        4.00E-01
5       %T7     SPURIOUS HPI ACTUATION <IE>             3.60E-03
3.60E-03        1.92E-08
        HMM1CCF001      HPI PUMPS COMMON CAUSE FAILURE TO RUN <module>
                3.39E-04        3.39E-04
        RMM101SRVT      Either SRV fails to reclose after steam relief
                1.58E-02        1.58E-02
6       %M      MEDIUM BREAK LOCA <IE>          4.50E-05        4.50E-
05      1.53E-08
        HMM1CCF001      HPI PUMPS COMMON CAUSE FAILURE TO RUN <module>
                3.39E-04        3.39E-04
7       %T16    LOSS OF AC BUS B6 <IE>          1.04E-03        1.04E-
03      1.44E-08
        QHF1RCPTRP      OPERATOR FAILS TO TRIP RCPS ON 30 MINUTES
        2.12E-03        2.12E-03
        RECB56  OPS. FAILS TO ALIGN POWER TO B56                4.00E-
01      4.00E-01
        RECSW   OPS. FAILS TO START SW PUMP             1.00E+00
1.00E+00
        SWSWINGREC      OPERATOR FAILS TO START AND ALIGN OP SW INCLUD
ING AVAILABLE POWER SOURCE (NON-T3              1.63E-02        1.63E-
02
8       %S      SMALL BREAK LOCA <IE>           5.00E-04        5.00E-
04      1.44E-08
        HMM1CCF005      COMMON CAUSE FAILURE OF HPI INJECTION MOVS
        5.94E-05        5.94E-05
        RECHPMAN2       OPERATOR FAILS TO OPEN MU-23,24 ON LOSS OF 2/4
 HPI LINES   SU MU              4.84E-01        4.84E-01
9       %T14    LOSS OF AC BUS A4 <IE>          3.94E-04        3.94E-
04      1.40E-08
        QHF1HPITR1      OPERATOR FAILS TO THROTTLE HPI TO PREVENT RCS
PRESSURE RELIEF         7.24E-02        7.24E-02
        RECB56  OPS. FAILS TO ALIGN POWER TO B56                4.00E-
01      4.00E-01
        RECB5OR6        OPS. FAILS TO CROSSTIE POWER SUPPLY
4.00E-01        4.00E-01
        RRZ1P1000T      ERV (PSV-1000) FAILS TO RESEAT AFTER STEAM
3.06E-03        1.00E+00        3.06E-03
10      %S      SMALL BREAK LOCA <IE>           5.00E-04        5.00E-
04      1.13E-08
        ETM1A4XXXX      4160V SWGR A4 IN TEST OR MAINTENANCE
5.66E-05        5.66E-05
        RECB56  OPS. FAILS TO ALIGN POWER TO B56                4.00E-
01      4.00E-01
11      %S      SMALL BREAK LOCA <IE>           5.00E-04        5.00E-
04      1.13E-08
        ETM1B6XXXX      480V LCC B6 IN TEST OR MAINTENANCE
```

```
5.66E-05        5.66E-05
        RECB56  OPS. FAILS TO ALIGN POWER TO B56                4.00E-
01      4.00E-01

PDS - IEI

1       %S      SMALL BREAK LOCA <IE>           5.00E-04        5.00E-
04      8.22E-08
        LMM100BWST      BWST FAILS TO PROVIDE FLOW <module>
1.64E-04        1.64E-04
2       %S      SMALL BREAK LOCA <IE>           5.00E-04        5.00E-
04      2.48E-08
        LMM1CCF002      MOTOR-OPERATED VALVES CV1407/8 CÓMMON CAUSE FA
ILURE <module>          5.94E-05        5.94E-05
        RECHPIMAN6      OPERATOR FAILS TO OPEN CV1407/08 OR CLOSE CV13
00/01 IF FAIL TO OP REMOTELY MU SU              8.37E-01        8.37E-
01
3       %S      SMALL BREAK LOCA <IE>           5.00E-04        5.00E-
04      1.86E-08
        LXV100BW1K      MANUAL VALVE BW1 TRANSFERS CLOSED       1.94E-
07      1.92E+02        3.72E-05

PDS-IIDI

1       %S      SMALL BREAK LOCA <IE>           5.00E-04        5.00E-
04      1.48E-08
        LMM1CCF007      MOTOR-OPERATED VALVES CV1405/6 COMMON CAUSE FA
ILURE <module>          5.94E-05        5.94E-05
        SX                      1.00E+00        1.00E+00
        RECDHMANSX      OPERATOR FAILS TO OPEN CV1405/06 ON FAILURE TO
 REMOTELY OPEN (SX)             5.00E-01        5.00E-01
2       %S      SMALL BREAK LOCA <IE>           5.00E-04        5.00E-
04      1.10E-08
        LSM10SUMPP      CONTAINMENT SUMP PLUGGED        2.20E-05
1.00E+00        2.20E-05
        SX                      1.00E+00        1.00E+00

PDS - IIICI

1       %T16    LOSS OF AC BUS B6 <IE>          1.04E-03        1.04E-
03      5.73E-08
        QMM1P7BTRA      LOSS OF FLOW THRU P7B TRAIN (TYPE-1) <module>
        3.22E-03        3.22E-03
        RECB56  OPS. FAILS TO ALIGN POWER TO B56                4.00E-
01      4.00E-01
        RECSGOVERF      FLAG - SG OVERFILL RECOVERY             1.00E+
00      1.00E+00
        SGOFREC OPERATOR FAILS TO PREVENT SG OVERFILL WITH MFW
```

```
4.28E-02        4.28E-02
2       %T16    LOSS OF AC BUS B6 <IE>          1.04E-03        1.04E-
03      5.34E-08
        QHF1P7BTNL      OPERATORS FAIL TO CORRECTLY RESTORE P7B AFTER
MAINTENANCE             3.00E-03        3.00E-03
        RECB56  OPS. FAILS TO ALIGN POWER TO B56                4.00E-
01      4.00E-01
        RECSGOVERF      FLAG - SG OVERFILL RECOVERY             1.00E+
00      1.00E+00
        SGOFREC OPERATOR FAILS TO PREVENT SG OVERFILL WITH MFW
4.28E-02        4.28E-02
3       %T16    LOSS OF AC BUS B6 <IE>          1.04E-03        1.04E-
03      4.98E-08
        QMM1TMAEFW      TRIP MODULE FOR CHANNEL A EFW ACTUATION FAILS
        2.80E-03        2.80E-03
        RECB56  OPS. FAILS TO ALIGN POWER TO B56                4.00E-
01      4.00E-01
        RECSGOVERF      FLAG - SG OVERFILL RECOVERY             1.00E+
00      1.00E+00
        SGOFREC OPERATOR FAILS TO PREVENT SG OVERFILL WITH MFW
4.28E-02        4.28E-02
4       %T16    LOSS OF AC BUS B6 <IE>          1.04E-03        1.04E-
03      3.51E-08
        QMM1P7BTRF      LOSS OF FLOW THRU P7B TRAIN (TYPE-2) <module>
        1.97E-03        1.97E-03
        RECB56  OPS. FAILS TO ALIGN POWER TO B56                4.00E-
01      4.00E-01
        RECSGOVERF      FLAG - SG OVERFILL RECOVERY             1.00E+
00      1.00E+00
        SGOFREC OPERATOR FAILS TO PREVENT SG OVERFILL WITH MFW
4.28E-02        4.28E-02
5       %T16    LOSS OF AC BUS B6 <IE>          1.04E-03        1.04E-
03      3.03E-08
        DBT1DSCD06      BATTERY D06 DISCHARGED PRIOR TO RECOVERY OF OF
FSITE PWR-2HRS          1.00E+00        1.00E+00
        QMM1P7BTRA      LOSS OF FLOW THRU P7B TRAIN (TYPE-1) <module>
        3.22E-03        3.22E-03
        RECB56  OPS. FAILS TO ALIGN POWER TO B56                4.00E-
01      4.00E-01
        RECSGOVER2      FLAG - SG OVERFILL RECOVERY             1.00E+
00      1.00E+00
        SGOFREC2        OPERATOR FAILS TO PREVENT SG OVERFILL WITH EFW
                2.26E-02        2.26E-02
6       %T16    LOSS OF AC BUS B6 <IE>          1.04E-03        1.04E-
03      2.82E-08
        DBT1DSCD06      BATTERY D06 DISCHARGED PRIOR TO RECOVERY OF OF
FSITE PWR-2HRS          1.00E+00        1.00E+00
        QHF1P7BTNL      OPERATORS FAIL TO CORRECTLY RESTORE P7B AFTER
```

Level 2 dominant sequences

```
MAINTENANCE              3.00E-03        3.00E-03
        RECB56  OPS. FAILS TO ALIGN POWER TO B56                4.00E-
01      4.00E-01
        RECSGOVER2      FLAG - SG OVERFILL RECOVERY             1.00E+
00      1.00E+00
        SGOFREC2        OPERATOR FAILS TO PREVENT SG OVERFILL WITH EFW
                2.26E-02        2.26E-02
7       %T16    LOSS OF AC BUS B6 <IE>          1.04E-03        1.04E-
03      2.63E-08
        DBT1DSCD06      BATTERY D06 DISCHARGED PRIOR TO RECOVERY OF OF
FSITE PWR-2HRS          1.00E+00        1.00E+00
        QMM1TMAEFW      TRIP MODULE FOR CHANNEL A EFW ACTUATION FAILS
        2.80E-03        2.80E-03
        RECB56  OPS. FAILS TO ALIGN POWER TO B56                4.00E-
01      4.00E-01
        RECSGOVER2      FLAG - SG OVERFILL RECOVERY             1.00E+
00      1.00E+00
        SGOFREC2        OPERATOR FAILS TO PREVENT SG OVERFILL WITH EFW
                2.26E-02        2.26E-02
8       %T11    LOSS OF DC BUS D01 <IE>         3.94E-04        3.94E-
04      2.02E-08
        HHF10P36CL      TRAIN P36C MAINTENANCE RESTORATION FAILURE
        3.00E-03        3.00E-03
        RECB5OR6        OPS. FAILS TO CROSSTIE POWER SUPPLY
4.00E-01        4.00E-01
        RECSGOVERF      FLAG - SG OVERFILL RECOVERY             1.00E+
00      1.00E+00
        SGOFREC OPERATOR FAILS TO PREVENT SG OVERFILL WITH MFW
4.28E-02        4.28E-02
9       %T13    LOSS OF AC BUS A3 <IE>          3.94E-04        3.94E-
04      2.02E-08
        HHF10P36CL      TRAIN P36C MAINTENANCE RESTORATION FAILURE
        3.00E-03        3.00E-03
        RECB5OR6        OPS. FAILS TO CROSSTIE POWER SUPPLY
4.00E-01        4.00E-01
        RECSGOVERF      FLAG - SG OVERFILL RECOVERY             1.00E+
00      1.00E+00
        SGOFREC OPERATOR FAILS TO PREVENT SG OVERFILL WITH MFW
4.28E-02        4.28E-02
10      %T11    LOSS OF DC BUS D01 <IE>         3.94E-04        3.94E-
04      1.95E-08
        RECB5OR6        OPS. FAILS TO CROSSTIE POWER SUPPLY
4.00E-01        4.00E-01
        RECSGOVERF      FLAG - SG OVERFILL RECOVERY             1.00E+
00      1.00E+00
        UHF1THPIAD      OPERATOR FAILS TO ATTEMPT HPI COOLING
2.89E-03        2.89E-03
        SGOFREC OPERATOR FAILS TO PREVENT SG OVERFILL WITH MFW
```

```
4.28E-02        4.28E-02
11      %T13    LOSS OF AC BUS A3 <IE>          3.94E-04        3.94E-
04      1.95E-08
        RECB5OR6        OPS. FAILS TO CROSSTIE POWER SUPPLY
4.00E-01        4.00E-01
        RECSGOVERF      FLAG - SG OVERFILL RECOVERY             1.00E+
00      1.00E+00
        UHF1THPIAD      OPERATOR FAILS TO ATTEMPT HPI COOLING
2.89E-03        2.89E-03
        SGOFREC OPERATOR FAILS TO PREVENT SG OVERFILL WITH MFW
4.28E-02        4.28E-02
12      %T16    LOSS OF AC BUS B6 <IE>          1.04E-03        1.04E-
03      1.85E-08
        DBT1DSCD06      BATTERY D06 DISCHARGED PRIOR TO RECOVERY OF OF
FSITE PWR-2HRS          1.00E+00        1.00E+00
        QMM1P7BTRF      LOSS OF FLOW THRU P7B TRAIN (TYPE-2) <module>
        1.97E-03        1.97E-03
        RECB56  OPS. FAILS TO ALIGN POWER TO B56                4.00E-
01      4.00E-01
        RECSGOVER2      FLAG - SG OVERFILL RECOVERY             1.00E+
00      1.00E+00
        SGOFREC2        OPERATOR FAILS TO PREVENT SG OVERFILL WITH EFW
                2.26E-02        2.26E-02
13      %T2     LOSS OF POWER CONVERSION SYSTEM <IE>            2.20E-
01      2.20E-01        1.71E-08
        QAV102888R      AIR-OPERATED VALVE CV-2888 TRANSFERS OPEN
1.12E-06        2.40E+01        2.69E-05
        UHF1THPIAD      OPERATOR FAILS TO ATTEMPT HPI COOLING
2.89E-03        2.89E-03
14      %T2     LOSS OF POWER CONVERSION SYSTEM <IE>            2.20E-
01      2.20E-01        1.64E-08
        QMM1P7ATRA      LOSS OF FLOW THRU P7A TRAIN (TYPE-1) <module>
        8.01E-03        8.01E-03
        QMM1P7BTRA      LOSS OF FLOW THRU P7B TRAIN (TYPE-1) <module>
        3.22E-03        3.22E-03
        UHF1THPIAD      OPERATOR FAILS TO ATTEMPT HPI COOLING
2.89E-03        2.89E-03
15      %T16    LOSS OF AC BUS B6 <IE>          1.04E-03        1.04E-
03      1.63E-08
        EXCESSMFWA      EXCESSIVE MAIN FEEDWATER TO SG A
5.00E-01        5.00E-01
        QCV1FW13BN      CHECK VALVE FW-13B FAILS TO OPEN        7.84E-
05      1.00E+00        7.84E-05
        RECB56  OPS. FAILS TO ALIGN POWER TO B56                4.00E-
01      4.00E-01
16      %T16    LOSS OF AC BUS B6 <IE>          1.04E-03        1.04E-
03      1.58E-08
        QTM1P7BTRN      P7B IN MAINTENANCE              8.89E-04
```

```
8.89E-04
        RECB56  OPS. FAILS TO ALIGN POWER TO B56                4.00E-
01      4.00E-01
        RECSGOVERF      FLAG - SG OVERFILL RECOVERY             1.00E+
00      1.00E+00
        SGOFREC OPERATOR FAILS TO PREVENT SG OVERFILL WITH MFW
4.28E-02        4.28E-02
17      %T2     LOSS OF POWER CONVERSION SYSTEM <IE>            2.20E-
01      2.20E-01        1.53E-08
        QHF1P7BTNL      OPERATORS FAIL TO CORRECTLY RESTORE P7B AFTER
MAINTENANCE             3.00E-03        3.00E-03
        QMM1P7ATRA      LOSS OF FLOW THRU P7A TRAIN (TYPE-1) <module>
        8.01E-03        8.01E-03
        UHF1THPIAD      OPERATOR FAILS TO ATTEMPT HPI COOLING
2.89E-03        2.89E-03
18      %T11    LOSS OF DC BUS D01 <IE>         3.94E-04        3.94E-
04      1.48E-08
        HMM1CV1300      CV1300 FAILS TO CLOSE           2.19E-03
2.19E-03
        RECB5OR6        OPS. FAILS TO CROSSTIE POWER SUPPLY
4.00E-01        4.00E-01
        RECSGOVERF      FLAG - SG OVERFILL RECOVERY             1.00E+
00      1.00E+00
        SGOFREC OPERATOR FAILS TO PREVENT SG OVERFILL WITH MFW
4.28E-02        4.28E-02
19      %T13    LOSS OF AC BUS A3 <IE>          3.94E-04        3.94E-
04      1.48E-08
        HMM1CV1300      CV1300 FAILS TO CLOSE           2.19E-03
2.19E-03
        RECB5OR6        OPS. FAILS TO CROSSTIE POWER SUPPLY
4.00E-01        4.00E-01
        RECSGOVERF      FLAG - SG OVERFILL RECOVERY             1.00E+
00      1.00E+00
        SGOFREC OPERATOR FAILS TO PREVENT SG OVERFILL WITH MFW
4.28E-02        4.28E-02
20      %T2     LOSS OF POWER CONVERSION SYSTEM <IE>            2.20E-
01      2.20E-01        1.43E-08
        QMM1P7ATRA      LOSS OF FLOW THRU P7A TRAIN (TYPE-1) <module>
        8.01E-03        8.01E-03
        QMM1TMAEFW      TRIP MODULE FOR CHANNEL A EFW ACTUATION FAILS
        2.80E-03        2.80E-03
        UHF1THPIAD      OPERATOR FAILS TO ATTEMPT HPI COOLING
2.89E-03        2.89E-03
21      %T16    LOSS OF AC BUS B6 <IE>          1.04E-03        1.04E-
03      1.41E-08
        DBT1DSCD06      BATTERY D06 DISCHARGED PRIOR TO RECOVERY OF OF
FSITE PWR-2HRS          1.00E+00        1.00E+00
        EXCESSMFWA      EXCESSIVE MAIN FEEDWATER TO SG A
```

```
5.00E-01        5.00E-01
        QHF1C2648L      MISCALIBRATION OF CV-2648 CONTROLLER SETPOINTS
                3.00E-03        3.00E-03
        RECB56  OPS. FAILS TO ALIGN POWER TO B56                4.00E-
01      4.00E-01
        RECSGOVER2      FLAG - SG OVERFILL RECOVERY             1.00E+
00      1.00E+00
        SGOFREC2        OPERATOR FAILS TO PREVENT SG OVERFILL WITH EFW
                2.26E-02        2.26E-02
22      %T11    LOSS OF DC BUS D01 <IE>         3.94E-04        3.94E-
04      1.37E-08
        HMM1P36CFR      TRAIN P36C FAILS TO RUN <module>
2.03E-03        2.03E-03
        RECB5OR6        OPS. FAILS TO CROSSTIE POWER SUPPLY
4.00E-01        4.00E-01
        RECSGOVERF      FLAG - SG OVERFILL RECOVERY             1.00E+
00      1.00E+00
        SGOFREC OPERATOR FAILS TO PREVENT SG OVERFILL WITH MFW
4.28E-02        4.28E-02
23      %T13    LOSS OF AC BUS A3 <IE>          3.94E-04        3.94E-
04      1.37E-08
        HMM1P36CFR      TRAIN P36C FAILS TO RUN <module>
2.03E-03        2.03E-03
        RECB5OR6        OPS. FAILS TO CROSSTIE POWER SUPPLY
4.00E-01        4.00E-01
        RECSGOVERF      FLAG - SG OVERFILL RECOVERY             1.00E+
00      1.00E+00
        SGOFREC OPERATOR FAILS TO PREVENT SG OVERFILL WITH MFW
4.28E-02        4.28E-02
24      %T11    LOSS OF DC BUS D01 <IE>         3.94E-04        3.94E-
04      1.36E-08
        HMM1P36CFS      TRAIN P36C FAILS TO START <module>
2.02E-03        2.02E-03
        RECB5OR6        OPS. FAILS TO CROSSTIE POWER SUPPLY
4.00E-01        4.00E-01
        RECSGOVERF      FLAG - SG OVERFILL RECOVERY             1.00E+
00      1.00E+00
        SGOFREC OPERATOR FAILS TO PREVENT SG OVERFILL WITH MFW
4.28E-02        4.28E-02
25      %T13    LOSS OF AC BUS A3 <IE>          3.94E-04        3.94E-
04      1.36E-08
        HMM1P36CFS      TRAIN P36C FAILS TO START <module>
2.02E-03        2.02E-03
        RECB5OR6        OPS. FAILS TO CROSSTIE POWER SUPPLY
4.00E-01        4.00E-01
        RECSGOVERF      FLAG - SG OVERFILL RECOVERY             1.00E+
00      1.00E+00
        SGOFREC OPERATOR FAILS TO PREVENT SG OVERFILL WITH MFW
```

Level 2 dominant sequences

4.28E-02 4.28E-02
26 %T16 LOSS OF AC BUS B6 <IE> 1.04E-03 1.04E-
03 1.27E-08
DBT1DSCD06 BATTERY D06 DISCHARGED PRIOR TO RECOVERY OF OF
FSITE PWR-2HRS 1.00E+00 1.00E+00
EXCESSMFWA EXCESSIVE MAIN FEEDWATER TO SG A
5.00E-01 5.00E-01
QMM1SGBP7B LOSS OF FLOW TO SGB FROM P7B 2.71E-
03 2.71E-03
RECB56 OPS. FAILS TO ALIGN POWER TO B56 4.00E-
01 4.00E-01
RECSGOVER2 FLAG - SG OVERFILL RECOVERY 1.00E+
00 1.00E+00
SGOFREC2 OPERATOR FAILS TO PREVENT SG OVERFILL WITH EFW
2.26E-02 2.26E-02
27 %T16 LOSS OF AC BUS B6 <IE> 1.04E-03 1.04E-
03 1.12E-08
QAV102888R AIR-OPERATED VALVE CV-2888 TRANSFERS OPEN
1.12E-06 2.40E+01 2.69E-05
RECB56 OPS. FAILS TO ALIGN POWER TO B56 4.00E-
01 4.00E-01
28 %T16 LOSS OF AC BUS B6 <IE> 1.04E-03 1.04E-
03 1.07E-08
QMM1P7ATRA LOSS OF FLOW THRU P7A TRAIN (TYPE-1) <module>
8.01E-03 8.01E-03
QMM1P7BTRA LOSS OF FLOW THRU P7B TRAIN (TYPE-1) <module>
3.22E-03 3.22E-03
RECB56 OPS. FAILS TO ALIGN POWER TO B56 4.00E-
01 4.00E-01
29 %T2 LOSS OF POWER CONVERSION SYSTEM <IE> 2.20E-
01 2.20E-01 1.00E-08
QMM1P7ATRA LOSS OF FLOW THRU P7A TRAIN (TYPE-1) <module>
8.01E-03 8.01E-03
QMM1P7BTRF LOSS OF FLOW THRU P7B TRAIN (TYPE-2) <module>
1.97E-03 1.97E-03
UHF1THPIAD OPERATOR FAILS TO ATTEMPT HPI COOLING
2.89E-03 2.89E-03
30 %T16 LOSS OF AC BUS B6 <IE> 1.04E-03 1.04E-
03 1.00E-08
QHF1P7BTNL OPERATORS FAIL TO CORRECTLY RESTORE P7B AFTER
MAINTENANCE 3.00E-03 3.00E-03
QMM1P7ATRA LOSS OF FLOW THRU P7A TRAIN (TYPE-1) <module>
8.01E-03 8.01E-03
RECB56 OPS. FAILS TO ALIGN POWER TO B56 4.00E-
01 4.00E-01

PDS-IIIEI

Level 2 dominant sequences

1 %T11 LOSS OF DC BUS D01 <IE> 3.94E-04 3.94E-
04 1.56E-08
LMM1CV1408 MOTOR-OPERATED VALVE CV1408 FAILS TO OPEN <mod
ule> 2.31E-03 2.31E-03
RECB5OR6 OPS. FAILS TO CROSSTIE POWER SUPPLY
4.00E-01 4.00E-01
RECSGOVERF FLAG - SG OVERFILL RECOVERY 1.00E+
00 1.00E+00
SGOFREC OPERATOR FAILS TO PREVENT SG OVERFILL WITH MFW
4.28E-02 4.28E-02
2 %T13 LOSS OF AC BUS A3 <IE> 3.94E-04 3.94E-
04 1.56E-08
LMM1CV1408 MOTOR-OPERATED VALVE CV1408 FAILS TO OPEN <mod
ule> 2.31E-03 2.31E-03
RECB5OR6 OPS. FAILS TO CROSSTIE POWER SUPPLY
4.00E-01 4.00E-01
RECSGOVERF FLAG - SG OVERFILL RECOVERY 1.00E+
00 1.00E+00
SGOFREC OPERATOR FAILS TO PREVENT SG OVERFILL WITH MFW
4.28E-02 4.28E-02

PDS-IIIKI

1 %T10 LOSS OF SW PUMP GREEN TRAIN <IE> 3.16E-
02 3.16E-02 3.06E-08
ETM1A3XXXX 4160V SWGR A3 IN TEST OR MAINTENANCE
5.66E-05 5.66E-05
RECB5OR6 OPS. FAILS TO CROSSTIE POWER SUPPLY
4.00E-01 4.00E-01
RECSGOVERF FLAG - SG OVERFILL RECOVERY 1.00E+
00 1.00E+00
SGOFREC OPERATOR FAILS TO PREVENT SG OVERFILL WITH MFW
4.28E-02 4.28E-02
2 %T8 TOTAL LOSS OF SW FLOW <IE> 1.00E-03
1.00E-03 2.69E-08
QAV102888R AIR-OPERATED VALVE CV-2888 TRANSFERS OPEN
1.12E-06 2.40E+01 2.69E-05
3 %T8 TOTAL LOSS OF SW FLOW <IE> 1.00E-03
1.00E-03 2.58E-08
QMM1P7ATRA LOSS OF FLOW THRU P7A TRAIN (TYPE-1) <module>
8.01E-03 8.01E-03
QMM1P7BTRA LOSS OF FLOW THRU P7B TRAIN (TYPE-1) <module>
3.22E-03 3.22E-03
4 %T8 TOTAL LOSS OF SW FLOW <IE> 1.00E-03
1.00E-03 2.40E-08
QHF1P7BTNL OPERATORS FAIL TO CORRECTLY RESTORE P7B AFTER
MAINTENANCE 3.00E-03 3.00E-03
QMM1P7ATRA LOSS OF FLOW THRU P7A TRAIN (TYPE-1) <module>

```
        8.01E-03        8.01E-03
5       %T8     TOTAL LOSS OF SW FLOW <IE>              1.00E-03
1.00E-03        2.24E-08
        QMM1P7ATRA      LOSS OF FLOW THRU P7A TRAIN (TYPE-1) <module>
        8.01E-03        8.01E-03
        QMM1TMAEFW      TRIP MODULE FOR CHANNEL A EFW ACTUATION FAILS
        2.80E-03        2.80E-03
6       %T8     TOTAL LOSS OF SW FLOW <IE>              1.00E-03
1.00E-03        1.58E-08
        QMM1P7ATRA      LOSS OF FLOW THRU P7A TRAIN (TYPE-1) <module>
        8.01E-03        8.01E-03
        QMM1P7BTRF      LOSS OF FLOW THRU P7B TRAIN (TYPE-2) <module>
        1.97E-03        1.97E-03
7       %T10    LOSS OF SW PUMP GREEN TRAIN <IE>                3.16E-
02      3.16E-02        1.43E-08
        ETM1A3XXXX      4160V SWGR A3 IN TEST OR MAINTENANCE
5.66E-05        5.66E-05
        QMM1P7ATRA      LOSS OF FLOW THRU P7A TRAIN (TYPE-1) <module>
        8.01E-03        8.01E-03
8       %T8     TOTAL LOSS OF SW FLOW <IE>              1.00E-03
1.00E-03        1.36E-08
        QMM1P7BTRA      LOSS OF FLOW THRU P7B TRAIN (TYPE-1) <module>
        3.22E-03        3.22E-03
        QTD1C2613F      CV-2613 TIME DELAY PREMATURE (OPENS CV-2613 TO
O EARLY)        1.00E-04        1.00E+00        3.60E-02
        RECP7AMAN       OPERATOR FAILS TO RECOVER P7A MAN AFTER EARLY
STM ADM OPENING (-T3)           1.17E-01        1.17E-01
9       %T8     TOTAL LOSS OF SW FLOW <IE>              1.00E-03
1.00E-03        1.36E-08
        QMM1P7BTRA      LOSS OF FLOW THRU P7B TRAIN (TYPE-1) <module>
        3.22E-03        3.22E-03
        QTD1C2663F      CV-2663 TIME DELAY PREMATURE (OPENS CV-2663 TO
O EARLY)        1.00E-04        1.00E+00        3.60E-02
        RECP7AMAN       OPERATOR FAILS TO RECOVER P7A MAN AFTER EARLY
STM ADM OPENING (-T3)           1.17E-01        1.17E-01
10      %T8     TOTAL LOSS OF SW FLOW <IE>              1.00E-03
1.00E-03        1.26E-08
        QHF1P7BTNL      OPERATORS FAIL TO CORRECTLY RESTORE P7B AFTER
MAINTENANCE             3.00E-03        3.00E-03
        QTD1C2613F      CV-2613 TIME DELAY PREMATURE (OPENS CV-2613 TO
O EARLY)        1.00E-04        1.00E+00        3.60E-02
        RECP7AMAN       OPERATOR FAILS TO RECOVER P7A MAN AFTER EARLY
STM ADM OPENING (-T3)           1.17E-01        1.17E-01
11      %T8     TOTAL LOSS OF SW FLOW <IE>              1.00E-03
1.00E-03        1.26E-08
        QHF1P7BTNL      OPERATORS FAIL TO CORRECTLY RESTORE P7B AFTER
MAINTENANCE             3.00E-03        3.00E-03
        QTD1C2663F      CV-2663 TIME DELAY PREMATURE (OPENS CV-2663 TO
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O EARLY)          1.00E-04          1.00E+00          3.60E-02
        RECP7AMAN         OPERATOR FAILS TO RECOVER P7A MAN AFTER EARLY
STM ADM OPENING (-T3)             1.17E-01          1.17E-01
12      %T8       TOTAL LOSS OF SW FLOW <IE>                1.00E-03
1.00E-03          1.18E-08
        QMM1TMAEFW        TRIP MODULE FOR CHANNEL A EFW ACTUATION FAILS
        2.80E-03          2.80E-03
        QTD1C2613F        CV-2613 TIME DELAY PREMATURE (OPENS CV-2613 TO
O EARLY)          1.00E-04          1.00E+00          3.60E-02
        RECP7AMAN         OPERATOR FAILS TO RECOVER P7A MAN AFTER EARLY
STM ADM OPENING (-T3)             1.17E-01          1.17E-01
13      %T8       TOTAL LOSS OF SW FLOW <IE>                1.00E-03
1.00E-03          1.18E-08
        QMM1TMAEFW        TRIP MODULE FOR CHANNEL A EFW ACTUATION FAILS
        2.80E-03          2.80E-03
        QTD1C2663F        CV-2663 TIME DELAY PREMATURE (OPENS CV-2663 TO
O EARLY)          1.00E-04          1.00E+00          3.60E-02
        RECP7AMAN         OPERATOR FAILS TO RECOVER P7A MAN AFTER EARLY
STM ADM OPENING (-T3)             1.17E-01          1.17E-01
14      %T8       TOTAL LOSS OF SW FLOW <IE>                1.00E-03
1.00E-03          1.13E-08
        QTK1CS41BG        TANK CST-41B LEAKAGE      4.83E-06          2.40E+
01      1.16E-04
        RECEFWSRC         OPERATOR FAILS TO SWITCH EFW FROM T41B TO T41
        9.76E-02          9.76E-02

PDS-IVCI

1       %T11      LOSS OF DC BUS D01 <IE>           3.94E-04          3.94E-
04      3.49E-08
        LMM1MPP34B        TRAIN B MOTOR-DRIVEN PUMP FAILS <module>
        5.17E-03          5.17E-03
        RECB5OR6          OPS. FAILS TO CROSSTIE POWER SUPPLY
4.00E-01          4.00E-01
        RECSGOVERF        FLAG - SG OVERFILL RECOVERY               1.00E+
00      1.00E+00
        TBX                               1.00E+00          1.00E+00
        SGOFREC OPERATOR FAILS TO PREVENT SG OVERFILL WITH MFW
4.28E-02          4.28E-02
2       %T13      LOSS OF AC BUS A3 <IE>            3.94E-04          3.94E-
04      3.49E-08
        LMM1MPP34B        TRAIN B MOTOR-DRIVEN PUMP FAILS <module>
        5.17E-03          5.17E-03
        RECB5OR6          OPS. FAILS TO CROSSTIE POWER SUPPLY
4.00E-01          4.00E-01
        RECSGOVERF        FLAG - SG OVERFILL RECOVERY               1.00E+
00      1.00E+00
        TBX                               1.00E+00          1.00E+00
```

```
        SGOFREC OPERATOR FAILS TO PREVENT SG OVERFILL WITH MFW
4.28E-02        4.28E-02
3       %T11    LOSS OF DC BUS D01 <IE>         3.94E-04        3.94E-
04      2.20E-08
        RECB5OR6        OPS. FAILS TO CROSSTIE POWER SUPPLY
4.00E-01        4.00E-01
        RECSGOVERF      FLAG - SG OVERFILL RECOVERY             1.00E+
00      1.00E+00
        SMM1AV3841      P34B LUBE OIL COOLER SW VALVES FAIL <module>
        3.26E-03        3.26E-03
        TBX                     1.00E+00        1.00E+00
        SGOFREC OPERATOR FAILS TO PREVENT SG OVERFILL WITH MFW
4.28E-02        4.28E-02
4       %T13    LOSS OF AC BUS A3 <IE>          3.94E-04        3.94E-
04      2.20E-08
        RECB5OR6        OPS. FAILS TO CROSSTIE POWER SUPPLY
4.00E-01        4.00E-01
        RECSGOVERF      FLAG - SG OVERFILL RECOVERY             1.00E+
00      1.00E+00
        SMM1AV3841      P34B LUBE OIL COOLER SW VALVES FAIL <module>
        3.26E-03        3.26E-03
        TBX                     1.00E+00        1.00E+00
        SGOFREC OPERATOR FAILS TO PREVENT SG OVERFILL WITH MFW
4.28E-02        4.28E-02
5       %T11    LOSS OF DC BUS D01 <IE>         3.94E-04        3.94E-
04      2.02E-08
        LHF1LHE004      TRAIN B LPR MAINTENANCE RESTORATION FAILURES
        3.00E-03        3.00E-03
        RECB5OR6        OPS. FAILS TO CROSSTIE POWER SUPPLY
4.00E-01        4.00E-01
        RECSGOVERF      FLAG - SG OVERFILL RECOVERY             1.00E+
00      1.00E+00
        TBX                     1.00E+00        1.00E+00
        SGOFREC OPERATOR FAILS TO PREVENT SG OVERFILL WITH MFW
4.28E-02        4.28E-02
6       %T13    LOSS OF AC BUS A3 <IE>          3.94E-04        3.94E-
04      2.02E-08
        LHF1LHE004      TRAIN B LPR MAINTENANCE RESTORATION FAILURES
        3.00E-03        3.00E-03
        RECB5OR6        OPS. FAILS TO CROSSTIE POWER SUPPLY
4.00E-01        4.00E-01
        RECSGOVERF      FLAG - SG OVERFILL RECOVERY             1.00E+
00      1.00E+00
        TBX                     1.00E+00        1.00E+00
        SGOFREC OPERATOR FAILS TO PREVENT SG OVERFILL WITH MFW
4.28E-02        4.28E-02
7       %T11    LOSS OF DC BUS D01 <IE>         3.94E-04        3.94E-
04      1.56E-08
```

Level 2 dominant sequences

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        LMM1CV1277      MOTOR-OPERATED VALVE CV1277 FAILS TO PROVIDE F
LOW <module>            2.31E-03        2.31E-03
        RECB5OR6        OPS. FAILS TO CROSSTIE POWER SUPPLY
4.00E-01        4.00E-01
        RECSGOVERF      FLAG - SG OVERFILL RECOVERY             1.00E+
00      1.00E+00
        TBX                     1.00E+00        1.00E+00
        SGOFREC OPERATOR FAILS TO PREVENT SG OVERFILL WITH MFW
4.28E-02        4.28E-02
8       %T13    LOSS OF AC BUS A3 <IE>          3.94E-04        3.94E-
04      1.56E-08
        LMM1CV1277      MOTOR-OPERATED VALVE CV1277 FAILS TO PROVIDE F
LOW <module>            2.31E-03        2.31E-03
        RECB5OR6        OPS. FAILS TO CROSSTIE POWER SUPPLY
4.00E-01        4.00E-01
        RECSGOVERF      FLAG - SG OVERFILL RECOVERY             1.00E+
00      1.00E+00
        TBX                     1.00E+00        1.00E+00
        SGOFREC OPERATOR FAILS TO PREVENT SG OVERFILL WITH MFW
4.28E-02        4.28E-02
9       %T11    LOSS OF DC BUS D01 <IE>         3.94E-04        3.94E-
04      1.44E-08
        LTM1TRAINB      TRAIN B IS IN MAINTENANCE               2.13E-
03      2.13E-03
        RECB5OR6        OPS. FAILS TO CROSSTIE POWER SUPPLY
4.00E-01        4.00E-01
        RECSGOVERF      FLAG - SG OVERFILL RECOVERY             1.00E+
00      1.00E+00
        TBX                     1.00E+00        1.00E+00
        SGOFREC OPERATOR FAILS TO PREVENT SG OVERFILL WITH MFW
4.28E-02        4.28E-02
10      %T13    LOSS OF AC BUS A3 <IE>          3.94E-04        3.94E-
04      1.44E-08
        LTM1TRAINB      TRAIN B IS IN MAINTENANCE               2.13E-
03      2.13E-03
        RECB5OR6        OPS. FAILS TO CROSSTIE POWER SUPPLY
4.00E-01        4.00E-01
        RECSGOVERF      FLAG - SG OVERFILL RECOVERY             1.00E+
00      1.00E+00
        TBX                     1.00E+00        1.00E+00
        SGOFREC OPERATOR FAILS TO PREVENT SG OVERFILL WITH MFW
4.28E-02        4.28E-02
```

PDS - IVDI

```
#       Inputs  Description     Rate    Exposure        Event Prob
Probability
```

Level 2 dominant sequences

1 %T11 LOSS OF DC BUS D01 <IE> 3.94E-04 3.94E-
04 1.56E-08
LMM1CV1406 MOTOR-OPERATED VALVES CV1406 FAILS TO DELIVER
FLOW<module> 2.31E-03 2.31E-03
RECB5OR6 OPS. FAILS TO CROSSTIE POWER SUPPLY
4.00E-01 4.00E-01
RECSGOVERF FLAG - SG OVERFILL RECOVERY 1.00E+
00 1.00E+00
TBX 1.00E+00 1.00E+00
SGOFREC OPERATOR FAILS TO PREVENT SG OVERFILL WITH MFW
4.28E-02 4.28E-02
2 %T13 LOSS OF AC BUS A3 <IE> 3.94E-04 3.94E-
04 1.56E-08
LMM1CV1406 MOTOR-OPERATED VALVES CV1406 FAILS TO DELIVER
FLOW<module> 2.31E-03 2.31E-03
RECB5OR6 OPS. FAILS TO CROSSTIE POWER SUPPLY
4.00E-01 4.00E-01
RECSGOVERF FLAG - SG OVERFILL RECOVERY 1.00E+
00 1.00E+00
TBX 1.00E+00 1.00E+00
SGOFREC OPERATOR FAILS TO PREVENT SG OVERFILL WITH MFW
4.28E-02 4.28E-02

PDS - VAI

Inputs Description Event Prob Probability

1 %A LARGE BREAK LOCA <IE> 4.50E-05 1.78E-08
LMM1CCF001 MOTOR-DRIVEN PUMP COMMON CAUSE FAILURE <module
> 3.96E-04

PDS - VIAU

Inputs Description Event Prob Probability

1 %A LARGE BREAK LOCA <IE> 4.50E-05 1.04E-08
AHF1RCSHIL MISCALIBRATION OF RCS PRESSURE SENSORS 3.00E-
03
AX 1.00E+00
XHF1ALPRAD OPERATOR FAILS TO ATTEMPT LPR WITHIN 30 MINUTE
S OF L LOCA 7.67E-02

PDS - SBOU

Inputs Description Rate Exposure Event Prob
Probability

1 %T11 LOSS OF DC BUS D01 <IE> 3.94E-04 3.94E-

```
04      6.62E-08
        DTM100D06M      BATTERY D06 IN MAINTENANCE                  1.68E-
04      1.68E-04
2       %T11    LOSS OF DC BUS D01 <IE>         3.94E-04            3.94E-
04      5.54E-08
        EDG1DG2XXF      DIESEL GENERATOR DG2 FAILS TO RUN           2.46E-
03      2.40E+01        5.73E-02
        EDG2DGAACF      XSESEL GENERATOR AAC FAILS TO RUN           2.46E-
03      2.40E+01        5.73E-02
        RECSGOVERF      FLAG - SG OVERFILL RECOVERY                 1.00E+
00      1.00E+00
        SGOFREC OPERATOR FAILS TO PREVENT SG OVERFILL WITH MFW
4.28E-02        4.28E-02
3       %T11    LOSS OF DC BUS D01 <IE>         3.94E-04            3.94E-
04      2.93E-08
        DBT1DSCD06      BATTERY D06 DISCHARGED PRIOR TO RECOVERY OF OF
FSITE PWR-2HRS          1.00E+00        1.00E+00
        EDG1DG2XXF      DIESEL GENERATOR DG2 FAILS TO RUN           2.46E-
03      2.40E+01        5.73E-02
        EDG2DGAACF      XSESEL GENERATOR AAC FAILS TO RUN           2.46E-
03      2.40E+01        5.73E-02
        RECSGOVER2      FLAG - SG OVERFILL RECOVERY                 1.00E+
00      1.00E+00
        SGOFREC2        OPERATOR FAILS TO PREVENT SG OVERFILL WITH EFW
                2.26E-02        2.26E-02
4       %T11    LOSS OF DC BUS D01 <IE>         3.94E-04            3.94E-
04      1.59E-08
        EDG1DG2XXF      DIESEL GENERATOR DG2 FAILS TO RUN           2.46E-
03      2.40E+01        5.73E-02
        EDG2DGTMAA      DG AAC IN TEST & MAINTENANCE                1.64E-
02      1.64E-02
        RECSGOVERF      FLAG - SG OVERFILL RECOVERY                 1.00E+
00      1.00E+00
        SGOFREC OPERATOR FAILS TO PREVENT SG OVERFILL WITH MFW
4.28E-02        4.28E-02
5       %T11    LOSS OF DC BUS D01 <IE>         3.94E-04            3.94E-
04      1.31E-08
        DBT100D06F      BATTERY 00D06 NO OUTPUT (HOURLY)            1.39E-
06      2.40E+01        3.34E-05
6       %T11    LOSS OF DC BUS D01 <IE>         3.94E-04            3.94E-
04      1.18E-08
        EDG1DG2XXF      DIESEL GENERATOR DG2 FAILS TO RUN           2.46E-
03      2.40E+01        5.73E-02
        EDGOPER-R       OPERATOR FAILS TO START DG AAC              1.22E-
02      1.22E-02
        RECSGOVERF      FLAG - SG OVERFILL RECOVERY                 1.00E+
00      1.00E+00
        SGOFREC OPERATOR FAILS TO PREVENT SG OVERFILL WITH MFW
```

Level 2 dominant sequences

4.28E-02 4.28E-02

PDS - SGTR

Inputs Description Rate Exposure Event Prob Probability

1 %R SGTR <IE> 7.00E-03 7.00E-03 6.15E-08
CB-R CONTAINMENT BYPASSED 1.00E+00 1.00E+00
DBD100D11F DC BUS 00D11 FAULT 3.66E-07 2.40E+01 8.78E-06
2 CB-R CONTAINMENT BYPASSED 1.00E+00 1.00E+00 4.50E-08
ISL INTERFACING SYSTEMS LOCA 4.50E-08 4.50E-08
3 %R SGTR <IE> 7.00E-03 7.00E-03 2.71E-08
CB-R CONTAINMENT BYPASSED 1.00E+00 1.00E+00
LMM1CV1404 MOTOR-OPERATED VALVES CV1404/1410/1050 FAIL TO DELIVER FLOW<module> 6.91E-03 6.91E-03
PRY1V2698T SG A MSSV PSV-2698 FAILS TO RECLOSE 7.94E-03 1.00E+00 7.91E-03
RX 1.00E+00 1.00E+00
RECDHMANR OPERATOR FAILS TO MANUALLY OPEN CV-1404 AFTER FAILURE TO OPEN REMOTELY 4.72E-01 4.72E-01
RECGAGSTM OPERATOR FAILS TO GAG MSSV AFTER IT FAILS TO RESEAT 1.50E-01 1.50E-01
4 %R SGTR <IE> 7.00E-03 7.00E-03 2.54E-08
CB-R CONTAINMENT BYPASSED 1.00E+00 1.00E+00
LMM1CV1404 MOTOR-OPERATED VALVES CV1404/1410/1050 FAIL TO DELIVER FLOW<module> 6.91E-03 6.91E-03
PRY1V2699T SG A MSSV PSV-2699 FAILS TO RECLOSE 7.42E-03 7.42E-03
RX 1.00E+00 1.00E+00
RECDHMANR OPERATOR FAILS TO MANUALLY OPEN CV-1404 AFTER FAILURE TO OPEN REMOTELY 4.72E-01 4.72E-01
RECGAGSTM OPERATOR FAILS TO GAG MSSV AFTER IT FAILS TO RESEAT 1.50E-01 1.50E-01
5 %R SGTR <IE> 7.00E-03 7.00E-03 1.25E-08
CB-R CONTAINMENT BYPASSED 1.00E+00 1.00E+00
DCF1D0112R FUSE D0112 TRANSFERS OPEN 6.38E-07

Level 2 dominant sequences

2.40E+01 1.53E-05

RECMANDCR OPERATOR FAILS TO OPEN BRKR LOCALLY AT A1 FROM UAT AND CLOSE BKR FROM SUT1 R 1.17E-01 1.17E-01

Report Summary:

Report Summary:

Filename: C:\TEMP\12-VIAI.CUT
Print date: 03/21/1900 1:29 PM
Not sorted
Printed in full