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BROWNS FERRY NUCLEAR PLANT UNIT 3 PROBABILISTIC SAFETY ASSESSMENT WITH UNIT 2 OPERATING

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1. INTRODUCTION

1.1 OBJECTIVE AND SCOPE

This report presents the results of an extension of the probabilistic safety assessments (PSA) that have been performed at Browns Ferry Nuclear Plant (BFN) to consider the operation of Unit 3 under conditions that reflect the shared mission of some components, systems, and structures at the plant. For this analysis, Unit 1 is assumed to remain in extended layup with no fuel in its core. Also, Unit 2 is modeled in this analysis as being in service; specifically, Unit 2 is assumed to be either operating at power or in an outage. These assumptions reflect the current operational configuration of Browns Ferry.

This update builds on previous models that considered the operation of Unit 2 under various plant configurations. The Individual Plant Evaluation (IPE) (Reference 1) examined the three unit BFN site under the assumption that only Unit 2 was initially at power, with Units 1 and 3 in layup. Consequently, Units 1 and 3 equipment permitted by plant design and plant status to support Unit 2 would have no other functional requirements. The Multi-Unit PRA (Reference 2) examined initiating events at Unit 2 with all three units initially at power. More recently (Reference 3), the core damage frequency (CDF) due to events originating at power of Unit 2 was determined under the initial conditions that Unit 1 remained in layup and Unit 3 had been returned to service. The current model, with Unit 3 initially operating and Unit 2 in service, was constructed from the model for Unit 2 documented in Reference 3. The Unit 2 model was altered to reflect unit-specific system configurations [e.g., the residual heat removal (RHR) crosstie capability] as well as unit-specific system dependencies. Specific model changes are summarized in Section 3.

This quantification considers the response of Unit 3 to initiating events while it is operating at full power, considering that Unit 2 may also be at full power and remain at power, may have also been affected by the same initiating event, or has been previously shut down. The model considers the CDF due to internal events as well as internal flooding. The systems and components available for use in bringing Unit 3 to a safe shutdown condition considers requirements of common systems to support Unit 2 under the above three circumstances as well as potential interactions and dependencies.

This report summarizes only those changes to the plant model made to reflect the specific plant configuration described above. Details of many of the underlying models can be found in the previous PRA reports (References 1 through 4).

1.1.1 SUMMARY OF RESULTS

The overall results indicate that the mean CDF for Unit 3 for the initiating events considered in this analysis is 9.19E-06 per year. A single parameter, such as the mean value, however, does not tell the full story about the CDF. A probabilistic distribution was determined for the CDF. That distribution is given in Figure 1-1. Besides the mean value, other characteristics of this distribution are the 5th percentile (1.22E-06 per year), the 50th percentile (3.49E-06

per year), and the 95th percentile (1.97E-05 per year). These percentiles permit the following interpretation of the CDF:

> We are as confident that "the" CDF at Unit 3 is above 3.49E-06 per year as we are that it is below 3.49E-06. Furthermore, the 5th and 95th percentiles allow us to claim that we are 90% confident that "the" CDF is between 1.22E-06 and 1.97E-05 per year.

The overall CDF is quite small. Based on the mean CDF, the analysis suggests that the current procedures, practices, and equipment performance at Unit 3 would result in one core damage event, on average, approximately every 109,000 years. The interval between expected core damage events is quite large compared to the plant lifetime, indicative of a well operated plant.

Information used to calculate the CDF distribution is summarized in Appendix A.

1.1.2 DISCUSSION OF THE TOP 10 SEQUENCES

The sequences that individually are the 10 most frequent core damage sequences are described in this section. Note that the frequencies of the individual sequences are quite small, with none larger than 1.01E-07 per year. The highest frequency sequence is anticipated to occur on the order of once every 10,000,000 years. Perspective on these small frequencies is necessary when interpreting the sequences. When one sees, for example in the first sequence, a reference to the failure of the operator to control low pressure injection during an anticipated transient with scram (ATWS) given a stuck-open relief valve, it is easy to miss the fact that the model also indicates that under those circumstances, the operator will be successful in performing the necessary actions under these stressful and unusual conditions 11 out of 12 times.

The first sequence is initiated by a turbine trip; failure of the control rods to insert into the core; successful operation of the standby liquid control and initial level control by the high pressure injection systems; failure of one relief valve to reseat following initially lifting to limit pressure; and failure to control the injection of low pressure systems once pressure has decayed. Core damage is assumed to occur due to the large inflow of low pressure water diluting or displacing the borated vessel inventory resulting in an unanalyzed condition that may lead to recriticality. The mean frequency of this sequence is 1.01E-07 per year.

The second and third sequences are related. Both are initiated by a turbine trip followed by failure of the control rods to insert into the core and failure of boron to inject to control reactivity. In sequence two, boron injection failure is due to operator failure to initiate the standby liquid control system. Sequence three is due to the standby liquid control system being unavailable due to hardware failures, or a combination of hardware failures and test or maintenance. The mean frequencies of the second and third sequences are 7.52E-08 and 7.25E-08 per year, respectively.

Sequence four is initiated by a loss of raw cooling water. The normal heat removal path (i.e., utilizing the main condenser) is rendered unavailable due to the initiating event. High pressure coolant injection (HPCI) and reactor core isolation cooling (RCIC) are both available initially. The sequence is complicated somewhat by a relief valve sticking open after initially lifting to relieve pressure. A modeling assumption is in place that requires successful suppression pool cooling if a relief valve remains open. All four RHR pumps are unavailable as is the Unit 2 to Unit 3 RHR crosstie. Core damage ultimately is the result of failure to remove decay heat. The mean frequency of this sequence is 6.89E-08 per year.

Sequence five is a blackout of Unit 3. The sequence initiator is loss of offsite power (both the 500-kV and 161-kV grids) followed by failure of diesel generators 3EA, 3EB, 3EC, and 3ED to supply power. The high pressure coolant injection and the reactor core isolation cooling systems are initially available to maintain vessel level control, but core damage eventually occurs since power is not recovered and no means of removing decay heat is established. The mean frequency of this sequence is 6.82E-08 per year.

Sequence six is a transient with the loss of the ability to maintain the core covered. This sequence is initiated by the loss of the raw cooling water system. The high pressure coolant injection and reactor core isolation cooling systems are unavailable to inject water into the vessel. The initiator prevents the control rod drive hydraulic system from being operable and the operator fails to depressurize the vessel in a timely manner to allow low pressure injection systems to maintain core coverage. The mean frequency of this sequence is 5.98E-08 per year.

The seventh sequence is quite similar to the second sequence: a transient, this time the closure of all main steam isolation valves, followed by failure of the control rods to insert and failure to initiate the standby liquid control system. The mean frequency of this sequence is 5.48E-08 per year.

The eighth sequence is initiated by a loss of offsite power and is characterized by the failure of diesel generators A, B, D, and 3ED. In addition, offsite power is not recovered in this sequence. This combination of diesel generator failure results in seven of the eight RHRSW pumps being unavailable (only pump B1 is available). The success criteria for RHRSW requires that one pump per unit (not on the same header) be available. Core damage is assumed to occur due to failure to provide adequate decay heat. The mean frequency of this sequence is 4.93E-08 per year.

The ninth sequence is similar to the sixth sequence. In the ninth sequence, the sequence is initiated by the closure of all main steam isolation valves, successful scram, but failure of the high pressure injection system, the reactor core isolation cooling system, and the control rod drive hydraulic system, and failure to depressurize the vessel. The initiator "MSIV Closure" occurs more frequently than "Loss of Raw Cooling Water;" the primary difference being how the control rod drive hydraulic system fails. In the sixth sequence, it is failed due to loss of support as a result of the initiating event, and in the ninth sequence, it is unavailable due to hardware failure or maintenance activities (both pumps 2A and 1B are required for success). The mean frequency of this sequence is 4.84E-08 per year.

The tenth sequence is similar to the eighth sequence. This sequence is initiated by a loss of offsite power and is characterized by the unavailability of diesel generators A, B, C, D, and 3EC and failure to recover offsite power. As in the eighth sequence, this combination of failures results in seven of the eight RHRSW pumps being unavailable. In this case, only RHRSW pump D1 is available. Core damage is assumed to occur due to failure to remove decay heat. The mean frequency of this sequence is 4.71E-08 per year.

A comparison of these 10 sequences with the corresponding sequences for Unit 2 (Reference 3) reveals that 7 of the 10 sequences are virtually identical. However, sequences four, eight, and ten for Unit 3 do not have an exact counterpart for Unit 2. These three sequences represent hardware and dependency differences between the units. The sequence for Unit 2 that would be analogous to Unit 3's fourth sequence would be of lower frequency due to the additional capability of Unit 2 to crosstie to division II Unit 1 RHR. Sequences eight and ten reflect the stronger dependence of Unit 3 on Units 1 and 2 4-kV shutdown boards as compared to Unit 2's dependence on Unit 3 4-kV shutdown boards.

A summary description of the top 100 sequences is presented in Appendix B.

1.1.3 FUNCTIONAL FAILURE GROUP CONTRIBUTIONS TO CDF

Table 1-1 presents the results of recasting the core damage frequencies into seven functional categories. Consideration of the functional categories provides some insights into the nature of the results. It should be noted that the functional categories are not mutually exclusive; individual sequences can be assigned to more than one functional category. As can be seen, nearly 39% of the CDF is due to sequences involving failure to control reactivity. Thirty-six percent of the CDF is from sequences that can be characterized by the loss of the ability to remove decay heat. Transients with the reactor vessel at high pressure represent 8.6% of the total core damage frequency. The transients with the reactor at high pressure can be characterized typically as an initiating event involving the loss of feedwater, the unavailability of both the high pressure coolant injection and the reactor core isolation cooling systems, and the failure to manually depressurize the vessel to allow low pressure systems to maintain level control. Transients followed by a loss of vital DC power contribute 7.5% of the total core damage frequency. This group is defined as any transient followed by the loss of battery board 1, 2, or 3. For Unit 3, battery boards 1 and 3 are of particular interest. Many sequences assigned to this group involve a failure of both battery boards 1 and 3, thus disabling HPCI and RCIC. Sequences involving failure of battery boards 1 and 3 constitute 3.6% (3.33E-07 per year) of the total core damage frequency. A typical sequence in this group is a transient that involves the loss of normal heat sink, such as closure of all main steam isolation valves, followed by failure of DC power resulting in the inoperability of HPCI, RCIC, and the ability to remove decay heat.

Two station blackout accident sequence groups are defined. The first such functional category (3.0% of the total CDF) is due to the unavailability of AC power in the Unit 3 portion of the plant. Blackout in this case is defined to be the loss of offsite power followed by failure of diesel generators 3EA, 3EB, 3EC, and 3ED. A smaller contribution (2.4% of the total CDF)

is due to total station blackout (failure of offsite power as well as all eight diesel generators at the site).

A small contribution to CDF (0.2%) can be attributed to sequences involving degraded states of the emergency equipment cooling water system.

1.1.4 INITIATING EVENT GROUP CONTRIBUTION TO CDF

Table 1-2 summarizes the results at the initiating event group level. The performance of a PSA begins with the identification of a comprehensive set of scenario initiators, often called initiating events or initiators. Table 1-2 also summarizes the CDF contribution due to initiating event categories as well as the individual initiators and provides a comparison to the Unit 2 PSA results as documented in Reference 3.

As can be seen by reviewing the results summarized in Table 1-2, the CDF due to a given initiating event is modestly higher, with one exception, for Unit 3 as compared to Unit 2. The reasons for this difference can be found by comparing the individual core damage sequences from the two analyses. The differences are due to unit-specific system configurations and dependencies. The one initiating event category for which, according to the information in Table 2-1, Unit 3 has an apparent lower CDF than Unit 2 is "Flood Scenario 1 in the Reactor Building." On closer examination, however, this difference can be attributed to modeling differences. The Unit 3 PSA, as documented in this report, contained an updated model for battery boards 1, 2, and 3, which resulted in a slight decrease in the calculated unavailabilities of these boards as compared to the Unit 2 model (Reference 3). This difference, combined with the 1.0E-10 calculational truncation limit for this initiator, are underlying reasons for the apparent anomaly.

1.1.5 IMPORTANT OPERATOR ACTIONS

Table 1-3 identifies the 10 most "important" operator actions that were included in the model for the response of the plant and the operators to the entire set of initiating events. The importance measures were derived from the split fraction importance measures (the "fraction importance") reported in the first numerical column in Appendix C. Split fraction importance is defined as the fraction of all core damage scenarios that include failure of the specific split fraction. This fraction can be determined by dividing the sum of the frequencies of scenarios containing the failed split fraction by the sum of the frequencies of all core damage frequencies.

Note that 2 of the 10 entries in Table 1-3 required adjusting. These split fractions, RVD22 and U22, contain both hardware and operator action elements. To eliminate the hardware portion of the fractional importance for RVD22 (0.087 from Appendix C), it was multiplied by the fraction of the split fraction value that is due to operator error (0.86). In a similar manner, the fractional importance of U22 from Appendix C (0.022) was multiplied by 0.58. It should be noted that the split fraction CRD4, which contains both hardware and operator elements, has a fractional importance from Appendix C of 0.037. However, the portion due

to operator error is quite small (0.025). Consequently, it does not appear in the list of the top 10 actions.

1.1.6 IMPORTANT SYSTEMS

Table 1-4 identifies the importance of selected plant systems. The top events that represent hardware and that comprise the mechanical support, signal, and frontline event trees were assigned to appropriate system groups. Top events that represented operator actions were not assigned to a system group. Two electrical groups were defined: one for the diesel generators and one for the battery boards 1, 2, and 3. These groups were used to determine importance measures.

The importance measures were determined from the information summarized in Appendix C by summing the importance of all split fractions (other than the one corresponding "guaranteed failure") associated with a given system.

1.2 PROCESS FOLLOWED TO DEVELOP CURRENT MODEL

The model developed in this analysis used the model for Unit 2 documented in Reference 3. Information developed as part of the Multi-Unit PRA (Reference 2), particularly the Unit 3 dependency matrices, was utilized in the model development. System configuration and dependency differences were noted. Event models (event tree structure and split fraction assignment rules) and, where appropriate, system models developed for Unit 2 (Reference 3) were modified to reflect the configuration and dependencies of Unit 3.

1.3 ϕ-M MATRIX

A convenient way to summarize the results of a PSA is to construct a table that shows how each of the initiating events map to the plant damage states considered in the analysis. If the initiating events are thought of as a vector ("ϕ"), then the plant model, event trees, and fault trees could be represented by a transformation matrix ("M") that relates the initiators to the plant damage states. ϕ-M would then display the relationship of the initiators to the plant damage states. The ϕ-M matrix for Unit 3 is presented in Appendix D of this report.

Table 1-1. Contributions of Functional Failure Groups to CDF		
Accident Sequence Group	**Mean CDF* (per Year)**	**Percentage of Total***
ATWS	3.52E-06	38.6
Loss of Residual Heat Removal	3.30E-06	36.1
Transient with Reactor Vessel at High Pressure	7.86E-07	8.6
Transient followed by Loss of Vital DC Power	6.85E-07	7.5
Blackout of Unit 3	2.72E-07	3.0
Station Blackout	2.18E-07	2.4
Degraded Emergency Equipment Cooling Water	2.28E-08	0.2

*The mean CDF is determined by examining the dominant sequence file. The sequences in the dominant sequence file represent in excess of 99% of the total CDF and form a convenient database for risk management applications. The accident sequence groups are defined by specifying success or failure combinations of top events or split fractions. For example, the "ATWS" accident sequence group is defined as all sequences with the Top Event "RPS" failed. Since the dominate sequence file represents less than 100% of the total CDF, the "percentage of total" for each accident sequence group is determined by dividing the mean CDF for that group by the total CDF represented by the dominant sequence file. In the current model, the total CDF represented by the dominant sequence file is 9.13E-06 (per year). For the ATWS accident sequence group, for example, the "percentage of total" is calculated as:

3.52E-06 ÷ 9.13E-06 = 38.6%

Table 1-2 (Page 1 of 2). Contribution to CDF by Initiating Event Group and Comparison to Unit 2 PSA Results (Reference 3)		
Initiating Event Group	Mean CDF (per Year)	
	Unit 2*	Unit 3**
Transients with Reactor Not Isolated	**1.58E-06**	**2.46E-06**
Loss of Feedwater	2.88E-07	5.19E-07
Turbine Trip	6.99E-07	9.27E-07
Inadvertent Scram	8.47E-08	1.65E-07
Feedwater Rampup	1.07E-07	1.95E-07
Events Requiring the Reactor to Scram	1.15E-07	1.45E-07
Partial Loss of Feedwater	1.40E-07	1.71E-07
Loss of All Condensate	5.23E-08	1.53E-07
Partial Loss of All Condensate	9.48E-08	1.81E-07
Loss of Offsite Power	**1.35E-06**	**2.11E-06**
Transients with Reactor Isolated	**1.04E-06**	**1.88E-06**
Closure of All Main Steam Isolation Valves	4.75E-07	8.39E-07
Loss of Condenser Vacuum	2.35E-07	4.45E-07
Turbine Trip without Bypass	2.31E-07	4.11E-07
Loss of the 500-kV Grid to Unit 2	3.55E-08	--
Loss of the 500-kV Grid to Unit 3	--	5.86E-08
Loss of the 500-kV Grid to the Station	3.48E-08	7.08E-08
Pressure Regulator Failure - Fails Open	3.07E-08	5.52E-08
Break Outside of Containment	1.42E-09	1.83E-09
Support System Failure	**7.03E-07**	**1.41E-06**
Loss of Raw Cooling Water	5.38E-07	9.79E-07
Loss of Plant Control Air	2.30E-08	1.83E-07
Loss of I&C Bus 2A	3.08E-09	--
Loss of I&C Bus 3A	--	5.98E-09
Loss of I&C Bus 2B	3.09E-09	--
Loss of I&C Bus 3B	--	6.01E-09
Loss of Unit Preferred Power	3.75E-08	5.18E-08
Loss of Reactor Building Closed Cooling Water System	9.04E-08	1.76E-07
Failure of Lower Instrument Tap IA	1.91E-09	2.24E-09
Failure of Lower Instrument Tap IIA	1.91E-09	2.24E-09
Failure of Lower Instrument Tap IB	1.99E-09	2.32E-09
Failure of Lower Instrument Tap IIB	1.91E-09	2.24E-09
Failure of Upper Instrument Tap I	2.23E-10	2.61E-10
Failure of Upper Instrument Tap II	2.23E-10	2.61E-10

*As documented in PLG-1112, Revision 1 (Reference 3).
**Results of this analysis.

Table 1-2 (Page 2 of 2). Contribution to CDF by Initiating Event Group and Comparison to Unit 2 PSA Results (Reference 3)		
Initiating Event Group	Mean CDF (per Year)	
	Unit 2*	Unit 3**
Loss of Coolant Accidents	**4.41E-07**	**5.35E-07**
Small LOCA	7.20E-08	7.30E-08
Recirculation Discharge Line Break	1.12E-07	1.33E-07
Recirculation Suction Line Break	2.66E-08	3.34E-08
Core Spray Line Break	7.77E-08	1.11E-07
Other Large LOCA	3.16E-08	4.05E-08
Medium LOCA	1.06E-07	1.29E-07
Very Small LOCA	5.80E-09	6.21E-09
Excessive LOCA	9.10E-09	9.09E-09
Stuck-Open Relief Valves	**1.34E-07**	**1.79E-07**
Inadvertent Opening of One Relief Valve	6.88E-08	1.07E-07
Inadvertent Opening of Two Relief Valves	8.77E-09	1.24E-08
Inadvertent Opening of Three or More Relief Valves	5.65E-08	5.92E-08
Internal Floods	**9.29E-08**	**5.68E-07**
Small Flood in the Turbine Building	1.93E-08	1.59E-07
Large Flood in the Turbine Building	2.22E-08	4.24E-08
Flood in the Pumping Station	1.15E-08	6.99E-08
Flood Scenario 1 in the Reactor Building	4.35E-09	2.63E-09
Flood Scenario 2 in the Reactor Building	3.86E-10	2.03E-09
Flood Scenario 3C in the Reactor Building	6.90E-10	7.07E-10
Flood Scenario 3S in the Reactor Building	3.45E-08	2.91E-07
Interfacing Systems LOCA	**4.63E-08**	**4.63E-08**
Total CDF	**5.39E-06**	**9.19E-06**

*As discussed in PLG-1112, Revision 1 (Reference 3).
**Results of this analysis.

Table 1-3. Ten Most Important Operator Actions Failures Contributing to Core Damage		
Operator Action	**PSA Importance**	**Surrogate Split Fraction**
Manual Depressurization of the Reactor Vessel using the Safety Relief Valves	0.075*	RVD22
Manual Control of Low Pressure Injection during ATWS	0.067	OLA1
Manual Alignment of Residual Heat Removal to Suppression Pool Cooling	0.064	OSP1
Manual Start of Standby Liquid Control Given ATWS and the Reactor Vessel Isolated	0.033	OSL1
Manual Start of Standby Liquid Control Given ATWS and the Reactor Vessel Not Isolated	0.022	OSL2
Alignment of Unit 2 Residual Heat Removal to Unit 3 via Crosstie	0.013**	U22
Prevention of Automatic Depressurization System during ATWS	0.007	OAD1
Manual Start of Residual Heat Removal/Core Spray	0.005	ORP2
Reactor Vessel Level Control Using Residual Heat Removal/Core Spray	0.005	OLP1
Level Control during ATWS	0.003	OAL1

*The fractional importance of 0.087 from Appendix C has been multiplied by the fraction (0.86) of the split fraction value that is due to operator action.
**The fractional importance of 0.022 from Appendix C has been multiplied by the fraction (0.58) of the split fraction value that is due to operator action.

Table 1-4. PSA Importance of Individual BFN Systems	
System	PSA Importance*
Reactor Protection System	0.39
Residual Heat Removal System	0.36
Diesel Generators	0.21
Residual Heat Removal Service Water System	0.16
High Pressure Coolant Injection System	0.13
Reactor Core Isolation Cooling System	0.09
Main Steam System Including Turbine Trip	0.08
250V DC Battery Boards	0.07
Shared Actuation Instrumentation	0.05
Control Rod Drive System	0.05
Standby Liquid Control System	0.04
RBCCW	0.01
Condensate and Feedwater System	< 0.01
Core Spray	< 0.01
Plant Air	< 0.01
Emergency Equipment Cooling Water System	< 0.01
*The fraction of CDF with sequences in which the failures occur in the indicated system.	

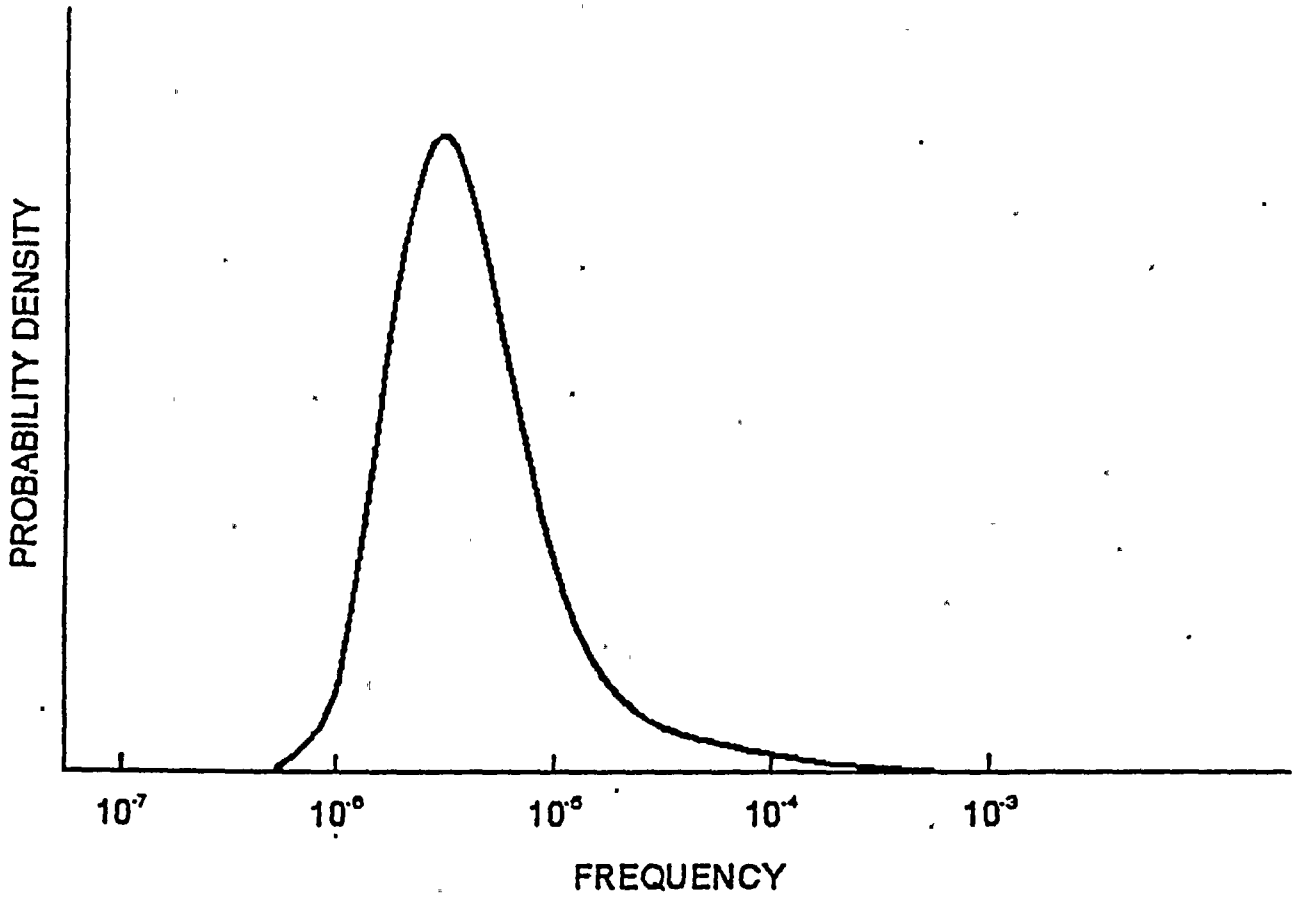

Figure 1-1. Probability Distribution of Browns Ferry Unit 3 Core Damage Frequency

2. PLANT CONFIGURATION

2.1 DESCRIPTION OF PLANT CONFIGURATION

The plant configuration under consideration is one in which Unit 3 is initially at power, Unit 2 in service (i.e., it is either initially operating or shut down), and Unit 1 remaining in extended layup. An assessment of the potential for multi-unit interactions at BFN was performed in the Multi-Unit PRA to determine the impact on shared systems or structures associated with Unit 2 by the return to service of Units 1 and 3. Although the information developed in the Multi-Unit PRA was developed with the potential impact on Unit 2 in mind, that information is also a viable resource when considering the potential impact on Unit 3. Guidelines or criteria were developed and used in that study to identify systems or structures that are potentially impacted by multi-unit interactions. Interactions of interest are those that have the potential to (1) impact the success criteria for an individual system or group of systems, (2) change the frequency of an initiating event considered in the previous PRAs, (3) introduce an initiating event not previously considered, (4) introduce new or to alter dependencies among systems, or (5) otherwise effect the response of the plant to an initiating event. It was determined that 14 of the shared systems and structures are potentially impacted by the return of additional units to service, and Table 2-1 shows a list of these shared systems and structures.

The review of system configurations and structures for the plant configuration under consideration utilized the results of the evaluation of all shared systems and structures performed in the Multi-Unit PRA. The control bay HVAC system has been shown to be risk insignificant and is not considered in depth in this review (Reference 3). A comparison of the equipment/system status in the various plant configurations (the one under consideration, and those modeled in the Rev. 1 I.O. #2 and Multi-Unit PRAs, which focused on Unit 2) is provided in Table 2-2. The equipment/system status may be the same in the various plant configurations considered, but the success criteria and plant response involving the shared systems may be different as discussed in the section below.

2.2 EVALUATION OF IMPACT ON SHARED SYSTEMS AND STRUCTURES

The potential impact on the shared systems and structures associated with Unit 3 when Unit 2 is in service can be characterized as changes in the system success criteria, changes in the initiating event frequency, or changes in the plant model with respect to those in adopted in the Rev. 1 I.O. #2 PRA model. Based on the discussion of the system configurations and shared structures, and the comparison of the equipment status in the various plant configurations, the impact on the shared systems and structures is presented below and a summary of the impact is given in Table 2-3.

2.2.1 ELECTRIC POWER SYSTEM

Two units in service impacts the success criteria used in the Rev. 1 I.O. #2 PRA for the analysis of the availability of individual electrical boards as loads on boards are increased. In

addition, the availability of boards is impacted if they no longer are considered "dedicated" to a single unit. These considerations will impact the actions considered as "recovery" actions in this study, as reflected in Table 2-4.

The loss of two large generating stations within a relatively small time window has the potential of increasing the frequency of the loss of the electrical grid. Two units in service therefore increases the likelihood of the induced loss of offsite power for initiating events, such as loss of raw cooling water, that involve a mechanism that potentially couples the response of the individual units. In addition, the nature of the plant response, as compared to the Rev. 1 I.O. #2 PRA, to the loss of offsite power will change due to the role of other shared systems, such as residual heat removal service water (RHRSW) or emergency equipment cooling water (EECW).

It was concluded that the reanalysis of portions of the electric power system was required in the Unit 2 PSA (Reference 3) including the assessment of the availability of individual electrical boards as well as the impact on the frequency of the loss of offsite power. The Unit 3 PSA took full advantage of these new analyses as documented in Reference 3.

2.2.2 CONTROL AND SERVICE AIR SYSTEM

The control air and service air systems are shared among the three units. Two units in service will not impact the system success criteria nor the frequency of the Loss of Plant Air initiator, as reported in Reference 3 for Unit 2.

2.2.3 RAW COOLING WATER SYSTEM

The raw cooling water system serves all three units. Two units in service impacts both the system success criteria as well as the frequency of the initiator Loss of Raw Cooling Water, as compared to the models developed for Rev. 1 I.O. #2 PRA. The same models developed for the Unit 2 PSA (Reference 3) were used in the current analysis.

2.2.4 TURBINE BUILDING

The turbine building is shared among the units. Flooding events in the turbine building were explicitly addressed in the Rev. 1 I.O. #2 PRA. When Unit 3 is returned to service, both the frequency and plant response to such flooding events were reassessed as part of the Unit 2 PSA (Reference 3). These updated results were also used in the current analysis.

2.2.5 REACTOR BUILDING CLOSED COOLING WATER SYSTEM

The reactor building closed cooling water system is normally unitized but there is one spare pump and heat exchanger for all units. The model developed for the Unit 2 PSA (Reference 3) was adopted for the current analysis.

2.2.6 REACTOR BUILDING (SECONDARY CONTAINMENT SYSTEM)

The reactor building is shared among the three units and is divided into three reactor zones and a common refueling zone. When Unit 2 is in service, an indirect interaction is created if a severe incident (such as extensive core damage) were to occur in Unit 2. In such a case, the accessibility of the Unit 3 reactor building will be affected.

2.2.7 CONDENSER CIRCULATING WATER SYSTEM

In the normal mode of operation, this system is unitized. In the shutdown mode, with all of the units down and with the reactors streaming to the condensers via the turbine bypass system, only a small amount of condenser circulating water (CCW) flow is required to maintain normal condenser vacuum. The plant design provides circulating water interties so that only one CCW pump can provide condensing water to all shutdown units. In the modeled plant configuration, with Unit 3 initially at power, the CCW interties are not considered.

2.2.8 PUMPING STATION (INTAKE BUILDING)

The RHR service water pumps and the emergency equipment cooling water pumps are located in four compartments of the pumping station. The reassessment of the frequency of and plant response to flooding of one of these compartments was evaluated in the Unit 2 PSA (Reference 3) and adopted for the current analysis.

2.2.9 CONTROL ROD DRIVE HYDRAULIC SYSTEM

A common control rod drive (CRD) hydraulic system pump is shared by Units 1 and 2. In the Rev. 1 I.O. #2 PRA, credit was taken for that pump as if it were assigned solely to Unit 2. Unit 3 has two dedicated CRD pumps. The models utilized in the Unit 2 PSA (Reference 3) were adopted for the current analysis.

2.2.10 RHR CROSS-CONNECTION AND STANDBY COOLANT SUPPLY SYSTEM

The use of the residual heat removal service water system for vessel injection via cross-connecting selected portions of the RHR systems in adjacent units is provided at the plant. Credit for such alignments is taken in the Rev. 1 I.O. #2 PRA on a limited basis; that is, only from Unit 1 to Unit 2. For Unit 2, credit was also taken for the crosstie from Unit 3. For Unit 3, only a single crosstie to Unit 2 is available.

2.2.11 RESIDUAL HEAT REMOVAL SERVICE WATER SYSTEM

The RHRSW system is shared between the units and is explicitly modeled in the Rev. 1 I.O. #2 PRA and Unit 2 PSA. The same success criteria derived for the Unit 2 PSA was adopted in the current analysis.

2.2.12 EMERGENCY EQUIPMENT COOLING WATER SYSTEM

The EECW system is shared between the units and is explicitly modeled in the Rev. 1 I.O. #2 PRA and Unit 2 PSA. The success criteria associated with the EECW system was reviewed and determined not to change when the Unit 2 PSA was conducted; therefore, no change is required for the current analysis.

2.2.13 FIRE PROTECTION SYSTEM

The fire protection system is shared among the units. Of potential interest in the PSA is the one diesel-driven fire pump that could provide flow to the vessel under station blackout conditions. Two units in service would impact the availability of this pump to serve either unit. However, in the current model, the use of the fire protection system to provide flow to the vessel is not considered.

2.2.14 REACTOR BUILDING AND CONTROL BAY VENTILATION AND COOLING SYSTEMS

A discussion of the impact of failure of these systems on core damage frequency is given in the Unit 2 PSA (Reference 3).

2.3 SYSTEM SUCCESS CRITERIA

Table 2-4 summarizes the success criteria for shared systems in the PSA model for the plant configuration being considered as well as the criteria used in the Rev. 1 I.O. #2 and Multi-Unit PRAs.

Table 2-1. Shared Plant Systems and Structures Associated with Unit 3 and Potentially Impacted by Unit 2 Being in Service
Electric Power System*
Control and Service Air System
Raw Cooling Water System
Turbine Building and Radwaste Building
Reactor Building Closed Cooling Water System
Reactor Building (Secondary Containment System)
Condenser Circulating Water System
Pumping Station (Intake Building)
Control Rod Drive Hydraulic System
RHR Cross-Connection and Standby Coolant Supply System
Residual Heat Removal Service Water System
Emergency Equipment Cooling Water System
Fire Protection System
Reactor Building and Control Bay Ventilation and Cooling Systems
*Includes offsite power system (switchyard, station service transformers, and normal auxiliary power switchboards), plant preferred and nonpreferred AC system, auxiliary DC power supply and distribution system, 250V DC power supply system, and standby AC power system.

Table 2-2 (Page 1 of 2). Comparison of Equipment Status in the Different Plant Configurations

System	Equipment Status In Unit 2 PRA	Equipment Status In Multi-Unit PRA	Equipment Status in the Plant Configuration with Unit 1 Remaining in Layup
Electric Power			
AC Power	Switchgear, buses, and boards are nominally available to power all equipment associated with Units 1, 2, and 3. Unit 3 boards are available to serve Unit 2 loads by crosstieing the boards.	Switchgear, buses, and boards are nominally available to power all equipment associated with Units 1, 2, and 3. Selected Unit 3 boards may be available to serve Unit 2 loads since the loads on the affected Unit 3 boards are increased and they are no longer considered "dedicated" to Unit 2 service. Similarly, selected Unit 2 boards may be available to serve Unit 3 loads.	Switchgear, buses, and boards are normally available to power equipment associated with Units 2 and 3. Selected Unit 3 boards may be available to serve Unit 2 loads since the loads on the affected Unit 3 boards are increased and they are no longer considered "dedicated" to Unit 2 service. Similarly, selected Unit 2 boards may be available to serve Unit 3 loads.
DC Power	Boards are nominally available to support all equipment associated with Units 1, 2, and 3. Unit 3 boards are available to Unit 2 via crosstieing the boards.	Boards are normally available to support all equipment associated with Units 1, 2, and 3. Selected battery boards may be available to serve Unit 2 loads since the loads on the affected Unit 3 boards are increased and they are no longer considered "dedicated" to Unit 2 service.	Boards are normally available to support equipment associated with Units 2 and 3. Selected battery boards may be available to serve Unit 2 loads since the loads on the affected Unit 3 boards are increased and they are no longer considered "dedicated" to Unit 2 service and vice versa.
Diesel Generators	All eight diesel generators available.	All eight diesel generators available.	All eight diesel generators available.
Control and Service Air	Two compressors are fully loaded, with the other two compressors running but unloaded or on standby.	Two compressors are fully loaded, with the other two compressors running but unloaded or on standby.	Two compressors are fully loaded, with the other two compressors running but unloaded or on standby.
Raw Cooling Water	Although interconnected, the portion of the system that serves Unit 3 is independent of that portion that serves Units 1 and 2.	Although interconnected, the portion of the system that serves Unit 3 is independent of that portion that serves Units 1 and 2.	The entire system is modeled with the portion serving Unit 2 dependent on the portion serving Unit 3 and vice versa.
Turbine Building and Radwaste Building	Buildings shared among all three units.	Buildings shared among all three units.	Buildings shared among all three units.
Reactor Building Closed Cooling Water	Unit 2 RBCCW pumps 2A and 2B are normally operating, and the common RBCCW pump 1C is dedicated to Unit 2.	Unit 2 RBCCW pumps are normally operating, and the common RBCCW pump 1C is available to Unit 1, 2, or 3.	Units 2 and 3 RBCCW pumps are normally operating, and the common RBCCW pump 1C is available to Unit 1, 2, or 3.
Reactor Building (Secondary Containment System)	Building shared among all three units.	Building shared among all three units.	Building shared among all three units.
Condenser Circulating Water	Three Unit 2 CCW pumps are initially operating; pumps from other units in standby with interties between the units.	All nine of the CCW pumps are initially operating with the interties between the units closed.	The three Unit 3 CCW pumps are initially operating and the number of Unit 2 CCW pumps operating depends on the status of Unit 2. The interties between the units are closed.
Pumping Station (Intake Building)	The pumping station contains RHRSW pumps and the EECW pumps that are shared among the units.	The pumping station contains RHRSW pumps and the EECW pumps that are shared among the units.	The pumping station contains RHRSW pumps and the EECW pumps that are shared among the units.

Table 2-2 (Page 2 of 2). Comparison of Equipment Status in the Different Plant Configurations

System	Equipment Status in Unit 2 PRA	Equipment Status in Multi-Unit PRA	Equipment Status in the Plant Configuration with Unit 1 Remaining in Layup
Control Rod Drive Hydraulic	Unit 2 CRD pump 2A is normally running, and the common control CRD swing pump is dedicated to Unit 2.	Unit 2 CRD pump 2A is normally running, and the common control CRD swing pump is shared by Units 1 and 2.	Unit 2 CRD pump 2A is normally running, and the common control CRD swing pump is dedicated to Unit 2. Unit 3 CRD pump 3A is normally running with standby pump 3B dedicated to Unit 3.
RHR Cross-Connection and Standby Coolant Supply	Cross-connecting a selected portion of the RHR systems from Unit 2 to Unit 1 is available.	Cross-connecting between Units 2 and 1, and between Units 2 and 3 are available.	Cross-connecting between Units 2 and 3 is dependent on the status of Unit 2.
Residual Heat Removal Service Water	Four RHRSW pumps are designated to provide RHR function, and four RHRSW pumps are swing pumps. The latter can replace designated EECW pumps when their corresponding EECW pumps are taken off-line.	Four RHRSW pumps are designated to provide RHR function, and four RHRSW pumps are swing pumps. The latter can replace designated EECW pumps when their corresponding EECW pumps are taken off-line.	Four RHRSW pumps are designated to provide RHR function, and four RHRSW pumps are swing pumps. The latter can replace designated EECW pumps when their corresponding EECW pumps are taken off-line.
Emergency Equipment Cooling Water	The EECW north and south header are each supplied by two RHRSW pumps with one pump in each header normally running.	The EECW north and south header are each supplied by two RHRSW pumps with one pump in each header normally running.	The EECW north and south header are each supplied by two RHRSW pumps with one pump in each header normally running.

Table 2-3. Summary of Potential Impact on Systems and Structures Associated with Unit 3			
System or Structure	System Success Criteria or Systems Analysis	Initiating Event Frequency	Plant Model
Electric Power System	X	X	X
Control and Service Air System	X	X	X
Raw Cooling Water System	X	X	X
Turbine Building* and Radwaste Building	--	X	X
Reactor Building Closed Cooling Water System	X	X	X
Reactor Building (Secondary Containment System)**	--	--	X
Condenser Circulating Water System	--	X	--
Pumping Station (Intake Building)	--	X	X
Control Rod Drive Hydraulic System	X	--	--
RHR Cross-Connection and Standby Coolant Supply System	X	--	X
Residual Heat Removal Service Water System	X	--	X
Emergency Equipment Cooling Water System	X	--	X
*Impacts nature and frequency of turbine flood. **May impact local manual operations in reactor building.			

Table 2-4 (Page 1 of 4). Success Criteria for Plant Configuration Under Consideration

System or Top Event	Initiating Event	Rev. 1 I.O. #2 PRA Success Criteria	Multi-Unit PRA Success Criteria	Success Criteria for Units 2 and 3 with Unit 1 Remaining in Layup	Impact on PSA Event Model for Units 2 and 3 with Unit 1 Remaining in Layup
Offsite Grid	LOSP L500PA L500U2	The offsite 500-kV and 161-kV grids are to remain available for 24 hours. (Only one category of loss of 500-kV grid was necessary).	Same as Rev. 1 I.O. #2 PRA. (Both categories of loss of 500-kV grid were considered).	Same as Rev. 1 I.O. #2 PRA. (Both categories of loss of 500-kV grid were considered).	All units at power will trip on loss of 500-kV to plant (L500PA). Loss of 500-kV to Unit 2 (L500U2) will trip Unit 2 only. Loss of 500-kV to Unit 3 (L500U3) will trip Unit 3 only. The L500PA and L500U2 frequencies developed for the Multi-Unit PRA were used in Reference 3; for this study, the same frequencies were used for L500PA and L500U3, respectively.
Recover Onsite/ Offsite Power	N/A	Recover offsite power within 30 minutes or within 6 hours.	Recover offsite power to reenergize the shutdown boards. No credit for diesel generator recovery.	Recover offsite power to reenergize the shutdown boards. Recovery of diesel generator C given failure of local HVAC is considered for Unit 2. Recovery of diesel generator 3ED is considered for Unit 3.	The number of diesel generators available for each operating unit/ shutdown board becomes more limited than in the Rev. 1 I.O. #2 PRA. Offsite power recovery analysis is applicable to the three types of LOSP initiators (LOSP, L500PA, and L500U3) under this plant configuration.
Common Unit 1/ Unit 2 Accident Signal	N/A	N/A	This was modeled as Top Event CASG.	N/A	The common accident signal is not applicable to this plant configuration.
4-kV Shutdown Boards; 480V Shutdown Boards; 480V RMOV Boards	N/A	Remain available for 24 hours.	Remain available for 24 hours.	Remain available for 24 hours.	No impact.
4-kV Shutdown Board Power Recovery	N/A	Specifically, recovery of shutdown boards B and/or D was considered. The recovered shutdown board(s) must remain available for 24 hours.	Diesel/4-kV shutdown board load limit will influence the combinations of boards to be recovered and boards supplying power. However, only the recovery of shutdown boards B and/or D will be considered for multi-unit scenarios.	Diesel/4-kV shutdown board load limit will influence the combinations of boards to be recovered and boards supplying power. However, only the recovery of shutdown board 3EC is considered for selected scenarios.	4-kV shutdown boards associated with the other operating unit (Unit 2) are required by the unit at power and shutdown. Crosstieing boards in support of Unit 3 shutdown will be limited by the maximum load capability of the bus and or diesel combination.
4-kV Unit Board Power Recovery (Backfeed from Diesel Generators)	N/A	This feature was not implemented in this study.	This feature was not implemented in this study.	This feature was not implemented in this study.	Recovery action not implemented in this study.

Table 2-4 (Page 2 of 4). Success Criteria for Plant Configuration Under Consideration

System or Top Event	Initiating Event	Rev. 1 I.O. #2 PRA Success Criteria	Multi-Unit PRA Success Criteria	Success Criteria for Units 2 and 3 with Unit 1 Remaining in Layup	Impact on PSA Event Model for Units 2 and 3 with Unit 1 Remaining in Layup
250V DC Battery Charger 2B	N/A	Remain available to support the loss of the normal charger for battery board 1, 2, or 3. Only the recovery of battery board 2 or 3 was considered in the Rev. 1 I.O. #2 PRA.	Success criteria remains the same. The charger unavailability will change.	Success criteria for the battery board remains the same.	Revised battery board availability analyses render the consideration of battery charger of secondary importance.
Control and Service Air System	Loss of Plant Air	Requires at least two of the four control air compressors to supply all three air receiver and the Unit 2 air dryer train. This is conservative since per Design Criteria BFN-50-732, Rev. 2, January 31, 1991, the plant control air system requires one of the four compressors if only Unit 2 is in operation.	The success criterion for the system requires three compressors in operation when three units are in operation.	The success criterion for the system requires three compressors in operation when three units are in operation.	The demands on the plant air system may increase if two units are at power. The initiating event frequency is based on industry experience and does not change when applied to this plant configuration. A review of a recent plant modification for Unit 2 to sectionalize units given a piping failure determined that the modification would not significantly impact the quantitative system analysis results.
Raw Cooling Water System	LRCW	Two of six raw cooling water (RCW) normally operating pumps modeled as two of three Unit 1 or two of three Unit 2 normally operating pumps must be available. Pump 1D replaces a normally operating pump that is in maintenance.	The following assumption on the success criteria is made: two of three Unit 1 and two of three Unit 2 pumps must be available (two are required per operating unit). This is modeled as four of six RCW pumps be available. Pump 1D is available to replace a Unit 2 pump in maintenance if itself is not in maintenance or it is not being used to replace a Unit 1 pump in maintenance. Unit 3 RCW is independent, and two of the five Unit 3 pumps were assumed for success.	Any four pumps.	Required changes to the system model and the initiating event frequency. The impact on the Unit 3 PSA is the same as for the Unit 2 PSA (Reference 3).
Turbine Building	FLTB	N/A	N/A	N/A	Frequency of flooding was reevaluated in the Unit 2 PSA; the same frequency was used in this analysis.
Reactor Building Closed Cooling Water	LRBCCW	Pumps 2A and 2B and their associated heat exchangers must remain in service for 24 hours. Pump 1C replaces a normally operating pump that is in maintenance.	The success criteria remains the same. The system analysis was changed to reflect possible alignment of pump 1C to Unit 1.	The success criteria remains the same. Pump 1C could support Unit 2 or 3.	Same as Rev. 1 I.O. #2 PRA. The initiating event LRBCCW was introduced in the Multi-Unit PRA and is considered in the current analysis.

Table 2-4 (Page 3 of 4). Success Criteria for Plant Configuration Under Consideration

System or Top Event	Initiating Event	Rev. 1 I.O. #2 PRA Success Criteria	Multi-Unit PRA Success Criteria	Success Criteria for Units 2 and 3 with Unit 1 Remaining in Layup	Impact on PSA Event Model for Units 2 and 3 with Unit 1 Remaining in Layup
Reactor Building (Secondary Containment)	N/A	Isolate all three reactor zones and the common refueling zone.	A top event (ACM) is used to specify degraded scenarios on other unit(s) has been added representing a flag for those events that may involve reactor building entry.	The new top event (ACM, the same as in the Unit 2 PSA) introduced in the Multi-Unit PRA has been implemented in the current analysis to specify when a degraded scenario occurs on Unit 2, thus impacting the ability to enter the Unit 3 reactor building.	An accident in Unit 2 may impact the habitability of the Unit 3 reactor building. This would then limit the capability of remote manual actions by operators in response to events at Unit 3. Event tree structure, logic rules, as well as new operator assessment from Multi-Unit PRA are applicable to this plant configuration.
Pumping Station (Intake Building)	FLPH1	N/A	N/A	N/A	The plant model already considers that four different sets of pumps could be lost due to this initiator. The initiating event frequency considers the contribution by three units.
Control Rod Drive Hydraulic	N/A	The control rod drive hydraulic system is available for 24 hours to act as a source of vessel makeup for reactor level control. Depending on the circumstances, either pump 2A is sufficient for makeup, or pumps 2A and 1B ("enhanced" flow) must act together.	The success criteria remains the same. The system analysis was changed to reflect possible assignment of pump 1B to Unit 2.	The control rod drive hydraulic system is available for 24 hours to act as a source of vessel makeup for reactor level control. Depending on the circumstances, either pump 3A is sufficient for makeup, or pumps 3A and 3B ("enhanced" flow) must act together.	The model developed for the Rev. 1 I.O. #2 PRA is applicable.
RHR Cross-Connection and Standby Coolant Supply	N/A	1. Unit 1 RHR pumps 1B and 1D can be aligned to support Unit 2 suppression pool cooling. 2. RHRSW pumps D1 and D2 are available to align to the Unit 2 RHR loop I header providing an alternate standby coolant supply.	In addition to Rev. 1 I.O. #2 PRA success criteria, the following are available to support Unit 2: 1. RHRSW pumps B1 and B2 are available to align to Unit 2 RHR loop II header providing additional standby coolant supply. 2. Unit 3 RHR pumps 3A and 3C can be aligned to support Unit 2 suppression pool cooling.	Instead of the two options available to support Unit 2, only the following is available to support Unit 3: 1. RHRSW pumps B1 and B2 are available to align to Unit 3 RHR loop I header providing additional standby coolant supply. 2. Unit 2 RHR pumps 2B and 2D can be aligned to support Unit 3 suppression pool cooling. However, the availability of the Unit 2 RHR system is dependent on the status of Unit 2.	The model takes credit for RHRSW pumps B1 and B2 for Unit 3 standby coolant supply, and RHR pumps 2B and 2D for Unit 3 suppression pool cooling and alternate injection.

Table 2-4 (Page 4 of 4). Success Criteria for Plant Configuration Under Consideration

System or Top Event	Initiating Event	Rev. 1 I.O. #2 PRA Success Criteria	Multi-Unit PRA Success Criteria	Success Criteria for Units 2 and 3 with Unit 1 Remaining in Layup	Impact on PSA Event Model for Units 2 and 3 with Unit 1 Remaining in Layup
RHR Service Water	N/A	At least one of the four RHR heat exchangers must be supplied with cooling water from an associated RHRSW pump for shutdown cooling. For ATWS conditions, all four RHR heat exchangers with cooling water from the associated RHRSW pump are available for suppression pool cooling. (The model developed requires all three RHR heat exchangers.)	At least two RHR pumps supplying cooling water to the associated heat exchangers (for transients only). For all other events, the success criteria is the same as the Rev. 1 I.O. #2 PRA.	One pump per unit (not on same header) for non-ATWS conditions. For ATWS conditions, four RHR heat exchangers are required.	Because the trains of RHRSW are modeled separately in the support tree, the systems analysis will not change. The event tree modeling accounts for the use of specific pumps by specific units (heat exchangers). The event tree logic rules account for the RHRSW swing pumps to EECW. Specific logic rules address the requirement for four pumps in ATWS scenarios.
Emergency Equipment Cooling Water	N/A	Two of the four EECW pumps must operate for 24 hours.	The success criteria are effected if Units 1 and 3 remain in operation and the diesel generators are not running. The flow paths for three unit operation are such that three out of four pumps are required. An alternate criteria is for the model to look at the successful operation of RCW and if RCW is available (meets acceptance criteria) then two of four EECW pumps is acceptable.	Two pumps not on same end of a header.	With two units fueled, the availability of RHRSW pumps to replace EECW pumps that require maintenance will be limited. The system model remains the same as the trains are modeled in four separate top events. For two-unit shutdown scenarios (e.g., those initiated by LOSP), the new system success criteria are implemented via the event tree logic rules. The event tree logic rules account for the RHRSW swing pumps possibly being aligned to EECW.

3. MODIFICATIONS MADE TO PREVIOUS PSA MODELS

The risk models in the current study were derived in large part from models developed for previous Browns Ferry risk assessments. Specifically, the Unit 3 PSA took advantage of the Unit 2 PSA (Reference 3) as well as information developed for the Multi-Unit PRA (Reference 2). The Unit 3 PSA started with the Unit 2 PSA models and made appropriate changes to reflect unit-specific system configurations and dependencies.

Changes made to the event model are discussed first. These changes involve changes to the electric power support event trees, changes to reflect differences in interunit RHR crosstie capability, the redefinition of selected initiating events, and changes to reflect Unit 3's dependencies on support systems.

Following the discussion of event model changes, specific system model analyses that were conducted are presented. These system model additions include the analyses of the availability of additional Unit 3 electric boards as well as an update of the analyses of the availability of battery boards 1, 2, and 3.

3.1 EVENT MODEL

3.1.1 ELECTRIC POWER SUPPORT EVENT TREES

In the Unit 2 PSA (Reference 3), the status of key electric power boards were addressed in two linked event trees ordered as follows: ELECT12 and ELECT3. The former primarily addressed boards that are nominally associated with Unit 1 or Unit 2 equipment, and the latter addressed boards nominally associated with Unit 3. The specific top events that make up these two trees are identified in Tables 3-1 and 3-2.

Given the large number of top events in the Browns Ferry risk models, it was desirable to reorder the top events for the Unit 3 electric power support event trees to facilitate the later comparison of Unit 3 sequences with those from the Unit 2 PSA (Reference 3). Also, additional top events were necessary for the Unit 3 PSA. In the Unit 3 PSA, therefore, the status of key electric power boards are addressed in three linked event trees ordered as follows: ELECT3, ELECT12, and ELECT3P. The event tree ELECT3P contains the new top events of interest for the Unit 3 PSA. The specific top events that make up these three trees are identified in Tables 3-3 through 3-5.

A comparison of the two sets of trees reveals the following observations. Top events associated with offsite power and recovery of power at the unit boards (OG5, OG16, OUB, and ELECT30) have been moved from ELECT12 to ELECT3. The top event governing the common cause coupling of Units 1 and 2 and Unit 3 diesel generators has been relocated from ELECT12 to ELECT3. Specific top events have been added to the ELECT3 and ELECT12 models for Unit 3 to address recovery of the diesel auxiliary board associated with room cooling for diesel generators 3ED and diesel generator C, respectively. Top

Events VB42C (the 4-kV unit board 2C) and DO (120V I&C bus 2b) were eliminated from ELECT12.

Top Event DG (250V DC control power for 4-kV shutdown board 3EC and 480V shutdown board 3EB) was relocated from the ELECT3 tree to the Unit 3 ELECT12 tree. Top Events DJ, DN, RC, CPREC, and UBREC (120V AC Unit 2 preferred power, 120V I&C bus 2A, 250V RMOV board 2B, control power recovery, and unit board backfeed, respectively) were eliminated from ELECT3.

3.1.2 ELECTRIC POWER EVENT TREE SPLIT FRACTION SYMMETRIES

In the Unit 2 PSA, the eight diesel generators were queried in the following order, given a loss of offsite power:

- A
- D
- B
- C
- 3EA
- 3EC
- 3EB
- 3ED

The evaluation of the unavailability of each diesel generator considers the status of all diesel generators previous queried. In other words, the split fraction chosen for the top event associated with diesel generator B depends on the status of diesel generators A and D. If both diesel generators A and D failed, for example, diesel generator B may have a different failure likelihood than if diesel generators A and D were successful, or if only A or D were successful. The ordering of the diesel generator top events, therefore, is important in the quantitative scenario development. In the Unit 3 PSA, the availability of the diesel generators are queried in the following order:

- 3EA
- 3EC
- 3EB
- 3ED
- A
- D
- B
- C

Advantage was taken of the Unit 2 PSA analysis of diesel generator split fractions by assigning them in the Unit 3 PSA according to the order they are queried. In other words, for example, in the Unit 3 PSA, split fractions assigned to diesel generator 3ED (the fourth diesel generator queried) are those developed for diesel generator C in the Unit 2 PSA. Similar substitutions are made for the corresponding split fractions for the fuel oil transfer pumps.

Likewise, in the Unit 2 PSA (Reference 3), the three battery boards are asked in the following order:

- Battery Board 1
- Battery Board 2
- Battery Board 3

In the Unit 3 PSA, they are asked in the following order:

- Battery Board 2
- Battery Board 1
- Battery Board 3

In this study, the analysis performed for the Unit 2 PSA for the battery boards was utilized by assigning the split fractions previously developed for battery board 1 to battery board 2 and those developed for battery board 2 are assigned to battery board 1.

3.1.3 RECOVERY OF DIESEL GENERATOR 3ED

In the Unit 2 PSA (Reference 3), the possibility of recovery of diesel generator C was considered given the failure of diesel generators A, B, and D. Diesel generators A, B, and D have the ability to power an auxiliary board that is required for cooling of the A, B, C, and D diesel rooms. Diesel generator C therefore has a dependency on diesel generators A, B, and D. Recovery is possible if an alternate means of room cooling, such as opening the room door, is accomplished in a timely manner.

A similar situation is found in the Unit 3 PSA. Diesel generator 3ED has a dependency on diesel generators 3EA, 3EB, and 3EC, through an auxiliary board that provides room cooling. Allowance is made in the Unit 3 PSA for recovery of cooling to diesel generator 3ED given failure of diesel generators 3EA, 3EB, and 3EC.

3.1.4 USE OF DIESEL GENERATOR C TO SUPPORT UNIT 3

Under specific conditions in the Unit 2 PSA (Reference 3), specifically if at least two other Unit 3 diesel generators are available, credit is taken for diesel generator 3ED to support Unit 2. In a like manner in the Unit 3 PSA, if at least two other Units 1 and 2 diesel generators are available, credit is taken for diesel generator C to support Unit 3.

3.1.5 RHR CROSSTIE

Division II of Unit 1 RHR can crosstie to Division I of Unit 2 RHR. Likewise, Division I of Unit 3 RHR can crosstie to Division II of Unit 2 RHR. The Unit 2 PSA considered both of these possibilities. An analysis assumption was imposed that disallowed the crosstie from Unit 3 if the scenario was of a multi-unit nature and Unit 3 was initially at power. Since the crosstie from Unit 1 has no other function other than to support Unit 2, no multi-unit restriction is placed on the Unit 1 to Unit 2 crosstie.

From Unit 3's point of view, Division II of Unit 2 RHR can crosstie to Division I of Unit 3 RHR. This is the only RHR crosstie available to Unit 3. In a manner similar to that employed in the Unit 2 PSA, this crosstie is disallowed by analysis assumption if the scenario is of multi-unit nature and Unit 2 was initially at power.

3.1.6 REDEFINITION OF INITIATING EVENTS

The same initiating events are considered for Unit 3 as were considered for Unit 2 with four minor exceptions. These exceptions have to do with redefining the nature of two initiators. The initiator "L500U2" (loss of 500-kV power to Unit 2) in the Unit 2 PSA was replaced by "L500U3" (loss of 500-kV power to Unit 3). Likewise, impact of the initiator "LUPS" (loss of unit preferred power) was charged from the loss of Unit 2 unit preferred power to the loss of Unit 3 preferred power. Likewise, the impact of initiators "LICA" and "LICB" were changed to the loss of I&C bus 3A and I&C bus 3B, respectively.

3.1.7 DEPENDENCIES

The dependency matrices developed for the Multi-Unit PRA (Reference 2) served as the starting point for the identification of Unit 3 dependencies on support systems. As these dependencies were being reviewed, their impact on the split fraction assignment rules developed for the Unit 2 PSA were noted. These impacts are summarized in Table 3-6, which was utilized in the development of split fraction assignment rules for the Unit 3 PSA.

3.2 SYSTEMS ANALYSES

The system analyses performed for the Unit 3 PSA includes the modeling of those electric power systems required to support the successful operation of the Unit 3 mechanical support systems and frontline systems for accident mitigation. In addition, the availability of battery boards 1, 2, and 3 were reanalyzed due to the modification of electric power systems event tree models associated with these battery boards. The sections below discuss the new analysis.

3.2.1 UNIT 3 ELECTRIC POWER SYSTEM MODELS

3.2.1.1 Top Event UB43C — 4-kV Unit Board 3C

Top Event UB43C models 4-kV unit board 3C. The unit board is successful if power is available at the board for the required loads for a period of 24 hours.

3.2.1.2 Top Event CBB — 4-kV Common Board B

Top Event CBB models 4-kV common board B. The common board is successful if power is available at the board for the required loads for a period of 24 hours.

3.2.1.3 Top Event UBX — 4-kV Unit/Common Board System

Top Events UB42C and CBB are combined to model common cause failures. The combined/ intermediate top event for this modeling purpose is UBX. The unit/common board system model is used to evaluate the unavailabilities of the boards. These unavailabilities are used to quantify the conditional split fraction values for Top Events UB42C and CBB.

3.2.1.4 Top Event RJ3 — 480V RMOV Board 3C

Top Event RJ3 is used to model the 480V RMOV board 3C power systems. Top Event RJ3 is successful if 480V RMOV board 3C remains available for 24 hours.

3.2.1.5 Top Event RK3 — 480V RMOV Board 3D

Top Event RK3 is used to model the 480V RMOV board 3D power systems. Top Event RK3 is successful if 480V RMOV board 3D remains available for 24 hours.

3.2.1.6 Top Event RL3 — 480V RMOV Board 3E

Top Event RL3 is used to model the 480V RMOV board 3E power systems. Top Event RL3 is successful if 480V RMOV board 3E remains available for 24 hours.

3.2.1.7 Top Event MOVU3 — Common Cause Failure on 480V RMOV Boards 3D and 3E

Top Events RK3 and RL3 have been combined to model common cause failures. The combined top event is called MOVU3. The RMOV boards system model is used to evaluate the unavailabilities of the RMOV boards. These unavailabilities are used to quantify the conditional split fraction values for Top Events RK3 and RL3.

3.2.1.8 Top Event DJ3 — 120V AC Unit 3 Preferred Power

Top Event DJ3 is used to model the Unit 3 120V AC unit preferred AC power subsystem. The Unit 3 120V AC unit preferred power subsystem is successful if it supplies power for 24 hours.

3.2.1.9 Top Event UNTPFD3 — 120V AC Preferred Power Combined Top Event

Top Events DI (120V AC Unit 1 preferred power) and RJ3 have been combined to model common cause failures and Technical Specifications dependencies. The combined or intermediate top event is called UNTPFD3. The 120V AC preferred power system model is used to evaluate the unavailabilities of the 120V AC Unit 1 and Unit 3 preferred power. These unavailabilities are use to quantify the conditional split fraction values for Top Events DI and DJ3.

3.2.1.10 Top Event DN3 — 120V AC I&C 3A Power System

Top Event DN3 is used to model the 120V AC I&C 3A power system. The 120V AC I&C 3A power system is successful if it is available for 24 hours.

3.2.1.11 Top Event DO3 — 120V AC I&C 3B Power System

Top Event DO3 is used to model the 120V AC I&C 3B power system. The 120V AC I&C 3B power system is successful if it is available for 24 hours.

3.2.1.12 Top Event RB3 — RMOV Board 3A Power System

Top Event RB3 is used to model the 250V RMOV board 3A power system. The 250V RMOV power subsystem is successful if it is available for 24 hours. The 250V RMOV board 3A is powered by 250V battery board 3.

3.2.1.13 Top Event RC3 — RMOV Board 3B Power System

Top Event RC3 is used to model the 250V RMOV board 3B power system. The 250V RMOV power subsystem is successful if it is available for 24 hours. The 250V RMOV board 3B is powered by 250V battery board 1.

3.2.1.14 Top Event RD3 — RMOV Board 3C Power System

Top Event RD3 is used to model the 250V RMOV board 3C power system. The 250V RMOV power subsystem is successful if it is available for 24 hours. The 250V RMOV board 3C is powered by 250V battery board 2.

3.2.2 MODELING OF BATTERY BOARDS 1, 2, AND 3

The models for the battery boards were revised to reflect the transfer of loads from a battery board when the battery board is removed from service for maintenance. In addition, the model was refined to more realistically treat combinations of maintenance and failures on separate boards. Another change in the modeling of the battery boards is the elimination of the contribution to the battery board unavailability due to the extended maintenance outage of a battery board during plant refueling shutdown. It was previously assumed that the battery board can be removed from service for maintenance purpose for a duration equal to about 25% of the refueling outage time. This extended outage duration of a battery board is not permitted by the plant Technical Specifications and models were updated to reflect actual plant practices..

The availability of battery boards 1, 2, and 3 is represented in the plant model by Top Events DE, DH, and DG, respectively, found in the electric power support event tree ELECT12. The order of the top events questioned in the event tree is DH, DE, and DG. The reason for questioning the top events in this order is that the plant model assumes the shifting of the loads of battery board 1 (Top Event DE) or 3 (Top Event DG) to battery

board 2 (Top Event DH) whenever battery board 1 or 3 is removed from service for maintenance purposes.

To ensure a contribution from simultaneous maintenance of more than one battery board to the unavailability of two or more of the battery boards does not occur, an intermediate top event fault tree model representing all three battery boards was constructed using the existing individual battery board fault tree models. Only top event alignments for the removal of one of the battery boards for maintenance were defined. This top event model, therefore, determines the unavailability of two battery boards due to hardware failure of both battery boards, and hardware failure of one battery board and maintenance of the second battery board. The model also determines the unavailability of three battery boards due to hardware failure of two of the battery boards and maintenance of the third battery board. In addition, the intermediate top event also determines the unavailability of an individual battery board due to all causes. The conditional split fractions for Top Events DE, DH, and DG are defined in terms of the unavailabilities or split fractions for battery boards 1, 2, and 3 evaluated from the intermediate top event model. These split fractions are used in the plant model quantification for event sequences in which battery board 2 (Top Event DH) is determined to be unavailable.

To model the shifting of the loads from battery board 1 or 3 to battery board 2 when the battery board 1 or 3 is taken out of service for maintenance purposes, a new set of intermediate and conditional split fractions for Top Events DE and DG were defined. The new split fractions or unavailabilities do not contain any contributions from maintenance activities for battery boards 1and 3. Only contributions from hardware failures are included in these new split fractions. The split fractions are used in the plant model quantification for event sequences in which battery board 2 is available. This implies that when battery board 2 is available, battery boards 1 and 3 can only be unavailable due to hardware failures. Maintenance of battery board 1 or 3 does not contribute to the unavailability of Top Event DE or DG for event sequences in which battery board 2 (Top Event DH) is available due to the shifting of the loads from the battery board 1 or 3 to battery board 2. However, for event sequences in which battery board 1 is not available, then maintenance contributions to the unavailability of battery boards 2 and/or 3 are included.

Table 3-1 (Page 1 of 2). Top Events in Tree ELECT12 as Found in the Unit 2 PSA	
Top Event	**Description**
OG5	500-kV Offsite Grid
OG16	161-kV Offsite Grid
OUB	Operator Restores Power to Unit Boards
UB41A	4-kV Unit Board 1A
UB41B	4-kV Unit Board 1B
UB42A	4-kV Unit Board 2A
UB42B	4-kV Unit Board 2B
SHUT1	Shutdown Bus 1
SHUT2	Shutdown Bus 2
FA	Fuel Oil System for Diesel Generator A
GA	Diesel Generator A
FD	Fuel Oil for Diesel Generator D
GD	Diesel Generator D
FB	Fuel Oil System for Diesel Generator B
GB	Diesel Generator B
FC	Fuel Oil System for Diesel Generator C
ODSB	Operator Aligns Power to Diesel Auxiliary Board for Diesel Generator C
GC	Diesel Generator C
EPR30	Recovery Offsite Power in 30 Minutes
DGC	Common Cause Coupling of Units 1 and 2 and Unit 3 Diesel Generators
AA	4-kV Shutdown Board A
RQ	480V Shutdown Board 1A
RE	480V RMOV Board 1A Power
RM	480V Diesel Auxiliary Board A Power
DA	250V DC Control Power for 4-kV Shutdown Board A and 480 Shutdown Board 1A
DE	Battery Board 1

Table 3-1 (Page 2 of 2). Top Events in Tree ELECT12 as Found in the Unit 2 PSA	
Top Event	**Description**
RD	250V RMOV 2C
AB	4-kV Shutdown Board B
RS	480V Shutdown Board 2A
RH	480V RMOV Board 2A Power
DC	250V DC Control Power for 4-kV Shutdown Board B and 480V Shutdown Board 2A
DH	Battery Board 2
UB42C	4-kV Unit Board 2C Power
RB	250V RMOV Board 2A
DI	120V AC Unit 1 Preferred Power
DK	120V RPS Bus "A"
AC	4-kV Shutdown Board C
RR	480V Shutdown Board 1B
RF	480V RMOV Board 1B Power.
DB	250V Control Power for Shutdown Board C and 480V Shutdown Board 1B
AD	4-kV Shutdown Board D
RT	480V Shutdown Board 2B
RK	480V RMOV Board 2D Power
RL	480V RMOV Board 2E Power
RI	480V RMOV Board 2B Power
RJ	480V RMOV Board 2C Power
RN	480V Diesel Auxiliary Board B Power
DL	120V RPS Bus "B"
DD	250V DC Control Power for Shutdown Board D and 480V Shutdown Board 2B
DO	120V I&C Bus "2B"

Table 3-2. Top Events in Tree ELECT3 as Found in the Unit 2 PSA	
Top Event	**Description**
UB43A	4-kV Unit Board 3A
UB43B	4-kV Unit Board 3B
FE	Fuel Oil System for Diesel Generator 3A
GE	Diesel Generator 3A
A3EA	4-kV Shutdown Board 3EA and 480V Shutdown Board 3A Power
RX	480V Shutdown Board 3A
RO	480V Diesel Auxiliary Board 3EA Power
DG	Battery Board 3
DF	250V DC Control Power for 4-kV Shutdown Board 3EB
DJ	120V AC Unit 2 Preferred Power
DN	120V I&C Bus "2A"
RC	250V RMOV Board 2B
FG	Fuel Oil System for Diesel Generator 3C
GG	Diesel Generator 3C
A3EC	4-kV Shutdown Board 3EC and 480V Shutdown Board 3B
FF	Fuel Oil System for Diesel Generator 3B
GF	Diesel Generator 3B
A3EB	4-kV Shutdown Board 3EB
RY	480V Shutdown Board 3B
RP	480V Diesel Auxiliary Board 3EB Power
FH	Fuel Oil for Diesel Generator 3D
GH	Diesel Generator 3D
A3ED	4-kV Shutdown Board 3ED
SDREC	Shutdown Board Recovery
CPREC	250V DC Division II Control Power Recovery
UBREC	Backfeed "B" Unit Boards for Shutdown Boards
OX	Operator Recovery Actions

Table 3-3. Top Events in Tree ELECT3 as Used in this Study	
Top Event	**Description**
OG5	500-kV Offsite Power Grid
OG16	161-kV Offsite Power Grid
OUB	Operator Restores Power to Unit Boards
UB43A	4-kV Unit Board 3A
UB43B	4-kV Unit Board 3B
FE	Fuel Oil System for Diesel Generator 3A
GE	Diesel Generator 3A
FG	Fuel Oil System for Diesel Generator 3C
GG	Diesel Generator 3C
FF	Fuel Oil System for Diesel Generator 3B
GF	Diesel Generator 3B
FH	Fuel Oil System for Diesel Generator 3D
ODSB	Operator Aligns Power to Diesel Auxiliary Board for Diesel Generator 3D
GH	Diesel Generator 3D
EPR30	Recover Offsite Power by 30 Minutes
DGC	Possibility of Global Common Cause Failure of DGS
A3EA	4-kV Shutdown Board 3EA and 480V Shutdown Board 3A Power
RX	480V Shutdown Board 3A
RO	480V Diesel Auxiliary Board 3EA Power
DF	250V DC Control Power for 4-kV Shutdown Board 3EB
A3EC	4-kV Shutdown Board 3EC and 480V Shutdown Board 3B
A3EB	4-kV Shutdown Board 3EB
RY	480V Shutdown Board 3B
RP	480V Diesel Auxiliary Board 3EB Power
A3ED	4-kV Shutdown Board 3ED

Table 3-4 (Page 1 of 2). Top Events in Tree ELECT12 as Used in this Study	
Top Event	**Description**
UB41A	4-kV Unit Board 1A
UB41B	4-kV Unit Board 1B
UB42A	4-kV Unit Board 2A
UB42B	4-kV Unit Board 2B
SHUT1	Shutdown Bus 1
SHUT2	Shutdown Bus 2
FA	Fuel Oil System for Diesel Generator A
GA	Diesel Generator A
FD	Fuel Oil for Diesel Generator D
GD	Diesel Generator D
FB	Fuel Oil System for Diesel Generator B
GB	Diesel Generator B
FC	Fuel Oil System for Diesel Generator C
ODSBU3	Operators Recover Cooling to Diesel Generator Room C
GC	Diesel Generator C
AA	4-kV Shutdown Board A
RQ	480V Shutdown Board 1A
RE	480V RMOV Board 1A Power
RM	480V Diesel Auxiliary Board A Power
DA	250V DC Control Power for 4-kV Shutdown Board A and 480 Shutdown Board 1A
AB	4-kV Shutdown Board B
RS	480V Shutdown Board 2A
RH	480V RMOV Board 2A Power
DC	250V DC Control Power for 4-kV Shutdown Board B and 480V Shutdown Board 2A
DH	Battery Board 2
DE	Battery Board 1

Table 3-4 (Page 2 of 2). Top Events in Tree ELECT12 as Used in this Study	
Top Event	**Description**
DG	Battery Board 3
RC	250V RMOV Board 2B
RB	250V RMOV Board 2A
RD	250V RMOV Board 2C
DI	120V AC Unit 1 Preferred Power
DK	120V RPS Bus "A"
AC	4-kV Shutdown Board C
RR	480V Shutdown Board 1B
RF	480V RMOV Board 1B Power
DB	250V Control Power for Shutdown Board C and 480V Shutdown Board 1B
AD	4-kV Shutdown Board D
RT	480V Shutdown Board 2B
RK	480V RMOV Board 2D Power
RL	480V RMOV Board 2E Power
RI	480V RMOV Board 2B Power
RJ	480V RMOV Board 2C Power
RN	480V Diesel Auxiliary Board B Power
DL	120V RPS Bus "B"
DD	250V DC Control Power for Shutdown Board D and 480V Shutdown Board 2B
SDREC	Recovery of Power at a 4-kV Shutdown Board
OX	Operator Recovery Actions

Table 3-5. Top Events in Tree ELECT3P as Used in this Study	
Top Event	**Description**
RB3	250V RMOV Board 3A
RC3	250V RMOV Board 3B
RD3	250V RMOV Board 3C
UB42C	4-kV Unit Board 2C
CBB	4-kV Common Board B
UB43C	4-kV Unit Board 3C
RJ3	480V RMOV Board 3C
DO3	120V I&C Bus 3B
DN3	120V I&C Bus 3B
DJ3	120V Unit 3 Preferred Power
RK3	480V RMOV Board 3D
RL3	480V RMOV Board 3E

Table 3-6 (Page 1 of 15). Impact of Unit 3 Dependencies on Split Fraction Assignment Rules Developed for Unit 2			
Event Tree	**Macros/Top Events**	**Replace**	**With**
HPGTET	**Macros**		
	L8FSUP	DH	DG
	HPISUP	RB	RB3
	RCISUP	RD DJ RC	RD3 DJ3 RC3
	L8HSUP	RB	RB3
	L8RSUP	RD RC	RD3 RC3
	POWER	RH RI	RX RY
	PWR4	RB RC RD DE	RB3 RC3 RD3 DH
	PWR6	RB RC RD DE	RB3 RC3 RD3 DH
	Top Events		
	RXS	RB RC DB DD	RB3 RC3 DA DF
	RPT	RB RC DB DD	RB3 RC3 DA DF
	TB	AB UB42A UB42B DH NOGB	DJ3 UB43A UB43B DG NOGE

Table 3-6 (Page 2 of 15). Impact of Unit 3 Dependencies on Split Fraction Assignment Rules Developed for Unit 2			
Event Tree	**Macros/Top Events**	**Replace**	**With**
	BVR	UB42A UB42B	UB43A UB43B
	IVO	RH RI RB RC NOGB NOGD	RX RY RB3 RC3 NOGE NOGG
	IVC	RH RI RB RC NOGB NOGD	RX RY RB3 RC3 NOGE NOGG
	SL	RS DC RT DD RC RH RI NOGB NOGD	RX DE RY DG RC3 RX RY NOGE NOGG
	CD	UB42A UB42B UB42C DH	UB43A UB43B UB43C DG
	FWH	DJ DN	DJ3 DN3
	FWC	DJ DN	DJ3 DN3
	L8F	NOGB NOGD	NOGE NOGG
	ORF	UB42A UB42B	UB43A UB43B

Table 3-6 (Page 3 of 15). Impact of Unit 3 Dependencies on Split Fraction Assignment Rules Developed for Unit 2			
Event Tree	**Macros/Top Events**	**Replace**	**With**
	HRC	RC RB RD	RC3 RB3 RD3
	EPR6	GA GB GC GD	GE GF GG GH
	HPL	GE GB	GB GE
	RCL	GA GE	GB GA
LLOCA1	**Macros**		
	CSISUP	DA AA DC AB RH	DE A3EA DF A3EB RX
	CSIISUP	DB AC DD AD RI	DG A3EC DH A3ED RY
	RPDSUP	AD DD	A3ED DH
	RPBSUP	AC DB	A3EC DG
	RPCSUP	AB DC	A3EB DF
	RPASUP	AA DA	A3EA DE
	POWER	RH RI	RX RY
	LPCI	RL RK	RL3 RK3

Table 3-6 (Page 4 of 15). Impact of Unit 3 Dependencies on Split Fraction Assignment Rules Developed for Unit 2			
Event Tree	**Macros/Top Events**	**Replace**	**With**
	HXAB	RH NOGA	RX NOGA
	HXBB	RI NOGC NOGG	RY NOGC NOGG
	HXCB	RH NOGB NOGF	RX NOGB NOGF
	DV2SUP	DD DB	DF DA
	DV2MIN	DD DB	DF DA
	LOOPIRHR	U1	U2
	Top Events		
	RXS	RB RC DB DD	RB3 RC3 DA DF
	TB	AB UB42A UB42B NOGB DH	DJ3 UB43A UB43B NOGE DG
	IVC	RH RI RB RC NOGB NOGD	RX RY RB3 RC3 NOGE NOGG
	DV1	RB RC RK NOGB NOGD	RB3 RC3 RK3 NOGE NOGG

Table 3-6 (Page 5 of 15). Impact of Unit 3 Dependencies on Split Fraction Assignment Rules Developed for Unit 2			
Event Tree	**Macros/Top Events**	**Replace**	**With**
	DV2	RB RC RK NOGB NOGD RL	RB3 RC3 RK3 NOGE NOGG RL3
	CRD	UB42C	UB43C
	RPA	RH RC NOGA NOGB	RX RC3 NOGE NOGF
	RPC	RH RC RB NOGB	RX RC RB3 NOGF
	RPB	RI RB NOGC NOGD RH	RY RB3 NOGG NOGH RX
	RPD	RI RB RC NOGD RH	RY RB3 RC3 NOGH RX
	HXA	RH NOGA	RX NOGA
	HXC	RH NOGB	RX NOGB
	HXB	RI NOGC NOGG	RY NOGC NOGG
	HXD	RH NOGD NOGH	RY NOGD NOGH
	U3	Replace by U2	

Table 3-6 (Page 6 of 15). Impact of Unit 3 Dependencies on Split Fraction Assignment Rules Developed for Unit 2			
Event Tree	**Macros/Top Events**	**Replace**	**With**
	OSP	U1	U2
	SP	RH RC RI RB	RX RC3 RY RB3
	SPR	RH RC RI RB	RX RC3 RY RB3
	LPC	NOGB NOGD RL RK	NOGF NOGH RL3 RK3
	CS	RB RC	RB3 RC3
	CD	UB42A UB42B DH UB42C	UB43A UB43B DG UB43C
LPGTET	**Macros**		
	Y11	DA AA GA SHUT1 INIT=L500U2	DE A3EA GE UB43A INIT=L500U3
	Y12	DC AB GB SHUT1 INIT=L500U2	DF A3EB GF UB43A INIT=L500U3
	Y21	DB AC GC SHUT2 INIT=L500U2	DG A3EC GG UB43B INIT=L500U3

Table 3-6 (Page 7 of 15). Impact of Unit 3 Dependencies on Split Fraction Assignment Rules Developed for Unit 2			
Event Tree	**Macros/Top Events**	**Replace**	**With**
	Y22	DD AD GD SHUT2 INIT=L500U2	DH A3ED GH UB43B INIT=L500U3
	RHOK	RHOK ABOK AC AA RH RT	RXOK A3EBOK A3ECOK A3EAOK RX RY
	RIOK	RIOK ADOK RI RS	RYOK A3ECOK+ A3EAOK+ A3EBOK RY RX
	RBOK	RBOK RB DH	RB3OK RB3 Delete (CPREC Not Credited)
	RCOK	RCOK RC	RC3OK Delete (CPREC Not Credited)
	RKOK	RKOK ABOK RK	RK3OK A3EAOK RK3
	RLOK	RLOK ADOK RL	RL3OK A3ECOK RL3
	RPASUP	AA RHOK RCOK	AA RXOK RC3OK
	RPBSUP	AC A3EC DB RIOK	ACOK A3ECOK DG RYOK

Table 3-6 (Page 8 of 15). Impact of Unit 3 Dependencies on Split Fraction Assignment Rules Developed for Unit 2

Event Tree	Macros/Top Events	Replace	With
	RPCSUP	ABOK DC RHOK RBOK RCOK	ABOK DF RXOK RB3OK RC3OK
	RPDSUP	ADOK A3ED DD RIOK RBOK RCOK	ADOK A3EDOK DH RYOK RB3OK RC3OK
	CRDSUP1	UB42C	UB43C
	CRDSUP2	AA DA	A3EA DE
	CRDSUP3	No Changes	
	HXASUP	RHOK AA INIT=L500U2	RXOK AA INIT=L500U3
	HXBSUP	RIOK AC A3EC INIT=L500U2	RYOK AC A3EC INIT=L500U3
	HXCSUP	RHOK AB INIT=L500U2	RXOK AB INIT=L500U3
	HXDSUP	RIOK AD A3ED INIT=L500U2	RYOK AD A3ED INIT=L500U3
	LPCI	RKOK RLOK	RK3OK RL3OK
	NPIOK	No Changes (No Credit for CPREC)	
	NPIIOK	No Changes (No Credit for CPREC)	

Table 3-6 (Page 9 of 15). Impact of Unit 3 Dependencies on Split Fraction Assignment Rules Developed for Unit 2			
Event Tree	**Macros/Top Events**	**Replace**	**With**
	GTLOOPIRHR	U1	U2
	GTLOOPIIRHR	U3	Delete
	SPISUP	RHOK NOGB	RXOK NOGF
	SPIISUP	RIOK NOGD	RYOK NOGG
	Top Events		
	HS	UB42A UB42B UB42C DH	UB43A UB43B UB43C DG
	LC	DJ	DJ3
	JC	DJ	DJ3
	CRD	RJ NOGA NOGD DJ	RJ3 NOGE NOGF DJ3
	R480	RH RI AD AB AC	RX RY A3ECOK A3EAOK A3EBOK
	U3	U3 RY RIOK A3EA DE A3EB DF RX U3AP	U2 RYOK RIOK ACOK DB ADOK DD RI U2AP
	U1		Delete

Table 3-6 (Page 10 of 15). Impact of Unit 3 Dependencies on Split Fraction Assignment Rules Developed for Unit 2

Event Tree	Macros/Top Events	Replace	With
	LPC	RKOK RLOK NOGB NOGD	RK3OK RL3OK NOGG NOGF
	CS	RHOK RIOK RB RC	RXOK RYOK RB3 RC3
	SP	RCOK RBOK	RC3OK RB3OK
	SPR	RCOK RBOK	RC3OK RB3OK
	OSP	U3 U1	Delete U2
	SDC	RB RHOK RIOK	RB3 RXOK RYOK
	OLP	RB DH RC DG	RB3 DG RC3 DE
	VNT	RB DH RC DG	RB3 DG RC3 DE
LOCACNTMT	**Macros**		
	RR12	U3 U1	U2 Delete
	RR11	U3 U1	U2 Delete
	RR22	U3 U1	U2 Delete
	RR21	U3 U1	U2 Delete

Table 3-6 (Page 11 of 15). Impact of Unit 3 Dependencies on Split Fraction Assignment Rules Developed for Unit 2			
Event Tree	**Macros/Top Events**	**Replace**	**With**
	HEAT	U3 U1	U2 Delete
	HEATL	U3 U1	U2 Delete
	Top Events		
	DWS	RH RI NOGD NOGB	RX RY NOGE NOGG
	CIL	DN	DN3
	SGT	No Changes	
PRETREE	**Macros**		
	L8TSUP	DH DN DJ	DG DN3 DJ3
	Top Events		
	MSVC	RH RI RB RC	RX RY RB3 RC3
	ISO	RI RC	RY RC3
SIGL	**Top Events**		
	PX1	RC	RC3
	PX2	RC RB	RC3 RB3
	LV	RC RB	RC3 RB3
	NPII	RC RB	RC3 RB3

Table 3-6 (Page 12 of 15). Impact of Unit 3 Dependencies on Split Fraction Assignment Rules Developed for Unit 2			
Event Tree	**Macros/Top Events**	**Replace**	**With**
MESUPT	**Top Events**		
	RBC	DJ DD RI RS DC RT DB RR	DJ3 DG RY RX DE RY DB RR
	DCA	DN DO RH RI	DN3 DO3 RX RY
	CAD	DN DO	DN3 DO3
CNTMT	**Macros**		
	RR12	U3 U1	U2 Delete
	RR11	U3 U1	U2 Delete
	RR22	U3 U1	U2 Delete
	RR21	U3 U1	U2 Delete
	HEAT	U3 U1	U2 Delete
	HEATL	U3 U1	U2 Delete
	Top Events		
	DWS	RH RI NOGD NOGB	RX RY NOGE NOGG
	CIL	DN	DN3

Table 3-6 (Page 13 of 15). Impact of Unit 3 Dependencies on Split Fraction Assignment Rules Developed for Unit 2			
Event Tree	**Macros/Top Events**	**Replace**	**With**
	SGT	No Changes	
MLOCA2	**Macros**		
	HPISUP	RB RC	RB3 RC3
	CSISUP	DA AA DC AB RH	DE A3EA DF A3EB RX
	CSIISUP	DB AC DD AD RI	DG A3EC DH A3ED RY
	RPDSUP	AD DD RI RB RC	A3ED DH RY RB3 RC3
	RPBSUP	AC DB RB	A3EC DG RB3
	RPCSUP	AB DC RH RB RC	A3EB DF RX RB3 RC3
	RPASUP	AA DA RC	A3EA DE RC3
	POWER	RH RI	RX RY
	PWR4	RB RC RD	RB3 RC3 RD3

Table 3-6 (Page 14 of 15). Impact of Unit 3 Dependencies on Split Fraction Assignment Rules Developed for Unit 2			
Event Tree	**Macros/Top Events**	**Replace**	**With**
	PWR6	RB RC RD	RB3 RC3 RD3
	LPCI	RL RK	RL3 RK3
	HXAB	RH NOGA	RX NOGA
	HXBB	RI NOGC NOGG	RY NOGC NOGG
	HXCB	RH NOGB NOGF	RX NOGB NOGF
	LOOPIRHR	U1	U2
	Top Events		
	RXS	RB RC DB DD	RB3 RC3 DA DF
	TB	AB UB42A UB42B NOGB DH	DJ3 UB43A UB43B NOGE DG
	IVC	RH RI RB RC NOGB NOGD	RX RY RB3 RC3 NOGE NOGG
	CRD	UB42C	UB43C
	HXA	RH NOGA	RX NOGA
	HXC	RH NOGB	RX NOGB

Table 3-6 (Page 15 of 15). Impact of Unit 3 Dependencies on Split Fraction Assignment Rules Developed for Unit 2			
Event Tree	**Macros/Top Events**	**Replace**	**With**
	HXB	RI NOGC NOGG	RY NOGC NOGG
	HXD	RI NOGD NOGH	RY NOGD NOGH
	U3	Replace by U2	
	OSP	U1	U2
	SP	RH RC RI RB	RX RC3 RY RB3
	SPR	RH RC RI RB	RX RC3 RY RB3
	LPC	NOGB NOGD RL RK	NOGF NOGH RL3 RK3
	CS	RB RC	RB3 RC3
	CD	UB42A UB42B DH UB42C	UB43A UB43B DG UB43C

4. REFERENCES

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4. "Browns Ferry Unit 2 Individual Plant Examination Revision 1, Interim Order No. 2," R92 950912800, September 1995.

5. PLG, Inc., "Database for Probabilistic Risk Assessment of Light Water Nuclear Power Plants," PLG-0500, 1989 (Proprietary).

6. Sandia National Laboratories, "Analysis of Core Damage Frequency: Peach Bottom, Unit 2: Internal Event Appendices," Appendix D prepared for U.S. Nuclear Regulatory Commission, NUREG-CR/4550 Volume 4, Revision 1, Part 2 (SAND86-2084), 1989.

APPENDIX A. BROWNS FERRY UNIT 3 PSA UNCERTAINTY ANALYSIS

The Browns Ferry Unit 3 PSA uncertainty analysis was performed using the group "All" defined in the model BFNU3M. The number of sequences retained in the important sequence file, "ALL.SEQ," was 2,500. The conditional split fractions in the important sequence files were replaced by the corresponding intermediate split fractions, as listed in Table A-1. The RISKMAN distribution file, CSF.DRA, was updated, incorporating modifications of top events in several systems. In addition, several database variables were developed to represent the distributions of several initiators; this is shown in Table A-2.

The total CDF for the Browns Ferry Unit 3 PSA was calculated with the following results:

- Mean 9.13E-06
- 5th Percentile 1.22E-06
- Median 3.49E-06
- 95th Percentile 1.97E-05

Table A-1 (Page 1 of 6). Split Fraction (SF) Substitutions to Support Core Damage Uncertainty Calculation for Unit 3 PSA			
Top Events in SF Group	**System**	**Split Fractions in SF Group**	**Replace SFs in the Group With**
DH, DE, DG	EP	-DH1 -DGA	-DXGH5
		-DH1 -DE1 -DGB	-DXGH9
		-DGJ	-DYGH3
		-DE3 - DGK	-DYGH5
		-DE3	-DYGH1
		-DH1	-DXGH1
EA, EB, EC, ED	EECW	-ED34	-EE19
		-EC12	-EE18
		-EA2	-EE16
EPR30, EPR6	MISC	-EPR304 (...) -EPR64	-STA6H4
		-EPR302 (...) -EPR63	-STA6H3
		-EPR303 (...) -EPR63	-STA6H3
		-EPR302 (...) -EPR62	-STA6H2
		-EPR301 (...) -EPR62	-STA6H2
		-EPR301 (...) -EPR61	-STA6H1
		-EPR301	-STA301
		-EPR302	-STA302
		-EPR303	-STA303
		-EPR304	-STA304
GE, GG, GF, GH	EP	-GE1 -GG2 -GF4 -GH4	-DG34
		-GE1 -GF2 -GH3	-DG33
		-GH1	-DG31
		-GG1 -GH2	-DG32
		-GF1 -GH2	-DG32
		-GE1 -GH2	-DG32
		-GH5	-DG31

Table A-1 (Page 2 of 6). Split Fraction (SF) Substitutions to Support Core Damage Uncertainty Calculation for Unit 3 PSA			
Top Events in SF Group	**System**	**Split Fractions in SF Group**	**Replace SFs in the Group With**
		-GE1 -FG1 -GF5 -GH7	-FG1 -DG33
		-GG3 -GF5 -GH7	-DG33
		-GE1 -GG2 (-FF1) -GH7	-FH1 -DG33
		-GG1 -GF2 -GH3	-DG33
		-GE1 -GG2 -GH3	-DG33
		-GE1 -GF2	-DG32
		-GG1 -GF2	-DG32
		-GF1	-DG31
		-GG1 -GG2 -GF4	-DG33
		-GF3	-DG31
		-GG1	-DG31
		-GE1 -GG2	-DG32
		-GG3	-DG31
		-GE1	-DG31
GA, GD, GB, GC	EP	-GC1	-DG1
		-GA1 -GC2	-DG2
		-GC3	-DG1
		-GC6	-DG1
		-GB1 -GC2	-DG2
		-GA1 -GB2 -GC4	-DG3
		-GA1 -GD2 -GC4	-DG3
		-GD1 -GB2 -GC4	-DG3
		-GA1 -FB1 -GC5	-FB1 -DG2
		-GB3 -GC5	-DG2
		-GA1 -GC2	-DG2
		-GA1 -GB2	-DG2

Table A-1 (Page 3 of 6). Split Fraction (SF) Substitutions to Support Core Damage Uncertainty Calculation for Unit 3 PSA			
Top Events in SF Group	**System**	**Split Fractions in SF Group**	**Replace SFs in the Group With**
		-GB1	-DG1
		-GA1 -GD2 -GB4	-DG3
		-GB3	-DG1
		-GD1 -GB2	-DG2
		-GB6	-DG1
		-GD3 -GB5	-DG2
		-GA1 (-FD1) -GB5	(-FD1) -DG2
		-GD1	-DG1
		-GA1 -GD2	-DG2
		-GD3	-DG1
		-GA1	-DG1
HXA, HXC, HXB, HXD	RHR	-HXA1 -HXC2 -HXB5 -HXD7	-HX4
		-HXA1 -HXC2 -U22 -HXB5 -HXD7	-U22 -HX4
		-HXC3 -HXB4 -HXD6	-HX3
		-HXD1	-HX1
		-HXD9	-HX1
		-HXB6	-HX1
		-HXB1	-HX1
		-HXC1	-HX1
		-HXC3	-HX1
		-HXA1	-HX1
NPI, NPII	SAI	-NPI1 -NPII2	-NP2
PX1, PX2	SAI	-PX23	-PXI
		-PX11 -PX22	-PXII

Table A-1 (Page 4 of 6). Split Fraction (SF) Substitutions to Support Core Damage Uncertainty Calculation for Unit 3 PSA			
Top Events in SF Group	**System**	**Split Fractions in SF Group**	**Replace SFs in the Group With**
RCI, HPI	RCIC/HPCI	-HPI6	-HRSHP1
		-HPI1	-HRSHP2
		-HPI2	-HRSHP1
		-HPI4	-HRSSY1
		-RCI1	-HRSRC1
RCL, HPL	RCIC/HPCI	-RCL1 -HPL3	-HRXSY1
		-HPL5	-HRXHP1
		-HPL3	-HRXSY1
		-RCL1	-HRXRC1
RPA, RPC, RPB, RPD	RHR	-RPA1 -RPC2 -RPB3 -RPD4	-RPX4
		-RPA1 -RPC2 -RPD10	-RPX3
		-RPB5 -RPD9	-RPX2AC
		-RPB1 -RPD2	-RPX2AC
		-RPA1 -RPD9	-RPX2AC
		-RPD9	-RPX1
		-RPA1 -RPB6 -RPD10	-RPX3
		-RPC3 -RPB6 -RPD10	-RPX3
		-RPB6 -RPD10	-RPX2AC
		-RPA1 -RPC2 (-HX1) -RPD3	(-HX1) -RPX3
		-RPA1 -RPC2 -RPD3	-RPX3
		-RPD1	-RPX1
		-RPD8	-RPX1
		-RPC1 -RPD9	-RPX2AC
		-RPC1 -PRD2	-RPX2AC
		-RPA1 -RPD2	-RPX2AC

Table A-1 (Page 5 of 6). Split Fraction (SF) Substitutions to Support Core Damage Uncertainty Calculation for Unit 3 PSA			
Top Events in SF Group	**System**	**Split Fractions in SF Group**	**Replace SFs in the Group With**
		-RPA1 -RPC2 -U22 -RPB3 -RPD4	-U22 -RPX4
		-RPD6	-RPX1
		-RPC1 -RPB2 -RPD3	-RPX3
		-RPB4 -RPD7	-RPX2AC
		-RPA1 -RPD10	-RPX2AC
		-RPA1 -RPC2 -U22 -RPD10	-U22 -RPX3
		-RPC1 -HX1 -RPD2	-HX1 -RPX2AC
		-RPB6	-RPX1
		-RPB1	-RPX1
		-RPB5	-RPX1
		-RPA1 -RPC2	-RPX2AC
		-RPC3	-RPX1
		-RPC1	-RPX1
		-RPA1	-RPX1
SW2A, SW1A, SW2C, SW1C	RHRSW	-SW1C1	-NB
		-SW1C7	-NB
		-SW2C1	-NA
		-SW1A1	-NB
		-SW2A1	-NA
SW2B, SW1B, SW2D, SW1D	RHRSW	-SW2B1 -SW1B2 -SW2D4 -SW1D6	-SABCD
		-SW1D7	-SB
		-SW1D14	-SB
		-SW1D16	-SB
		-SW1D17	-SB
		-SW1D11	-SB

Table A-1 (Page 6 of 6). Split Fraction (SF) Substitutions to Support Core Damage Uncertainty Calculation for Unit 3 PSA			
Top Events in SF Group	**System**	**Split Fractions in SF Group**	**Replace SFs in the Group With**
		-SW2D1 -SW1D2	-SAC
		-SW1D1	-SB
		-SW2D1	-SA
		-SW2D6	-SA
		-SW2D7	-SA
		-SW2D5	-SA
		-SW1B3	-SB
		-SW1B1	-SB
		-SW2B1 -SW1B2	-SAC
		-SW2B1	-SA
DJ3	EPS	-DJ31	-PRE1A
RK3	EPS	-RK33	-MOV1B
RL3	EPS	-RL36	-MOV1B
Initiator	RBCCW	LRBCCW	RBCIE

Table A-2. Database Variables Representing Distribution of Initiating Events (Lognormal)			
DPD Variable	**Mean**	**Range Factor**	**Initiating Events**
HS2	0.085	4	LOCV PLOC PLFW
HS3	0.057	4	CIV
HS4	0.3	2.5	LOFW
HS5	0.126	5	LOPA
HS6	0.142	3.5	TTWB
HS7	0.09	4	LOSP L500PA

APPENDIX B. LISTING OF TOP 100 SEQUENCES

Figure B-1 presents a listing of the top 100 sequences for the Unit 3 PSA model.

MODEL Name: BFNU3M — Top-Ranking Sequences Contributing to Group : ALL Frequency — 15:53:30 20 MAY 1996
ALL = ALL DAMAGE STATES EXCEPT SUCCESS

Rank No.	Sequence Description	Events: Guaranteed Events/Comments	End State	Frequency (per year)	Percent
1	TURBINE TRIP - AUTOMATIC/MANUAL REACTOR SCRAM FAILURE - CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS) STATE - 1 RELIEF VALVE STUCK OPEN - OPERATOR FAILS TO CONTROL LPI DURING ATWS	- VESSEL INJECTION WITH CRDHS UNAVAILABLE	OIAV	1.01E-07	1.10
2	TURBINE TRIP - AUTOMATIC/MANUAL REACTOR SCRAM FAILURE - OPERATOR FAILS TO START SLC	- RPV DEPRESSURIZATION	MXCV	7.52E-08	.82
3	TURBINE TRIP - AUTOMATIC/MANUAL REACTOR SCRAM FAILURE - STANDBY LIQUID CONTROL SYSTEM UNAVAILABLE - CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS) STATE - 0 RELIEF VALVES STUCK OPEN		MIAV	7.25E-08	.79
4	LOSS OF RAW COOLING WATER - CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS) STATE - 1 RELIEF VALVE STUCK OPEN - RHR PUMP A UNAVAILABLE - RHR PUMP C UNAVAILABLE - RHR PUMP B UNAVAILABLE - RHR PUMP D UNAVAILABLE	- RAW COOLING WATER SYSTEM UNAVAILABLE - MAIN CONDENSER UNAVAILABLE - 1 CND/CND BSTR PUMP, INCLUDES SHORT CYCLE VALVE UNAVAILABL - VESSEL INJECTION WITH CRDHS UNAVAILABLE - UNIT 2 TO UNIT 3 CROSS CONNECT UNAVAILABLE - OPERATOR FAILS TO ESTABLISH TORUS COOLING - RHR LOW PRESSURE INJECTION PATH UNAVAILABLE	PIGV	6.89E-08	.75
5	TOTAL LOSS OF OFFSITE POWER - DG 3A UNAVAILABILITY - DG 3C UNAVAILABLE - DG 3B UNAVAILABLE - DG 3D UNAVAILABLE - RECOVER OFFSITE POWER BY 30 MINUTES - POSSIBILITY OF GLOBAL COMMON CAUSE FAILURE OF DGS - CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS) STATE - 0 RELIEF VALVES STUCK OPEN - FAILURE TO RECOVER ELECTRIC POWER IN 6 HOURS	- 500KV OFFSITE POWER GRID - 161KV OFFSITE POWER GRID - OPERATOR FAILS TO RESTORE POWER TO UNIT BOARDS - 4KV UNIT BD 3A UNAVAILABLE - 4KV UNIT BD 3B UNAVAILABLE - 4KV SD BD 3EA AND 480V SD BD 3A POWER UNAVAILABLE - 480V SHUTDOWN BOARD 3A - 480V DIESEL AUX BD 3EA POWER UNAVAILABLE - 4KV SD BD 3EC AND 480V SD BD 3B UNAVAILABLE - 4KV SD BD 3EB UNAVAILABLE - 480V SHUTDOWN BOARD 3B - 480V DIESEL AUX BD 3EB POWER UNAVAILABLE - 4KV SD BD 3ED UNAVAILABLE - 4KV UNIT BD 1A UNAVAILABLE - 4KV UNIT BD 1B UNAVAILABLE - 4KV UNIT BD 2A UNAVAILABLE - 4KV UNIT BD 2B UNAVAILABLE - SHUTDOWN BUS 1 UNAVAILABLE - SHUTDOWN BUS 2 UNAVAILABLE - DG A UNAVAILABLE - DG D UNAVAILABLE - DG B UNAVAILABLE - DG C UNAVAILABLE - 4KV SD BD A UNAVAILABLE - 480V SHUTDOWN BOARD 1A - 480V RMOV BD 1A POWER UNAVAILABLE - 480V DIESEL AUX. BD A POWER UNAVAILABLE - 4KV SD BD B UNAVAILABLE - 480V SHUTDOWN BOARD 2A - 480V RMOV BD 2A POWER UNAVAILABLE - 120 V RPS BUS "A" UNAVAILABLE - 4KV SD BD C UNAVAILABLE - 480V SHUTDOWN BOARD 1B - 480V RMOV BD 1B POWER UNAVAILABLE - 4KV SD BD D UNAVAILABLE - 480V SHUTDOWN BOARD 2B - 480V RMOV BD 2D POWER UNAVAILABLE - 480V RMOV BD 2E POWER UNAVAILABLE - 480V RMOV BD 2B POWER UNAVAILABLE - 480V RMOV BD 2C POWER UNAVAILABLE - 480V DIESEL AUX BD B POWER UNAVAILABLE	PIGX	6.82E-08	.75

Figure B-1 (Page 1 of 24). Top 100 Sequences in Browns Ferry Unit 3 PSA Model

Rank No.	Sequence Description	Events	Guaranteed Events/Comments	End State	Frequency (per year)	Percent
			- 120 V RPS BUS "B" UNAVAILABLE - 4 KV UNIT BOARD 2C - 4 KV COMMON BOARD B - 4 KV UNIT BOARD 3C - 480 V RMOV BOARD 3C - 120 V I&C BUS 3B - 120 V I&C BUS 3B - 480 V RMOV BOARD 3D - 480 V RMOV BOARD 3E - RAW COOLING WATER SYSTEM UNAVAILABLE - EECW PUMP A UNAVAILABLE - EECW PUMP B UNAVAILABLE - EECW PUMP C UNAVAILABLE - EECW PUMP D UNAVAILABLE - RX BUILDING COMPONENT COOLING WATER SYSTEM UNAVAILABLE - RHRSW PUMP A2 UNAVAILABLE - RHRSW PUMP A1 (SWING PUMP) UNAVAILABLE - RHRSW PUMP B2 UNAVAILABLE - RHRSW PUMP B1 (SWING PUMP) UNAVAILABLE - RHRSW PUMP C2 UNAVAILABLE - RHRSW PUMP C1 (SWING PUMP) UNAVAILABLE - RHRSW PUMP D2 UNAVAILABLE - RHRSW PUMP D1 (SWING PUMP) UNAVAILABLE - PLANT CONTROL AIR SYSTEM UNAVAILABLE - DRYWELL CONTROL AIR SYSTEM UNAVAILABLE - CONTAINMENT ATMOSPHERIC DILUTION - OPERATOR FAILS TO RECOVER EECW (START SWING PUMP) - MSIVS FAIL TO REMAIN OPEN - 1 CND/CND BSTR PUMP, INCLUDES SHORT CYCLE VALVE UNAVAILABL - RCIC UNAVAILABLE LONG TERM - HPCI UNAVAILABLE LONG TERM - VESSEL INJECTION WITH CRDHS UNAVAILABLE - OPERATOR FAILS TO MANUALLY START RHR/CORE SPRAY - FAILURE TO RECOVER 480V RMOV BDS 2A OR 2B - RHR PUMP A UNAVAILABLE - RHR PUMP C UNAVAILABLE - UNIT 2 TO UNIT 3 CROSS CONNECT UNAVAILABLE - RHR PUMP B UNAVAILABLE - RHR PUMP D UNAVAILABLE - OPERATOR FAILS TO ESTABLISH TORUS COOLING - RHR LOW PRESSURE INJECTION PATH UNAVAILABLE			
6	LOSS OF RAW COOLING WATER - CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS) STATE - 0 RELIEF VALVES STUCK OPEN - RCIC UNAVAILABLE (6 HOURS) - HPCI UNAVAILABLE (6 HOURS) - RPV DEPRESSURIZATION		- RAW COOLING WATER SYSTEM UNAVAILABLE - MAIN CONDENSER UNAVAILABLE - 1 CND/CND BSTR PUMP, INCLUDES SHORT CYCLE VALVE UNAVAILABL - VESSEL INJECTION WITH CRDHS UNAVAILABLE	MIAV	5.98E-08	.66
7	CLOSURE OF ALL MSIVS - AUTOMATIC/MANUAL REACTOR SCRAM FAILURE - OPERATOR FAILS TO START SLC		- MSIVS FAIL TO REMAIN OPEN - RPV DEPRESSURIZATION	MKCV	5.48E-08	.60
8	TOTAL LOSS OF OFFSITE POWER - DG 3D UNAVAILABLE - RECOVER OFFSITE POWER BY 30 MINUTES - DG A UNAVAILABLE - DG D UNAVAILABLE - DG B UNAVAILABLE - CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS) STATE - 0 RELIEF VALVES STUCK OPEN - FAILURE TO RECOVER ELECTRIC POWER IN 6 HOURS		- 500KV OFFSITE POWER GRID - 161KV OFFSITE POWER GRID - OPERATOR FAILS TO RESTORE POWER TO UNIT BOARDS - 4KV UNIT BD 3A UNAVAILABLE - 4KV UNIT BD 3B UNAVAILABLE - 4KV SD BD 3ED UNAVAILABLE - 4KV UNIT BD 1A UNAVAILABLE - 4KV UNIT BD 1B UNAVAILABLE - 4KV UNIT BD 2A UNAVAILABLE - 4KV UNIT BD 2B UNAVAILABLE - SHUTDOWN BUS 1 UNAVAILABLE	PLFX	4.93E-08	.54

Figure B-1 (Page 2 of 24). Top 100 Sequences in Browns Ferry Unit 3 PSA Model

MODEL Name: BFNU3M — Top-Ranking Sequences Contributing to Group : ALL Frequency — 15:53:30 20 MAY 1996
ALL = ALL DAMAGE STATES EXCEPT SUCCESS

Rank No.	Sequence Description	Events: Guaranteed Events/Comments	End State	Frequency (per year)	Percent
		- SHUTDOWN BUS 2 UNAVAILABLE - DG C UNAVAILABLE - 4KV SD BD A UNAVAILABLE - 480V SHUTDOWN BOARD 1A - 480V RMOV BD 1A POWER UNAVAILABLE - 480V DIESEL AUX. BD A POWER UNAVAILABLE - 4KV SD BD B UNAVAILABLE - 480V SHUTDOWN BOARD 2A - 480V RMOV BD 2A POWER UNAVAILABLE - 120 V RPS BUS "A" UNAVAILABLE - 4KV SD BD C UNAVAILABLE - 480V SHUTDOWN BOARD 1B - 480V RMOV BD 1B POWER UNAVAILABLE - 4KV SD BD D UNAVAILABLE - 480V SHUTDOWN BOARD 2B - 480V RMOV BD 2D POWER UNAVAILABLE - 480V RMOV BD 2E POWER UNAVAILABLE - 480V RMOV BD 2B POWER UNAVAILABLE - 480V RMOV BD 2C POWER UNAVAILABLE - 480V DIESEL AUX BD B POWER UNAVAILABLE - 120 V RPS BUS "B" UNAVAILABLE - 4 KV UNIT BOARD 2C - 4 KV COMMON BOARD B - 4 KV UNIT BOARD 3C - RAW COOLING WATER SYSTEM UNAVAILABLE - EECW PUMP B UNAVAILABLE - RHRSW PUMP A2 UNAVAILABLE - RHRSW PUMP A1 (SWING PUMP) UNAVAILABLE - RHRSW PUMP B2 UNAVAILABLE - RHRSW PUMP C2 UNAVAILABLE - RHRSW PUMP C1 (SWING PUMP) UNAVAILABLE - RHRSW PUMP D2 UNAVAILABLE - RHRSW PUMP D1 (SWING PUMP) UNAVAILABLE - PLANT CONTROL AIR SYSTEM UNAVAILABLE - DRYWELL CONTROL AIR SYSTEM UNAVAILABLE - MSIVS FAIL TO REMAIN OPEN - 1 CND/CND BSTR PUMP, INCLUDES SHORT CYCLE VALVE UNAVAILABL - RCIC UNAVAILABLE LONG TERM - HPCI UNAVAILABLE LONG TERM - VESSEL INJECTION WITH CRDHS UNAVAILABLE - RHR HEAT EXCHANGER A UNAVAILABLE - RHR HEAT EXCHANGER C UNAVAILABLE - UNIT 2 TO UNIT 3 CROSS CONNECT UNAVAILABLE - RHR PUMP D UNAVAILABLE - RHR HEAT EXCHANGER D UNAVAILABLE - OPERATOR FAILS TO ESTABLISH TORUS COOLING - OPERATOR FAILS TO ESTABLISH SHUTDOWN COOLING			
9	CLOSURE OF ALL MSIVS - CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS) STATE - 0 RELIEF VALVES STUCK OPEN - RCIC UNAVAILABLE (6 HOURS) - HPCI UNAVAILABLE (6 HOURS) - RPV DEPRESSURIZATION - VESSEL INJECTION WITH CRDHS UNAVAILABLE	- MSIVS FAIL TO REMAIN OPEN - RPM HARDWARE UNAVAILABLE - OPERATOR FAILS TO INHIBIT CLOSURE OF MSIVS ON LEVEL	MIAV	4.84E-08	.53
10	TOTAL LOSS OF OFFSITE POWER - DG 3C UNAVAILABLE - RECOVER OFFSITE POWER BY 30 MINUTES - DG A UNAVAILABLE - DG D UNAVAILABLE - DG B UNAVAILABLE - CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS) STATE - 0 RELIEF VALVES STUCK OPEN	- 500KV OFFSITE POWER GRID - 161KV OFFSITE POWER GRID - OPERATOR FAILS TO RESTORE POWER TO UNIT BOARDS - 4KV UNIT BD 3A UNAVAILABLE - 4KV UNIT BD 3B UNAVAILABLE - 4KV SD BD 3EC AND 480V SD BD 3B UNAVAILABLE - 480V SHUTDOWN BOARD 3B - 480V DIESEL AUX BD 3EB POWER UNAVAILABLE	PLPX	4.71E-08	.52

Figure B-1 (Page 3 of 24). Top 100 Sequences in Browns Ferry Unit 3 PSA Model

Rank No.	Sequence Description	Events: Guaranteed Events/Comments	End State	Frequency (per year)	Percent
	- FAILURE TO RECOVER ELECTRIC POWER IN 6 HOURS	- 4KV UNIT BD 1A UNAVAILABLE - 4KV UNIT BD 1B UNAVAILABLE - 4KV UNIT BD 2A UNAVAILABLE - 4KV UNIT BD 2B UNAVAILABLE - SHUTDOWN BUS 1 UNAVAILABLE - SHUTDOWN BUS 2 UNAVAILABLE - DG C UNAVAILABLE - 4KV SD BD A UNAVAILABLE - 480V SHUTDOWN BOARD 1A - 480V RMOV BD 1A POWER UNAVAILABLE - 480V DIESEL AUX. BD A POWER UNAVAILABLE - 4KV SD BD B UNAVAILABLE - 480V SHUTDOWN BOARD 2A - 480V RMOV BD 2A POWER UNAVAILABLE - 120 V RPS BUS "A" UNAVAILABLE - 4KV SD BD C UNAVAILABLE - 480V SHUTDOWN BOARD 1B - 480V RMOV BD 1B POWER UNAVAILABLE - 4KV SD BD D UNAVAILABLE - 480V SHUTDOWN BOARD 2B - 480V RMOV BD 2D POWER UNAVAILABLE - 480V RMOV BD 2E POWER UNAVAILABLE - 480V RMOV BD 2B POWER UNAVAILABLE - 480V RMOV BD 2C POWER UNAVAILABLE - 480V DIESEL AUX BD B POWER UNAVAILABLE - 120 V RPS BUS "B" UNAVAILABLE - 4 KV UNIT BOARD 3C - 4 KV COMMON BOARD B - 4 KV UNIT BOARD 3C - 480 V RMOV BOARD 3C - 120 V I&C BUS 3B - RAW COOLING WATER SYSTEM UNAVAILABLE - RECW PUMP B UNAVAILABLE - RX BUILDING COMPONENT COOLING WATER SYSTEM UNAVAILABLE - RHRSW PUMP A2 UNAVAILABLE - RHRSW PUMP A1 (SWING PUMP) UNAVAILABLE - RHRSW PUMP B2 UNAVAILABLE - RHRSW PUMP B1 (SWING PUMP) UNAVAILABLE - RHRSW PUMP C2 UNAVAILABLE - RHRSW PUMP C1 (SWING PUMP) UNAVAILABLE - RHRSW PUMP D2 UNAVAILABLE - PLANT CONTROL AIR SYSTEM UNAVAILABLE - DRYWELL CONTROL AIR SYSTEM UNAVAILABLE - MSIVS FAIL TO REMAIN OPEN - 1 CND/CND BSTR PUMP, INCLUDES SHORT CYCLE VALVE UNAVAILABL - RCIC UNAVAILABLE LONG TERM - HPCI UNAVAILABLE LONG TERM - VESSEL INJECTION WITH CRDHS UNAVAILABLE - RHR HEAT EXCHANGER A UNAVAILABLE - RHR HEAT EXCHANGER C UNAVAILABLE - UNIT 2 TO UNIT 3 CROSS CONNECT UNAVAILABLE - RHR PUMP B UNAVAILABLE - OPERATOR FAILS TO ESTABLISH TORUS COOLING - OPERATOR FAILS TO ESTABLISH SHUTDOWN COOLING			
11	TOTAL LOSS OF OFFSITE POWER - CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS) STATE - 0 RELIEF VALVES STUCK OPEN - RCIC UNAVAILABLE (6 HOURS) - HPCI UNAVAILABLE (6 HOURS) - RPV DEPRESSURIZATION	- 500KV OFFSITE POWER GRID - 161KV OFFSITE POWER GRID - OPERATOR FAILS TO RESTORE POWER TO UNIT BOARDS - 4KV UNIT BD 3A UNAVAILABLE - 4KV UNIT BD 3B UNAVAILABLE - 4KV UNIT BD 1A UNAVAILABLE - 4KV UNIT BD 1B UNAVAILABLE - 4KV UNIT BD 2A UNAVAILABLE - 4KV UNIT BD 2B UNAVAILABLE	MIAV	4.67E-08	.51

Figure B-1 (Page 4 of 24). Top 100 Sequences in Browns Ferry Unit 3 PSA Model

Rank No.	Sequence Description	Events: Guaranteed Events/Comments	End State	Frequency (per year)	Percent
		- 4 KV UNIT BOARD 2C - 4 KV COMMON BOARD B - 4 KV UNIT BOARD 3C - RAW COOLING WATER SYSTEM UNAVAILABLE - MSIVS FAIL TO REMAIN OPEN - 1 CND/CND BSTR PUMP, INCLUDES SHORT CYCLE VALVE UNAVAILABL - VESSEL INJECTION WITH CRDHS UNAVAILABLE			
12	INTERFACING SYSTEM LOCA		NJAZ	4.63E-08	.51
13	TOTAL LOSS OF OFFSITE POWER - DG 3B UNAVAILABLE - RECOVER OFFSITE POWER BY 30 MINUTES - DG A UNAVAILABLE - DG D UNAVAILABLE - DG B UNAVAILABLE - CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS) STATE - 0 RELIEF VALVES STUCK OPEN - FAILURE TO RECOVER ELECTRIC POWER IN 6 HOURS	- 500KV OFFSITE POWER GRID - 161KV OFFSITE POWER GRID - OPERATOR FAILS TO RESTORE POWER TO UNIT BOARDS - 4KV UNIT BD 3A UNAVAILABLE - 4KV UNIT BD 3B UNAVAILABLE - 4KV SD BD 3EB UNAVAILABLE - 4KV UNIT BD 1A UNAVAILABLE - 4KV UNIT BD 1B UNAVAILABLE - 4KV UNIT BD 2A UNAVAILABLE - 4KV UNIT BD 2B UNAVAILABLE - SHUTDOWN BUS 1 UNAVAILABLE - SHUTDOWN BUS 2 UNAVAILABLE - DG C UNAVAILABLE - 4KV SD BD A UNAVAILABLE - 480V SHUTDOWN BOARD 1A - 480V RMOV BD 1A POWER UNAVAILABLE - 480V DIESEL AUX. BD A POWER UNAVAILABLE - 4KV SD BD B UNAVAILABLE - 480V SHUTDOWN BOARD 2A - 480V RMOV BD 2A POWER UNAVAILABLE - 120 V RPS BUS "A" UNAVAILABLE - 4KV SD BD C UNAVAILABLE - 480V SHUTDOWN BOARD 1B - 480V RMOV BD 1B POWER UNAVAILABLE - 4KV SD BD D UNAVAILABLE - 480V SHUTDOWN BOARD 2B - 480V RMOV BD 2D POWER UNAVAILABLE - 480V RMOV BD 2E POWER UNAVAILABLE - 480V RMOV BD 2B POWER UNAVAILABLE - 480V RMOV BD 2C POWER UNAVAILABLE - 480V DIESEL AUX BD B POWER UNAVAILABLE - 120 V RPS BUS "B" UNAVAILABLE - 4 KV UNIT BOARD 2C - 4 KV COMMON BOARD B - 4 KV UNIT BOARD 3C - RAW COOLING WATER SYSTEM UNAVAILABLE - EECW PUMP B UNAVAILABLE - EECW PUMP C UNAVAILABLE - EECW PUMP D UNAVAILABLE - RX BUILDING COMPONENT COOLING WATER SYSTEM UNAVAILABLE - RHRSW PUMP A2 UNAVAILABLE - RHRSW PUMP A1 (SWING PUMP) UNAVAILABLE - RHRSW PUMP B2 UNAVAILABLE - RHRSW PUMP C2 UNAVAILABLE - RHRSW PUMP C1 (SWING PUMP) UNAVAILABLE - RHRSW PUMP D2 UNAVAILABLE - PLANT CONTROL AIR SYSTEM UNAVAILABLE - DRYWELL CONTROL AIR SYSTEM UNAVAILABLE - MSIVS FAIL TO REMAIN OPEN - 1 CND/CND BSTR PUMP, INCLUDES SHORT CYCLE VALVE UNAVAILABL - RCIC UNAVAILABLE LONG TERM - HPCI UNAVAILABLE LONG TERM - VESSEL INJECTION WITH CRDHS UNAVAILABLE - RHR HEAT EXCHANGER A UNAVAILABLE	PLPX	4.58E-08	.50

Figure B-1 (Page 5 of 24). Top 100 Sequences in Browns Ferry Unit 3 PSA Model

MODEL Name: BFNU3M — Top-Ranking Sequences Contributing to Group : ALL Frequency — 15:53:30 20 MAY 1996
ALL - ALL DAMAGE STATES EXCEPT SUCCESS

Rank No.	Sequence Description	Events / Guaranteed Events/Comments	End State	Frequency (per year)	Percent
		- RHR PUMP C UNAVAILABLE - UNIT 2 TO UNIT 3 CROSS CONNECT UNAVAILABLE - RHR HEAT EXCHANGER D UNAVAILABLE - OPERATOR FAILS TO ESTABLISH TORUS COOLING - OPERATOR FAILS TO ESTABLISH SHUTDOWN COOLING			
14	LOSS OF RAW COOLING WATER - CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS) STATE - 1 RELIEF VALVE STUCK OPEN - OPERATOR FAILS TO ESTABLISH TORUS COOLING	- RAW COOLING WATER SYSTEM UNAVAILABLE - MAIN CONDENSER UNAVAILABLE - 1 CND/CND BSTR PUMP, INCLUDES SHORT CYCLE VALVE UNAVAILABL - VESSEL INJECTION WITH CRDHS UNAVAILABLE	OLCV	4.50E-08	.49
15	TOTAL LOSS OF OFFSITE POWER - DG 3A UNAVAILABILITY - RECOVER OFFSITE POWER BY 30 MINUTES - DG A UNAVAILABLE - DG D UNAVAILABLE - DG B UNAVAILABLE - CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS) STATE - 0 RELIEF VALVES STUCK OPEN - FAILURE TO RECOVER ELECTRIC POWER IN 6 HOURS	- 500KV OFFSITE POWER GRID - 161KV OFFSITE POWER GRID - OPERATOR FAILS TO RESTORE POWER TO UNIT BOARDS - 4KV UNIT BD 3A UNAVAILABLE - 4KV UNIT BD 3B UNAVAILABLE - 4KV SD BD 3EA AND 480V SD BD 3A POWER UNAVAILABLE - 480V SHUTDOWN BOARD 3A - 480V DIESEL AUX BD 3EA POWER UNAVAILABLE - 4KV UNIT BD 1A UNAVAILABLE - 4KV UNIT BD 1B UNAVAILABLE - 4KV UNIT BD 2A UNAVAILABLE - 4KV UNIT BD 2B UNAVAILABLE - SHUTDOWN BUS 1 UNAVAILABLE - SHUTDOWN BUS 2 UNAVAILABLE - DG C UNAVAILABLE - 4KV SD BD A UNAVAILABLE - 480V SHUTDOWN BOARD 1A - 480V RMOV BD 1A POWER UNAVAILABLE - 480V DIESEL AUX. BD A POWER UNAVAILABLE - 4KV SD BD B UNAVAILABLE - 480V SHUTDOWN BOARD 2A - 480V RMOV BD 2A POWER UNAVAILABLE - 120 V RPS BUS "A" UNAVAILABLE - 4KV SD BD C UNAVAILABLE - 480V SHUTDOWN BOARD 1B - 480V RMOV BD 1B POWER UNAVAILABLE - 4KV SD BD D UNAVAILABLE - 480V SHUTDOWN BOARD 2B - 480V RMOV BD 2D POWER UNAVAILABLE - 480V RMOV BD 2E POWER UNAVAILABLE - 480V RMOV BD 2B POWER UNAVAILABLE - 480V RMOV BD 2C POWER UNAVAILABLE - 480V DIESEL AUX BD B POWER UNAVAILABLE - 120 V RPS BUS "B" UNAVAILABLE - 4 KV UNIT BOARD 2C - 4 KV COMMON BOARD B - 4 KV UNIT BOARD 3C - 120 V I&C BUS 3B - RAW COOLING WATER SYSTEM UNAVAILABLE - EECW PUMP A UNAVAILABLE - EECW PUMP B UNAVAILABLE - EECW PUMP D UNAVAILABLE - RX BUILDING COMPONENT COOLING WATER SYSTEM UNAVAILABLE - RHRSW PUMP A2 UNAVAILABLE - RHRSW PUMP A1 (SWING PUMP) UNAVAILABLE - RHRSW PUMP B2 UNAVAILABLE - RHRSW PUMP C2 UNAVAILABLE - RHRSW PUMP C1 (SWING PUMP) UNAVAILABLE - RHRSW PUMP D2 UNAVAILABLE - PLANT CONTROL AIR SYSTEM UNAVAILABLE - DRYWELL CONTROL AIR SYSTEM UNAVAILABLE - MSIVS FAIL TO REMAIN OPEN - 1 CND/CND BSTR PUMP, INCLUDES SHORT CYCLE VALVE UNAVAILABL	PLFX	4.47E-08	.49

Figure B-1 (Page 6 of 24). Top 100 Sequences in Browns Ferry Unit 3 PSA Model

MODEL Name: BFNU3M — Top-Ranking Sequences Contributing to Group : ALL Frequency — 15:53:30 20 MAY 1996
ALL = ALL DAMAGE STATES EXCEPT SUCCESS

Rank No.	Sequence Description	Events: Guaranteed Events/Comments	End State	Frequency (per year)	Percent
		- RCIC UNAVAILABLE LONG TERM - HPCI UNAVAILABLE LONG TERM - VESSEL INJECTION WITH CRDHS UNAVAILABLE - RHR PUMP A UNAVAILABLE - RHR HEAT EXCHANGER C UNAVAILABLE - UNIT 2 TO UNIT 3 CROSS CONNECT UNAVAILABLE - RHR HEAT EXCHANGER D UNAVAILABLE - OPERATOR FAILS TO ESTABLISH TORUS COOLING - OPERATOR FAILS TO ESTABLISH SHUTDOWN COOLING			
16	FLOOD FROM THE TORUS - TURBINE TRIP FAILURE - CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS) STATE - 0 RELIEF VALVES STUCK OPEN - UNIT 2 TO UNIT 3 CROSS CONNECT UNAVAILABLE	- SUPPRESSION POOL (TORUS) UNAVAILABLE - RPW HARDWARE UNAVAILABLE - RCIC UNAVAILABLE (6 HOURS) - HPCI UNAVAILABLE (6 HOURS) - OPERATOR FAILS TO DEPRESSURIZE USING TBV'S - VESSEL INJECTION WITH CRDHS UNAVAILABLE - OPERATOR FAILS TO MANUALLY START RHR/CORE SPRAY - RHR PUMP A UNAVAILABLE - RHR PUMP C UNAVAILABLE - RHR PUMP B UNAVAILABLE - RHR PUMP D UNAVAILABLE - OPERATOR FAILS TO ESTABLISH TORUS COOLING - OPERATOR FAILS TO ESTABLISH SHUTDOWN COOLING - OPERATOR FAILS TO START CS/LPCI OR TO ESTAB TORUS VENT	PJAV	4.40E-08	.48
17	FLOOD FROM THE TORUS - RHRSW PUMP B2 UNAVAILABLE - TURBINE TRIP FAILURE - CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS) STATE - 0 RELIEF VALVES STUCK OPEN	- SUPPRESSION POOL (TORUS) UNAVAILABLE - RPW HARDWARE UNAVAILABLE - RCIC UNAVAILABLE (6 HOURS) - HPCI UNAVAILABLE (6 HOURS) - OPERATOR FAILS TO DEPRESSURIZE USING TBV'S - VESSEL INJECTION WITH CRDHS UNAVAILABLE - OPERATOR FAILS TO MANUALLY START RHR/CORE SPRAY - RHR PUMP A UNAVAILABLE - RHR PUMP C UNAVAILABLE - UNIT 2 TO UNIT 3 CROSS CONNECT UNAVAILABLE - RHR PUMP B UNAVAILABLE - RHR PUMP D UNAVAILABLE - OPERATOR FAILS TO ESTABLISH TORUS COOLING - OPERATOR FAILS TO ESTABLISH SHUTDOWN COOLING - OPERATOR FAILS TO START CS/LPCI OR TO ESTAB TORUS VENT	PJAV	3.65E-08	.40
18	SMALL LOSS OF COOLANT ACCIDENT (LOCA) - AUTOMATIC/MANUAL REACTOR SCRAM FAILURE	- CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS) STATE - 1 RELIEF VALVE STUCK OPEN - VESSEL INJECTION WITH CRDHS UNAVAILABLE	OIAV	3.63E-08	.40
19	FLOOD FROM THE TORUS - TBVS FAIL TO RELIEVE\MAINTAIN RX PRESSURE - CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS) STATE - 0 RELIEF VALVES STUCK OPEN - UNIT 2 TO UNIT 3 CROSS CONNECT UNAVAILABLE	- SUPPRESSION POOL (TORUS) UNAVAILABLE - RPW HARDWARE UNAVAILABLE - RCIC UNAVAILABLE (6 HOURS) - HPCI UNAVAILABLE (6 HOURS) - OPERATOR FAILS TO DEPRESSURIZE USING TBV'S - VESSEL INJECTION WITH CRDHS UNAVAILABLE - OPERATOR FAILS TO MANUALLY START RHR/CORE SPRAY - RHR PUMP A UNAVAILABLE - RHR PUMP C UNAVAILABLE - RHR PUMP B UNAVAILABLE - RHR PUMP D UNAVAILABLE - OPERATOR FAILS TO ESTABLISH TORUS COOLING - OPERATOR FAILS TO ESTABLISH SHUTDOWN COOLING - OPERATOR FAILS TO START CS/LPCI OR TO ESTAB TORUS VENT	PJAV	3.56E-08	.39
20	INADVERTENT OPENING OF THREE OR MORE SRVS - OPERATOR FAILS TO ESTABLISH TORUS COOLING	- CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS) STATE - 3 OR MORE VALVES STUCK OPEN - OPERATOR FAILS TO ESTABLISH SHUTDOWN COOLING	OLCV	3.35E-08	.37

Figure B-1 (Page 7 of 24). Top 100 Sequences in Browns Ferry Unit 3 PSA Model

MODEL Name: BFNU3H

Top-Ranking Sequences Contributing to Group : ALL Frequency
ALL = ALL DAMAGE STATES EXCEPT SUCCESS

15:53:30 20 MAY 1996

Rank No.	Sequence Description	Events	Guaranteed Events/Comments	End State	Frequency (per year)	Percent
21	TOTAL LOSS OF OFFSITE POWER - FUEL OIL SYSTEM FOR DIESEL 3A UNAVAILABLE - FUEL OIL SYSTEM FOR DIESEL 3C UNAVAILABLE - FUEL OIL SYSTEM FOR DIESEL 3B UNAVAILABLE - FUEL OIL SYSTEM FOR DIESEL 3D UNAVAILABLE - RECOVER OFFSITE POWER BY 30 MINUTES - CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS) STATE - 0 RELIEF VALVES STUCK OPEN - FAILURE TO RECOVER ELECTRIC POWER IN 6 HOURS		- 500KV OFFSITE POWER GRID - 161KV OFFSITE POWER GRID - OPERATOR FAILS TO RESTORE POWER TO UNIT BOARDS - 4KV UNIT BD 3A UNAVAILABLE - 4KV UNIT BD 3B UNAVAILABLE - DG 3A UNAVAILABILITY - DG 3C UNAVAILABLE - DG 3B UNAVAILABLE - DG 3D UNAVAILABLE - 4KV SD BD 3EA AND 480V SD BD 3A POWER UNAVAILABLE - 480V SHUTDOWN BOARD 3A - 480V DIESEL AUX BD 3EA POWER UNAVAILABLE - 4KV SD BD 3EC AND 480V SD BD 3B UNAVAILABLE - 4KV SD BD 3EB UNAVAILABLE - 480V SHUTDOWN BOARD 3B - 480V DIESEL AUX BD 3EB POWER UNAVAILABLE - 4KV SD BD 3ED UNAVAILABLE - 4KV UNIT BD 1A UNAVAILABLE - 4KV UNIT BD 1B UNAVAILABLE - 4KV UNIT BD 2A UNAVAILABLE - 4KV UNIT BD 2B UNAVAILABLE - SHUTDOWN BUS 1 UNAVAILABLE - SHUTDOWN BUS 2 UNAVAILABLE - FUEL OIL SYSTEM FOR DIESEL A UNAVAILABLE - DG A UNAVAILABLE - FUEL OIL FOR DIESEL D UNAVAILABLE - DG D UNAVAILABLE - FUEL OIL SYSTEM FOR DIESEL B UNAVAILABLE - DG B UNAVAILABLE - FUEL OIL SYSTEM FOR DIESEL C UNAVAILABLE - DG C UNAVAILABLE - 4KV SD BD A UNAVAILABLE - 480V SHUTDOWN BOARD 1A - 480V RMOV BD 1A POWER UNAVAILABLE - 480V DIESEL AUX. BD A POWER UNAVAILABLE - 4KV SD BD B UNAVAILABLE - 480V SHUTDOWN BOARD 2A - 480V RMOV BD 2A POWER UNAVAILABLE - 120 V RPS BUS "A" UNAVAILABLE - 4KV SD BD C UNAVAILABLE - 480V SHUTDOWN BOARD 1B - 480V RMOV BD 1B POWER UNAVAILABLE - 4KV SD BD D UNAVAILABLE - 480V SHUTDOWN BOARD 2B - 480V RMOV BD 2D POWER UNAVAILABLE. - 480V RMOV BD 2E POWER UNAVAILABLE - 480V RMOV BD 2B POWER UNAVAILABLE - 480V RMOV BD 2C POWER UNAVAILABLE - 480V DIESEL AUX BD B POWER UNAVAILABLE - 120 V RPS BUS "B" UNAVAILABLE - 4 KV UNIT BOARD 2C - 4 KV COMMON BOARD B - 4 KV UNIT BOARD 3C - 480 V RMOV BOARD 3C - 120 V I&C BUS 3B - 120 V I&C BUS 3B - 480 V RMOV BOARD 3D - 480 V RMOV BOARD 3E - RAW COOLING WATER SYSTEM UNAVAILABLE - ERCW PUMP A UNAVAILABLE - ERCW PUMP B UNAVAILABLE - ERCW PUMP C UNAVAILABLE - ERCW PUMP D UNAVAILABLE - RX BUILDING COMPONENT COOLING WATER SYSTEM UNAVAILABLE	PIGX	3.27E-08	.36

Figure B-1 (Page 8 of 24). Top 100 Sequences in Browns Ferry Unit 3 PSA Model

Rank No.	Sequence Description	Events	Guaranteed Events/Comments	End State	Frequency (per year)	Percent
			- RHRSW PUMP A2 UNAVAILABLE - RHRSW PUMP A1 (SWING PUMP) UNAVAILABLE - RHRSW PUMP B2 UNAVAILABLE - RHRSW PUMP B1 (SWING PUMP) UNAVAILABLE - RHRSW PUMP C2 UNAVAILABLE - RHRSW PUMP C1 (SWING PUMP) UNAVAILABLE - RHRSW PUMP D2 UNAVAILABLE - RHRSW PUMP D1 (SWING PUMP) UNAVAILABLE - PLANT CONTROL AIR SYSTEM UNAVAILABLE - DRYWELL CONTROL AIR SYSTEM UNAVAILABLE - CONTAINMENT ATMOSPHERIC DILUTION - OPERATOR FAILS TO RECOVER EECW (START SWING PUMP) - MSIVS FAIL TO REMAIN OPEN - 1 CND/CND BSTR PUMP, INCLUDES SHORT CYCLE VALVE UNAVAILABL - RCIC UNAVAILABLE LONG TERM - HPCI UNAVAILABLE LONG TERM - VESSEL INJECTION WITH CRDHS UNAVAILABLE - OPERATOR FAILS TO MANUALLY START RHR/CORE SPRAY - FAILURE TO RECOVER 480V RMOV BDS 2A OR 2B - RHR PUMP A UNAVAILABLE - RHR PUMP C UNAVAILABLE - UNIT 2 TO UNIT 3 CROSS CONNECT UNAVAILABLE - RHR PUMP B UNAVAILABLE - RHR PUMP D UNAVAILABLE - OPERATOR FAILS TO ESTABLISH TORUS COOLING - RHR LOW PRESSURE INJECTION PATH UNAVAILABLE			
22	LOSS OF RAW COOLING WATER - CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS) STATE - 0 RELIEF VALVES STUCK OPEN - RHR PUMP A UNAVAILABLE - RHR PUMP C UNAVAILABLE - RHR PUMP B UNAVAILABLE - RHR PUMP D UNAVAILABLE - OPERATOR FAILS TO MAINTAIN HPCI/RCIC W/O SPC		- RAW COOLING WATER SYSTEM UNAVAILABLE - MAIN CONDENSER UNAVAILABLE - 1 CND/CND BSTR PUMP, INCLUDES SHORT CYCLE VALVE UNAVAILABL - VESSEL INJECTION WITH CRDHS UNAVAILABLE - UNIT 2 TO UNIT 3 CROSS CONNECT UNAVAILABLE - OPERATOR FAILS TO ESTABLISH TORUS COOLING - RHR LOW PRESSURE INJECTION PATH UNAVAILABLE	NIGV	3.26E-08	.36
23	LOSS OF PLANT AIR - 250 V DC CONTROL POWER FOR 4KV SD BD 3EA AND 480 V SD BD 3EA UNAVAIL- - 250 V DC CONTROL POWER FOR 4KV SD BD 3EC AND 480 V SD BD 3EB UNAVAIL- - CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS) STATE - 0 RELIEF VALVES STUCK OPEN		- 250 V RMOV BD 2B UNAVAILABLE 250 RMOV BD 2C UNAVAILABLE - 250 V RMOV BOARD 3A - 250 V RMOV BOARD 3B - POWER SUPPLY DIVISION I UNAVAILABLE - POWER SUPPLY DIVISION II UNAVAILABLE - VESSEL LEVEL SIGNAL UNAVAILABLE - DIV I VESSEL LOW PRESSURE SIGNAL UNAVAILABLE - DIV II VESSEL LOW PRESSURE SIGNAL UNAVAILABLE - DIV I HI RX PRESS SIGNAL UNAVAILABLE - DIV II HI RX PRESS SIGNAL UNAVAILABLE - RHRSW PUMP B1 (SWING PUMP) UNAVAILABLE - PLANT CONTROL AIR SYSTEM UNAVAILABLE - DRYWELL CONTROL AIR SYSTEM UNAVAILABLE - MSIVS FAIL TO REMAIN OPEN - RPV HARDWARE UNAVAILABLE - RCIC UNAVAILABLE (6 HOURS) - HPCI UNAVAILABLE (6 HOURS) - OPERATOR FAILS TO INHIBIT CLOSURE OF MSIVS ON LEVEL - STARTUP BYPASS VALVE UNAVAILABLE - RHR PUMP A UNAVAILABLE - RHR PUMP C UNAVAILABLE - UNIT 2 TO UNIT 3 CROSS CONNECT UNAVAILABLE - RHR PUMP B UNAVAILABLE - RHR PUMP D UNAVAILABLE - OPERATOR FAILS TO ESTABLISH TORUS COOLING - RHR LOW PRESSURE INJECTION PATH UNAVAILABLE - OPERATOR FAILS TO START CS/LPCI OR TO ESTAB TORUS VENT	PIPV	3.21E-08	.35

Figure B-1 (Page 9 of 24). Top 100 Sequences in Browns Ferry Unit 3 PSA Model

MODEL Name: BFNU3M — Top-Ranking Sequences Contributing to Group : ALL Frequency — 15:53:30 20 MAY 1996
ALL = ALL DAMAGE STATES EXCEPT SUCCESS

Rank No.	Sequence Description	Events	Guaranteed Events/Comments	End State	Frequency (per year)	Percent
24	LOSS OF ALL CONDENSATE		- 250 V RMOV BD 2B UNAVAILABLE	PIHV	3.12E-08	.34
	- 250 V DC CONTROL POWER FOR 4KV SD BD 3EA AND 480 V SD BD 3EA UNAVAIL-		- 250 RMOV BD 2C UNAVAILABLE			
	- 250 V DC CONTROL POWER FOR 4KV SD BD 3EC AND 480 V SD BD 3EB UNAVAIL-		- 250 V RMOV BOARD 3A			
	- CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS)		- 250 V RMOV BOARD 3B			
	STATE - 0 RELIEF VALVES STUCK OPEN		- POWER SUPPLY DIVISION I UNAVAILABLE			
			- POWER SUPPLY DIVISION II UNAVAILABLE			
			- VESSEL LEVEL SIGNAL UNAVAILABLE			
			- DIV I VESSEL LOW PRESSURE SIGNAL UNAVAILABLE			
			- DIV II VESSEL LOW PRESSURE SIGNAL UNAVAILABLE			
			- DIV I HI RX PRESS SIGNAL UNAVAILABLE			
			- DIV II HI RX PRESS SIGNAL UNAVAILABLE			
			- MAIN CONDENSER UNAVAILABLE			
			- 1 CND/CND BSTR PUMP, INCLUDES SHORT CYCLE VALVE UNAVAILABL			
			- RCIC UNAVAILABLE (6 HOURS)			
			- HPCI UNAVAILABLE (6 HOURS)			
			- VESSEL INJECTION WITH CRDHS UNAVAILABLE			
			- RHR PUMP A UNAVAILABLE			
			- RHR PUMP C UNAVAILABLE			
			- RHR PUMP B UNAVAILABLE			
			- RHR PUMP D UNAVAILABLE			
			- TORUS COOLING HARDWARE UNAVAILABLE			
			- CS LOW PRESSURE INJECTION UNAVAILABLE			
			- RHR LOW PRESSURE INJECTION PATH UNAVAILABLE			
25	(SMALL) FLOOD IN THE TURBINE BUILDING		- MAIN CONDENSER UNAVAILABLE	PIEV	3.10E-08	.34
	- CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS)		- 1 CND/CND BSTR PUMP, INCLUDES SHORT CYCLE VALVE UNAVAILABL			
	STATE - 1 RELIEF VALVE STUCK OPEN		- UNIT 2 TO UNIT 3 CROSS CONNECT UNAVAILABLE			
	- RHR PUMP A UNAVAILABLE		- OPERATOR FAILS TO ESTABLISH TORUS COOLING			
	- RHR PUMP C UNAVAILABLE		- RHR LOW PRESSURE INJECTION PATH UNAVAILABLE			
	- RHR PUMP B UNAVAILABLE					
	- RHR PUMP D UNAVAILABLE					
26	LOSS OF CONDENSER VACUUM		- MAIN CONDENSER UNAVAILABLE	MIAV	2.98E-08	.33
	- CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS)		- RPV HARDWARE UNAVAILABLE			
	STATE - 0 RELIEF VALVES STUCK OPEN		- OPERATOR FAILS TO DEPRESSURIZE USING TBV'S			
	- RCIC UNAVAILABLE (6 HOURS)					
	- HPCI UNAVAILABLE (6 HOURS)					
	- RPV DEPRESSURIZATION					
	- VESSEL INJECTION WITH CRDHS UNAVAILABLE					
27	FLOOD FROM THE TORUS		- SUPPRESSION POOL (TORUS) UNAVAILABLE	PJAV	2.95E-08	.32
	- RHRSW PUMP B2 UNAVAILABLE		- RPV HARDWARE UNAVAILABLE			
	- TBVS FAIL TO RELIEVE\MAINTAIN RX PRESSURE		- RCIC UNAVAILABLE (6 HOURS)			
	- CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS)		- HPCI UNAVAILABLE (6 HOURS)			
	STATE - 0 RELIEF VALVES STUCK OPEN		- OPERATOR FAILS TO DEPRESSURIZE USING TBV'S			
			- VESSEL INJECTION WITH CRDHS UNAVAILABLE			
			- OPERATOR FAILS TO MANUALLY START RHR/CORE SPRAY			
			- RHR PUMP A UNAVAILABLE			
			- RHR PUMP C UNAVAILABLE			
			- UNIT 2 TO UNIT 3 CROSS CONNECT UNAVAILABLE			
			- RHR PUMP B UNAVAILABLE			
			- RHR PUMP D UNAVAILABLE			
			- OPERATOR FAILS TO ESTABLISH TORUS COOLING			
			- OPERATOR FAILS TO ESTABLISH SHUTDOWN COOLING			
			- OPERATOR FAILS TO START CS/LPCI OR TO ESTAB TORUS VENT			
28	CLOSURE OF ALL MSIVS		- MSIVS FAIL TO REMAIN OPEN	MIBV	2.94E-08	.32
	- AUTOMATIC/MANUAL REACTOR SCRAM FAILURE		- OPERATOR FAILS TO COOLDOWN USING THE TBVS			
	- CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS)		- OPERATOR FAILS TO ESTABLISH TORUS COOLING			
	STATE - 0 RELIEF VALVES STUCK OPEN					
	- RHR PUMP D UNAVAILABLE					
29	CLOSURE OF ALL MSIVS		- MSIVS FAIL TO REMAIN OPEN	MIBV	2.94E-08	.32

Figure B-1 (Page 10 of 24). Top 100 Sequences in Browns Ferry Unit 3 PSA Model

MODEL Name: BFNU3M — Top-Ranking Sequences Contributing to Group : ALL Frequency — 15:53:30 20 MAY 1996
ALL = ALL DAMAGE STATES EXCEPT SUCCESS

Rank No.	Sequence Description	Events	Guaranteed Events/Comments	End State	Frequency (per year)	Percent
	- AUTOMATIC/MANUAL REACTOR SCRAM FAILURE - CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS) STATE - 0 RELIEF VALVES STUCK OPEN - RHR PUMP B UNAVAILABLE		- OPERATOR FAILS TO COOLDOWN USING THE TBVS - OPERATOR FAILS TO ESTABLISH TORUS COOLING			
30	TURBINE TRIP WITHOUT BYPASS - AUTOMATIC/MANUAL REACTOR SCRAM FAILURE - OPERATOR FAILS TO START SLC		- TBVS FAIL TO RELIEVE\MAINTAIN RX PRESSURE - RPV DEPRESSURIZATION	MKCV	2.86E-08	.31
31	INADVERTENT OPENING OF ONE SRV - AUTOMATIC/MANUAL REACTOR SCRAM FAILURE - OPERATOR FAILS TO CONTROL LPI DURING ATWS		- CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS) STATE - 1 RELIEF VALVE STUCK OPEN - VESSEL INJECTION WITH CRDHS UNAVAILABLE	OIAV	2.83E-08	.31
32	TOTAL LOSS OF OFFSITE POWER - DG 3C UNAVAILABLE - RECOVER OFFSITE POWER BY 30 MINUTES - DG A UNAVAILABLE - DG B UNAVAILABLE - DG C UNAVAILABLE - CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS) STATE - 0 RELIEF VALVES STUCK OPEN - FAILURE TO RECOVER ELECTRIC POWER IN 6 HOURS		- 500KV OFFSITE POWER GRID - 161KV OFFSITE POWER GRID - OPERATOR FAILS TO RESTORE POWER TO UNIT BOARDS - 4KV UNIT BD 3A UNAVAILABLE - 4KV UNIT BD 3B UNAVAILABLE - 4KV SD BD 3EC AND 480V SD BD 3B UNAVAILABLE - 480V SHUTDOWN BOARD 3B - 480V DIESEL AUX BD 3EB POWER UNAVAILABLE - 4KV UNIT BD 1A UNAVAILABLE - 4KV UNIT BD 1B UNAVAILABLE - 4KV UNIT BD 2A UNAVAILABLE - 4KV UNIT BD 2B UNAVAILABLE - SHUTDOWN BUS 1 UNAVAILABLE - SHUTDOWN BUS 2 UNAVAILABLE - 4KV SD BD A UNAVAILABLE - 480V SHUTDOWN BOARD 1A - 480V RMOV BD 1A POWER UNAVAILABLE - 480V DIESEL AUX. BD A POWER UNAVAILABLE - 4KV SD BD B UNAVAILABLE - 480V SHUTDOWN BOARD 2A - 480V RMOV BD 2A POWER UNAVAILABLE - 120 V RPS BUS "A" UNAVAILABLE - 4KV SD BD C UNAVAILABLE - 480V SHUTDOWN BOARD 1B - 480V RMOV BD 1B POWER UNAVAILABLE - 4 KV UNIT BOARD 2C - 4 KV COMMON BOARD B - 4 KV UNIT BOARD 3C - 480 V RMOV BOARD 3C - RAW COOLING WATER SYSTEM UNAVAILABLE - RECW PUMP B UNAVAILABLE - RX BUILDING COMPONENT COOLING WATER SYSTEM UNAVAILABLE - RHRSW PUMP A2 UNAVAILABLE - RHRSW PUMP A1 (SWING PUMP) UNAVAILABLE - RHRSW PUMP B2 UNAVAILABLE - RHRSW PUMP B1 (SWING PUMP) UNAVAILABLE - RHRSW PUMP C2 UNAVAILABLE - RHRSW PUMP C1 (SWING PUMP) UNAVAILABLE - PLANT CONTROL AIR SYSTEM UNAVAILABLE - DRYWELL CONTROL AIR SYSTEM UNAVAILABLE - MSIVS FAIL TO REMAIN OPEN - 1 CND/CND BSTR PUMP, INCLUDES SHORT CYCLE VALVE UNAVAILABL - RCIC UNAVAILABLE LONG TERM - HPCI UNAVAILABLE LONG TERM - VESSEL INJECTION WITH CRDHS UNAVAILABLE. - RHR HEAT EXCHANGER A UNAVAILABLE - RHR HEAT EXCHANGER C UNAVAILABLE - UNIT 2 TO UNIT 3 CROSS CONNECT UNAVAILABLE - RHR PUMP B UNAVAILABLE - OPERATOR FAILS TO ESTABLISH TORUS COOLING - OPERATOR FAILS TO ESTABLISH SHUTDOWN COOLING	PLPV	2.75E-08	.30

Figure B-1 (Page 11 of 24). Top 100 Sequences in Browns Ferry Unit 3 PSA Model

MODEL Name: BFNU3M — Top-Ranking Sequences Contributing to Group : ALL Frequency — 15:53:30 20 MAY 1996
ALL = ALL DAMAGE STATES EXCEPT SUCCESS

Rank No.	Sequence Description	Events	Guaranteed Events/Comments	End State	Frequency (per year)	Percent
33	CLOSURE OF ALL MSIVS - AUTOMATIC/MANUAL REACTOR SCRAM FAILURE - CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS) STATE - 1 RELIEF VALVE STUCK OPEN - OPERATOR FAILS TO CONTROL LPI DURING ATWS		- MSIVS FAIL TO REMAIN OPEN - OPERATOR FAILS TO COOLDOWN USING THE TBVS - VESSEL INJECTION WITH CRDHS UNAVAILABLE	OIAV	2.74E-08	.30
34	TURBINE TRIP WITHOUT BYPASS - CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS) STATE - 0 RELIEF VALVES STUCK OPEN - RCIC UNAVAILABLE (6 HOURS) - HPCI UNAVAILABLE (6 HOURS) - RPV DEPRESSURIZATION - VESSEL INJECTION WITH CRDHS UNAVAILABLE		- TBVS FAIL TO RELIEVE\MAINTAIN RX PRESSURE - RPM HARDWARE UNAVAILABLE - OPERATOR FAILS TO DEPRESSURIZE USING TBV'S	MIAV	2.52E-08	.28
35	TURBINE TRIP - CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS) STATE - 3 OR MORE VALVES STUCK OPEN - OPERATOR FAILS TO ESTABLISH TORUS COOLING		- OPERATOR FAILS TO ESTABLISH SHUTDOWN COOLING	OLCV	2.42E-08	.26
36	CLOSURE OF ALL MSIVS - AUTOMATIC/MANUAL REACTOR SCRAM FAILURE - STANDBY LIQUID CONTROL SYSTEM UNAVAILABLE - CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS) STATE - 0 RELIEF VALVES STUCK OPEN		- MSIVS FAIL TO REMAIN OPEN	OIAV	2.34E-08	.26
37	PARTIAL LOSS OF FEEDWATER - AUTOMATIC/MANUAL REACTOR SCRAM FAILURE - CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS) STATE - 1 RELIEF VALVE STUCK OPEN - OPERATOR FAILS TO CONTROL LPI DURING ATWS		- VESSEL INJECTION WITH CRDHS UNAVAILABLE	OIAV	2.30E-08	.25
38	TOTAL LOSS OF FEEDWATER - AUTOMATIC/MANUAL REACTOR SCRAM FAILURE - CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS) STATE - 0 RELIEF VALVES STUCK OPEN - RHR PUMP D UNAVAILABLE		- RPM HARDWARE UNAVAILABLE - OPERATOR FAILS TO ESTABLISH TORUS COOLING	MIBV	2.30E-08	.25
39	TOTAL LOSS OF FEEDWATER - AUTOMATIC/MANUAL REACTOR SCRAM FAILURE - CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS) STATE - 0 RELIEF VALVES STUCK OPEN - RHR PUMP B UNAVAILABLE		- RPM HARDWARE UNAVAILABLE - OPERATOR FAILS TO ESTABLISH TORUS COOLING	MIBV	2.30E-08	.25
40	INADVERTENT (OTHER) SCRAM - CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS) STATE - 3 OR MORE VALVES STUCK OPEN - OPERATOR FAILS TO ESTABLISH TORUS COOLING		- OPERATOR FAILS TO ESTABLISH SHUTDOWN COOLING	OLCV	2.23E-08	.24
41	TOTAL LOSS OF FEEDWATER - AUTOMATIC/MANUAL REACTOR SCRAM FAILURE - CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS) STATE - 1 RELIEF VALVE STUCK OPEN - OPERATOR FAILS TO CONTROL LPI DURING ATWS		- RPM HARDWARE UNAVAILABLE - VESSEL INJECTION WITH CRDHS UNAVAILABLE	OIAV	2.14E-08	.23
42	CLOSURE OF ALL MSIVS - AUTOMATIC/MANUAL REACTOR SCRAM FAILURE - CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS) STATE - 0 RELIEF VALVES STUCK OPEN - RHR PUMP B UNAVAILABLE - RHR PUMP D UNAVAILABLE		- MSIVS FAIL TO REMAIN OPEN - OPERATOR FAILS TO COOLDOWN USING THE TBVS - OPERATOR FAILS TO ESTABLISH TORUS COOLING	MIBV	2.02E-08	.22
43	LOSS OF RAW COOLING WATER - 250 V DC CONTROL POWER FOR 4KV SD BD 3EA AND 480 V SD BD 3EA UNAVAIL-		- 250 V RMOV BD 2B UNAVAILABLE 250 RMOV BD 2C UNAVAILABLE	PIHV	1.99E-08	.22

Figure B-1 (Page 12 of 24). Top 100 Sequences in Browns Ferry Unit 3 PSA Model

Rank No.	Sequence Description	Events / Guaranteed Events/Comments	End State	Frequency (per year)	Percent
	- 250 V DC CONTROL POWER FOR 4KV SD BD 3EC AND 480 V SD BD 3EB UNAVAIL - CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS) STATE - 0 RELIEF VALVES STUCK OPEN	- 250 V RMOV BOARD 3A - 250 V RMOV BOARD 3B - POWER SUPPLY DIVISION I UNAVAILABLE - POWER SUPPLY DIVISION II UNAVAILABLE - VESSEL LEVEL SIGNAL UNAVAILABLE - DIV I VESSEL LOW PRESSURE SIGNAL UNAVAILABLE - DIV II VESSEL LOW PRESSURE SIGNAL UNAVAILABLE - DIV I HI RX PRESS SIGNAL UNAVAILABLE - DIV II HI RX PRESS SIGNAL UNAVAILABLE - RAW COOLING WATER SYSTEM UNAVAILABLE - RHRSW PUMP B1 (SWING PUMP) UNAVAILABLE - MAIN CONDENSER UNAVAILABLE - 1 CND/CND BSTR PUMP, INCLUDES SHORT CYCLE VALVE UNAVAILABL - RCIC UNAVAILABLE (6 HOURS) - HPCI UNAVAILABLE (6 HOURS) - VESSEL INJECTION WITH CRDHS UNAVAILABLE - RHR PUMP A UNAVAILABLE - RHR PUMP C UNAVAILABLE - UNIT 2 TO UNIT 3 CROSS CONNECT UNAVAILABLE - RHR PUMP B UNAVAILABLE - RHR PUMP D UNAVAILABLE - OPERATOR FAILS TO ESTABLISH TORUS COOLING - RHR LOW PRESSURE INJECTION PATH UNAVAILABLE - OPERATOR FAILS TO START CS/LPCI OR TO ESTAB TORUS VENT			
44	TOTAL LOSS OF OFFSITE POWER - DG 3C UNAVAILABLE - DG 3D UNAVAILABLE - RECOVER OFFSITE POWER BY 30 MINUTES - DG A UNAVAILABLE - DG B UNAVAILABLE - CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS) STATE - 0 RELIEF VALVES STUCK OPEN - FAILURE TO RECOVER ELECTRIC POWER IN 6 HOURS	- 500KV OFFSITE POWER GRID - 161KV OFFSITE POWER GRID - OPERATOR FAILS TO RESTORE POWER TO UNIT BOARDS - 4KV UNIT BD 3A UNAVAILABLE - 4KV UNIT BD 3B UNAVAILABLE - 4KV SD BD 3EC AND 480V SD BD 3B UNAVAILABLE - 480V SHUTDOWN BOARD 3B - 480V DIESEL AUX BD 3EB POWER UNAVAILABLE - 4KV SD BD 3ED UNAVAILABLE - 4KV UNIT BD 1A UNAVAILABLE - 4KV UNIT BD 1B UNAVAILABLE - 4KV UNIT BD 2A UNAVAILABLE - 4KV UNIT BD 2B UNAVAILABLE - SHUTDOWN BUS 1 UNAVAILABLE - SHUTDOWN BUS 2 UNAVAILABLE - 4KV SD BD A UNAVAILABLE - 480V SHUTDOWN BOARD 1A - 480V RMOV BD 1A POWER UNAVAILABLE - 480V DIESEL AUX. BD A POWER UNAVAILABLE - 4KV SD BD B UNAVAILABLE - 480V SHUTDOWN BOARD 2A - 480V RMOV BD 2A POWER UNAVAILABLE - 120 V RPS BUS "A" UNAVAILABLE - 4 KV UNIT BOARD 2C - 4 KV COMMON BOARD B - 4 KV UNIT BOARD 3C - 480 V RMOV BOARD 3C - RAW COOLING WATER SYSTEM UNAVAILABLE - RX BUILDING COMPONENT COOLING WATER SYSTEM UNAVAILABLE - RHRSW PUMP A2 UNAVAILABLE - RHRSW PUMP A1 (SWING PUMP) UNAVAILABLE - RHRSW PUMP B1 (SWING PUMP) UNAVAILABLE - RHRSW PUMP C2 UNAVAILABLE - RHRSW PUMP C1 (SWING PUMP) UNAVAILABLE - RHRSW PUMP D1 (SWING PUMP) UNAVAILABLE - PLANT CONTROL AIR SYSTEM UNAVAILABLE - DRYWELL CONTROL AIR SYSTEM UNAVAILABLE - MSIVS FAIL TO REMAIN OPEN - 1 CND/CND BSTR PUMP, INCLUDES SHORT CYCLE VALVE UNAVAILABL	PLFX	1.99E-08	.22

Figure B-1 (Page 13 of 24). Top 100 Sequences in Browns Ferry Unit 3 PSA Model

MODEL Name: BFNU3M — Top-Ranking Sequences Contributing to Group : ALL Frequency — 15:53:30 20 MAY 1996
ALL = ALL DAMAGE STATES EXCEPT SUCCESS

Rank No.	Sequence Description	Events: Guaranteed Events/Comments	End State	Frequency (per year)	Percent
		- RCIC UNAVAILABLE LONG TERM - HPCI UNAVAILABLE LONG TERM - VESSEL INJECTION WITH CRDHS UNAVAILABLE - RHR HEAT EXCHANGER A UNAVAILABLE - RHR HEAT EXCHANGER C UNAVAILABLE - UNIT 2 TO UNIT 3 CROSS CONNECT UNAVAILABLE - RHR PUMP B UNAVAILABLE - RHR PUMP D UNAVAILABLE - OPERATOR FAILS TO ESTABLISH TORUS COOLING - OPERATOR FAILS TO ESTABLISH SHUTDOWN COOLING			
45	SCRAM REQUIRED (MANUAL SCRAMS) - AUTOMATIC/MANUAL REACTOR SCRAM FAILURE - CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS) STATE - 1 RELIEF VALVE STUCK OPEN - OPERATOR FAILS TO CONTROL LPI DURING ATWS	- VESSEL INJECTION WITH CRDHS UNAVAILABLE	OIAV	1.95E-08	.21
46	RECIRC DISCHARGE LINE BREAK - RHR PUMP A UNAVAILABLE - RHR PUMP C UNAVAILABLE - RHR PUMP B UNAVAILABLE - RHR PUMP D UNAVAILABLE	- CROSS CONNECT TO UNIT 2 RHR SYSTEM UNAVAILABLE - OPERATOR FAILS TO INITIATE SP COOLING - CONTAINMENT VENT UNAVAILABLE	OLFV	1.93E-08	.21
47	TOTAL LOSS OF FEEDWATER - AUTOMATIC/MANUAL REACTOR SCRAM FAILURE - OPERATOR FAILS TO START SLC	- RPV DEPRESSURIZATION	HKCV	1.90E-08	.21
48	LOSS OF RAW COOLING WATER - CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS) STATE - 1 RELIEF VALVE STUCK OPEN - RHR HEAT EXCHANGER A UNAVAILABLE - RHR HEAT EXCHANGER C UNAVAILABLE - RHR HEAT EXCHANGER B UNAVAILABLE - RHR HEAT EXCHANGER D UNAVAILABLE	- RAW COOLING WATER SYSTEM UNAVAILABLE - MAIN CONDENSER UNAVAILABLE - 1 CND/CND BSTR PUMP, INCLUDES SHORT CYCLE VALVE UNAVAILABL - VESSEL INJECTION WITH CRDHS UNAVAILABLE - UNIT 2 TO UNIT 3 CROSS CONNECT UNAVAILABLE - OPERATOR FAILS TO ESTABLISH TORUS COOLING - OPERATOR FAILS TO ESTABLISH SHUTDOWN COOLING	PLFV	1.88E-08	.21
49	MEDIUM LOCA - RHR PUMP A UNAVAILABLE - RHR PUMP C UNAVAILABLE - RHR PUMP B UNAVAILABLE - RHR PUMP D UNAVAILABLE	- CROSS CONNECT TO UNIT 2 RHR SYSTEM UNAVAILABLE - OPERATOR FAILS TO INITIATE SP COOLING - CONTAINMENT VENT UNAVAILABLE	OLFV	1.88E-08	.21
50	LOSS OF UNIT 2 120V PREFERRED POWER - CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS) STATE - 0 RELIEF VALVES STUCK OPEN - HPCI UNAVAILABLE (6 HOURS) - RPV DEPRESSURIZATION - VESSEL INJECTION WITH CRDHS UNAVAILABLE	- 120 V UNIT 3 PREFERRED POWER - TURBINE TRIP FAILURE - RPN HARDWARE UNAVAILABLE - RCIC UNAVAILABLE (6 HOURS) - OPERATOR FAILS TO DEPRESSURIZE USING TBV'S	MIAV	1.87E-08	.20
51	LOSS OF CONDENSER VACUUM - AUTOMATIC/MANUAL REACTOR SCRAM FAILURE - CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS) STATE - 0 RELIEF VALVES STUCK OPEN - RHR PUMP D UNAVAILABLE	- MAIN CONDENSER UNAVAILABLE - RPN HARDWARE UNAVAILABLE - OPERATOR FAILS TO ESTABLISH TORUS COOLING	MIBV	1.82E-08	.20
52	LOSS OF CONDENSER VACUUM - AUTOMATIC/MANUAL REACTOR SCRAM FAILURE - CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS) STATE - 0 RELIEF VALVES STUCK OPEN - RHR PUMP B UNAVAILABLE	- MAIN CONDENSER UNAVAILABLE - RPN HARDWARE UNAVAILABLE - OPERATOR FAILS TO ESTABLISH TORUS COOLING	MIBV	1.82E-08	.20
53	CLOSURE OF ALL MSIVS - AUTOMATIC/MANUAL REACTOR SCRAM FAILURE - CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS) STATE - 0 RELIEF VALVES STUCK OPEN	- MSIVS FAIL TO REMAIN OPEN - OPERATOR FAILS TO COOLDOWN USING THE TBVS - OPERATOR FAILS TO ESTABLISH TORUS COOLING	MIBV	1.82E-08	.20

Figure B-1 (Page 14 of 24). Top 100 Sequences in Browns Ferry Unit 3 PSA Model

Rank No.	Sequence Description	Events: Guaranteed Events/Comments	End State	Frequency (per year)	Percent
	- RHR HEAT EXCHANGER D UNAVAILABLE				
54	CLOSURE OF ALL MSIVS - AUTOMATIC/MANUAL REACTOR SCRAM FAILURE - CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS) STATE - 0 RELIEF VALVES STUCK OPEN - RHR HEAT EXCHANGER B UNAVAILABLE	- MSIVS FAIL TO REMAIN OPEN - OPERATOR FAILS TO COOLDOWN USING THE TBVS - OPERATOR FAILS TO ESTABLISH TORUS COOLING	MIBV	1.82E-08	.20
55	CLOSURE OF ALL MSIVS - SUPPRESSION POOL (TORUS) UNAVAILABLE - CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS) STATE - 0 RELIEF VALVES STUCK OPEN - RCIC UNAVAILABLE (6 HOURS)	- MSIVS FAIL TO REMAIN OPEN - RPV HARDWARE UNAVAILABLE - HPCI UNAVAILABLE (6 HOURS) - OPERATOR FAILS TO INHIBIT CLOSURE OF MSIVS ON LEVEL - RHR PUMP B UNAVAILABLE - RHR PUMP D UNAVAILABLE - OPERATOR FAILS TO ESTABLISH TORUS COOLING - OPERATOR FAILS TO ESTABLISH SHUTDOWN COOLING - OPERATOR FAILS TO START CS/LPCI OR TO ESTAB TORUS VENT	PLFV	1.80E-08	.20
56	TURBINE TRIP - UNIT 2 NOT AT POWER - AUTOMATIC/MANUAL REACTOR SCRAM FAILURE - CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS) STATE - 1 RELIEF VALVE STUCK OPEN - OPERATOR FAILS TO CONTROL LPI DURING ATWS	- VESSEL INJECTION WITH CRDHS UNAVAILABLE	OIAV	1.78E-08	.19
57	PARTIAL LOSS OF FEEDWATER - AUTOMATIC/MANUAL REACTOR SCRAM FAILURE - OPERATOR FAILS TO START SLC	- RPV DEPRESSURIZATION	MKCV	1.75E-08	.19
58	RECIRC DISCHARGE LINE BREAK - 480V SHUTDOWN BOARD 3A - RHR PUMP B UNAVAILABLE - RHR PUMP D UNAVAILABLE	- 480V DIESEL AUX BD 3EA POWER UNAVAILABLE - RX BUILDING COMPONENT COOLING WATER SYSTEM UNAVAILABLE - DRYWELL CONTROL AIR SYSTEM UNAVAILABLE - RHR PUMP A UNAVAILABLE - RHR PUMP C UNAVAILABLE - CROSS CONNECT TO UNIT 2 RHR SYSTEM UNAVAILABLE - OPERATOR FAILS TO INITIATE SP COOLING - CONTAINMENT VENT UNAVAILABLE	OLFV	1.72E-08	.19
59	LOSS OF CONDENSER VACUUM - AUTOMATIC/MANUAL REACTOR SCRAM FAILURE - CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS) STATE - 1 RELIEF VALVE STUCK OPEN - OPERATOR FAILS TO CONTROL LPI DURING ATWS	- MAIN CONDENSER UNAVAILABLE - RPV HARDWARE UNAVAILABLE - VESSEL INJECTION WITH CRDHS UNAVAILABLE	OIAV	1.70E-08	.19
60	CORE SPRAY LINE BREAK - 480V SHUTDOWN BOARD 3A	- 480V DIESEL AUX BD 3EA POWER UNAVAILABLE - RX BUILDING COMPONENT COOLING WATER SYSTEM UNAVAILABLE - DRYWELL CONTROL AIR SYSTEM UNAVAILABLE - ONE CORE SPRAY LOOP FAILS TO INJECT - RHR PUMP A UNAVAILABLE - RHR PUMP C UNAVAILABLE - CROSS CONNECT TO UNIT 2 RHR SYSTEM UNAVAILABLE - RHR LPCI INJECTION PATH UNAVAILABLE - CONTAINMENT VENT UNAVAILABLE	OIAV	1.69E-08	.19
61	TURBINE TRIP - AUTOMATIC/MANUAL REACTOR SCRAM FAILURE - OPERATOR FAILS TO INHIBIT ADS	- VESSEL INJECTION WITH CRDHS UNAVAILABLE	MIAV	1.68E-08	.18
62	PARTIAL LOSS OF FEEDWATER - AUTOMATIC/MANUAL REACTOR SCRAM FAILURE - STANDBY LIQUID CONTROL SYSTEM UNAVAILABLE - CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS) STATE - 0 RELIEF VALVES STUCK OPEN		MIAV	1.65E-08	.18

Figure B-1 (Page 15 of 24). Top 100 Sequences in Browns Ferry Unit 3 PSA Model

MODEL Name: BFNU3M — Top-Ranking Sequences Contributing to Group : ALL Frequency — 15:53:30 20 MAY 1996
ALL = ALL DAMAGE STATES EXCEPT SUCCESS

Rank No.	Sequence Description	Events / Guaranteed Events/Comments	End State	Frequency (per year)	Percent
63	TOTAL LOSS OF FEEDWATER - AUTOMATIC/MANUAL REACTOR SCRAM FAILURE - STANDBY LIQUID CONTROL SYSTEM UNAVAILABLE - CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS) STATE - 0 RELIEF VALVES STUCK OPEN	- RPW HARDWARE UNAVAILABLE	OIAV	1.61E-08	.18
64	TOTAL LOSS OF FEEDWATER - AUTOMATIC/MANUAL REACTOR SCRAM FAILURE - CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS) STATE - 0 RELIEF VALVES STUCK OPEN - RHR PUMP B UNAVAILABLE - RHR PUMP D UNAVAILABLE	- RPW HARDWARE UNAVAILABLE - OPERATOR FAILS TO ESTABLISH TORUS COOLING	MIBV	1.58E-08	.17
65	TOTAL LOSS OF OFFSITE POWER - 250 V DC CONTROL POWER FOR 4KV SD BD 3EA AND 480 V SD BD 3EA UNAVAIL- - 250 V DC CONTROL POWER FOR 4KV SD BD 3EC AND 480 V SD BD 3KB UNAVAIL- - CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS) STATE - 0 RELIEF VALVES STUCK OPEN	- 500KV OFFSITE POWER GRID 161KV OFFSITE POWER GRID OPERATOR FAILS TO RESTORE POWER TO UNIT BOARDS - 4KV UNIT BD 3A UNAVAILABLE - 4KV UNIT BD 3B UNAVAILABLE - 4KV UNIT BD 1A UNAVAILABLE - 4KV UNIT BD 1B UNAVAILABLE - 4KV UNIT BD 2A UNAVAILABLE - 4KV UNIT BD 2B UNAVAILABLE - 250 V RMOV BD 2B UNAVAILABLE - 250 RMOV BD 2C UNAVAILABLE - 250 V RMOV BOARD 3A - 250 V RMOV BOARD 3B - 4 KV UNIT BOARD 2C - 4 KV COMMON BOARD B - 4 KV UNIT BOARD 3C - POWER SUPPLY DIVISION I UNAVAILABLE - POWER SUPPLY DIVISION II UNAVAILABLE - VESSEL LEVEL SIGNAL UNAVAILABLE - DIV I VESSEL LOW PRESSURE SIGNAL UNAVAILABLE - DIV II VESSEL LOW PRESSURE SIGNAL UNAVAILABLE - DIV I HI RX PRESS SIGNAL UNAVAILABLE - DIV II HI RX PRESS SIGNAL UNAVAILABLE - RAW COOLING WATER SYSTEM UNAVAILABLE - RECW PUMP A UNAVAILABLE - RECW PUMP C UNAVAILABLE - RECW PUMP D UNAVAILABLE - RX BUILDING COMPONENT COOLING WATER SYSTEM UNAVAILABLE - RHRSW PUMP B1 (SWING PUMP) UNAVAILABLE - PLANT CONTROL AIR SYSTEM UNAVAILABLE - DRYWELL CONTROL AIR SYSTEM UNAVAILABLE - MSIVS FAIL TO REMAIN OPEN - 1 CND/CND BSTR PUMP, INCLUDES SHORT CYCLE VALVE UNAVAILABL - RCIC UNAVAILABLE (6 HOURS) - HPCI UNAVAILABLE (6 HOURS) - VESSEL INJECTION WITH CRDHS UNAVAILABLE - TORUS COOLING HARDWARE UNAVAILABLE - CS LOW PRESSURE INJECTION UNAVAILABLE - RHR LOW PRESSURE INJECTION PATH UNAVAILABLE	PIHV	1.54E-08	.17
66	TURBINE TRIP WITHOUT BYPASS - AUTOMATIC/MANUAL REACTOR SCRAM FAILURE - CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS) STATE - 0 RELIEF VALVES STUCK OPEN - RHR PUMP D UNAVAILABLE	- TBVS FAIL TO RELIEVE\MAINTAIN RX PRESSURE - OPERATOR FAILS TO COOLDOWN USING THE TBVS - OPERATOR FAILS TO ESTABLISH TORUS COOLING	MIBV	1.53E-08	.17
67	TURBINE TRIP WITHOUT BYPASS - AUTOMATIC/MANUAL REACTOR SCRAM FAILURE - CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS) STATE - 0 RELIEF VALVES STUCK OPEN - RHR PUMP B UNAVAILABLE	- TBVS FAIL TO RELIEVE\MAINTAIN RX PRESSURE - OPERATOR FAILS TO COOLDOWN USING THE TBVS - OPERATOR FAILS TO ESTABLISH TORUS COOLING	MIBV	1.53E-08	.17

Figure B-1 (Page 16 of 24). Top 100 Sequences in Browns Ferry Unit 3 PSA Model

MODEL Name: BFNU3M — Top-Ranking Sequences Contributing to Group : ALL Frequency — 15:53:30 20 MAY 1996
ALL = ALL DAMAGE STATES EXCEPT SUCCESS

Rank No.	Sequence Description	Events	Guaranteed Events/Comments	End State	Frequency (per year)	Percent
68	CLOSURE OF ALL MSIVS		- MSIVS FAIL TO REMAIN OPEN	MIBV	1.53E-08	.17
	- AUTOMATIC/MANUAL REACTOR SCRAM FAILURE		- OPERATOR FAILS TO COOLDOWN USING THE TBVS			
	- CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS) STATE - 0 RELIEF VALVES STUCK OPEN		- OPERATOR FAILS TO ESTABLISH TORUS COOLING			
	- RHR PUMP A UNAVAILABLE					
	- RHR PUMP C UNAVAILABLE					
69	LOSS OF CONDENSER VACUUM		- MAIN CONDENSER UNAVAILABLE	MKCV	1.51E-08	.17
	- AUTOMATIC/MANUAL REACTOR SCRAM FAILURE		- RPV DEPRESSURIZATION			
	- OPERATOR FAILS TO START SLC					
70	SCRAM REQUIRED (MANUAL SCRAMS)		- RPV DEPRESSURIZATION	MKCV	1.45E-08	.16
	- AUTOMATIC/MANUAL REACTOR SCRAM FAILURE					
	- OPERATOR FAILS TO START SLC					
71	TOTAL LOSS OF OFFSITE POWER		- 500KV OFFSITE POWER GRID	PIGX	1.45E-08	.16
	- DG 3A UNAVAILABILITY		- 161KV OFFSITE POWER GRID			
	- DG 3D UNAVAILABLE		- OPERATOR FAILS TO RESTORE POWER TO UNIT BOARDS			
	- RECOVER OFFSITE POWER BY 30 MINUTES		- 4KV UNIT BD 3A UNAVAILABLE			
	- DG D UNAVAILABLE		- 4KV UNIT BD 3B UNAVAILABLE			
	- DG C UNAVAILABLE		- 4KV SD BD 3EA AND 480V SD BD 3A POWER UNAVAILABLE			
	- CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS) STATE - 0 RELIEF VALVES STUCK OPEN		- 480V SHUTDOWN BOARD 3A			
			- 480V DIESEL AUX BD 3EA POWER UNAVAILABLE			
	- FAILURE TO RECOVER ELECTRIC POWER IN 6 HOURS		- 4KV SD BD 3ED UNAVAILABLE			
			- 4KV UNIT BD 1A UNAVAILABLE			
			- 4KV UNIT BD 1B UNAVAILABLE			
			- 4KV UNIT BD 2A UNAVAILABLE			
			- 4KV UNIT BD 2B UNAVAILABLE			
			- SHUTDOWN BUS 1 UNAVAILABLE			
			- SHUTDOWN BUS 2 UNAVAILABLE			
			- 4KV SD BD C UNAVAILABLE			
			- 480V SHUTDOWN BOARD 1B			
			- 480V RMOV BD 1B POWER UNAVAILABLE			
			- 4KV SD BD D UNAVAILABLE			
			- 480V SHUTDOWN BOARD 2B			
			- 480V RMOV BD 2B POWER UNAVAILABLE			
			- 480V RMOV BD 2C POWER UNAVAILABLE			
			- 480V DIESEL AUX BD B POWER UNAVAILABLE			
			- 120 V RPS BUS "B" UNAVAILABLE			
			- 4 KV UNIT BOARD 2C			
			- 4 KV COMMON BOARD B			
			- 4 KV UNIT BOARD 3C			
			- RAW COOLING WATER SYSTEM UNAVAILABLE			
			- EECW PUMP A UNAVAILABLE			
			- EECW PUMP B UNAVAILABLE			
			- EECW PUMP D UNAVAILABLE			
			- RX BUILDING COMPONENT COOLING WATER SYSTEM UNAVAILABLE			
			- RHRSW PUMP B2 UNAVAILABLE			
			- RHRSW PUMP D2 UNAVAILABLE			
			- RHRSW PUMP D1 (SWING PUMP) UNAVAILABLE			
			- PLANT CONTROL AIR SYSTEM UNAVAILABLE			
			- DRYWELL CONTROL AIR SYSTEM UNAVAILABLE			
			- OPERATOR FAILS TO RECOVER EECW (START SWING PUMP)			
			- MSIVS FAIL TO REMAIN OPEN			
			- 1 CND/CND BSTR PUMP, INCLUDES SHORT CYCLE VALVE UNAVAILABL			
			- RCIC UNAVAILABLE LONG TERM			
			- HPCI UNAVAILABLE LONG TERM			
			- VESSEL INJECTION WITH CRDHS UNAVAILABLE			
			- OPERATOR FAILS TO MANUALLY START RHR/CORE SPRAY			
			- RHR PUMP A UNAVAILABLE			
			- RHR PUMP C UNAVAILABLE			
			- UNIT 2 TO UNIT 3 CROSS CONNECT UNAVAILABLE			
			- RHR PUMP B UNAVAILABLE			

Figure B-1 (Page 17 of 24). Top 100 Sequences in Browns Ferry Unit 3 PSA Model

MODEL Name: BFNU3M — Top-Ranking Sequences Contributing to Group : ALL Frequency — 15:53:30 20 MAY 1996
ALL = ALL DAMAGE STATES EXCEPT SUCCESS

Rank No.	Sequence Description	Events: Guaranteed Events/Comments	End State	Frequency (per year)	Percent
		- RHR PUMP D UNAVAILABLE - OPERATOR FAILS TO ESTABLISH TORUS COOLING - RHR LOW PRESSURE INJECTION PATH UNAVAILABLE			
72	TOTAL LOSS OF FEEDWATER - CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS) STATE - 0 RELIEF VALVES STUCK OPEN - VESSEL INJECTION WITH CRDHS UNAVAILABLE - OPERATOR FAILS TO ESTABLISH TORUS COOLING	- RPW HARDWARE UNAVAILABLE	MLCV	1.45E-08	.16
73	TOTAL LOSS OF OFFSITE POWER - DG 3A UNAVAILABILITY - DG 3B UNAVAILABLE - RECOVER OFFSITE POWER BY 30 MINUTES - DG B UNAVAILABLE - DG C UNAVAILABLE - CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS) STATE - 0 RELIEF VALVES STUCK OPEN - FAILURE TO RECOVER ELECTRIC POWER IN 6 HOURS	- 500KV OFFSITE POWER GRID - 161KV OFFSITE POWER GRID - OPERATOR FAILS TO RESTORE POWER TO UNIT BOARDS - 4KV UNIT BD 3A UNAVAILABLE - 4KV UNIT BD 3B UNAVAILABLE - 4KV SD BD 3EA AND 480V SD BD 3A POWER UNAVAILABLE - 480V SHUTDOWN BOARD 3A - 480V DIESEL AUX BD 3EA POWER UNAVAILABLE - 4KV SD BD 3EB UNAVAILABLE - 4KV UNIT BD 1A UNAVAILABLE - 4KV UNIT BD 1B UNAVAILABLE - 4KV UNIT BD 2A UNAVAILABLE - 4KV UNIT BD 2B UNAVAILABLE - SHUTDOWN BUS 1 UNAVAILABLE - SHUTDOWN BUS 2 UNAVAILABLE - 4KV SD BD B UNAVAILABLE - 480V SHUTDOWN BOARD 2A - 480V RMOV BD 2A POWER UNAVAILABLE - 120 V RPS BUS "A" UNAVAILABLE - 4KV SD BD C UNAVAILABLE - 480V SHUTDOWN BOARD 1B - 480V RMOV BD 1B POWER UNAVAILABLE - 4 KV UNIT BOARD 2C - 4 KV COMMON BOARD B - 4 KV UNIT BOARD 3C - RAW COOLING WATER SYSTEM UNAVAILABLE - RECW PUMP A UNAVAILABLE - RECW PUMP B UNAVAILABLE - RECW PUMP C UNAVAILABLE - RX BUILDING COMPONENT COOLING WATER SYSTEM UNAVAILABLE - RHRSW PUMP B2 UNAVAILABLE - RHRSW PUMP C2 UNAVAILABLE - RHRSW PUMP C1 (SWING PUMP) UNAVAILABLE - PLANT CONTROL AIR SYSTEM UNAVAILABLE - DRYWELL CONTROL AIR SYSTEM UNAVAILABLE - OPERATOR FAILS TO RECOVER RECW (START SWING PUMP) - MSIVS FAIL TO REMAIN OPEN - 1 CND/CND BSTR PUMP, INCLUDES SHORT CYCLE VALVE UNAVAILABL - RCIC UNAVAILABLE LONG TERM - RPCI UNAVAILABLE LONG TERM - VESSEL INJECTION WITH CRDHS UNAVAILABLE - OPERATOR FAILS TO MANUALLY START RHR/CORE SPRAY - RHR PUMP A UNAVAILABLE - RHR PUMP C UNAVAILABLE - UNIT 2 TO UNIT 3 CROSS CONNECT UNAVAILABLE - RHR PUMP B UNAVAILABLE - RHR PUMP D UNAVAILABLE - OPERATOR FAILS TO ESTABLISH TORUS COOLING - RHR LOW PRESSURE INJECTION PATH UNAVAILABLE	PIGX	1.44E-08	.16
74	TURBINE TRIP WITHOUT BYPASS - AUTOMATIC/MANUAL REACTOR SCRAM FAILURE - CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS) STATE - 1 RELIEF VALVE STUCK OPEN	- TBVS FAIL TO RELIEVE\MAINTAIN RX PRESSURE - OPERATOR FAILS TO COOLDOWN USING THE TBVS - VESSEL INJECTION WITH CRDHS UNAVAILABLE	OIAV	1.43E-08	.16

Figure B-1 (Page 18 of 24). Top 100 Sequences in Browns Ferry Unit 3 PSA Model

Rank No.	Sequence Description	Events: Guaranteed Events/Comments	End State	Frequency (per year)	Percent
	- OPERATOR FAILS TO CONTROL LPI DURING ATWS				
75	TOTAL LOSS OF FEEDWATER - AUTOMATIC/MANUAL REACTOR SCRAM FAILURE - CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS) STATE - 0 RELIEF VALVES STUCK OPEN - RHR HEAT EXCHANGER D UNAVAILABLE	- RPM HARDWARE UNAVAILABLE - OPERATOR FAILS TO ESTABLISH TORUS COOLING	MIBV	1.43E-08	.16
76	TOTAL LOSS OF FEEDWATER - AUTOMATIC/MANUAL REACTOR SCRAM FAILURE - CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS) STATE - 0 RELIEF VALVES STUCK OPEN - RHR HEAT EXCHANGER B UNAVAILABLE	- RPM HARDWARE UNAVAILABLE - OPERATOR FAILS TO ESTABLISH TORUS COOLING	MIBV	1.43E-08	.16
77	SCRAM REQUIRED (MANUAL SCRAMS) - AUTOMATIC/MANUAL REACTOR SCRAM FAILURE - STANDBY LIQUID CONTROL SYSTEM UNAVAILABLE - CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS) STATE - 0 RELIEF VALVES STUCK OPEN		MIAV	1.40E-08	.15
78	LOSS OF PLANT AIR - CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS) STATE - 1 RELIEF VALVE STUCK OPEN - CONDENSER UNAVAILABLE AS HEAT SINK - RHR PUMP A UNAVAILABLE - RHR PUMP C UNAVAILABLE - RHR PUMP B UNAVAILABLE - RHR PUMP D UNAVAILABLE	- PLANT CONTROL AIR SYSTEM UNAVAILABLE - DRYWELL CONTROL AIR SYSTEM UNAVAILABLE - MSIVS FAIL TO REMAIN OPEN - RPM HARDWARE UNAVAILABLE - OPERATOR FAILS TO COOLDOWN USING THE TBVS - STARTUP BYPASS VALVE UNAVAILABLE - UNIT 2 TO UNIT 3 CROSS CONNECT UNAVAILABLE - OPERATOR FAILS TO ESTABLISH TORUS COOLING - RHR LOW PRESSURE INJECTION PATH UNAVAILABLE	PIEV	1.39E-08	.15
79	TOTAL LOSS OF OFFSITE POWER - DG 3A UNAVAILABILITY - RECOVER OFFSITE POWER BY 30 MINUTES - DG D UNAVAILABLE - DG C UNAVAILABLE - RHRSW PUMP D1 (SWING PUMP) UNAVAILABLE - CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS) STATE - 0 RELIEF VALVES STUCK OPEN - FAILURE TO RECOVER ELECTRIC POWER IN 6 HOURS	- 500KV OFFSITE POWER GRID - 161KV OFFSITE POWER GRID - OPERATOR FAILS TO RESTORE POWER TO UNIT BOARDS - 4KV UNIT BD 3A UNAVAILABLE - 4KV UNIT BD 3B UNAVAILABLE - 4KV SD BD 3EA AND 480V SD BD 3A POWER UNAVAILABLE - 480V SHUTDOWN BOARD 3A - 480V DIESEL AUX BD 3EA POWER UNAVAILABLE - 4KV UNIT BD 1A UNAVAILABLE - 4KV UNIT BD 1B UNAVAILABLE - 4KV UNIT BD 2A UNAVAILABLE - 4KV UNIT BD 2B UNAVAILABLE - SHUTDOWN BUS 1 UNAVAILABLE - SHUTDOWN BUS 2 UNAVAILABLE - 4KV SD BD C UNAVAILABLE - 480V SHUTDOWN BOARD 1B - 480V RMOV BD 1B POWER UNAVAILABLE - 4KV SD BD D UNAVAILABLE - 480V SHUTDOWN BOARD 2B - 480V RMOV BD 2B POWER UNAVAILABLE - 480V RMOV BD 2C POWER UNAVAILABLE - 480V DIESEL AUX BD B POWER UNAVAILABLE - 120 V RPS BUS "B" UNAVAILABLE - 4 KV UNIT BOARD 2C - 4 KV COMMON BOARD B - 4 KV UNIT BOARD 1C - RAW COOLING WATER SYSTEM UNAVAILABLE - EECW PUMP A UNAVAILABLE - EECW PUMP B UNAVAILABLE - EECW PUMP D UNAVAILABLE - RX BUILDING COMPONENT COOLING WATER SYSTEM UNAVAILABLE - RHRSW PUMP B2 UNAVAILABLE - RHRSW PUMP D2 UNAVAILABLE - PLANT CONTROL AIR SYSTEM UNAVAILABLE	PIGX	1.39E-08	.15

Figure B-1 (Page 19 of 24). Top 100 Sequences in Browns Ferry Unit 3 PSA Model

Rank No.	Sequence Description	Events: Guaranteed Events/Comments	End State	Frequency (per year)	Percent
		- DRYWELL CONTROL AIR SYSTEM UNAVAILABLE - OPERATOR FAILS TO RECOVER RECW (START SWING PUMP) - MSIVS FAIL TO REMAIN OPEN - 1 CND/CND BSTR PUMP, INCLUDES SHORT CYCLE VALVE UNAVAILABL - RCIC UNAVAILABLE LONG TERM - HPCI UNAVAILABLE LONG TERM - VESSEL INJECTION WITH CRDHS UNAVAILABLE - OPERATOR FAILS TO MANUALLY START RHR/CORE SPRAY - RHR PUMP A UNAVAILABLE - RHR PUMP C UNAVAILABLE - UNIT 2 TO UNIT 3 CROSS CONNECT UNAVAILABLE - RHR PUMP B UNAVAILABLE - RHR PUMP D UNAVAILABLE - OPERATOR FAILS TO ESTABLISH TORUS COOLING - RHR LOW PRESSURE INJECTION PATH UNAVAILABLE			
80	RECIRC DISCHARGE LINE BREAK - OPERATOR FAILS TO INITIATE SP COOLING	- CONTAINMENT VENT UNAVAILABLE	OLCV	1.34E-08	.15
81	LOSS OF ALL CONDENSATE - 250 V DC CONTROL POWER FOR 4KV SD BD 3EA AND 480 V SD BD 3EA UNAVAIL- - POWER SUPPLY DIVISION II UNAVAILABLE - CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS) STATE - 0 RELIEF VALVES STUCK OPEN	- 250 RMOV BD 2C UNAVAILABLE - 250 V RMOV BOARD 3B - POWER SUPPLY DIVISION I UNAVAILABLE - VESSEL LEVEL SIGNAL UNAVAILABLE - DIV I VESSEL LOW PRESSURE SIGNAL UNAVAILABLE - DIV II VESSEL LOW PRESSURE SIGNAL UNAVAILABLE - DIV I HI RX PRESS SIGNAL UNAVAILABLE - DIV II HI RX PRESS SIGNAL UNAVAILABLE - MAIN CONDENSER UNAVAILABLE - 1 CND/CND BSTR PUMP, INCLUDES SHORT CYCLE VALVE UNAVAILABL - RCIC UNAVAILABLE (6 HOURS) - HPCI UNAVAILABLE (6 HOURS) - VESSEL INJECTION WITH CRDHS UNAVAILABLE - RHR PUMP A UNAVAILABLE - CS LOW PRESSURE INJECTION UNAVAILABLE - RHR LOW PRESSURE INJECTION PATH UNAVAILABLE	PIHV	1.33E-08	.15
82	TURBINE TRIP - UNIT 2 NOT AT POWER - AUTOMATIC/MANUAL REACTOR SCRAM FAILURE - OPERATOR FAILS TO START SLC	- RPV DEPRESSURIZATION	MKCV	1.33E-08	.15
83	CLOSURE OF ALL MSIVS - 250 V DC CONTROL POWER FOR 4KV SD BD 3EA AND 480 V SD BD 3EA UNAVAIL- - CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS) STATE - 0 RELIEF VALVES STUCK OPEN - HPCI UNAVAILABLE (6 HOURS) - RPV DEPRESSURIZATION	- 250 RMOV BD 2C UNAVAILABLE - 250 V RMOV BOARD 3B - POWER SUPPLY DIVISION I UNAVAILABLE - DIV I VESSEL LOW PRESSURE SIGNAL UNAVAILABLE - DIV I HI RX PRESS SIGNAL UNAVAILABLE - MSIVS FAIL TO REMAIN OPEN - RPM HARDWARE UNAVAILABLE - RCIC UNAVAILABLE (6 HOURS) - OPERATOR FAILS TO INHIBIT CLOSURE OF MSIVS ON LEVEL - VESSEL INJECTION WITH CRDHS UNAVAILABLE - RHR PUMP A UNAVAILABLE	MIAV	1.33E-08	.15
84	PARTIAL LOSS OF CONDENSATE - CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS) STATE - 0 RELIEF VALVES STUCK OPEN - RCIC UNAVAILABLE (6 HOURS) - HPCI UNAVAILABLE (6 HOURS) - RPV DEPRESSURIZATION - VESSEL INJECTION WITH CRDHS UNAVAILABLE	- TBVS FAIL TO RELIEVE\MAINTAIN RX PRESSURE - RPM HARDWARE UNAVAILABLE - OPERATOR FAILS TO DEPRESSURIZE USING TBV'S	MIAV	1.30E-08	.14
85	MEDIUM LOCA - OPERATOR FAILS TO INITIATE SP COOLING	- CONTAINMENT VENT UNAVAILABLE	OLCV	1.30E-08	.14

Figure B-1 (Page 20 of 24). Top 100 Sequences in Browns Ferry Unit 3 PSA Model

MODEL Name: BFNU3M — Top-Ranking Sequences Contributing to Group : ALL Frequency — 15:53:30 20 MAY 1996
ALL = ALL DAMAGE STATES EXCEPT SUCCESS

Rank No.	Sequence Description	Events: Guaranteed Events/Comments	End State	Frequency (per year)	Percent
86	LOSS OF PLANT AIR - 500KV OFFSITE POWER GRID - CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS) STATE - 1 RELIEF VALVE STUCK OPEN - RHR PUMP A UNAVAILABLE - RHR PUMP C UNAVAILABLE - RHR PUMP B UNAVAILABLE - RHR PUMP D UNAVAILABLE	- PLANT CONTROL AIR SYSTEM UNAVAILABLE - DRYWELL CONTROL AIR SYSTEM UNAVAILABLE - MSIVS FAIL TO REMAIN OPEN - RPV HARDWARE UNAVAILABLE - OPERATOR FAILS TO COOLDOWN USING THE TBVS - STARTUP BYPASS VALVE UNAVAILABLE - UNIT 2 TO UNIT 3 CROSS CONNECT UNAVAILABLE - OPERATOR FAILS TO ESTABLISH TORUS COOLING - RHR LOW PRESSURE INJECTION PATH UNAVAILABLE	PIEV	1.29E-08	.14
87	TURBINE TRIP - UNIT 2 NOT AT POWER - AUTOMATIC/MANUAL REACTOR SCRAM FAILURE - STANDBY LIQUID CONTROL SYSTEM UNAVAILABLE - CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS) STATE - 0 RELIEF VALVES STUCK OPEN		MIAV	1.28E-08	.14
88	LOSS OF CONDENSER VACUUM - AUTOMATIC/MANUAL REACTOR SCRAM FAILURE - STANDBY LIQUID CONTROL SYSTEM UNAVAILABLE - CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS) STATE - 0 RELIEF VALVES STUCK OPEN	- MAIN CONDENSER UNAVAILABLE - RPV HARDWARE UNAVAILABLE	OIAV	1.28E-08	.14
89	MEDIUM LOCA - HIGH PRESSURE COOLANT INJECTION SYSTEM UNAVAILABLE - FAILURE TO DEPRESSURIZE VIA THE SRVS	- CONTAINMENT VENT UNAVAILABLE	OIAV	1.27E-08	.14
90	LOSS OF RAW COOLING WATER - SUPPRESSION POOL (TORUS) UNAVAILABLE - CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS) STATE - 0 RELIEF VALVES STUCK OPEN	- RAW COOLING WATER SYSTEM UNAVAILABLE - MAIN CONDENSER UNAVAILABLE - 1 CND/CND BSTR PUMP, INCLUDES SHORT CYCLE VALVE UNAVAILABL - HPCI UNAVAILABLE (6 HOURS) - RCIC UNAVAILABLE LONG TERM - VESSEL INJECTION WITH CRDHS UNAVAILABLE - RHR PUMP B UNAVAILABLE - RHR PUMP D UNAVAILABLE - OPERATOR FAILS TO ESTABLISH TORUS COOLING	PLPV	1.27E-08	.14
91	LOSS OF CONDENSER VACUUM - AUTOMATIC/MANUAL REACTOR SCRAM FAILURE - CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS) STATE - 0 RELIEF VALVES STUCK OPEN - RHR PUMP B UNAVAILABLE - RHR PUMP D UNAVAILABLE	- MAIN CONDENSER UNAVAILABLE - RPV HARDWARE UNAVAILABLE - OPERATOR FAILS TO ESTABLISH TORUS COOLING	MIBV	1.26E-08	.14
92	CLOSURE OF ALL MSIVS - AUTOMATIC/MANUAL REACTOR SCRAM FAILURE - CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS) STATE - 0 RELIEF VALVES STUCK OPEN - RHR PUMP C UNAVAILABLE - RHR PUMP D UNAVAILABLE	- MSIVS FAIL TO REMAIN OPEN - OPERATOR FAILS TO COOLDOWN USING THE TBVS - OPERATOR FAILS TO ESTABLISH TORUS COOLING	MIBV	1.22E-08	.13
93	CLOSURE OF ALL MSIVS - AUTOMATIC/MANUAL REACTOR SCRAM FAILURE - CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS) STATE - 0 RELIEF VALVES STUCK OPEN - RHR PUMP A UNAVAILABLE - RHR PUMP D UNAVAILABLE	- MSIVS FAIL TO REMAIN OPEN - OPERATOR FAILS TO COOLDOWN USING THE TBVS - OPERATOR FAILS TO ESTABLISH TORUS COOLING	MIBV	1.22E-08	.13
94	TURBINE TRIP WITHOUT BYPASS - AUTOMATIC/MANUAL REACTOR SCRAM FAILURE - STANDBY LIQUID CONTROL SYSTEM UNAVAILABLE - CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS) STATE - 0 RELIEF VALVES STUCK OPEN	- TBVS FAIL TO RELIEVE\MAINTAIN RX PRESSURE	OIAV	1.22E-08	.13

Figure B-1 (Page 21 of 24). Top 100 Sequences in Browns Ferry Unit 3 PSA Model

MODEL Name: BFNU3M — Top-Ranking Sequences Contributing to Group : ALL Frequency — 15:53:30 20 MAY 1996
ALL = ALL DAMAGE STATES EXCEPT SUCCESS

Rank No.	Sequence Description	Events	Guaranteed Events/Comments	End State	Frequency (per year)	Percent
95	TOTAL LOSS OF OFFSITE POWER					
	- DG 3A UNAVAILABILITY		- 500KV OFFSITE POWER GRID	PIGX	1.20E-08	.13
	- DG 3C UNAVAILABLE		- 161KV OFFSITE POWER GRID			
	- DG 3B UNAVAILABLE		- OPERATOR FAILS TO RESTORE POWER TO UNIT BOARDS			
	- DG 3D UNAVAILABLE		- 4KV UNIT BD 3A UNAVAILABLE			
	- RECOVER OFFSITE POWER BY 30 MINUTES		- 4KV UNIT BD 3B UNAVAILABLE			
	- POSSIBILITY OF GLOBAL COMMON CAUSE FAILURE OF DGS		- 4KV SD BD 3EA AND 480V SD BD 3A POWER UNAVAILABLE			
	- UNIT 2 NOT AT POWER		- 480V SHUTDOWN BOARD 3A			
	- CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS) STATE - 0 RELIEF VALVES STUCK OPEN		- 480V DIESEL AUX BD 3EA POWER UNAVAILABLE			
			- 4KV SD BD 3EC AND 480V SD BD 3B UNAVAILABLE			
	- FAILURE TO RECOVER ELECTRIC POWER IN 6 HOURS		- 4KV SD BD 3EB UNAVAILABLE			
			- 480V SHUTDOWN BOARD 3B			
			- 480V DIESEL AUX BD 3EB POWER UNAVAILABLE			
			- 4KV SD BD 3ED UNAVAILABLE			
			- 4KV UNIT BD 1A UNAVAILABLE			
			- 4KV UNIT BD 1B UNAVAILABLE			
			- 4KV UNIT BD 2A UNAVAILABLE			
			- 4KV UNIT BD 2B UNAVAILABLE			
			- SHUTDOWN BUS 1 UNAVAILABLE			
			- SHUTDOWN BUS 2 UNAVAILABLE			
			- DG A UNAVAILABLE			
			- DG D UNAVAILABLE			
			- DG B UNAVAILABLE			
			- DG C UNAVAILABLE			
			- 4KV SD BD A UNAVAILABLE			
			- 480V SHUTDOWN BOARD 1A			
			- 480V RMOV BD 1A POWER UNAVAILABLE			
			- 480V DIESEL AUX. BD A POWER UNAVAILABLE			
			- 4KV SD BD B UNAVAILABLE			
			- 480V SHUTDOWN BOARD 2A			
			- 480V RMOV BD 2A POWER UNAVAILABLE			
			- 120 V RPS BUS "A" UNAVAILABLE			
			- 4KV SD BD C UNAVAILABLE			
			- 480V SHUTDOWN BOARD 1B			
			- 480V RMOV BD 1B POWER UNAVAILABLE			
			- 4KV SD BD D UNAVAILABLE			
			- 480V SHUTDOWN BOARD 2B			
			- 480V RMOV BD 2D POWER UNAVAILABLE			
			- 480V RMOV BD 2E POWER UNAVAILABLE			
			- 480V RMOV BD 2B POWER UNAVAILABLE			
			- 480V RMOV BD 2C POWER UNAVAILABLE			
			- 480V DIESEL AUX BD B POWER UNAVAILABLE			
			- 120 V RPS BUS "B" UNAVAILABLE			
			- 4 KV UNIT BOARD 2C			
			- 4 KV COMMON BOARD B			
			- 4 KV UNIT BOARD 3C			
			- 480 V RMOV BOARD 3C			
			- 120 V I&C BUS 3B			
			- 120 V I&C BUS 3B			
			- 480 V RMOV BOARD 3D			
			- 480 V RMOV BOARD 3E			
			- RAW COOLING WATER SYSTEM UNAVAILABLE			
			- RECW PUMP A UNAVAILABLE			
			- RECW PUMP B UNAVAILABLE			
			- RECW PUMP C UNAVAILABLE			
			- RECW PUMP D UNAVAILABLE			
			- RX BUILDING COMPONENT COOLING WATER SYSTEM UNAVAILABLE			
			- RHRSW PUMP A2 UNAVAILABLE			
			- RHRSW PUMP A1 (SWING PUMP) UNAVAILABLE			
			- RHRSW PUMP B2 UNAVAILABLE			
			- RHRSW PUMP B1 (SWING PUMP) UNAVAILABLE			
			- RHRSW PUMP C2 UNAVAILABLE			
			- RHRSW PUMP C1 (SWING PUMP) UNAVAILABLE			
			- RHRSW PUMP D2 UNAVAILABLE			
			- RHRSW PUMP D1 (SWING PUMP) UNAVAILABLE			

Figure B-1 (Page 22 of 24). Top 100 Sequences in Browns Ferry Unit 3 PSA Model

Rank No.	Sequence Description	Events: Guaranteed Events/Comments	End State	Frequency (per year)	Percent
		- PLANT CONTROL AIR SYSTEM UNAVAILABLE - DRYWELL CONTROL AIR SYSTEM UNAVAILABLE - CONTAINMENT ATMOSPHERIC DILUTION - OPERATOR FAILS TO RECOVER RECW (START SWING PUMP) - MSIVS FAIL TO REMAIN OPEN - 1 CND/CND BSTR PUMP, INCLUDES SHORT CYCLE VALVE UNAVAILABL - RCIC UNAVAILABLE LONG TERM - HPCI UNAVAILABLE LONG TERM - VESSEL INJECTION WITH CRDHS UNAVAILABLE - OPERATOR FAILS TO MANUALLY START RHR/CORE SPRAY - FAILURE TO RECOVER 480V RMOV BDS 2A OR 2B - RHR PUMP A UNAVAILABLE - RHR PUMP C UNAVAILABLE - UNIT 2 TO UNIT 3 CROSS CONNECT UNAVAILABLE - RHR PUMP B UNAVAILABLE - RHR PUMP D UNAVAILABLE - OPERATOR FAILS TO ESTABLISH TORUS COOLING - RHR LOW PRESSURE INJECTION PATH UNAVAILABLE			
96	TOTAL LOSS OF FEEDWATER - AUTOMATIC/MANUAL REACTOR SCRAM FAILURE - CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS) STATE - 0 RELIEF VALVES STUCK OPEN - RHR PUMP A UNAVAILABLE - RHR PUMP C UNAVAILABLE	- RPW HARDWARE UNAVAILABLE - OPERATOR FAILS TO ESTABLISH TORUS COOLING	MIBV	1.19E-08	.13
97	TURBINE TRIP - AUTOMATIC/MANUAL REACTOR SCRAM FAILURE - CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS) STATE - 1 RELIEF VALVE STUCK OPEN - OPERATOR FAILS TO CONTROL LPI DURING ATWS	- VESSEL INJECTION WITH CRDHS UNAVAILABLE	OIAZ	1.14E-08	.13
98	TOTAL LOSS OF OFFSITE POWER - DG 3A UNAVAILABILITY - RECOVER OFFSITE POWER BY 30 MINUTES - DG B UNAVAILABLE - CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS) STATE - 0 RELIEF VALVES STUCK OPEN - FAILURE TO RECOVER ELECTRIC POWER IN 6 HOURS - RHR PUMP B UNAVAILABLE - RHR PUMP D UNAVAILABLE	- 500KV OFFSITE POWER GRID - 161KV OFFSITE POWER GRID - OPERATOR FAILS TO RESTORE POWER TO UNIT BOARDS - 4KV UNIT BD 3A UNAVAILABLE - 4KV UNIT BD 3B UNAVAILABLE - 4KV SD BD 3EA AND 480V SD BD 3A POWER UNAVAILABLE - 480V SHUTDOWN BOARD 3A - 480V DIESEL AUX BD 3EA POWER UNAVAILABLE - 4KV UNIT BD 1A UNAVAILABLE - 4KV UNIT BD 1B UNAVAILABLE - 4KV UNIT BD 2A UNAVAILABLE - 4KV UNIT BD 2B UNAVAILABLE - SHUTDOWN BUS 1 UNAVAILABLE - SHUTDOWN BUS 2 UNAVAILABLE - 4KV SD BD B UNAVAILABLE - 480V SHUTDOWN BOARD 2A - 480V RMOV BD 2A POWER UNAVAILABLE - 120 V RPS BUS "A" UNAVAILABLE - 4 KV UNIT BOARD 2C - 4 KV COMMON BOARD B - 4 KV UNIT BOARD 3C - RAW COOLING WATER SYSTEM UNAVAILABLE - RECW PUMP A UNAVAILABLE - RHRSW PUMP C2 UNAVAILABLE - RHRSW PUMP C1 (SWING PUMP) UNAVAILABLE - PLANT CONTROL AIR SYSTEM UNAVAILABLE - DRYWELL CONTROL AIR SYSTEM UNAVAILABLE - MSIVS FAIL TO REMAIN OPEN - 1 CND/CND BSTR PUMP, INCLUDES SHORT CYCLE VALVE UNAVAILABL - RCIC UNAVAILABLE LONG TERM - HPCI UNAVAILABLE LONG TERM - VESSEL INJECTION WITH CRDHS UNAVAILABLE	PLFV	1.14E-08	.12

Figure B-1 (Page 23 of 24). Top 100 Sequences in Browns Ferry Unit 3 PSA Model

MODEL Name: BFNU3H | Top-Ranking Sequences Contributing to Group : ALL Frequency | 15:53:30 20 MAY 1996
ALL = ALL DAMAGE STATES EXCEPT SUCCESS

Rank No.	Sequence Description	Events / Guaranteed Events/Comments	End State	Frequency (per year)	Percent
		- RHR PUMP A UNAVAILABLE - RHR HEAT EXCHANGER C UNAVAILABLE - UNIT 2 TO UNIT 3 CROSS CONNECT UNAVAILABLE - OPERATOR FAILS TO ESTABLISH TORUS COOLING - OPERATOR FAILS TO ESTABLISH SHUTDOWN COOLING			
99	LOSS OF CONDENSER VACUUM - AUTOMATIC/MANUAL REACTOR SCRAM FAILURE - CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS) STATE - 0 RELIEF VALVES STUCK OPEN - RHR HEAT EXCHANGER D UNAVAILABLE	- MAIN CONDENSER UNAVAILABLE - RPW HARDWARE UNAVAILABLE - OPERATOR FAILS TO ESTABLISH TORUS COOLING	MIBV	1.13E-08	.12
100	LOSS OF CONDENSER VACUUM - AUTOMATIC/MANUAL REACTOR SCRAM FAILURE - CONDITIONS RELATING TO STUCK OPEN SRVS (0, 1, 2, 3+ SORVS) STATE - 0 RELIEF VALVES STUCK OPEN - RHR HEAT EXCHANGER B UNAVAILABLE	- MAIN CONDENSER UNAVAILABLE - RPW HARDWARE UNAVAILABLE - OPERATOR FAILS TO ESTABLISH TORUS COOLING	MIBV	1.13E-08	.12

Figure B-1 (Page 24 of 24). Top 100 Sequences in Browns Ferry Unit 3 PSA Model

APPENDIX C. SPLIT FRACTION IMPORTANCE MEASURES

MODEL Name: BFNU3M

Split Fraction Importance for Group : ALL
Sorted by Fraction Importance
Group Frequency = 9.1335E-06

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.....	SF Name...	Fraction... Importance	Fussel-Vesely. Importance	Birnbaum... Importance	Achievement. Worth	Reduction... Worth	SF Value.....	Frequency.
1.	FIWTRF	9.9493E-01			1.0000E+00		1.0000E+00	9.0872E-06
2.	MELTF	9.9493E-01			1.0000E+00		1.0000E+00	9.0872E-06
3.	NCDF	9.9493E-01			1.0000E+00		1.0000E+00	9.0872E-06
4.	SDRECF	9.7257E-01			1.0000E+00		1.0000E+00	8.8830E-06
5.	OXF	9.7257E-01			1.0000E+00		1.0000E+00	8.8830E-06
6.	DWF	9.2955E-01			1.0000E+00		1.0000E+00	8.4900E-06
7.	FWAF	8.2951E-01			1.0000E+00		1.0000E+00	7.5764E-06
8.	INAF	7.3840E-01			1.0000E+00		1.0000E+00	6.7442E-06
9.	HSF	7.0237E-01			1.0000E+00		1.0000E+00	6.4151E-06
10.	CDAF	6.3005E-01			1.0000E+00		1.0000E+00	5.7546E-06
11.	OSPF	5.8607E-01			1.0000E+00		1.0000E+00	5.3529E-06
12.	INBF	5.4276E-01			1.0000E+00		1.0000E+00	4.9573E-06
13.	INCF	5.4251E-01			1.0000E+00		1.0000E+00	4.9550E-06
14.	INDF	5.3684E-01			1.0000E+00		1.0000E+00	4.9032E-06
15.	CRDF	5.1593E-01			1.0000E+00		1.0000E+00	4.7122E-06
16.	INEF	4.9607E-01			1.0000E+00		1.0000E+00	4.5308E-06
17.	INFF	4.7479E-01			1.0000E+00		1.0000E+00	4.3365E-06
18.	HRLF	4.3755E-01			1.0000E+00		1.0000E+00	3.9964E-06
19.	DWSF	4.1656E-01			1.0000E+00		1.0000E+00	3.8046E-06
20.	WETF	4.0086E-01			1.0000E+00		1.0000E+00	3.6613E-06
21.	IVOF	3.9273E-01			1.0000E+00		1.0000E+00	3.5870E-06
22.	RVC0	3.8979E-01	-4.9611E+00		6.3861E-01	5.9611E+00	9.3210E-01	3.5601E-06
23.	NAF	3.8441E-01			1.0000E+00		1.0000E+00	3.5110E-06
24.	RXS1	3.8199E-01	3.8198E-01		1.7710E+04	6.1802E-01	2.1570E-05	3.4889E-06
25.	CDF	3.7709E-01			1.0000E+00		1.0000E+00	3.4442E-06
26.	U2F	3.5613E-01			1.0000E+00		1.0000E+00	3.2527E-06
27.	INGF	3.4970E-01			1.0000E+00		1.0000E+00	3.1940E-06
28.	LPRESF	3.4950E-01			1.0000E+00		1.0000E+00	3.1922E-06
29.	RCWF	3.4416E-01			1.0000E+00		1.0000E+00	3.1433E-06
30.	INHF	3.1794E-01			1.0000E+00		1.0000E+00	2.9039E-06
31.	OAIF	3.1725E-01			1.0000E+00		1.0000E+00	2.8976E-06
32.	HR6F	2.9437E-01			1.0000E+00		1.0000E+00	2.6887E-06
33.	NRVF	2.9150E-01			1.0000E+00		1.0000E+00	2.6624E-06
34.	DCAF	2.8900E-01			1.0000E+00		1.0000E+00	2.6395E-06
35.	JAF	2.8605E-01			1.0000E+00		1.0000E+00	2.6126E-06
36.	JHF	2.8605E-01			1.0000E+00		1.0000E+00	2.6126E-06
37.	FWHF	2.8019E-01			1.0000E+00		1.0000E+00	2.5591E-06
38.	LPCF	2.5063E-01			1.0000E+00		1.0000E+00	2.2892E-06
39.	OG5F	2.4499E-01			1.0000E+00		1.0000E+00	2.2376E-06
40.	UB41AF	2.3233E-01			1.0000E+00		1.0000E+00	2.1220E-06
41.	UB43BF	2.3233E-01			1.0000E+00		1.0000E+00	2.1220E-06
42.	UB43CF	2.3233E-01			1.0000E+00		1.0000E+00	2.1220E-06
43.	UB42AF	2.3233E-01			1.0000E+00		1.0000E+00	2.1220E-06
44.	UB42CF	2.3233E-01			1.0000E+00		1.0000E+00	2.1220E-06
45.	CBBF	2.3233E-01			1.0000E+00		1.0000E+00	2.1220E-06
46.	UB41BF	2.3233E-01			1.0000E+00		1.0000E+00	2.1220E-06
47.	UB43AF	2.3233E-01			1.0000E+00		1.0000E+00	2.1220E-06
48.	UB42BF	2.3233E-01			1.0000E+00		1.0000E+00	2.1220E-06
49.	OUBF	2.3087E-01			1.0000E+00		1.0000E+00	2.1087E-06
50.	OG16F	2.3083E-01			1.0000E+00		1.0000E+00	2.1082E-06
51.	KCF	2.3011E-01			1.0000E+00		1.0000E+00	2.1017E-06
52.	KFF	2.2849E-01			1.0000E+00		1.0000E+00	2.0869E-06
53.	KHF	2.2838E-01			1.0000E+00		1.0000E+00	2.0859E-06
54.	RPBF	2.2686E-01			1.0000E+00		1.0000E+00	2.0721E-06
55.	PCAF	2.2314E-01			1.0000E+00		1.0000E+00	2.0380E-06
56.	RPDF	2.2188E-01			1.0000E+00		1.0000E+00	2.0266E-06
57.	RBCF	2.2068E-01			1.0000E+00		1.0000E+00	2.0155E-06
58.	RPAF	2.1394E-01			1.0000E+00		1.0000E+00	1.9540E-06
59.	RVC4	2.0927E-01	-1.6576E+00		8.1419E-01	2.6576E+00	8.9920E-01	1.9114E-06
60.	MCDF	2.0233E-01			1.0000E+00		1.0000E+00	1.8480E-06
61.	OSDF	1.9980E-01			1.0000E+00		1.0000E+00	1.8249E-06
62.	SHUT1F	1.9804E-01			1.0000E+00		1.0000E+00	1.8088E-06
63.	SHT2F	1.9804E-01			1.0000E+00		1.0000E+00	1.8088E-06
64.	RPCF	1.9328E-01			1.0000E+00		1.0000E+00	1.7653E-06
65.	RCLF	1.6831E-01			1.0000E+00		1.0000E+00	1.5373E-06
66.	LECF	1.6491E-01			1.0000E+00		1.0000E+00	1.5062E-06
67.	HPLF	1.6208E-01			1.0000E+00		1.0000E+00	1.4803E-06
68.	SW2CF	1.5768E-01			1.0000E+00		1.0000E+00	1.4402E-06
69.	SW1CF	1.5768E-01			1.0000E+00		1.0000E+00	1.4402E-06
70.	RSF	1.5722E-01			1.0000E+00		1.0000E+00	1.4360E-06
71.	DKF	1.5722E-01			1.0000E+00		1.0000E+00	1.4360E-06
72.	RHF	1.5722E-01			1.0000E+00		1.0000E+00	1.4360E-06
73.	ABF	1.5721E-01			1.0000E+00		1.0000E+00	1.4359E-06
74.	HUMF	1.5651E-01			1.0000E+00		1.0000E+00	1.4295E-06

.....	SF Name...	Fraction... Importance	Fussel-Vesely. Importance	Birnbaum... Importance	Achievement. Worth	Reduction... Worth	SF Value.....	Frequency.
75.	SW2BF	1.5631E-01			1.0000E+00		1.0000E+00	1.4276E-06
76.	EBF	1.5560E-01			1.0000E+00		1.0000E+00	1.4212E-06
77.	RRF	1.5539E-01			1.0000E+00		1.0000E+00	1.4192E-06
78.	RFF	1.5539E-01			1.0000E+00		1.0000E+00	1.4192E-06
79.	ACF	1.5534E-01			1.0000E+00		1.0000E+00	1.4188E-06
80.	OBCF	1.4567E-01			1.0000E+00		1.0000E+00	1.3305E-06
81.	SGTOPF	1.4536E-01			1.0000E+00		1.0000E+00	1.3277E-06
82.	SW1AF	1.4329E-01			1.0000E+00		1.0000E+00	1.3087E-06
83.	SW2AF	1.4329E-01			1.0000E+00		1.0000E+00	1.3087E-06
84.	REF	1.3513E-01			1.0000E+00		1.0000E+00	1.2342E-06
85.	RQF	1.3513E-01			1.0000E+00		1.0000E+00	1.2342E-06
86.	RMF	1.3513E-01			1.0000E+00		1.0000E+00	1.2342E-06
87.	AAF	1.3508E-01			1.0000E+00		1.0000E+00	1.2338E-06
88.	ROF	1.3412E-01			1.0000E+00		1.0000E+00	1.2250E-06
89.	EAF	1.3280E-01			1.0000E+00		1.0000E+00	1.2130E-06
90.	SW2DF	1.3082E-01			1.0000E+00		1.0000E+00	1.1948E-06
91.	SGTF	1.3051E-01			1.0000E+00		1.0000E+00	1.1920E-06
92.	RJF	1.3032E-01			1.0000E+00		1.0000E+00	1.1903E-06
93.	RIF	1.3032E-01			1.0000E+00		1.0000E+00	1.1903E-06
94.	DLF	1.3032E-01			1.0000E+00		1.0000E+00	1.1903E-06
95.	RNF	1.3032E-01			1.0000E+00		1.0000E+00	1.1903E-06
96.	RTF	1.3032E-01			1.0000E+00		1.0000E+00	1.1903E-06
97.	ADF	1.3028E-01			1.0000E+00		1.0000E+00	1.1899E-06
98.	RPA1	1.2957E-01	1.2010E-01		9.2610E+00	8.7990E-01	1.4330E-02	1.1835E-06
99.	RVC1	1.2956E-01	1.2106E-01		2.8462E+00	8.7894E-01	6.1540E-02	1.1833E-06
100.	EPR301	1.2007E-01	1.1844E-01		1.3985E+00	8.8156E-01	2.2910E-01	1.0966E-06
101.	RXF	1.1802E-01			1.0000E+00		1.0000E+00	1.0780E-06
102.	RCI1	1.1707E-01	8.0375E-02		2.1328E+00	9.1963E-01	6.6250E-02	1.0693E-06
103.	SW1BF	1.0957E-01			1.0000E+00		1.0000E+00	1.0008E-06
104.	A3EAF	1.0902E-01			1.0000E+00		1.0000E+00	9.9574E-07
105.	RPC2	1.0880E-01	9.8727E-02		1.1438E+00	9.0127E-01	4.0700E-01	9.9370E-07
106.	RCIF	1.0674E-01			1.0000E+00		1.0000E+00	9.7491E-07
107.	RLF	1.0666E-01			1.0000E+00		1.0000E+00	9.7419E-07
108.	RKF	1.0666E-01			1.0000E+00		1.0000E+00	9.7419E-07
109.	RPF	1.0417E-01			1.0000E+00		1.0000E+00	9.5147E-07
110.	RJ3F	1.0417E-01			1.0000E+00		1.0000E+00	9.5147E-07
111.	HPIF	1.0413E-01			1.0000E+00		1.0000E+00	9.5107E-07
112.	EPR61	1.0275E-01	1.0217E-01		1.7557E+00	8.9783E-01	1.1910E-01	9.3848E-07
113.	OSVF	1.0164E-01			1.0000E+00		1.0000E+00	9.2831E-07
114.	U2AP1	1.0164E-01	-5.6002E-02		6.8265E-01	1.0560E+00	1.5000E-01	9.2830E-07
115.	GCF	1.0101E-01			1.0000E+00		1.0000E+00	9.2262E-07
116.	GA1	9.9749E-02	9.0483E-02		1.6148E+00	9.0952E-01	1.2830E-01	9.1106E-07
117.	EDF	9.9591E-02			1.0000E+00		1.0000E+00	9.0962E-07
118.	RYF	9.5724E-02			1.0000E+00		1.0000E+00	8.7430E-07
119.	ORPF	9.5189E-02			1.0000E+00		1.0000E+00	8.6941E-07
120.	GE1	9.2069E-02	7.9904E-02		1.8120E+00	9.2010E-01	8.9590E-02	8.4091E-07
121.	HXCF	9.0024E-02			1.0000E+00		1.0000E+00	8.2224E-07
122.	SW1DF	8.9462E-02			1.0000E+00		1.0000E+00	8.1710E-07
123.	A3ECF	8.9058E-02			1.0000E+00		1.0000E+00	8.1341E-07
124.	A3EDF	8.7071E-02			1.0000E+00		1.0000E+00	7.9526E-07
125.	RVD22	8.6636E-02	8.6414E-02		1.0926E+02	9.1359E-01	7.9760E-04	7.9129E-07
126.	RVC5	8.6417E-02	7.7598E-02		1.7604E+00	9.2240E-01	9.2600E-02	7.8929E-07
127.	HXAF	8.5906E-02			1.0000E+00		1.0000E+00	7.8462E-07
128.	HPI4	8.2404E-02	7.9812E-02		1.6464E+00	9.2019E-01	1.0990E-01	7.5264E-07
129.	ECF	8.2034E-02			1.0000E+00		1.0000E+00	7.4926E-07
130.	A3EBF	8.0393E-02			1.0000E+00		1.0000E+00	7.3427E-07
131.	RPB3	7.7881E-02	7.7019E-02		3.4843E+00	9.2298E-01	3.0070E-02	7.1132E-07
132.	RPD4	7.7547E-02	7.7343E-02		1.0476E+00	9.2266E-01	6.1900E-01	7.0828E-07
133.	RBISOF	7.2128E-02			1.0000E+00		1.0000E+00	6.5878E-07
134.	RBI2	7.2128E-02	-3.2312E-02		7.1450E-01	1.0323E+00	1.0167E-01	6.5878E-07
135.	OLPF	7.1888E-02			1.0000E+00		1.0000E+00	6.5659E-07
136.	OEEF	7.1672E-02			1.0000E+00		1.0000E+00	6.5462E-07
137.	OBDF	7.0884E-02			1.0000E+00		1.0000E+00	6.4742E-07
138.	OLA1	6.6849E-02	6.2302E-02		1.7352E+00	9.3770E-01	7.8120E-02	6.1057E-07
139.	OSP1	6.3565E-02	6.3555E-02		8.1397E+02	9.3645E-01	7.8170E-05	5.8057E-07
140.	BVRF	6.3010E-02			1.0000E+00		1.0000E+00	5.7551E-07
141.	GD2	6.1549E-02	5.8285E-02		1.5854E+00	9.4172E-01	9.0550E-02	5.6215E-07
142.	RVD45	5.9798E-02			1.0000E+00		1.0000E+00	5.4617E-07
143.	NPIF	5.9263E-02			1.0000E+00		1.0000E+00	5.4128E-07
144.	NH1F	5.9263E-02			1.0000E+00		1.0000E+00	5.4128E-07
145.	HXDF	5.8520E-02			1.0000E+00		1.0000E+00	5.3449E-07
146.	RPB1	5.7987E-02	5.1273E-02		4.6295E+00	9.4873E-01	1.3930E-02	5.2962E-07
147.	PX1F	5.7349E-02			1.0000E+00		1.0000E+00	5.2379E-07
148.	RC3F	5.5100E-02			1.0000E+00		1.0000E+00	5.0326E-07
149.	RDF	5.5100E-02			1.0000E+00		1.0000E+00	5.0326E-07
150.	NH2F	5.5020E-02			1.0000E+00		1.0000E+00	5.0252E-07
151.	NPIIF	5.5020E-02			1.0000E+00		1.0000E+00	5.0252E-07
152.	GB4	5.4186E-02	5.3705E-02		1.3027E+00	9.4629E-01	1.5070E-01	4.9491E-07
153.	DN3F	5.4012E-02			1.0000E+00		1.0000E+00	4.9332E-07
154.	DE3	5.2560E-02	5.1826E-02		5.6916E+01	9.4817E-01	9.2600E-04	4.8006E-07
155.	RK3F	5.1861E-02			1.0000E+00		1.0000E+00	4.7367E-07

MODEL Name: BFNU3M
Split Fraction Importance for Group : ALL
Sorted by Fraction Importance
Group Frequency = 9.1335E-06

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.....	SF Name...	Fraction... Importance	Fussel-Vesely. Importance	Birnbaum... Importance	Achievement. Worth	Reduction... Worth	SF Value.....	Frequency.
156.	RL3F	5.1861E-02			1.0000E+00		1.0000E+00	4.7367E-07
157.	DO3F	5.1690E-02			1.0000E+00		1.0000E+00	4.7211E-07
158.	CSF	5.1407E-02			1.0000E+00		1.0000E+00	4.6952E-07
159.	AIF	4.9749E-02			1.0000E+00		1.0000E+00	4.5438E-07
160.	VNTF	4.9749E-02			1.0000E+00		1.0000E+00	4.5438E-07
161.	RPD2	4.8802E-02	2.4034E-02		1.0345E+00	9.7597E-01	4.1070E-01	4.4573E-07
162.	LVF	4.7801E-02			1.0000E+00		1.0000E+00	4.3659E-07
163.	PX2F	4.6050E-02			1.0000E+00		1.0000E+00	4.2060E-07
164.	RB3F	4.3210E-02			1.0000E+00		1.0000E+00	3.9466E-07
165.	RCF	4.3210E-02			1.0000E+00		1.0000E+00	3.9466E-07
166.	SL1	4.2609E-02	4.0970E-02		8.0730E+00	9.5903E-01	5.7591E-03	3.8917E-07
167.	EPR62	4.2237E-02	4.1754E-02		1.3074E+00	9.5825E-01	1.1960E-01	3.8577E-07
168.	GG1	4.1140E-02	3.3573E-02		1.3412E+00	9.6643E-01	8.9590E-02	3.7575E-07
169.	EPR302	4.0577E-02	4.0286E-02		1.1646E+00	9.5971E-01	1.9660E-01	3.7061E-07
170.	OIVF	3.9243E-02			1.0000E+00		1.0000E+00	3.5842E-07
171.	SW2B1	3.8460E-02	3.6068E-03		1.0828E+00	9.9639E-01	4.1740E-02	3.5128E-07
172.	GBF	3.7180E-02			1.0000E+00		1.0000E+00	3.3958E-07
173.	CRD4	3.7004E-02	3.3919E-02		1.8355E+00	9.6608E-01	3.9011E-02	3.3797E-07
174.	GAF	3.5335E-02			1.0000E+00		1.0000E+00	3.2273E-07
175.	GB2	3.5203E-02	3.3150E-02		1.3588E+00	9.6685E-01	8.4570E-02	3.2153E-07
176.	GDF	3.4605E-02			1.0000E+00		1.0000E+00	3.1606E-07
177.	DGK	3.3976E-02	3.3941E-02		1.9165E+01	9.6606E-01	1.8650E-03	3.1032E-07
178.	RPD1	3.3349E-02	2.9911E-02		4.5630E+00	9.7009E-01	8.3250E-03	3.0460E-07
179.	OSL1	3.2679E-02	3.1476E-02		6.8619E+00	9.6852E-01	5.3410E-03	2.9848E-07
180.	TORF	3.1895E-02			1.0000E+00		1.0000E+00	2.9131E-07
181.	R480F	3.1511E-02			1.0000E+00		1.0000E+00	2.8781E-07
182.	GG2	3.1455E-02	2.5647E-02		1.2605E+00	9.7435E-01	8.9620E-02	2.8729E-07
183.	HPI2	2.9876E-02	-1.4507E-02		8.4387E-01	1.0145E+00	8.5020E-02	2.7287E-07
184.	EPR304	2.9801E-02	2.9796E-02		1.0813E+00	9.7020E-01	2.6830E-01	2.7218E-07
185.	GD1	2.8705E-02	2.3876E-02		1.1544E+00	9.7612E-01	1.3390E-01	2.6217E-07
186.	SPF	2.8327E-02			1.0000E+00		1.0000E+00	2.5873E-07
187.	EPR64	2.7996E-02	2.7991E-02		1.2072E+00	9.7201E-01	1.1900E-01	2.5570E-07
188.	NIEF	2.7621E-02			1.0000E+00		1.0000E+00	2.5228E-07
189.	RVC9	2.7192E-02			9.7281E-01		1.0000E+00	2.4836E-07
190.	CADF	2.6139E-02			1.0000E+00		1.0000E+00	2.3874E-07
191.	TB1	2.5179E-02	1.6001E-02		1.9708E+00	9.8400E-01	1.6216E-02	2.2998E-07
192.	GF4	2.4156E-02	2.2882E-02		1.1168E+00	9.7712E-01	1.6380E-01	2.2063E-07
193.	SW2D1	2.3782E-02	-1.0843E-02		7.7333E-01	1.0108E+00	4.5650E-02	2.1721E-07
194.	GC2	2.3446E-02	2.2363E-02		1.2512E+00	9.7764E-01	8.1740E-02	2.1415E-07
195.	GF1	2.2341E-02	1.7205E-02		1.1733E+00	9.8279E-01	9.0310E-02	2.0405E-07
196.	OSL2	2.2060E-02	2.0785E-02		2.7185E+00	9.7922E-01	1.1950E-02	2.0148E-07
197.	U22	2.1727E-02	1.9977E-02		1.6801E+00	9.8002E-01	2.8537E-02	1.9844E-07
198.	NRUF	2.1382E-02			1.0000E+00		1.0000E+00	1.9529E-07
199.	RPB6	2.1314E-02	1.8042E-02		1.0263E+00	9.8196E-01	4.0700E-01	1.9467E-07
200.	RPD10	2.1227E-02	2.0094E-02		1.0311E+00	9.7991E-01	3.9220E-01	1.9387E-07
201.	GH1	2.1220E-02	1.8449E-02		1.1834E+00	9.8155E-01	9.1410E-02	1.9381E-07
202.	GH2	2.0465E-02	1.3522E-02		1.1572E+00	9.8648E-01	7.9200E-02	1.8691E-07
203.	HXA1	1.9853E-02	1.6842E-02		4.0520E+00	9.8316E-01	5.4880E-03	1.8133E-07
204.	GH4	1.9574E-02	1.6853E-02		1.0250E+00	9.8315E-01	4.0240E-01	1.7878E-07
205.	MCD1	1.9502E-02	9.9038E-03		1.3036E+00	9.9010E-01	3.1590E-02	1.7812E-07
206.	HXB1	1.9445E-02	1.7294E-02		4.2643E+00	9.8271E-01	5.2700E-03	1.7760E-07
207.	HXD1	1.9292E-02	1.7504E-02		4.3442E+00	9.8250E-01	5.2070E-03	1.7620E-07
208.	TOR2	1.9203E-02	1.9202E-02		1.4806E+04	9.8080E-01	1.2970E-06	1.7539E-07
209.	LCF	1.8678E-02			1.0000E+00		1.0000E+00	1.7059E-07
210.	HXC2	1.8165E-02	1.8121E-02		1.5889E+00	9.8188E-01	2.9850E-02	1.6591E-07
211.	OGS2	1.7859E-02	1.5382E-03		1.0131E+00	9.9846E-01	1.0500E-01	1.6311E-07
212.	RVC3	1.7858E-02	1.7850E-02		4.1532E+01	9.8215E-01	4.4020E-04	1.6310E-07
213.	HXD7	1.7851E-02	1.7851E-02		1.0124E+00	9.8215E-01	5.8920E-01	1.6304E-07
214.	HXB5	1.7840E-02	1.7783E-02		1.0375E+00	9.8222E-01	3.2150E-01	1.6295E-07
215.	DGC1	1.7687E-02	1.3941E-02		1.0451E+00	9.8606E-01	2.3600E-01	1.6154E-07
216.	HPI6	1.7686E-02	1.4535E-02		1.1532E+00	9.8546E-01	8.6670E-02	1.6153E-07
217.	GC4	1.7528E-02	1.5073E-02		1.1158E+00	9.8493E-01	1.1520E-01	1.6009E-07
218.	BVR1	1.7310E-02	1.4323E-02		2.0258E+00	9.8568E-01	1.3770E-02	1.5810E-07
219.	SW2C1	1.7056E-02	-1.5296E-02		6.3136E-01	1.0153E+00	3.9840E-02	1.5578E-07
220.	FE1	1.6952E-02	1.3393E-02		1.8118E+00	9.8661E-01	1.6230E-02	1.5483E-07
221.	GEF	1.6952E-02			1.0000E+00		1.0000E+00	1.5483E-07
222.	GB1	1.6695E-02	1.4546E-02		1.0883E+00	9.8545E-01	1.4150E-01	1.5249E-07
223.	SW2A1	1.6561E-02	-1.5416E-02		5.9742E-01	1.0154E+00	3.6880E-02	1.5126E-07
224.	GF2	1.6346E-02	9.0051E-03		1.1004E+00	9.9099E-01	8.2320E-02	1.4929E-07
225.	RX1	1.6103E-02	1.5561E-02		2.5736E+01	9.8444E-01	6.2870E-04	1.4707E-07
226.	RBF	1.5886E-02			1.0000E+00		1.0000E+00	1.4510E-07
227.	RD3F	1.5886E-02			1.0000E+00		1.0000E+00	1.4510E-07
228.	U21	1.5795E-02	1.5613E-02		1.2760E+00	9.8439E-01	5.3539E-02	1.4427E-07
229.	DH1	1.5662E-02	1.3218E-02		5.4464E+00	9.8678E-01	2.9640E-03	1.4305E-07
230.	SW1C1	1.5257E-02	5.4727E-04		1.0071E+00	9.9945E-01	7.1180E-02	1.3935E-07
231.	GGF	1.5102E-02			1.0000E+00		1.0000E+00	1.3794E-07
232.	GHF	1.5089E-02			1.0000E+00		1.0000E+00	1.3782E-07
233.	RPC1	1.4619E-02	9.4228E-03		2.0835E+00	9.9058E-01	8.6220E-03	1.3353E-07
234.	GFF	1.3899E-02			1.0000E+00		1.0000E+00	1.2695E-07
235.	RVC2	1.3777E-02	1.3718E-02		4.2111E+00	9.8628E-01	4.2540E-03	1.2584E-07
236.	OHR1	1.3680E-02	1.3494E-02		1.4030E+00	9.8651E-01	3.2400E-02	1.2494E-07

MODEL Name: BFNU3M
Split Fraction Importance for Group : ALL
Sorted by Fraction Importance
Group Frequency = 9.1335E-06

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.....	SF Name...	Fraction... Importance	Fussel-Vesely. Importance	Birnbaum... Importance	Achievement. Worth	Reduction... Worth	SF Value.....	Frequency.
237.	FA1	1.1647E-02	8.7032E-03		1.5275E+00	9.9130E-01	1.6230E-02	1.0637E-07
238.	SW1D17	1.1647E-02	9.2780E-03		1.1180E+00	9.9072E-01	7.2920E-02	1.0638E-07
239.	EPR63	1.0976E-02	1.0976E-02		1.0810E+00	9.8902E-01	1.1940E-01	1.0025E-07
240.	HXBF	1.0664E-02			1.0000E+00		1.0000E+00	9.7401E-08
241.	FB1	1.0372E-02	7.7520E-03		1.4717E+00	9.9225E-01	1.6170E-02	9.4737E-08
242.	SW1A1	9.7763E-03	-7.5450E-03		8.9143E-01	1.0075E+00	6.4980E-02	8.9292E-08
243.	GB5	9.2962E-03	9.2610E-03		1.0930E+00	9.9074E-01	9.0550E-02	8.4907E-08
244.	A3EA1	8.9557E-03	8.7515E-03		3.3285E+01	9.9125E-01	2.7100E-04	8.1797E-08
245.	TBF	8.8252E-03			1.0000E+00		1.0000E+00	8.0605E-08
246.	SW1B1	8.6296E-03	-5.2107E-03		9.3180E-01	1.0052E+00	7.0980E-02	7.8819E-08
247.	FD1	8.6081E-03	5.8173E-03		1.3539E+00	9.9418E-01	1.6170E-02	7.8622E-08
248.	SW1D1	8.6047E-03	-4.7940E-03		9.4391E-01	1.0048E+00	7.8740E-02	7.8591E-08
249.	RPD3	8.5405E-03	2.6614E-03		1.0082E+00	9.9734E-01	2.4590E-01	7.8004E-08
250.	RPD9	8.3520E-03	8.0823E-03		1.0118E+00	9.9192E-01	4.0750E-01	7.6283E-08
251.	SDC2	8.0826E-03	7.2471E-03		1.2153E+00	9.9275E-01	3.2569E-02	7.3822E-08
252.	FG2	8.0276E-03	7.8425E-03		1.3781E+00	9.9216E-01	2.0320E-02	7.3320E-08
253.	RPB5	8.0178E-03	7.1457E-03		1.5000E+00	9.9285E-01	1.4090E-02	7.3231E-08
254.	FF3	7.9815E-03	7.9685E-03		1.0282E+00	9.9203E-01	2.2050E-01	7.2899E-08
255.	FAF	7.9815E-03			1.0000E+00		1.0000E+00	7.2899E-08
256.	FDF	7.9815E-03			1.0000E+00		1.0000E+00	7.2899E-08
257.	FBF	7.9815E-03			1.0000E+00		1.0000E+00	7.2899E-08
258.	FCF	7.9815E-03			1.0000E+00		1.0000E+00	7.2899E-08
259.	FH4	7.9815E-03	7.9815E-03		1.0005E+00	9.9202E-01	9.4280E-01	7.2899E-08
260.	RBCQ	7.7649E-03	4.4202E-04		1.0344E+00	9.9956E-01	1.2695E-02	7.0921E-08
261.	EPR303	7.5943E-03	7.5820E-03		1.0298E+00	9.9242E-01	2.0290E-01	6.9363E-08
262.	OAD1	7.3114E-03	6.9878E-03		5.6797E+00	9.9301E-01	1.4910E-03	6.6779E-08
263.	SW1B3	7.1426E-03	8.2742E-04		1.0112E+00	9.9917E-01	6.8680E-02	6.5237E-08
264.	PX23	7.0810E-03	7.0720E-03		9.8941E+00	9.9293E-01	7.9450E-04	6.4675E-08
265.	FG1	7.0749E-03	3.6483E-03		1.2220E+00	9.9635E-01	1.6170E-02	6.4618E-08
266.	CS4	6.9810E-03	6.6561E-03		1.1801E+00	9.9334E-01	3.5639E-02	6.3761E-08
267.	GC1	6.8814E-03	5.8457E-03		1.0328E+00	9.9415E-01	1.5140E-01	6.2852E-08
268.	FH1	6.6987E-03	3.4759E-03		1.2115E+00	9.9652E-01	1.6170E-02	6.1183E-08
269.	RPC3	6.6174E-03	6.0243E-03		1.4144E+00	9.9398E-01	1.4330E-02	6.0440E-08
270.	DGJ	6.4884E-03	5.8326E-03		7.2712E+00	9.9417E-01	9.2920E-04	5.9262E-08
271.	CRD1	6.4604E-03	6.2035E-03		5.6959E+00	9.9380E-01	1.3193E-03	5.9006E-08
272.	RVC6	6.3550E-03	6.2933E-03		1.6481E+00	9.9371E-01	9.6170E-03	5.8044E-08
273.	A3EC1	6.2908E-03	6.0882E-03		2.3451E+01	9.9391E-01	2.7110E-04	5.7457E-08
274.	SPRF	6.2328E-03			1.0000E+00		1.0000E+00	5.6927E-08
275.	NPI1	5.9101E-03	5.6446E-03		2.0772E+01	9.9436E-01	2.8540E-04	5.3980E-08
276.	HS7	5.9044E-03	5.9044E-03		1.0597E+00	9.9410E-01	9.0000E-02	5.3928E-08
277.	FC1	5.8153E-03	3.2905E-03		1.2002E+00	9.9671E-01	1.6170E-02	5.3114E-08
278.	NPII2	5.8069E-03	5.8069E-03		1.0886E+00	9.9419E-01	6.1540E-02	5.3037E-08
279.	FP1	5.6978E-03	2.3627E-03		1.1438E+00	9.9764E-01	1.6170E-02	5.2041E-08
280.	DJ3F	5.6685E-03			1.0000E+00		1.0000E+00	5.1774E-08
281.	CRD5	5.6325E-03	5.6091E-03		1.0871E+00	9.9439E-01	6.0532E-02	5.1444E-08
282.	GH3	5.4739E-03	3.2189E-03		1.0243E+00	9.9678E-01	1.1700E-01	4.9996E-08
283.	GD3	5.4192E-03	4.8673E-03		1.0331E+00	9.9513E-01	1.2830E-01	4.9496E-08
284.	ORP2	5.2668E-03	-3.6791E-03		8.5598E-01	1.0037E+00	2.4910E-02	4.8104E-08
285.	ODWS2	5.0010E-03	-5.5275E-03		8.0005E-01	1.0055E+00	2.6900E-02	4.5677E-08
286.	HS5	4.8545E-03	4.8545E-03		1.0337E+00	9.9515E-01	1.2600E-01	4.4338E-08
287.	OLP1	4.7897E-03	4.7879E-03		2.6494E+02	9.9521E-01	1.8140E-05	4.3746E-08
288.	HXB6	4.2436E-03	3.8053E-03		1.6896E+00	9.9619E-01	5.4880E-03	3.8759E-08
289.	DF1	4.1437E-03	1.3968E-03		1.4356E+00	9.9860E-01	3.1963E-03	3.7847E-08
290.	GB3	4.0521E-03	3.6659E-03		1.0237E+00	9.9633E-01	1.3390E-01	3.7010E-08
291.	DL1	3.7433E-03	-7.0056E-03		5.0696E-01	1.0070E+00	1.4010E-02	3.4189E-08
292.	DK1	3.7426E-03	-6.9268E-03		5.0644E-01	1.0069E+00	1.3840E-02	3.4183E-08
293.	RY3	3.5968E-03	3.5509E-03		6.5560E+00	9.9645E-01	6.3870E-04	3.2852E-08
294.	SW1B2	3.5785E-03	3.0951E-03		1.1914E+00	9.9690E-01	1.5910E-02	3.2684E-08
295.	HRC1	3.5648E-03	3.2904E-03		6.6848E+00	9.9671E-01	5.7846E-04	3.2559E-08
296.	OAL1	3.4928E-03	-2.2619E-05		9.9860E-01	1.0000E+00	1.5910E-02	3.1902E-08
297.	GC3	3.3025E-03	3.2109E-03		1.0195E+00	9.9679E-01	1.4150E-01	3.0164E-08
298.	RY1	3.1057E-03	2.5887E-03		5.0486E+00	9.9741E-01	6.3900E-04	2.8366E-08
299.	GC5	3.0657E-03	2.5856E-03		1.0280E+00	9.9741E-01	8.4570E-02	2.8000E-08
300.	GH5	2.9334E-03	1.8675E-03		1.0188E+00	9.9813E-01	9.0310E-02	2.6792E-08
301.	VNT1	2.9206E-03	1.4016E-03		1.2994E+00	9.9860E-01	4.6587E-03	2.6675E-08
302.	HR1	2.8831E-03	2.8590E-03		1.3148E+00	9.9714E-01	9.0000E-03	2.6333E-08
303.	RB31	2.8400E-03	2.7212E-03		2.2718E+01	9.9728E-01	1.2528E-04	2.5940E-08
304.	RXS4	2.7654E-03	2.7650E-03		1.3444E+02	9.9724E-01	2.0720E-05	2.5258E-08
305.	RCL1	2.7218E-03	-1.1219E-03		9.3954E-01	1.0011E+00	1.8220E-02	2.4860E-08
306.	HPI1	2.6552E-03	1.7376E-03		1.0186E+00	9.9826E-01	8.5600E-02	2.4252E-08
307.	TB2	2.5688E-03	6.2276E-04		1.0097E+00	9.9938E-01	6.0058E-02	2.3462E-08
308.	HXD9	2.5657E-03	1.7017E-03		1.0553E+00	9.9830E-01	2.9850E-02	2.3434E-08
309.	DE1	2.5401E-03	2.5171E-03		2.4342E+00	9.9748E-01	1.7520E-03	2.3200E-08
310.	DGB	2.3910E-03	2.3905E-03		1.6439E+00	9.9761E-01	3.6990E-03	2.1838E-08
311.	LPC2	2.3571E-03	1.7559E-03		1.2152E+00	9.9824E-01	8.0944E-03	2.1529E-08
312.	FD2	2.3086E-03	2.1150E-03		1.1020E+00	9.9789E-01	2.0320E-02	2.1086E-08
313.	LC1	2.2994E-03	8.8958E-04		1.1498E+00	9.9911E-01	5.9020E-03	2.1002E-08
314.	RC31	2.2487E-03	2.1381E-03		1.9130E+01	9.9786E-01	1.1792E-04	2.0538E-08
315.	OHS3	2.1322E-03	9.1377E-04		1.1729E+00	9.9909E-01	5.2570E-03	1.9474E-08
316.	RVD14	2.0809E-03	2.0782E-03		3.5434E+00	9.9792E-01	8.1640E-04	1.9006E-08
317.	GF3	2.0326E-03	9.4161E-04		1.0096E+00	9.9906E-01	8.9590E-02	1.8565E-08

MODEL Name: BFNU3M
Split Fraction Importance for Group : ALL
Sorted by Fraction Importance
Group Frequency = 9.1335E-06

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.....	SF Name...	Fraction... Importance	Fussel-Vesely. Importance	Birnbaum... Importance	Achievement. Worth	Reduction... Worth	SF Value.....	Frequency.
318.	DCA1	1.9628E-03	-1.3398E-03		7.1572E-01	1.0013E+00	4.6908E-03	1.7928E-08
319.	SW2D4	1.9327E-03	1.5306E-03		1.0062E+00	9.9847E-01	1.9800E-01	1.7652E-08
320.	PX11	1.9145E-03	1.1705E-03		2.4721E+00	9.9883E-01	7.9450E-04	1.7486E-08
321.	CS2	1.8972E-03	1.8517E-03		1.8695E+00	9.9815E-01	2.1252E-03	1.7328E-08
322.	CS5	1.8790E-03	1.7982E-03		2.9949E+00	9.9820E-01	9.0058E-04	1.7162E-08
323.	SW1D6	1.8485E-03	1.7642E-03		1.0010E+00	9.9824E-01	6.3610E-01	1.6883E-08
324.	OAD2	1.7788E-03	1.6262E-03		2.1046E+00	9.9837E-01	1.4700E-03	1.6246E-08
325.	SW1D16	1.7551E-03	3.9091E-04		1.0053E+00	9.9961E-01	6.8680E-02	1.6030E-08
326.	RY2	1.7468E-03	1.7455E-03		1.4539E+01	9.9825E-01	1.2890E-04	1.5954E-08
327.	FB3	1.7133E-03	1.5449E-03		1.0055E+00	9.9846E-01	2.2050E-01	1.5649E-08
328.	PX22	1.6625E-03	1.6623E-03		1.4266E+00	9.9834E-01	3.8810E-03	1.5185E-08
329.	FC4	1.6614E-03	8.0542E-04		1.0000E+00	9.9919E-01	9.4280E-01	1.5174E-08
330.	SP21	1.6316E-03	-1.4444E-03		9.1417E-01	1.0014E+00	1.6550E-02	1.4902E-08
331.	GF5	1.5880E-03	1.4824E-03		1.0151E+00	9.9852E-01	8.9620E-02	1.4504E-08
332.	OHRF	1.5670E-03			1.0000E+00		1.0000E+00	1.4312E-08
333.	OBD1	1.5433E-03	9.4978E-04		1.0063E+00	9.9905E-01	1.3120E-01	1.4096E-08
334.	GH7	1.5327E-03	1.3843E-03		1.0071E+00	9.9862E-01	1.6380E-01	1.3999E-08
335.	FWH1	1.5254E-03	1.2908E-03		1.4095E+00	9.9871E-01	3.1422E-03	1.3932E-08
336.	HS6	1.5169E-03	1.5169E-03		1.0092E+00	9.9848E-01	1.4200E-01	1.3855E-08
337.	CD5	1.5117E-03	1.4522E-03		1.5186E+00	9.9855E-01	2.7922E-03	1.3807E-08
338.	A3ED5	1.4902E-03	2.8336E-04		1.0031E+00	9.9972E-01	8.3940E-02	1.3611E-08
339.	OUB2	1.4568E-03	1.2982E-03		1.2573E+00	9.9870E-01	5.0200E-03	1.3305E-08
340.	HXC1	1.4272E-03	-1.3061E-03		7.5732E-01	1.0013E+00	5.3530E-03	1.3035E-08
341.	SW1D2	1.4172E-03	1.1349E-03		1.0947E+00	9.9887E-01	1.1840E-02	1.2944E-08
342.	SW1D7	1.4065E-03	4.5471E-04		1.0056E+00	9.9955E-01	7.5690E-02	1.2846E-08
343.	FB2	1.4059E-03	1.1343E-03		1.0691E+00	9.9887E-01	1.6160E-02	1.2841E-08
344.	OAL2	1.3862E-03	-4.2763E-04		9.7774E-01	1.0004E+00	1.8850E-02	1.2661E-08
345.	GG3	1.3603E-03	6.1599E-04		1.0063E+00	9.9938E-01	8.9590E-02	1.2424E-08
346.	JC1	1.3550E-03	1.3446E-03		1.0268E+00	9.9866E-01	4.7790E-02	1.2376E-08
347.	OLC1	1.3362E-03	1.3109E-03		3.4554E+00	9.9869E-01	5.3360E-04	1.2204E-08
348.	ODWS1	1.3254E-03	-4.7632E-03		5.2456E-01	1.0048E+00	9.9190E-03	1.2105E-08
349.	CS7	1.2829E-03	9.8465E-04		1.0360E+00	9.9902E-01	2.6615E-02	1.1717E-08
350.	HPL1	1.2177E-03	-2.0284E-03		8.8129E-01	1.0020E+00	1.6800E-02	1.1122E-08
351.	SW1D11	1.2149E-03	-7.1049E-04		9.9106E-01	1.0007E+00	7.3590E-02	1.1096E-08
352.	RPD8	1.2059E-03	6.3982E-05		1.0045E+00	9.9994E-01	1.3930E-02	1.1014E-08
353.	HS2	1.1976E-03	1.1976E-03		1.0129E+00	9.9880E-01	8.5000E-02	1.0939E-08
354.	CD1	1.1797E-03	5.3666E-04		1.4271E+00	9.9946E-01	1.2550E-03	1.0775E-08
355.	DJ31	1.1793E-03	6.8871E-04		2.3867E+00	9.9931E-01	4.9640E-04	1.0771E-08
356.	OJC1	1.0907E-03	4.3058E-04		1.0130E+00	9.9957E-01	3.2040E-02	9.9624E-09
357.	EA2	1.0377E-03	4.8356E-04		1.1250E+00	9.9952E-01	3.8540E-03	9.4776E-09
358.	HS3	9.9720E-04	9.9720E-04		1.0165E+00	9.9900E-01	5.7000E-02	9.1079E-09
359.	RVC7	9.5564E-04	9.5341E-04		1.4075E+00	9.9905E-01	2.3340E-03	8.7284E-09
360.	HS4	9.2381E-04	9.2381E-04		1.0022E+00	9.9908E-01	3.0000E-01	8.4376E-09
361.	HPL3	9.2323E-04	8.1009E-04		1.0089E+00	9.9919E-01	8.3410E-02	8.4324E-09
362.	DB1	9.2004E-04	-8.0198E-04		6.0944E-01	1.0008E+00	2.0492E-03	8.4032E-09
363.	OF4	9.0745E-04	2.7270E-04		1.0348E+00	9.9973E-01	7.7770E-03	8.2882E-09
364.	SW1D14	9.0455E-04	-1.3378E-04		9.9825E-01	1.0001E+00	7.0980E-02	8.2617E-09
365.	OG51	9.0271E-04	6.7035E-04		2.7081E+00	9.9933E-01	3.9230E-04	8.2449E-09
366.	SW2D5	8.5750E-04	-7.8465E-04		9.8252E-01	1.0008E+00	4.2970E-02	7.8319E-09
367.	RBCT	8.5669E-04	-1.1525E-03		9.4139E-01	1.0012E+00	1.9284E-02	7.8246E-09
368.	OLP3	8.2644E-04	-4.1917E-04		9.3245E-01	1.0004E+00	6.1670E-03	7.5483E-09
369.	RPB2	8.0251E-04	2.5143E-04		1.0126E+00	9.9975E-01	1.9580E-02	7.3297E-09
370.	PCAA	7.8281E-04	-1.4612E-03		5.0246E-01	1.0015E+00	2.9283E-03	7.1498E-09
371.	VNT2	7.8273E-04	-4.3184E-04		9.2891E-01	1.0004E+00	6.0377E-03	7.1491E-09
372.	HXC3	7.1260E-04	5.2056E-04		1.0943E+00	9.9948E-01	5.4880E-03	6.5086E-09
373.	RVD21	6.9077E-04	5.6495E-04		1.1523E+00	9.9944E-01	3.6950E-03	6.3092E-09
374.	HXB4	6.7982E-04	6.7982E-04		1.0221E+00	9.9932E-01	2.9850E-02	6.2091E-09
375.	GH6	6.6819E-04	2.6722E-04		1.0030E+00	9.9973E-01	8.2320E-02	6.1029E-09
376.	SW1C7	6.6637E-04	-3.1950E-04		9.9540E-01	1.0003E+00	6.4980E-02	6.0863E-09
377.	RPB4	6.5542E-04	5.8340E-04		1.0401E+00	9.9942E-01	1.4330E-02	5.9863E-09
378.	HPL5	6.3672E-04	1.4267E-04		1.0078E+00	9.9986E-01	1.8020E-02	5.8155E-09
379.	RXS2	6.3637E-04	6.3630E-04		3.0733E+01	9.9936E-01	2.1400E-05	5.8123E-09
380.	RK33	5.9879E-04	-1.2938E-03		9.4417E-01	1.0013E+00	2.2650E-02	5.4691E-09
381.	OHL1	5.9778E-04	2.5134E-04		1.1703E+00	9.9975E-01	1.4740E-03	5.4598E-09
382.	GB6	5.9532E-04	5.9532E-04		1.0040E+00	9.9940E-01	1.2830E-01	5.4374E-09
383.	CIS1	5.9238E-04	-3.6163E-03		1.4562E-01	1.0036E+00	4.2148E-03	5.4105E-09
384.	HXD6	5.4811E-04	5.4811E-04		1.0012E+00	9.9945E-01	3.2150E-01	5.0062E-09
385.	SW2D6	5.4728E-04	-5.8606E-05		9.9873E-01	1.0001E+00	4.4100E-02	4.9986E-09
386.	RPD7	5.0848E-04	4.9928E-04		1.0007E+00	9.9950E-01	4.0700E-01	4.6442E-09
387.	DA1	5.0145E-04	-1.2958E-03		3.8046E-01	1.0013E+00	2.0872E-03	4.5800E-09
388.	DD1	4.9762E-04	-1.2463E-03		3.8246E-01	1.0012E+00	2.0141E-03	4.5450E-09
389.	FWH2	4.7777E-04	2.3468E-04		1.0093E+00	9.9977E-01	2.4612E-02	4.3637E-09
390.	RXS10	4.7376E-04	4.7304E-04		1.5493E+02	9.9953E-01	3.0730E-06	4.3270E-09
391.	OHC4	4.6978E-04	-1.8872E-03		8.1955E-01	1.0019E+00	1.0350E-02	4.2907E-09
392.	SW2D7	4.6528E-04	-2.1348E-04		9.9510E-01	1.0002E+00	4.1740E-02	4.2496E-09
393.	DC1	4.6222E-04	-1.2549E-03		3.8813E-01	1.0013E+00	2.0467E-03	4.2217E-09
394.	EB5	4.4950E-04	4.4888E-04		1.0138E+00	9.9955E-01	3.1580E-02	4.1055E-09
395.	HRC6	4.4763E-04	4.3380E-04		1.0530E+00	9.9957E-01	8.1246E-03	4.0884E-09
396.	RL36	4.3134E-04	-7.7047E-04		9.6674E-01	1.0008E+00	2.2640E-02	3.9396E-09
397.	OSW1	4.2761E-04	-2.1322E-04		7.1679E-01	1.0002E+00	7.5230E-04	3.9055E-09
398.	CRD3	4.1515E-04	-5.9880E-04		9.8511E-01	1.0006E+00	3.8661E-02	3.7918E-09

.....	SF Name...	Fraction... Importance	Fussel-Vesely. Importance	Birnbaum... Importance	Achievement. Worth	Reduction... Worth	SF Value.....	Frequency.
399.	RPD6	4.1350E-04	3.2645E-04		1.0228E+00	9.9967E-01	1.4090E-02	3.7767E-09
400.	EB6	3.9176E-04	2.6605E-04		1.0694E+00	9.9973E-01	3.8170E-03	3.5781E-09
401.	EC10	3.9058E-04	3.5977E-04		1.0004E+00	9.9964E-01	5.0110E-01	3.5673E-09
402.	FH2	3.7891E-04	3.2366E-05		1.0020E+00	9.9997E-01	1.6160E-02	3.4608E-09
403.	ED29	3.7620E-04	3.7620E-04		1.0001E+00	9.9962E-01	7.8590E-01	3.4360E-09
404.	HXD3	3.6689E-04	-9.0236E-06		9.9948E-01	1.0000E+00	1.7170E-02	3.3510E-09
405.	OSP2	3.6402E-04	-7.0699E-04		8.7826E-01	1.0007E+00	5.7740E-03	3.3248E-09
406.	A3ED1	3.5214E-04	1.9333E-04		1.9088E+00	9.9981E-01	2.1270E-04	3.2163E-09
407.	UB43C1	3.4430E-04	2.5958E-04		3.3356E+00	9.9974E-01	1.1113E-04	3.1447E-09
408.	FC2	3.3799E-04	-9.8512E-05		9.9400E-01	1.0001E+00	1.6160E-02	3.0870E-09
409.	RK3	3.3179E-04	-9.1860E-04		9.6310E-01	1.0009E+00	2.4290E-02	3.0304E-09
410.	A3EC2	3.2069E-04	3.1979E-04		4.0540E+00	9.9968E-01	1.0470E-04	2.9290E-09
411.	EC12	3.1596E-04	1.5159E-04		1.0393E+00	9.9985E-01	3.8390E-03	2.8858E-09
412.	EA1	3.1488E-04	-3.6650E-04		6.1404E-01	1.0004E+00	9.4870E-04	2.8759E-09
413.	UB43A1	3.1125E-04	1.4110E-04		1.6321E+00	9.9986E-01	2.2316E-04	2.8428E-09
414.	SP12	2.9993E-04	2.1976E-04		1.0164E+00	9.9978E-01	1.3190E-02	2.7394E-09
415.	A3EB2	2.9756E-04	-3.4543E-04		9.9554E-01	1.0003E+00	7.1900E-02	2.7177E-09
416.	DV2F	2.9033E-04			1.0000E+00		1.0000E+00	2.6517E-09
417.	NH11	2.8236E-04	-2.5445E-03		1.5805E-01	1.0025E+00	3.0130E-03	2.5789E-09
418.	NH21	2.8230E-04	-2.4873E-03		1.6670E-01	1.0025E+00	2.9760E-03	2.5784E-09
419.	SP11	2.8181E-04	2.0512E-04		1.2336E+00	9.9979E-01	8.7750E-04	2.5740E-09
420.	SGT2	2.6883E-04	-9.7774E-04		9.6281E-01	1.0010E+00	2.5619E-02	2.4554E-09
421.	DGA	2.5336E-04	2.3139E-04		1.1321E+00	9.9977E-01	1.7490E-03	2.3141E-09
422.	SW1A2	2.4833E-04	-1.1360E-05		9.9929E-01	1.0000E+00	1.5670E-02	2.2682E-09
423.	ED34	2.4560E-04	2.3690E-04		1.0633E+00	9.9976E-01	3.7310E-03	2.2432E-09
424.	HXB2	2.4360E-04	1.8964E-04		1.0089E+00	9.9981E-01	2.0870E-02	2.2249E-09
425.	PX21	2.2586E-04	-5.1005E-04		3.5650E-01	1.0005E+00	7.9200E-04	2.0629E-09
426.	DH2	2.2433E-04	-1.5715E-04		9.3533E-01	1.0002E+00	2.4240E-03	2.0489E-09
427.	FF2	2.1983E-04	-3.9347E-05		9.9760E-01	1.0000E+00	1.6160E-02	2.0078E-09
428.	EB2	2.1755E-04	2.1632E-04		1.0170E+00	9.9978E-01	1.2530E-02	1.9870E-09
429.	DV21	2.1189E-04	1.9893E-04		1.0438E+00	9.9980E-01	4.5200E-03	1.9353E-09
430.	SL2	2.1114E-04	1.0734E-04		1.0038E+00	9.9989E-01	2.7449E-02	1.9284E-09
431.	SW2C4	2.0809E-04	2.0485E-04		1.0007E+00	9.9980E-01	2.1690E-01	1.9006E-09
432.	SW1C6	2.0809E-04	2.0809E-04		1.0001E+00	9.9979E-01	6.5990E-01	1.9006E-09
433.	NBOCF	2.0084E-04			1.0000E+00		1.0000E+00	1.8344E-09
434.	DWS2	2.0057E-04	-6.3048E-04		9.6724E-01	1.0006E+00	1.8883E-02	1.8319E-09
435.	SDCF	1.9965E-04			1.0000E+00		1.0000E+00	1.8235E-09
436.	DF2	1.9752E-04	-1.5316E-04		9.4151E-01	1.0002E+00	2.6116E-03	1.8040E-09
437.	ED5	1.9714E-04	1.9714E-04		1.0005E+00	9.9980E-01	2.9250E-01	1.8006E-09
438.	EC2	1.9714E-04	1.9714E-04		1.0169E+00	9.9980E-01	1.1550E-02	1.8006E-09
439.	CD6	1.9582E-04	3.3895E-05		1.0038E+00	9.9997E-01	8.7847E-03	1.7886E-09
440.	NPII3	1.8802E-04	1.8480E-04		1.6473E+00	9.9982E-01	2.8540E-04	1.7173E-09
441.	UB43B1	1.8204E-04	4.2673E-06		1.0183E+00	1.0000E+00	2.3311E-04	1.6626E-09
442.	OSV1	1.6675E-04	-3.1655E-04		8.6463E-01	1.0003E+00	2.3330E-03	1.5230E-09
443.	RVL3	1.5194E-04	1.5160E-04		1.1882E+00	9.9985E-01	8.0480E-04	1.3877E-09
444.	RPT1	1.5169E-04	1.0829E-04		1.9369E+00	9.9989E-01	1.1557E-04	1.3855E-09
445.	SP13	1.4841E-04	-1.9249E-04		9.8572E-01	1.0002E+00	1.3300E-02	1.3555E-09
446.	SW2C5	1.3304E-04	-4.4166E-04		9.8847E-01	1.0004E+00	3.6880E-02	1.2151E-09
447.	CRD2	1.2709E-04	1.2501E-04		1.0148E+00	9.9987E-01	8.3944E-03	1.1608E-09
448.	LPC1	1.2639E-04	7.5913E-05		1.2399E+00	9.9992E-01	3.1630E-04	1.1544E-09
449.	DK2	1.2395E-04	-6.9243E-04		9.3757E-01	1.0007E+00	1.0970E-02	1.1321E-09
450.	EC4	1.1645E-04	6.5832E-05		1.0001E+00	9.9993E-01	3.3360E-01	1.0636E-09
451.	DL6	1.1288E-04	-4.4665E-04		9.5973E-01	1.0004E+00	1.0970E-02	1.0310E-09
452.	RL6	1.1155E-04	-4.7461E-04		9.8094E-01	1.0005E+00	2.4290E-02	1.0188E-09
453.	SPR17	1.0843E-04	9.5205E-05		1.0872E+00	9.9990E-01	1.0900E-03	9.9039E-10
454.	ED10	1.0111E-04	1.0111E-04		1.0002E+00	9.9990E-01	3.4560E-01	9.2346E-10
455.	EB1	9.9815E-05	-5.9527E-04		3.8558E-01	1.0006E+00	9.6790E-04	9.1166E-10
456.	GC6	9.8365E-05	8.0237E-05		1.0005E+00	9.9992E-01	1.3390E-01	8.9842E-10
457.	GH9	9.1684E-05	9.1684E-05		1.0009E+00	9.9991E-01	8.9620E-02	8.3739E-10
458.	DL4	8.9489E-05	-4.6707E-04		9.5812E-01	1.0005E+00	1.1030E-02	8.1735E-10
459.	OSP3	8.7806E-05	8.5065E-05		2.1792E+00	9.9991E-01	7.2130E-05	8.0198E-10
460.	RBCA	8.4043E-05	2.7585E-05		1.0003E+00	9.9997E-01	9.0372E-02	7.6761E-10
461.	SW2D9	8.2213E-05	-6.1242E-06		9.9968E-01	1.0000E+00	1.8570E-02	7.5089E-10
462.	EC9	7.5893E-05	-1.6293E-04		9.5649E-01	1.0002E+00	3.7310E-03	6.9317E-10
463.	CSTF	7.1694E-05			1.0000E+00		1.0000E+00	6.5482E-10
464.	A3EB1	7.0539E-05	-1.1741E-04		5.3347E-01	1.0001E+00	2.5160E-04	6.4427E-10
465.	HRC3	6.4539E-05	5.3242E-05		1.1864E+00	9.9995E-01	2.8558E-04	5.8947E-10
466.	A3EB4	6.4184E-05	-3.6857E-05		9.9991E-01	1.0000E+00	2.8260E-01	5.8623E-10
467.	ORP3	6.1232E-05	-2.5215E-04		9.9435E-01	1.0003E+00	4.2740E-02	5.5926E-10
468.	SW2D3	6.0234E-05	-2.5749E-04		9.7583E-01	1.0003E+00	1.0540E-02	5.5014E-10
469.	DGO	5.5668E-05	5.5627E-05		1.0670E+00	9.9994E-01	8.2930E-04	5.0845E-10
470.	SGT1	5.3734E-05	-1.2083E-03		2.1809E-01	1.0012E+00	1.5429E-03	4.9078E-10
471.	DV11	5.3210E-05	5.0122E-05		1.0103E+00	9.9995E-01	4.8650E-03	4.8600E-10
472.	AA2	5.0418E-05	2.3771E-06		1.0031E+00	1.0000E+00	7.6310E-04	4.6049E-10
473.	IVC1	4.9033E-05	4.6440E-05		1.6027E+00	9.9995E-01	7.7044E-05	4.4785E-10
474.	SW1D13	4.8989E-05	4.4331E-05		1.0001E+00	9.9996E-01	2.3300E-01	4.4744E-10
475.	HXD10	4.8644E-05	3.8733E-05		1.0070E+00	9.9996E-01	5.4880E-03	4.4429E-10
476.	SW1D5	4.8187E-05	4.8187E-05		1.0004E+00	9.9995E-01	1.1050E-01	4.4012E-10
477.	DGL	4.5995E-05	-2.9634E-05		9.6815E-01	1.0000E+00	9.2970E-04	4.2009E-10
478.	A3EA2	4.5811E-05	-6.1753E-05		9.2906E-01	1.0001E+00	8.6970E-04	4.1841E-10
479.	OG161	4.5143E-05	-4.0743E-04		3.1216E-01	1.0004E+00	5.9198E-04	4.1231E-10

MODEL Name: BFNU3M
Split Fraction Importance for Group : ALL
Sorted by Fraction Importance
Group Frequency = 9.1335E-06

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.....	SF Name...	Fraction... Importance	Fussel-Vesely. Importance	Birnbaum... Importance	Achievement. Worth	Reduction... Worth	SF Value.....	Frequency.
480.	HRC5	4.4942E-05	3.1126E-05		1.0940E+00	9.9997E-01	3.3091E-04	4.1048E-10
481.	EC11	4.2020E-05	2.4871E-05		1.0008E+00	9.9998E-01	3.1690E-02	3.8379E-10
482.	PCA4	3.9907E-05	-2.3465E-04		9.9479E-01	1.0002E+00	4.3080E-02	3.6449E-10
483.	A3ED23	3.6143E-05	-3.4574E-05		9.5542E-01	1.0000E+00	7.7500E-04	3.3011E-10
484.	A3EC5	3.5852E-05	3.5790E-05		1.1320E+00	9.9996E-01	2.7100E-04	3.2745E-10
485.	R4801	3.5455E-05	-1.1338E-04		8.9513E-01	1.0001E+00	1.0800E-03	3.2382E-10
486.	OSD1	3.4033E-05	3.7753E-06		1.0035E+00	1.0000E+00	1.0630E-03	3.1084E-10
487.	RJ31	3.3566E-05	-1.0269E-04		3.2870E-01	1.0001E+00	1.5295E-04	3.0657E-10
488.	SW1D15	3.2659E-05	2.8055E-05		1.0017E+00	9.9997E-01	1.5910E-02	2.9829E-10
489.	GF6	3.0567E-05	2.9040E-05		1.0003E+00	9.9997E-01	8.9590E-02	2.7918E-10
490.	SPR11	3.0051E-05	2.9919E-05		1.0569E+00	9.9997E-01	5.2530E-04	2.7447E-10
491.	ODSB1	2.9906E-05	-1.2015E-05		9.9255E-01	1.0000E+00	1.6100E-03	2.7315E-10
492.	HXD2	2.9853E-05	-2.9983E-04		9.4341E-01	1.0003E+00	5.2700E-03	2.7266E-10
493.	A3EB21	2.9198E-05	-1.0435E-05		9.8704E-01	1.0000E+00	8.0440E-04	2.6668E-10
494.	ED32	2.8647E-05	1.4589E-05		1.0000E+00	9.9999E-01	5.1250E-01	2.6165E-10
495.	SW1D12	2.7836E-05	-2.5453E-05		9.9806E-01	1.0000E+00	1.2940E-02	2.5424E-10
496.	SW2D8	2.6664E-05	-1.3764E-05		9.9915E-01	1.0000E+00	1.5910E-02	2.4353E-10
497.	RBCK	2.6417E-05	-6.3018E-05		9.8712E-01	1.0001E+00	4.8676E-03	2.4128E-10
498.	CAD2	2.5856E-05	-1.1144E-04		9.5666E-01	1.0001E+00	2.5645E-03	2.3616E-10
499.	RK31	2.4658E-05	-8.7896E-05		3.6865E-01	1.0001E+00	1.3920E-04	2.2521E-10
500.	RL31	2.4658E-05	-8.7892E-05		3.6868E-01	1.0001E+00	1.3920E-04	2.2521E-10
501.	RBCV	2.3977E-05	-1.6165E-04		9.6538E-01	1.0002E+00	4.6474E-03	2.1899E-10
502.	AD23	2.3302E-05	1.1101E-05		1.0166E+00	9.9999E-01	6.6700E-04	2.1283E-10
503.	AC4	2.3299E-05	1.8360E-05		1.0275E+00	9.9998E-01	6.6700E-04	2.1280E-10
504.	RVO2	2.0278E-05	1.5006E-05		2.0938E+00	9.9998E-01	1.3720E-05	1.8521E-10
505.	A3EC8	1.9537E-05	-4.2317E-05		9.4744E-01	1.0000E+00	8.0440E-04	1.7844E-10
506.	PCAB	1.9037E-05	-2.3352E-05		9.9958E-01	1.0000E+00	5.2577E-02	1.7388E-10
507.	SLF	1.8901E-05			1.0000E+00		1.0000E+00	1.7264E-10
508.	EB4	1.8722E-05	-2.5858E-04		9.3056E-01	1.0003E+00	3.7100E-03	1.7100E-10
509.	AD32	1.7966E-05	-3.3384E-06		9.9522E-01	1.0000E+00	6.9790E-04	1.6410E-10
510.	LV2	1.7636E-05	-3.1234E-05		9.9269E-01	1.0000E+00	4.2520E-03	1.6108E-10
511.	SW1D18	1.7369E-05	-1.3850E-05		9.9879E-01	1.0000E+00	1.1290E-02	1.5864E-10
512.	RBCL	1.7077E-05	-1.3030E-04		9.9050E-01	1.0001E+00	1.3528E-02	1.5598E-10
513.	ED28	1.6353E-05	1.6353E-05		1.0001E+00	9.9998E-01	2.1640E-01	1.4936E-10
514.	AC18	1.6128E-05	1.3933E-06		1.0018E+00	1.0000E+00	7.6310E-04	1.4731E-10
515.	LV1	1.5619E-05	-4.9181E-05		2.9536E-01	1.0000E+00	6.9791E-05	1.4266E-10
516.	SW2D2	1.4819E-05	-5.2914E-05		9.9330E-01	1.0001E+00	7.8300E-03	1.3535E-10
517.	DWS1	1.4529E-05	-6.8087E-04		4.8240E-01	1.0007E+00	1.3137E-03	1.3270E-10
518.	ED30	1.4176E-05	0.0000E+00		1.0000E+00	1.0000E+00	5.0180E-01	1.2947E-10
519.	ED31	1.3830E-05	1.3650E-05		1.0008E+00	9.9999E-01	1.5900E-02	1.2632E-10
520.	SP1	1.2675E-05	9.1165E-06		1.0197E+00	9.9999E-01	4.6180E-04	1.1577E-10
521.	SPR1	1.2675E-05	1.2675E-05		1.0291E+00	9.9999E-01	4.3480E-04	1.1577E-10
522.	L8H1	1.2393E-05	-1.0169E-04		9.9645E-01	1.0001E+00	2.7872E-02	1.1319E-10
523.	ODSB31	1.2034E-05	-1.2537E-04		9.2226E-01	1.0001E+00	1.6100E-03	1.0991E-10
524.	RBCN	1.1809E-05	-5.0914E-05		9.9908E-01	1.0001E+00	5.2470E-02	1.0786E-10
525.	AB2	1.1778E-05	-1.1683E-05		9.8327E-01	1.0000E+00	6.9790E-04	1.0757E-10
526.	AC14	1.1774E-05	6.5350E-07		1.0009E+00	1.0000E+00	6.9790E-04	1.0754E-10
527.	SW1C2	1.1717E-05	-2.3232E-04		9.7966E-01	1.0002E+00	1.1290E-02	1.0702E-10
528.	SW1C8	1.1651E-05	9.8192E-06		1.0007E+00	9.9999E-01	1.4870E-02	1.0642E-10
529.	SW1C3	1.1620E-05	-7.1926E-05		9.9244E-01	1.0001E+00	9.4230E-03	1.0613E-10
530.	DA2	1.1581E-05	-1.9812E-04		8.7234E-01	1.0002E+00	1.5495E-03	1.0578E-10
531.	DD2	1.1529E-05	-1.8978E-04		8.7716E-01	1.0002E+00	1.5425E-03	1.0530E-10
532.	DB2	1.1354E-05	-2.2504E-04		8.5209E-01	1.0002E+00	1.5191E-03	1.0370E-10
533.	DC2	1.1265E-05	-2.2604E-04		8.5025E-01	1.0002E+00	1.5072E-03	1.0289E-10
534.	HXB3	2.9258E-06	-3.2136E-04		9.4029E-01	1.0003E+00	5.3530E-03	2.6723E-11
535.	AD27	0.0000E+00	-1.8725E-06		9.9996E-01	1.0000E+00	4.4860E-02	0.0000E+00
536.	SPR18	0.0000E+00	-2.4292E-06		9.9480E-01	1.0000E+00	4.6650E-04	0.0000E+00
537.	RT1	0.0000E+00	-9.3708E-05		1.8595E-01	1.0001E+00	1.1510E-04	0.0000E+00
538.	RS1	0.0000E+00	-9.6431E-05		1.6229E-01	1.0001E+00	1.1510E-04	0.0000E+00
539.	RT3	0.0000E+00	-5.8200E-06		9.4944E-01	1.0000E+00	1.1510E-04	0.0000E+00
540.	A3EC3	0.0000E+00	-1.2915E-08		9.9995E-01	1.0000E+00	2.7110E-04	0.0000E+00
541.	AD34	0.0000E+00	-3.0442E-06		9.9997E-01	1.0000E+00	8.6230E-02	0.0000E+00
542.	ACM1	0.0000E+00	-4.3474E-05		7.8267E-01	1.0000E+00	2.0000E-04	0.0000E+00
543.	A3ED27	0.0000E+00	-2.2646E-06		9.9994E-01	1.0000E+00	3.7330E-02	0.0000E+00
544.	A3ED4	0.0000E+00	-2.0773E-05		9.7245E-01	1.0000E+00	7.5350E-04	0.0000E+00
545.	A3ED35	0.0000E+00	-4.1763E-06		9.9520E-01	1.0000E+00	8.6970E-04	0.0000E+00
546.	A3EB11	0.0000E+00	-3.8345E-08		9.9995E-01	1.0000E+00	8.0450E-04	0.0000E+00
547.	SW1ANN	0.0000E+00				1.0000E+00	0.0000E+00	0.0000E+00
548.	SPR8	0.0000E+00	-3.1158E-06		9.9377E-01	1.0000E+00	5.0020E-04	0.0000E+00
549.	AD1	0.0000E+00	-1.1285E-04		2.0311E-01	1.0001E+00	1.4160E-04	0.0000E+00
550.	ACM3	0.0000E+00	-1.0526E-06		4.7372E-01	1.0000E+00	2.0000E-06	0.0000E+00
551.	A3ED3	0.0000E+00	-1.1990E-08		9.9995E-01	1.0000E+00	2.5170E-04	0.0000E+00
552.	ACM2	0.0000E+00	-7.4845E-06		8.5032E-01	1.0000E+00	5.0000E-05	0.0000E+00
553.	SW2C2	0.0000E+00	-6.5813E-05		9.9096E-01	1.0001E+00	7.2310E-03	0.0000E+00
554.	SW2C3	0.0000E+00	-1.8958E-04		9.8392E-01	1.0002E+00	1.1650E-02	0.0000E+00
555.	SHUT13	0.0000E+00	-5.0957E-06		9.6571E-01	1.0000E+00	1.4860E-04	0.0000E+00
556.	A3EB25	0.0000E+00	-6.6087E-06		9.9241E-01	1.0000E+00	8.6970E-04	0.0000E+00
557.	TB3	0.0000E+00	-1.7064E-05		9.9974E-01	1.0000E+00	6.0794E-02	0.0000E+00
558.	AD4	0.0000E+00	-3.7385E-06		9.9419E-01	1.0000E+00	6.4360E-04	0.0000E+00
559.	A3EC10	0.0000E+00	-5.7932E-05		9.3345E-01	1.0001E+00	8.6970E-04	0.0000E+00
560.	A3ED32	0.0000E+00	-1.7440E-05		9.7834E-01	1.0000E+00	8.0440E-04	0.0000E+00

.....	SF Name...	Fraction... Importance	Fussel-Vesely. Importance	Birnbaum... Importance	Achievement. Worth	Reduction... Worth	SF Value.....	Frequency.
561.	RPT2	0.0000E+00	-1.0149E-07		9.9913E-01	1.0000E+00	1.1631E-04	0.0000E+00
562.	RPT5	0.0000E+00	-2.1480E-05		9.9738E-01	1.0000E+00	8.1386E-03	0.0000E+00
563.	A3EB10	0.0000E+00	-2.9162E-06		9.9996E-01	1.0000E+00	7.1920E-02	0.0000E+00
564.	SPR13	0.0000E+00	-8.6700E-08		9.9998E-01	1.0000E+00	3.4730E-03	0.0000E+00
565.	CAD1	0.0000E+00	-8.0323E-06		7.8860E-01	1.0000E+00	3.7995E-05	0.0000E+00
566.	A3EB15	0.0000E+00	-1.7818E-07		9.9980E-01	1.0000E+00	8.6970E-04	0.0000E+00
567.	TB0	0.0000E+00				1.0000E+00	0.0000E+00	0.0000E+00
568.	RR3	0.0000E+00	-8.1791E-06		9.7673E-01	1.0000E+00	3.5140E-04	0.0000E+00
569.	AD35	0.0000E+00	-9.9719E-06		9.8694E-01	1.0000E+00	7.6310E-04	0.0000E+00
570.	A3EB3	0.0000E+00	-4.7266E-07		9.9371E-01	1.0000E+00	7.5130E-05	0.0000E+00
571.	SP2	0.0000E+00	-1.0833E-05		9.9877E-01	1.0000E+00	8.7310E-03	0.0000E+00
572.	RQ1	0.0000E+00	-2.9510E-04		1.4021E-01	1.0003E+00	3.4310E-04	0.0000E+00
573.	SPR16	0.0000E+00	-6.7666E-08		9.9994E-01	1.0000E+00	1.0660E-03	0.0000E+00
574.	RR1	0.0000E+00	-2.8694E-04		1.8373E-01	1.0003E+00	3.5140E-04	0.0000E+00
575.	TBB	0.0000E+00				1.0000E+00	0.0000E+00	0.0000E+00
576.	RPT8	0.0000E+00	-1.6176E-06		9.9485E-01	1.0000E+00	3.1400E-04	0.0000E+00
577.	SP3	0.0000E+00	-3.2875E-05		9.9620E-01	1.0000E+00	8.5690E-03	0.0000E+00
578.	SPR15	0.0000E+00	-6.5791E-08		9.9988E-01	1.0000E+00	5.3230E-04	0.0000E+00
579.	SPR14	0.0000E+00	-1.5022E-07		9.9970E-01	1.0000E+00	5.0060E-04	0.0000E+00
580.	RPT9	0.0000E+00	-2.1011E-06		9.9985E-01	1.0000E+00	1.4041E-02	0.0000E+00
581.	UB41A1	0.0000E+00	-1.7796E-04		2.3740E-01	1.0002E+00	2.3330E-04	0.0000E+00
582.	SW1C4	0.0000E+00	-1.3681E-06		9.9999E-01	1.0000E+00	1.0450E-01	0.0000E+00
583.	SW1D3	0.0000E+00	-7.4574E-05		9.9153E-01	1.0001E+00	8.7290E-03	0.0000E+00
584.	SW1D4	0.0000E+00	-1.9918E-05		9.9981E-01	1.0000E+00	9.6230E-02	0.0000E+00
585.	RXS0	0.0000E+00				1.0000E+00	0.0000E+00	0.0000E+00
586.	UB42A1	0.0000E+00	-1.7796E-04		2.3740E-01	1.0002E+00	2.3330E-04	0.0000E+00
587.	A3EB18	0.0000E+00	-6.4402E-07		9.9998E-01	1.0000E+00	3.7330E-02	0.0000E+00
588.	RXS5	0.0000E+00	-2.3174E-10		9.9999E-01	1.0000E+00	2.1000E-05	0.0000E+00
589.	RV0B	0.0000E+00				1.0000E+00	0.0000E+00	0.0000E+00
590.	SHT21	0.0000E+00	-8.9872E-05		2.6883E-01	1.0001E+00	1.2290E-04	0.0000E+00
591.	AB5	0.0000E+00	-5.5190E-06		9.9277E-01	1.0000E+00	7.6310E-04	0.0000E+00
592.	SGTOPS	0.0000E+00				1.0000E+00	0.0000E+00	0.0000E+00
593.	AC1	0.0000E+00	-1.1285E-04		2.0311E-01	1.0001E+00	1.4160E-04	0.0000E+00
594.	WETS	0.0000E+00				1.0000E+00	0.0000E+00	0.0000E+00
595.	SDREC1	0.0000E+00	-7.0961E-05		9.7764E-01	1.0001E+00	3.1638E-03	0.0000E+00
596.	A3ED22	0.0000E+00	-5.1534E-08		9.9980E-01	1.0000E+00	2.5170E-04	0.0000E+00
597.	U2NN	0.0000E+00				1.0000E+00	0.0000E+00	0.0000E+00
598.	A3EB9	0.0000E+00	-3.6341E-08		9.9986E-01	1.0000E+00	2.5160E-04	0.0000E+00
599.	SW1CNN	0.0000E+00				1.0000E+00	0.0000E+00	0.0000E+00
600.	AB1	0.0000E+00	-1.1285E-04		2.0311E-01	1.0001E+00	1.4160E-04	0.0000E+00
601.	RXS7	0.0000E+00	-5.0469E-07		9.7502E-01	1.0000E+00	2.0200E-05	0.0000E+00
602.	A3ED6	0.0000E+00	-2.1858E-08		9.9996E-01	1.0000E+00	5.8050E-04	0.0000E+00
603.	A3EB19	0.0000E+00	-7.5760E-07		9.9998E-01	1.0000E+00	3.7330E-02	0.0000E+00
604.	A3ED21	0.0000E+00	-1.2571E-07		9.9986E-01	1.0000E+00	8.6980E-04	0.0000E+00
605.	UB41B1	0.0000E+00	-1.7796E-04		2.3740E-01	1.0002E+00	2.3330E-04	0.0000E+00
606.	AA1	0.0000E+00	-1.1285E-04		2.0311E-01	1.0001E+00	1.4160E-04	0.0000E+00
607.	A3EB16	0.0000E+00	-2.3286E-08		9.9996E-01	1.0000E+00	6.4910E-04	0.0000E+00
608.	RVD18	0.0000E+00	-8.9390E-06		9.8819E-01	1.0000E+00	7.5630E-04	0.0000E+00
609.	A3EC9	0.0000E+00	-3.7578E-06		9.9995E-01	1.0000E+00	7.5810E-02	0.0000E+00
610.	SHT22	0.0000E+00	-3.8627E-06		9.6857E-01	1.0000E+00	1.2290E-04	0.0000E+00
611.	RVD17	0.0000E+00	-2.1028E-06		9.9820E-01	1.0000E+00	1.1640E-03	0.0000E+00
612.	AC16	0.0000E+00	-3.2356E-06		9.9997E-01	1.0000E+00	8.6230E-02	0.0000E+00
613.	A3ED11	0.0000E+00	-1.9116E-07		9.9945E-01	1.0000E+00	3.4490E-04	0.0000E+00
614.	SW1DNN	0.0000E+00				1.0000E+00	0.0000E+00	0.0000E+00
615.	SHUT12	0.0000E+00	-7.6393E-05		9.6857E-01	1.0001E+00	2.4250E-03	0.0000E+00
616.	SHUT11	0.0000E+00	-8.9872E-05		2.6883E-01	1.0001E+00	1.2290E-04	0.0000E+00
617.	A3EB23	0.0000E+00	-3.4955E-05		9.5658E-01	1.0000E+00	8.0440E-04	0.0000E+00
618.	RVD13	0.0000E+00	-1.4219E-07		9.9982E-01	1.0000E+00	8.0480E-04	0.0000E+00
619.	A3ED25	0.0000E+00	-2.7778E-06		9.9996E-01	1.0000E+00	7.1910E-02	0.0000E+00
620.	SHT213	0.0000E+00	-5.0992E-06		9.6571E-01	1.0000E+00	1.4870E-04	0.0000E+00
621.	SW1D9	0.0000E+00	-3.1248E-06		9.9976E-01	1.0000E+00	1.2880E-02	0.0000E+00
622.	RV01	0.0000E+00	-6.9471E-06		4.7451E-01	1.0000E+00	1.3220E-05	0.0000E+00
623.	A3EB17	0.0000E+00	-4.0060E-05		9.4835E-01	1.0000E+00	7.7500E-04	0.0000E+00
624.	UB42B1	0.0000E+00	-1.7796E-04		2.3740E-01	1.0002E+00	2.3330E-04	0.0000E+00
625.	SW1D8	0.0000E+00	-1.3568E-05		9.9857E-01	1.0000E+00	9.4140E-03	0.0000E+00
626.	RVD38	0.0000E+00	-1.4609E-07		9.9982E-01	1.0000E+00	8.1640E-04	0.0000E+00
627.	RVL0	0.0000E+00				1.0000E+00	0.0000E+00	0.0000E+00
628.	UB42C1	0.0000E+00	-1.8673E-04		2.3740E-01	1.0002E+00	2.4480E-04	0.0000E+00
629.	RVL1	0.0000E+00	-2.6220E-11		9.9871E-01	1.0000E+00	2.0340E-08	0.0000E+00
630.	SW1BNN	0.0000E+00				1.0000E+00	0.0000E+00	0.0000E+00
631.	A3ED17	0.0000E+00	-1.2417E-05		9.9994E-01	1.0000E+00	1.6210E-01	0.0000E+00
632.	FEB	0.0000E+00				1.0000E+00	0.0000E+00	0.0000E+00
633.	JAS	0.0000E+00				1.0000E+00	0.0000E+00	0.0000E+00
634.	DW1	0.0000E+00	-3.5678E-06		9.3649E-01	1.0000E+00	5.6170E-05	0.0000E+00
635.	JC2	0.0000E+00	-4.9862E-06		9.8162E-01	1.0000E+00	2.7120E-04	0.0000E+00
636.	IVC3	0.0000E+00	-7.0201E-08		9.9862E-01	1.0000E+00	5.0853E-05	0.0000E+00
637.	IV01	0.0000E+00	-3.3678E-15		4.8392E-01	1.0000E+00	6.5257E-15	0.0000E+00
638.	IVC2	0.0000E+00	-8.1787E-08		9.9851E-01	1.0000E+00	5.4966E-05	0.0000E+00
639.	KFS	0.0000E+00				1.0000E+00	0.0000E+00	0.0000E+00
640.	DV27	0.0000E+00	-2.0335E-07		9.9996E-01	1.0000E+00	5.3820E-03	0.0000E+00
641.	DV2B	0.0000E+00				1.0000E+00	0.0000E+00	0.0000E+00

.....	SF Name...	Fraction... Importance	Fussel-Vesely. Importance	Birnbaum... Importance	Achievement. Worth	Reduction... Worth	SF Value.....	Frequency.
642.	DV29	0.0000E+00	-2.2761E-06		9.9959E-01	1.0000E+00	5.5550E-03	0.0000E+00
643.	KCS	0.0000E+00				1.0000E+00	0.0000E+00	0.0000E+00
644.	DV22	0.0000E+00	-3.7643E-06		9.9995E-01	1.0000E+00	6.6070E-02	0.0000E+00
645.	INES	0.0000E+00				1.0000E+00	0.0000E+00	0.0000E+00
646.	INDS	0.0000E+00				1.0000E+00	0.0000E+00	0.0000E+00
647.	INFS	0.0000E+00				1.0000E+00	0.0000E+00	0.0000E+00
648.	INBS	0.0000E+00				1.0000E+00	0.0000E+00	0.0000E+00
649.	INCS	0.0000E+00				1.0000E+00	0.0000E+00	0.0000E+00
650.	ISO1	0.0000E+00	-4.4633E-08		9.9980E-01	1.0000E+00	2.2218E-04	0.0000E+00
651.	INHS	0.0000E+00				1.0000E+00	0.0000E+00	0.0000E+00
652.	DW2	0.0000E+00	-9.3797E-06		9.9814E-01	1.0000E+00	5.0086E-03	0.0000E+00
653.	DWP1	0.0000E+00	-2.7991E-05		5.0738E-03	1.0000E+00	2.8133E-05	0.0000E+00
654.	INGS	0.0000E+00				1.0000E+00	0.0000E+00	0.0000E+00
655.	INAS	0.0000E+00				1.0000E+00	0.0000E+00	0.0000E+00
656.	DO32	0.0000E+00	-1.7710E-05		9.2103E-01	1.0000E+00	2.2422E-04	0.0000E+00
657.	DO33	0.0000E+00	-5.6004E-05		9.4718E-01	1.0001E+00	1.0591E-03	0.0000E+00
658.	MSVC1	0.0000E+00	-4.6526E-07		9.9396E-01	1.0000E+00	7.7040E-05	0.0000E+00
659.	LVP1	0.0000E+00	-2.8349E-05		5.0738E-03	1.0000E+00	2.8493E-05	0.0000E+00
660.	DT11	0.0000E+00	-4.0424E-06		5.0738E-03	1.0000E+00	4.0630E-06	0.0000E+00
661.	DT21	0.0000E+00	-4.0116E-06		5.0738E-03	1.0000E+00	4.0320E-06	0.0000E+00
662.	DN32	0.0000E+00	-3.7645E-05		9.1955E-01	1.0000E+00	4.6771E-04	0.0000E+00
663.	DN33	0.0000E+00	-7.0089E-05		9.1854E-01	1.0001E+00	8.5967E-04	0.0000E+00
664.	NA0	0.0000E+00				1.0000E+00	0.0000E+00	0.0000E+00
665.	DO31	0.0000E+00	-1.1940E-04		1.8855E-01	1.0001E+00	1.4712E-04	0.0000E+00
666.	NBOCB	0.0000E+00				1.0000E+00	0.0000E+00	0.0000E+00
667.	KHS	0.0000E+00				1.0000E+00	0.0000E+00	0.0000E+00
668.	DV1B	0.0000E+00				1.0000E+00	0.0000E+00	0.0000E+00
669.	L8TR1	0.0000E+00	-4.1497E-05		9.9396E-01	1.0000E+00	6.8250E-03	0.0000E+00
670.	LECS	0.0000E+00				1.0000E+00	0.0000E+00	0.0000E+00
671.	L8H2	0.0000E+00	-6.1944E-06		9.9946E-01	1.0000E+00	1.1431E-02	0.0000E+00
672.	L8H3	0.0000E+00	-1.1002E-06		9.9994E-01	1.0000E+00	1.6761E-02	0.0000E+00
673.	LV3	0.0000E+00	-3.0472E-05		9.9278E-01	1.0000E+00	4.2033E-03	0.0000E+00
674.	LPRESS	0.0000E+00				1.0000E+00	0.0000E+00	0.0000E+00
675.	DV12	0.0000E+00	-5.8422E-07		9.9993E-01	1.0000E+00	8.4020E-03	0.0000E+00
676.	LFS	0.0000E+00				1.0000E+00	0.0000E+00	0.0000E+00
677.	LM1	0.0000E+00	-4.6966E-05		5.0738E-03	1.0000E+00	4.7203E-05	0.0000E+00
678.	NH22	0.0000E+00	-4.3145E-06		9.9972E-01	1.0000E+00	1.5050E-02	0.0000E+00
679.	FAB	0.0000E+00				1.0000E+00	0.0000E+00	0.0000E+00
680.	GDB	0.0000E+00				1.0000E+00	0.0000E+00	0.0000E+00
681.	EPR6B	0.0000E+00				1.0000E+00	0.0000E+00	0.0000E+00
682.	FBB	0.0000E+00				1.0000E+00	0.0000E+00	0.0000E+00
683.	GCB	0.0000E+00				1.0000E+00	0.0000E+00	0.0000E+00
684.	GBB	0.0000E+00				1.0000E+00	0.0000E+00	0.0000E+00
685.	GFB	0.0000E+00				1.0000E+00	0.0000E+00	0.0000E+00
686.	ED9	0.0000E+00	-1.7658E-06		9.9953E-01	1.0000E+00	3.7100E-03	0.0000E+00
687.	GEB	0.0000E+00				1.0000E+00	0.0000E+00	0.0000E+00
688.	EPR30B	0.0000E+00				1.0000E+00	0.0000E+00	0.0000E+00
689.	EDNN	0.0000E+00				1.0000E+00	0.0000E+00	0.0000E+00
690.	ED36	0.0000E+00	-6.1958E-05		9.8391E-01	1.0001E+00	3.8370E-03	0.0000E+00
691.	FHB	0.0000E+00				1.0000E+00	0.0000E+00	0.0000E+00
692.	FH3	0.0000E+00	-4.3705E-06		9.9973E-01	1.0000E+00	1.6170E-02	0.0000E+00
693.	FWA1	0.0000E+00				1.0000E+00	0.0000E+00	0.0000E+00
694.	FFB	0.0000E+00				1.0000E+00	0.0000E+00	0.0000E+00
695.	FGB	0.0000E+00				1.0000E+00	0.0000E+00	0.0000E+00
696.	FC3	0.0000E+00	-3.2892E-05		9.9800E-01	1.0000E+00	1.6170E-02	0.0000E+00
697.	FCB	0.0000E+00				1.0000E+00	0.0000E+00	0.0000E+00
698.	GAB	0.0000E+00				1.0000E+00	0.0000E+00	0.0000E+00
699.	FDB	0.0000E+00				1.0000E+00	0.0000E+00	0.0000E+00
700.	FWC1	0.0000E+00	-1.8703E-07		9.9784E-01	1.0000E+00	8.6480E-05	0.0000E+00
701.	EB3	0.0000E+00	-1.3044E-05		9.8669E-01	1.0000E+00	9.7890E-04	0.0000E+00
702.	HUM2	0.0000E+00	-2.9874E-06		9.9274E-01	1.0000E+00	4.1140E-04	0.0000E+00
703.	HUM1	0.0000E+00	-5.4827E-04		2.4198E-01	1.0005E+00	7.2277E-04	0.0000E+00
704.	HUM3	0.0000E+00	-3.5203E-05		9.2687E-01	1.0000E+00	4.8115E-04	0.0000E+00
705.	ECNN	0.0000E+00				1.0000E+00	0.0000E+00	0.0000E+00
706.	HS0	0.0000E+00				1.0000E+00	0.0000E+00	0.0000E+00
707.	HRL0	0.0000E+00				1.0000E+00	0.0000E+00	0.0000E+00
708.	HXD8	0.0000E+00	-1.1344E-04		9.7892E-01	1.0001E+00	5.3530E-03	0.0000E+00
709.	HXD5	0.0000E+00	-8.8354E-05		9.9963E-01	1.0001E+00	1.9470E-01	0.0000E+00
710.	EC8	0.0000E+00	-6.2663E-07		9.9996E-01	1.0000E+00	1.6380E-02	0.0000E+00
711.	EC3	0.0000E+00	-4.8120E-05		9.8727E-01	1.0000E+00	3.7670E-03	0.0000E+00
712.	HXD4	0.0000E+00	-1.3207E-06		9.9994E-01	1.0000E+00	2.0870E-02	0.0000E+00
713.	ED35	0.0000E+00	-9.2212E-06		9.9972E-01	1.0000E+00	3.1360E-02	0.0000E+00
714.	GHB	0.0000E+00				1.0000E+00	0.0000E+00	0.0000E+00
715.	GH8	0.0000E+00	-1.7145E-05		9.9983E-01	1.0000E+00	8.9590E-02	0.0000E+00
716.	ED27	0.0000E+00	-2.3196E-05		9.9380E-01	1.0000E+00	3.7290E-03	0.0000E+00
717.	GGB	0.0000E+00				1.0000E+00	0.0000E+00	0.0000E+00
718.	ED33	0.0000E+00	-1.1861E-05		9.9964E-01	1.0000E+00	3.1640E-02	0.0000E+00
719.	HR60	0.0000E+00				1.0000E+00	0.0000E+00	0.0000E+00
720.	ED11	0.0000E+00	-2.8477E-05		9.9988E-01	1.0000E+00	1.9650E-01	0.0000E+00
721.	HPL6	0.0000E+00	-4.1634E-06		9.9996E-01	1.0000E+00	8.8030E-02	0.0000E+00
722.	ED26	0.0000E+00	-1.7524E-07		9.9999E-01	1.0000E+00	1.5550E-02	0.0000E+00

.....	SF Name...	Fraction... Importance	Fussel-Vesely. Importance	Birnbaum... Importance	Achievement. Worth	Reduction... Worth	SF Value.....	Frequency.
723.	HPL2	0.0000E+00	-3.8226E-05		9.9957E-01	1.0000E+00	8.2230E-02	0.0000E+00
724.	CBB1	0.0000E+00	-1.8673E-04		2.3740E-01	1.0002E+00	2.4480E-04	0.0000E+00
725.	RD31	0.0000E+00	-1.1295E-04		2.0960E-02	1.0001E+00	1.1535E-04	0.0000E+00
726.	RD1	0.0000E+00	-1.3554E-04		6.0174E-02	1.0001E+00	1.4420E-04	0.0000E+00
727.	RE1	0.0000E+00	-2.3309E-04		1.4021E-01	1.0002E+00	2.7103E-04	0.0000E+00
728.	RCW1	0.0000E+00	-1.7582E-07		9.9303E-01	1.0000E+00	2.5213E-05	0.0000E+00
729.	RCW1A	0.0000E+00	-3.5016E-06		3.5620E-01	1.0000E+00	5.4390E-06	0.0000E+00
730.	RCL2	0.0000E+00	-5.1121E-05		9.9957E-01	1.0001E+00	1.0700E-01	0.0000E+00
731.	CS6	0.0000E+00	-8.9501E-07		9.9910E-01	1.0000E+00	9.9380E-04	0.0000E+00
732.	RI1	0.0000E+00	-1.3960E-04		1.3539E-01	1.0001E+00	1.6143E-04	0.0000E+00
733.	RF1	0.0000E+00	-2.2760E-04		1.6046E-01	1.0002E+00	2.7103E-04	0.0000E+00
734.	CST1	0.0000E+00	-2.9466E-06		5.1455E-03	1.0000E+00	2.9618E-06	0.0000E+00
735.	RH1	0.0000E+00	-1.3525E-04		1.6229E-01	1.0001E+00	1.6143E-04	0.0000E+00
736.	RJ1	0.0000E+00	-1.3960E-04		1.3539E-01	1.0001E+00	1.6143E-04	0.0000E+00
737.	RBCI	0.0000E+00	-4.1726E-06		9.9996E-01	1.0000E+00	8.6537E-02	0.0000E+00
738.	DE11	0.0000E+00	-7.6906E-08		9.9995E-01	1.0000E+00	1.5360E-03	0.0000E+00
739.	RBCM	0.0000E+00	-1.4875E-06		9.9989E-01	1.0000E+00	1.3683E-02	0.0000E+00
740.	RBCC	0.0000E+00	-6.2661E-07		9.9995E-01	1.0000E+00	1.3400E-02	0.0000E+00
741.	RBCD	0.0000E+00	-1.0320E-06		9.9993E-01	1.0000E+00	1.3613E-02	0.0000E+00
742.	DCA2	0.0000E+00	-7.4566E-05		9.9679E-01	1.0001E+00	2.2722E-02	0.0000E+00
743.	RC1	0.0000E+00	-1.3726E-04		4.8284E-02	1.0001E+00	1.4420E-04	0.0000E+00
744.	RBISOS	0.0000E+00				1.0000E+00	0.0000E+00	0.0000E+00
745.	RBCS	0.0000E+00	-1.0329E-04		9.7752E-01	1.0001E+00	4.5736E-03	0.0000E+00
746.	RBCU	0.0000E+00	-1.1905E-05		9.9947E-01	1.0000E+00	2.2039E-02	0.0000E+00
747.	DE21	0.0000E+00	-1.8639E-07		9.9983E-01	1.0000E+00	1.0680E-03	0.0000E+00
748.	RP1	0.0000E+00	-2.2864E-04		1.0925E-01	1.0002E+00	2.5662E-04	0.0000E+00
749.	RO1	0.0000E+00	-2.3337E-04		1.3920E-01	1.0002E+00	2.7103E-04	0.0000E+00
750.	CIL2	0.0000E+00	-1.2558E-04		7.7568E-01	1.0001E+00	5.5952E-04	0.0000E+00
751.	RM1	0.0000E+00	-2.9505E-04		1.4021E-01	1.0003E+00	3.4305E-04	0.0000E+00
752.	RN1	0.0000E+00	-2.9671E-04		1.3539E-01	1.0003E+00	3.4305E-04	0.0000E+00
753.	CS13	0.0000E+00	-2.1242E-08		9.9998E-01	1.0000E+00	1.1226E-03	0.0000E+00
754.	CD2	0.0000E+00	-4.3295E-07		9.9966E-01	1.0000E+00	1.2559E-03	0.0000E+00
755.	CD3	0.0000E+00	-6.9694E-07		9.9974E-01	1.0000E+00	2.6367E-03	0.0000E+00
756.	CIL1	0.0000E+00	-2.8211E-06		2.2939E-01	1.0000E+00	3.6609E-06	0.0000E+00
757.	CDA1	0.0000E+00				1.0000E+00	0.0000E+00	0.0000E+00
758.	CD4	0.0000E+00	-3.8465E-07		9.9982E-01	1.0000E+00	2.1086E-03	0.0000E+00
759.	RK1	0.0000E+00	-1.0983E-04		1.8595E-01	1.0001E+00	1.3490E-04	0.0000E+00
760.	RL1	0.0000E+00	-1.0983E-04		1.8595E-01	1.0001E+00	1.3490E-04	0.0000E+00
761.	CS16	0.0000E+00	-7.1293E-07		9.9992E-01	1.0000E+00	8.7556E-03	0.0000E+00
762.	RL32	0.0000E+00	-3.8250E-09		9.9998E-01	1.0000E+00	1.5510E-04	0.0000E+00
763.	RK2	0.0000E+00	-2.4060E-05		9.7634E-01	1.0000E+00	1.0160E-03	0.0000E+00
764.	RK32	0.0000E+00	-5.1836E-05		9.4769E-01	1.0001E+00	9.8990E-04	0.0000E+00
765.	RL5	0.0000E+00	-3.2481E-07		9.9967E-01	1.0000E+00	9.7800E-04	0.0000E+00
766.	RL4	0.0000E+00	-5.1133E-05		9.4977E-01	1.0001E+00	1.0170E-03	0.0000E+00
767.	CS15	0.0000E+00	-6.4458E-07		9.9992E-01	1.0000E+00	7.6651E-03	0.0000E+00
768.	RL34	0.0000E+00	-8.0839E-05		9.1833E-01	1.0001E+00	9.8890E-04	0.0000E+00
769.	RL35	0.0000E+00	-6.2099E-07		9.9940E-01	1.0000E+00	1.0360E-03	0.0000E+00
770.	NH23	0.0000E+00	-3.4640E-05		9.8854E-01	1.0000E+00	3.0130E-03	0.0000E+00
771.	OF1	0.0000E+00	-8.1601E-07		9.9788E-01	1.0000E+00	3.8410E-04	0.0000E+00
772.	DJ34	0.0000E+00	-1.3537E-06		9.9994E-01	1.0000E+00	2.3740E-02	0.0000E+00
773.	OFT1	0.0000E+00	-3.9364E-06		9.9784E-01	1.0000E+00	1.8170E-03	0.0000E+00
774.	OEE1	0.0000E+00	-2.3630E-05		9.5459E-01	1.0000E+00	5.2010E-04	0.0000E+00
775.	OEEB	0.0000E+00				1.0000E+00	0.0000E+00	0.0000E+00
776.	ODSBB	0.0000E+00				1.0000E+00	0.0000E+00	0.0000E+00
777.	OHC3	0.0000E+00	-1.8883E-05		9.7436E-01	1.0000E+00	7.3590E-04	0.0000E+00
778.	OHC2	0.0000E+00	-2.5458E-05		9.7228E-01	1.0000E+00	9.1750E-04	0.0000E+00
779.	DJ33	0.0000E+00	-1.2208E-07		9.9974E-01	1.0000E+00	4.6320E-04	0.0000E+00
780.	DI3	0.0000E+00	-5.7073E-06		9.9978E-01	1.0000E+00	2.4810E-02	0.0000E+00
781.	OHC1	0.0000E+00	-3.0603E-04		7.1188E-01	1.0003E+00	1.0610E-03	0.0000E+00
782.	OHL2	0.0000E+00	-2.1202E-06		9.9953E-01	1.0000E+00	4.4930E-03	0.0000E+00
783.	NPII1	0.0000E+00	-2.4724E-04		7.7363E-02	1.0002E+00	2.6790E-04	0.0000E+00
784.	DL5	0.0000E+00	-5.2644E-07		9.9991E-01	1.0000E+00	5.8500E-03	0.0000E+00
785.	NRUB	0.0000E+00				1.0000E+00	0.0000E+00	0.0000E+00
786.	DN31	0.0000E+00	-8.2747E-05		2.2100E-01	1.0001E+00	1.0621E-04	0.0000E+00
787.	NIEB	0.0000E+00				1.0000E+00	0.0000E+00	0.0000E+00
788.	ODSB3B	0.0000E+00				1.0000E+00	0.0000E+00	0.0000E+00
789.	OBD2	0.0000E+00	-1.2120E-08		9.9998E-01	1.0000E+00	7.9588E-04	0.0000E+00
790.	OBC1	0.0000E+00	-1.5598E-05		9.8036E-01	1.0000E+00	7.9338E-04	0.0000E+00
791.	DL2	0.0000E+00	-7.1958E-06		9.9626E-01	1.0000E+00	1.9190E-03	0.0000E+00
792.	NRV0	0.0000E+00				1.0000E+00	0.0000E+00	0.0000E+00
793.	RB1	0.0000E+00	-1.4120E-04		2.0960E-02	1.0001E+00	1.4420E-04	0.0000E+00
794.	OSWNN	0.0000E+00				1.0000E+00	0.0000E+00	0.0000E+00
795.	DGCS	0.0000E+00				1.0000E+00	0.0000E+00	0.0000E+00
796.	DGCA	0.0000E+00	-2.0721E-07		9.9986E-01	1.0000E+00	1.4630E-03	0.0000E+00
797.	DGE1	0.0000E+00	-5.3399E-08		9.9995E-01	1.0000E+00	1.0670E-03	0.0000E+00
798.	DGE	0.0000E+00	-3.9274E-07		9.9967E-01	1.0000E+00	1.1970E-03	0.0000E+00
799.	DGH1	0.0000E+00	-3.5153E-08		9.9997E-01	1.0000E+00	1.0670E-03	0.0000E+00
800.	DE4	0.0000E+00	-7.2715E-05		8.6504E-01	1.0001E+00	5.3850E-04	0.0000E+00
801.	R480B	0.0000E+00				1.0000E+00	0.0000E+00	0.0000E+00
802.	OUBNN	0.0000E+00				1.0000E+00	0.0000E+00	0.0000E+00
803.	OX1	0.0000E+00	-3.5740E-05		9.7764E-01	1.0000E+00	1.5960E-03	0.0000E+00

MODEL Name: BFNU3M
Split Fraction Importance for Group : ALL
Sorted by Fraction Importance
Group Frequency = 9.1335E-06

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.....	SF Name...	Fraction... Importance	Fussel-Vesely. Importance	Birnbaum... Importance	Achievement. Worth	Reduction... Worth	SF Value.....	Frequency.
804.	DI1	0.0000E+00	-4.9451E-04		5.2982E-03	1.0005E+00	4.9690E-04	0.0000E+00
805.	DGP	0.0000E+00	-2.8874E-05		9.4636E-01	1.0000E+00	5.3800E-04	0.0000E+00
806.	OIV1	0.0000E+00	-1.7187E-04		9.2389E-01	1.0002E+00	2.2530E-03	0.0000E+00
807.	OLC2	0.0000E+00	-1.3584E-04		7.8903E-01	1.0001E+00	6.4350E-04	0.0000E+00
808.	OHS1	0.0000E+00	-1.1920E-04		9.8598E-01	1.0001E+00	8.4290E-03	0.0000E+00
809.	OHS2	0.0000E+00	-4.0991E-04		4.7969E-01	1.0004E+00	7.8720E-04	0.0000E+00
810.	OSD2	0.0000E+00	-6.6026E-06		9.9533E-01	1.0000E+00	1.4130E-03	0.0000E+00
811.	DGN	0.0000E+00	-4.3046E-05		9.2003E-01	1.0000E+00	5.3800E-04	0.0000E+00
812.	ORP1	0.0000E+00	-4.8536E-05		5.1254E-01	1.0000E+00	9.9560E-05	0.0000E+00
813.	OLP2	0.0000E+00	-1.2195E-05		6.7254E-01	1.0000E+00	3.7240E-05	0.0000E+00
814.	OPTR1	0.0000E+00	-4.0596E-05		9.7862E-01	1.0000E+00	1.8950E-03	0.0000E+00

APPENDIX D. ϕ-M MATRIX

Table D-1 presents the ϕ-M matrix for the Browns Ferry Unit 3 PSA.

Table D-1 (Page 1 of 3). Phi-M Matrix for Browns Ferry Unit 3 PSA

Initiators	% Cum.	LOSP	LRCW	TT	CIV	LOFW	LOCV	TTMB	FLRB1S	FWRU	LOPA	PLOC	LRBCCW	PLFW	ISCRAM	FLTB2	LOAC	SCRAM	LLD	
I.E. Frequency		3.39E-02	3.22E-02	2.42E-00	4.34E-01	3.59E-01	2.72E-01	2.34E-01	9.53E-05	1.49E-01	5.30E-02	1.24E-01	8.87E-02	3.31E-01	1.31E-00	1.44E-02	3.72E-02	2.74E-01	3.12E-04	
PDS: TOTAL FREQ:																				
MIBV	1.23E-06	13.6	1.10E-08	1.66E-08	2.31E-08	2.94E-07	2.19E-07	1.66E-07	1.41E-07	0.00E-00	8.47E-08	2.73E-09	6.93E-08	5.00E-08	2.09E-08	0.00E-00	5.92E-09	1.81E-08	8.38E-09	0.00E+00
OIAV	1.23E-06	25.9	4.75E-08	8.47E-08	2.31E-07	2.00E-07	7.62E-08	5.81E-08	5.00E-08	0.00E+00	2.98E-08	5.68E-10	2.45E-08	1.77E-08	4.50E-08	1.53E-09	5.56E-09	2.27E-08	3.69E-08	2.16E-08
MIAV	9.77E-07	36.6	1.37E-07	1.49E-07	1.46E-07	1.17E-07	3.62E-08	5.92E-08	5.84E-08	0.00E+00	1.21E-08	1.36E-08	2.86E-08	2.24E-08	3.55E-08	2.73E-09	1.76E-09	7.79E-09	2.94E-08	0.00E+00
PLPZ	6.72E-07	43.9	6.70E-07	0.00E+00	1.32E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PIGX	5.86E-07	50.3	5.85E-07	9.93E-10	1.32E-20	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PLPV	5.33E-07	56.1	2.18E-07	9.12E-08	1.55E-08	1.53E-08	3.83E-09	2.06E-08	1.85E-08	0.00E+00	1.02E-09	1.88E-08	8.48E-09	1.36E-08	1.35E-09	1.40E-08	2.26E-08	2.90E-09	1.33E-09	0.00E+00
OLCV	4.99E-07	61.5	2.00E-08	1.39E-07	5.41E-08	1.54E-08	2.35E-08	9.71E-09	9.52E-09	0.00E+00	9.12E-09	1.33E-09	3.73E-09	1.27E-08	9.18E-09	5.00E-08	3.81E-09	5.62E-09	8.73E-09	1.82E-08
MKCV	4.58E-07	66.5	4.29E-09	2.05E-09	1.37E-07	9.17E-08	3.23E-08	2.47E-08	4.68E-08	0.00E+00	1.25E-08	7.22E-10	1.05E-08	1.65E-08	2.95E-08	0.00E+00	5.32E-10	2.43E-09	2.40E-08	0.00E+00
OIBV	4.32E-07	71.1	2.10E-10	1.34E-09	1.22E-07	7.09E-08	4.89E-08	3.64E-08	2.85E-08	0.00E+00	1.56E-08	1.36E-10	1.24E-08	8.48E-09	2.01E-08	0.00E+00	2.61E-10	2.81E-09	1.59E-08	0.00E+00
PIGV	3.76E-07	75.2	1.38E-07	2.11E-07	1.22E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.21E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.99E-09	1.00E-10	0.00E+00	0.00E+00
PIEV	3.33E-07	78.8	0.00E+00	0.00E+00	5.37E-08	5.76E-09	3.58E-09	4.52E-09	5.81E-09	0.00E+00	3.18E-09	5.74E-08	1.40E-09	1.57E-08	1.30E-09	4.75E-08	7.02E-08	1.21E-09	7.07E-09	0.00E+00
PJAV	2.67E-07	81.7	0.00E+00	0.00E+00	1.32E-20	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.67E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PINV	2.52E-07	84.5	5.40E-08	7.79E-08	5.43E-09	1.66E-09	0.00E+00	8.71E-10	6.68E-10	0.00E+00	3.32E-10	0.00E+00	1.42E-09	2.11E-10	0.00E+00	5.11E-09	2.31E-08	7.65E-08	8.38E-10	0.00E+00
OLPV	1.65E-07	86.3	0.00E+00	0.00E+00	2.20E-20	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.31E-08
PIFV	1.43E-07	87.8	0.00E+00	0.00E+00	1.98E-09	2.17E-08	2.18E-09	1.17E-08	1.03E-08	0.00E+00	8.09E-10	6.38E-08	4.92E-09	4.02E-09	1.37E-09	5.28E-09	2.32E-09	0.00E+00	9.65E-10	0.00E+00
MIBZ	1.03E-07	88.9	2.51E-10	8.36E-10	3.37E-09	2.80E-08	1.94E-08	1.46E-08	1.22E-08	0.00E+00	6.95E-09	0.00E+00	5.36E-09	3.95E-09	0.00E+00	0.00E+00	0.00E+00	1.49E-09	0.00E+00	0.00E+00
NIGV	1.02E-07	90.1	1.09E-08	8.67E-08	0.00E-00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
OIAZ	9.79E-08	91.1	5.89E-09	5.59E-09	2.07E-08	9.98E-09	6.69E-09	5.12E-09	4.39E-09	0.00E+00	2.28E-09	0.00E+00	1.74E-09	1.29E-09	3.94E-09	0.00E+00	1.59E-10	1.66E-09	3.05E-09	1.58E-09
PLPZ	9.30E-08	92.1	7.24E-08	7.03E-09	4.42E-10	3.39E-09	0.00E+00	1.47E-09	1.25E-09	0.00E+00	0.00E+00	1.21E-09	5.49E-10	9.86E-10	0.00E+00	3.08E-10	1.32E-09	1.73E-10	0.00E+00	0.00E+00
MIAZ	8.48E-08	93.1	1.13E-08	1.37E-08	1.46E-08	1.14E-08	2.22E-09	6.33E-09	5.26E-09	0.00E+00	7.50E-10	9.26E-10	2.30E-09	1.74E-09	2.77E-09	1.86E-09	1.19E-10	5.89E-10	2.34E-09	0.00E+00
PIGZ	6.87E-08	93.8	4.90E-08	1.84E-08	1.32E-00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.54E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00
OIAX	6.25E-08	94.5	6.24E-08	0.00E+00	1.56E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MJAZ	4.63E-08	95	0.00E+00	0.00E+00	2.20E-00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MKCZ	4.22E-08	95.5	2.42E-10	1.39E-10	1.36E-08	9.24E-09	2.63E-09	2.01E-09	4.60E-09	0.00E+00	1.05E-09	0.00E+00	8.87E-10	1.49E-09	2.33E-09	0.00E+00	0.00E+00	2.34E-10	1.93E-09	0.00E+00
OLCZ	4.03E-08	95.9	8.74E-10	1.19E-08	4.83E-09	1.31E-09	2.03E-09	7.33E-10	7.25E-10	0.00E+00	7.46E-10	0.00E+00	2.40E-10	1.03E-09	7.50E-10	4.26E-09	1.69E-10	1.97E-10	5.28E-10	1.78E-09
MLCV	3.96E-08	96.3	0.00E+00	1.03E-09	8.17E-10	2.35E-10	2.53E-08	2.16E-10	3.05E-10	0.00E+00	9.76E-09	0.00E+00	0.00E+00	8.43E-10	3.29E-10	6.57E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NLPV	3.38E-08	96.7	1.06E-09	2.85E-08	2.20E+00	0.00E+00	3.18E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.36E-09	0.00E+00	1.55E-10	0.00E+00	0.00E+00	7.27E-10	0.00E+00	0.00E+00	0.00E+00
NIDV	3.33E-08	97.1	4.68E-10	7.06E-10	5.01E-09	9.33E-09	1.91E-09	4.78E-09	3.99E-09	0.00E+00	4.44E-10	0.00E+00	2.81E-09	1.27E-09	7.64E-10	2.01E-09	0.00E+00	0.00E+00	5.51E-10	0.00E+00
OIBZ	2.64E-08	97.3	0.00E+00	0.00E+00	3.98E-09	4.96E-09	3.12E-09	2.04E-09	1.63E-09	0.00E+00	6.03E-10	0.00E+00	3.35E-10	2.52E-10	1.39E-09	0.00E+00	0.00E+00	1.05E-10	9.93E-10	0.00E+00
PIEZ	2.35E-08	97.6	0.00E+00	0.00E+00	3.43E-09	2.62E-10	0.00E+00	2.40E-10	1.40E-10	0.00E+00	0.00E+00	5.15E-09	1.05E-10	1.19E-09	0.00E+00	3.17E-09	6.54E-09	1.17E-10	2.75E-10	0.00E+00
NJAZ	2.28E-08	97.8	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.28E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NIFV	2.22E-08	98.1	0.00E+00	0.00E+00	3.67E-09	4.73E-10	0.00E+00	1.46E-10	3.36E-10	0.00E+00	0.00E+00	7.99E-09	0.00E+00	1.03E-09	2.79E-10	1.79E-09	5.39E-09	0.00E+00	2.36E-10	0.00E+00
PINZ	2.04E-08	98.3	4.20E-09	6.21E-09	3.59E-10	1.22E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00E-10	0.00E+00	0.00E+00	3.31E-10	1.58E-09	7.34E-09	0.00E+00	0.00E+00
NIEV	2.00E-08	98.5	0.00E+00	0.00E+00	0.00E+00	6.08E-09	4.75E-09	2.91E-09	2.45E-09	0.00E+00	1.78E-09	0.00E+00	1.09E-09	6.56E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NIHV	1.55E-08	98.7	8.60E-10	1.31E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
OIFV	1.51E-08	98.9	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
OKCV	1.40E-08	99	0.00E+00	1.91E-10	5.29E-10	2.15E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MIFV	1.29E-08	99.2	0.00E+00	3.94E-09	3.26E-09	8.47E-10	6.72E-10	1.41E-09	0.00E+00	3.51E-10	0.00E+00	2.97E-10	4.99E-10	7.81E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.46E-10	0.00E+00
OLPZ	1.28E-08	99.3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.13E-09
PIDV	1.28E-08	99.4	0.00E+00	1.08E-10	4.35E-09	2.06E-09	1.14E-09	8.24E-10	7.34E-10	0.00E+00	4.30E-10	0.00E+00	3.61E-10	2.87E-10	7.49E-10	0.00E+00	0.00E+00	1.51E-10	5.39E-10	0.00E+00
PIFZ	1.17E-08	99.6	0.00E+00	0.00E+00	5.66E-10	1.97E-09	0.00E+00	8.82E-10	7.82E-10	0.00E+00	0.00E+00	6.22E-09	3.29E-10	2.49E-10	0.00E+00	3.45E-10	1.33E-10	0.00E+00	0.00E+00	0.00E+00
NIGZ	8.24E-09	99.6	2.59E-10	7.73E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
OIDV	4.66E-09	99.7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
OIFX	3.47E-09	99.7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MLCZ	3.13E-09	99.8	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.33E-09	0.00E+00	0.00E+00	0.00E+00	7.99E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.80E-09
MICV	2.68E-09	99.8	0.00E+00	0.00E+00	0.00E+00	1.28E-09	5.84E-10	2.92E-10	2.46E-10	0.00E+00	1.53E-10	0.00E+00	1.28E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MJAV	2.02E-09	99.8	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.02E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PIEX	1.80E-09	99.8	1.80E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NLPZ	1.79E-09	99.9	0.00E+00	1.79E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NIDZ	1.69E-09	99.9	0.00E+00	0.00E+00	2.27E-10	7.93E-10	0.00E+00	2.98E-10	2.55E-10	0.00E+00	0.00E+00	0.00E+00	1.26E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NIGX	1.61E-09	99.9	1.21E-10	2.70E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MIPZ	1.09E-09	99.9	0.00E+00	0.00E+00	1.38E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.64E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.91E-10	0.00E+00	0.00E+00
OIEV	9.26E-10	99.9	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
OKCZ	8.62E-10	99.9	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.17E-10
MIHZ	8.34E-10	99.9	0.00E+00	8.34E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PKPX	7.92E-10	99.9	7.92E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NKPZ	6.55E-10	100	0.00E+00	0.00E+00	3.79E-10	2.76E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
OIPZ	5.35E-10	100	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
OKPV	4.77E-10	100	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PIDZ	4.75E-10	100	0.00E+00	0.00E+00	3.16E-10	1.59E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.31E-10
PKFV	4.62E-10	100	1.16E-10	0.00E+00	0.00E+00	7.63E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.36E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.31E-10	0.00E+00	0.00E+00
PKHX	4.27E-10	100	4.27E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PKHV	4.24E-10	100	0.00E+00	2.92E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.32E-10	0.00E+00	0.00E+00
MIAX	3.95E-10	100	2.08E-10	0.00E+00	1.12E-10	7.48E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PIFX	3.69E-10	100	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NIEZ	3.63E-10	100	0.00E+00	0.00E+00	0.00E+00	3.63E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
OIDZ	3.61E-10	100	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MKCX	2.01E-10	100	0.00E+00	0.00E+00	1.16E-10	8.47E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
OICV	1.98E-10	100	0.00E+00	0.00E+00	1.47E-10	5.10E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NIHV	1.38E-10	100	0.00E+00	1.38E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MICZ	5.33E-11	100	0.00E+00	0.00E+00	0.00E+00	5.33E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PJHV	1.18E-12	100	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TOTAL CDF'S:	9.19E-06		2.11E-06	9.79E-07	9.27E-07	8.39E-07	5.19E-07	4.45E-07	4.11E-07	2.51E-07	1.95E-07	1.83E-07	1.81E-07	1.76E-07	1.71E-07	1.65E-07	1.59E-07	1.53E-07	1.45E-07	1.33E-07
Truncation Freq:			1.00E-10	1.00E-10	1.00E-10	5.00E-11	1.00E-10	1.00E-10	1.00E-10	5.00E-10	1.00E-10	1.00E-10	1.00E-10	1.00E-10	1.00E-10	1.00E-10	1.00E-10	1.00E-10	1.00E-10	2.00E-10
Unacct Freq:	9.18E-04		1.19E-04	3.33E-05	8.93E-05	3.07E-05	5.72E-05	4.25E-05	4.10E-05	7.50E-07	3.79E-05	4.25E-05	3.31E-05	2.33E-05	4.24E-05	8.54E-05	2.26E-05	1.74E-05	3.93E-05	6.95E-07
Unacct Freq %:	100		56.3	36	96.4	36.5	110.2	95.4	99.7	2.4	194.1	231.8	182.6	132.3	247.8	516	142.3	113.8	271.9	5.2
%CUMULATIVE			22.9	33.6	43.7	52.8	58.5	63.3	67.8	71	73.1	75.2	77.2	79	80.9	82.7	84.4	86.1	87.6	89.1

Table D-1 (Page 2 of 3). Phi-M Matrix for Browns Ferry Unit 3 PSA

Initiator	%LOCA	LLC	IOOV	SLOCA	LSOOPA	FLPH1	IGTH	LSOOU3	PRPO	LUPS	ISLOCA	FLTB	LLO	LLS	IOTV	ELOCA	VLOCA	LICB	LICA	FLRB1
I.E. Frequency	3.32E-04	8.27E-05	3.69E-02	4.01E-03	1.59E-02	1.22E-02	8.66E-04	4.47E-02	4.08E-02	9.08E-03	4.64E-08	2.20E-03	1.07E-04	9.17E-05	5.66E-03	9.39E-09	2.14E-02	3.52E-03	3.51E-03	1.20E-02
PDS:																				
MIBV	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.97E-08	2.16E-08	0.00E+00	2.20E-08	2.02E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.70E-09	1.69E-09	0.00E+00
OIAV	4.87E-08	8.92E-08	4.65E-08	6.06E-08	5.22E-09	0.00E+00	5.80E-10	7.88E-09	7.38E-09	2.22E-09	0.00E+00	2.10E-09	7.30E-09	6.48E-09	4.80E-09	8.07E-09	2.03E-09	5.04E-10	6.02E-10	9.35E-10
MIAV	0.00E+00	0.00E+00	4.35E-10	0.00E+00	1.78E-09	1.17E-10	0.00E+00	8.13E-09	8.71E-09	2.94E-08	0.00E+00	7.99E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.54E-09	2.26E-10	2.24E-10	8.04E-10
PLFX	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PIGX	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PLFV	0.00E+00	0.00E+00	1.72E-09	0.00E+00	5.58E-09	1.80E-08	1.30E-09	2.49E-09	2.47E-09	8.82E-09	0.00E+00	3.40E-09	0.00E+00	0.00E+00	1.23E-10	0.00E+00	0.00E+00	4.40E-10	4.38E-10	0.00E+00
OLCV	1.92E-08	4.03E-09	5.44E-09	1.45E-10	8.27E-10	1.55E-10	5.11E-08	1.53E-09	1.28E-09	1.10E-09	0.00E+00	6.84E-09	5.82E-09	4.62E-09	6.96E-10	0.00E+00	3.64E-10	4.58E-10	4.56E-10	1.91E-10
MXCV	0.00E+00	0.00E+00	2.36E-09	2.12E-10	2.21E-09	4.92E-10	0.00E+00	3.33E-09	7.23E-09	1.32E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.33E-09	6.19E-10	6.17E-10	6.97E-10
OIBV	0.00E+00	0.00E+00	2.32E-08	2.83E-09	1.31E-09	1.51E-08	0.00E+00	2.38E-09	3.39E-09	3.98E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.14E-10	2.43E-10	2.43E-10	0.00E+00
PIGV	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.38E-09	0.00E+00	0.00E+00	5.65E-09	0.00E+00	0.00E+00	0.00E+00	1.06E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PIEV	0.00E+00	0.00E+00	1.84E-08	0.00E+00	1.75E-08	8.83E-09	1.67E-09	3.68E-10	5.38E-10	1.04E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.77E-09	0.00E+00	1.01E-10	5.66E-10	5.64E-10	0.00E+00
PJAV	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.30E+00	0.00E+00	0.00E+00	1.01E-10	0.00E+00	0.00E+00	0.00E+00	3.07E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PINV	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.30E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.28E-08	1.92E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
OLFV	4.10E-08	8.65E-09	0.00E+00	0.00E+00	2.30E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.29E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.31E-10	1.30E-10	0.00E+00
PIFV	0.00E+00	0.00E+00	4.77E-10	0.00E+00	2.59E-09	1.03E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.40E-10	1.40E-10	0.00E+00
MIBZ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.39E-09	1.57E-09	0.00E+00	1.78E-09	1.64E-09	0.00E+00	0.00E+00	0.00E+00	4.41E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MIGV	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.77E-10	0.00E+00	0.00E+00	1.97E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.29E-10	8.86E-10	1.72E-10	4.59E-11	4.58E-11	0.00E+00
OIAZ	3.93E-09	6.06E-09	4.55E-09	6.11E-09	3.29E-10	0.00E+00	0.00E+00	5.51E-10	5.37E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PLFZ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.60E-10	7.95E-10	0.00E+00	2.05E-10	1.90E-10	7.65E-10	0.00E+00	0.00E+00	1.46E-10	0.00E+00	0.00E+00	0.00E+00	1.24E-10	5.58E-11	5.56E-11	0.00E+00
MIAZ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.29E-10	0.00E+00	0.00E+00	5.51E-10	6.52E-10	2.59E-09	0.00E+00	0.00E+00	4.67E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PIGZ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.62E-10	0.00E+00	0.00E+00	2.34E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.34E-10	0.00E+00	0.00E+00	0.00E+00	1.18E-11	0.00E+00	0.00E+00	0.00E+00
OIAX	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NJAZ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.79E-10	6.81E-10	1.29E-10	0.00E+00	0.00E+00	4.63E-08	0.00E+00	0.00E+00	0.00E+00	1.28E-10	4.96E-11	4.94E-11	0.00E+00
MXCZ	0.00E+00	0.00E+00	2.12E-10	0.00E+00	1.67E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.51E-10	5.19E-10	4.45E-10	0.00E+00	0.00E+00	2.81E-11	2.80E-11	0.00E+00
OLCZ	1.73E-09	3.88E-10	1.51E-10	0.00E+00	-0.00E+00	0.00E+00	4.46E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.29E-11	3.28E-11	0.00E+00
MLCV	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.15E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NLFV	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.87E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.40E-11	4.38E-11	0.00E+00
NIDV	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.81E-10	0.00E+00	0.00E+00	1.15E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.67E-11	3.65E-11	0.00E+00
OIBZ	0.00E+00	0.00E+00	1.83E-09	0.00E+00	0.00E+00	4.92E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PIEZ	0.00E+00	0.00E+00	1.07E-09	0.00E+00	1.03E-09	4.92E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.63E-11	3.62E-11	0.00E+00
PJAZ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.35E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.55E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NIFV	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.29E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.22E-11	1.22E-11	0.00E+00
PIEZ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.35E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.01E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NIEV	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.95E-10	4.05E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NIEV	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.49E-09	1.08E-09	2.87E-10	2.66E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00
OIFV	1.29E-09	8.62E-09	0.00E+00	7.20E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.49E-09	1.08E-09	2.87E-10	2.66E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00
OKCV	4.61E-09	9.43E-10	1.20E-10	1.54E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.42E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.21E-11	1.21E-11	0.00E+00
MXFV	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.85E-09	1.22E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
OLFZ	3.09E-09	5.61E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.05E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PIDV	0.00E+00	0.00E+00	9.22E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PIFZ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.88E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.52E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NIGZ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.25E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00
OIDV	2.50E-09	8.83E-10	0.00E+00	1.18E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
OIFX	1.67E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MLCZ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MICV	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MJAV	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PIHX	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NLFZ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MIDZ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.20E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NIGX	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.96E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NIFZ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
OIEV	0.00E+00	0.00E+00	0.00E+00	9.26E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
OKCZ	4.43E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NIEZ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PKFX	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MXFZ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
OIFZ	0.00E+00	5.35E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
OKFV	2.46E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PIDZ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PKFV	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PKHX	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PKHV	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MIAX	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PIFX	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.59E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NIEZ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
OIDZ	2.40E-10	0.00E+00	0.00E+00	1.14E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MKCX	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
OICV	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NKFV	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MICZ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PJHV	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.63E-08	4.24E-08	4.05E-08	3.34E-08	1.24E-08	9.09E-09	6.21E-09	6.01E-09	5.98E-09	2.63E-09
TOTAL CDF'S:	1.29E-07	1.11E-07	1.07E-07	7.30E-08	7.08E-08	6.99E-08	5.92E-08	5.86E-08	5.52E-08	5.18E-08	4.63E-08	4.24E-08	4.05E-08	3.34E-08	1.00E-10	1.00E-10	1.00E-10	1.00E-11	1.00E-11	1.00E-10
Truncation Fre	2.00E-10	2.00E-10	1.00E-10	1.00E-10	1.00E-10	1.00E-10	2.00E-10	1.00E-10	1.00E-10	1.00E-10	1.00E-10	1.00E-10	1.00E-10	2.00E-10	1.00E-10	1.00E-11	1.00E-10	1.00E-11	1.00E-11	1.00E-10
Unacct Freq:	8.59E-07	3.76E-07	1.23E-05	4.03E-06	3.50E-05	1.39E-05	1.91E-06	2.46E-05	1.61E-05	6.12E-06	5.82E-11	7.38E-06	3.97E-07	3.68E-07	4.49E-06	2.98E-13	1.06E-05	1.66E-06	1.66E-06	9.25E-06
Unacct Freq M	6.7	3.4	114.8	55.3	434.3	198.5	32.3	419.9	291.9	118.2	0	174.1	9.8	11	362.4	0	1713	276.2	277.6	3519.7
%CUMULATIVE	90.5	91.7	92.8	93.6	94.4	95.2	95.8	96.5	97.1	97.6	98.1	98.6	99	99.4	99.5	99.6	99.7	99.8	99.8	99.8

Table D-1 (Page 3 of 3). Phi-M Matrix for Browns Ferry Unit 3 PSA

Initiator	LIB	LIIA	LIIB	LIA	FLRB2	SOC	FLRB1C	UI	UII	
I.E. Frequency		5.74E-03	5.74E-03	5.74E-03	5.74E-03	2.05E-06	6.67E-04	1.23E-04	6.58E-04	6.58E-04
PDS:										
MIBV		3.54E-11	3.54E-11	3.54E-11	3.54E-11	0.00E+00	0.00E+00	0.00E+00	4.02E-12	4.02E-12
OIAV		6.51E-10	6.51E-10	6.51E-10	6.51E-10	0.00E+00	0.00E+00	1.38E-11	7.73E-11	7.72E-11
MIAV		5.97E-10	5.15E-10	5.15E-10	5.15E-10	0.00E+00	1.30E-09	5.92E-10	5.86E-11	5.86E-11
PLFX		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PIGX		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PLFV		0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.37E-11	4.11E-10	0.00E+00	0.00E+00	0.00E+00
OLCV		1.28E-10	1.28E-10	1.28E-10	1.28E-10	0.00E+00	0.00E+00	6.35E-12	1.45E-11	1.45E-11
MKCV		4.44E-10	4.44E-10	4.44E-10	4.44E-10	0.00E+00	0.00E+00	8.52E-12	5.30E-11	5.30E-11
OIBV		2.33E-10	2.33E-10	2.33E-10	2.33E-10	1.51E-12	0.00E+00	3.48E-12	2.65E-11	2.65E-11
PIGV		0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.90E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PIEV		8.16E-11	8.16E-11	8.16E-11	8.16E-11	9.90E-10	0.00E+00	1.17E-12	9.27E-12	9.27E-12
PJAV		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PIHV		1.28E-11	1.28E-11	1.28E-11	1.28E-11	0.00E+00	0.00E+00	0.00E+00	1.46E-12	1.46E-12
OLFV		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PIFV		0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.05E-10	0.00E+00	0.00E+00	1.02E-12	1.02E-12
MIBZ		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MIGV		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
OIAZ		4.62E-11	4.62E-11	4.62E-11	4.62E-11	0.00E+00	0.00E+00	9.89E-13	5.24E-12	5.24E-12
PLFZ		0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.14E-12	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MIAZ		3.32E-11	3.32E-11	3.32E-11	3.32E-11	0.00E+00	1.25E-10	5.32E-11	3.77E-12	3.77E-12
PIGZ		0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.38E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00
OIAX		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NJAZ		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MKCZ		3.44E-11	3.44E-11	3.44E-11	3.44E-11	0.00E+00	0.00E+00	7.67E-13	3.91E-12	3.91E-12
OLCZ		1.21E-11	1.21E-11	1.21E-11	1.21E-11	0.00E+00	0.00E+00	0.00E+00	1.26E-12	1.26E-12
MLCV		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.65E-11	0.00E+00	0.00E+00
NLFV		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.85E-12	0.00E+00	0.00E+00
MIDV		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.06E-12	0.00E+00	0.00E+00
OIBZ		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PIEZ		0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.56E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PJAZ		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MIFV		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PIHZ		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MIKV		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.52E-13	0.00E+00	0.00E+00
MIHV		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
OIFV		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
OKCV		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MKFV		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
OLFZ		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PIDV		1.13E-11	1.13E-11	1.13E-11	1.13E-11	0.00E+00	0.00E+00	0.00E+00	1.28E-12	1.28E-12
PIFZ		0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.59E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MIGZ		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
OIDV		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
OIFX		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MLCZ		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.43E-12	0.00E+00	0.00E+00
MICV		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MJAV		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PIHX		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NLFZ		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NIDZ		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MIGX		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MIFZ		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
OIEV		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
OKCZ		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NIHZ		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PKFX		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NKFZ		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
OIFZ		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
OKFV		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PIDZ		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PKFV		0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.66E-12	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PKHX		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PKHV		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MIAX		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PIFX		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NIHZ		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
OIDZ		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MKFV		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
OICV		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NKHV		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MICZ		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PJHV		0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.18E-12	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TOTAL CDF'S:		2.32E-09	2.24E-09	2.24E-09	2.24E-09	2.03E-09	1.83E-09	7.07E-10	2.61E-10	2.61E-10
Truncation Fre		1.00E-11	1.00E-11	1.00E-11	1.00E-11	1.00E-12	1.00E-10	5.00E-13	1.00E-12	1.00E-12
Unacct Freq:		1.77E-06	1.77E-06	1.77E-06	1.77E-06	7.36E-09	1.87E-06	4.82E-08	2.07E-07	2.07E-07
Unacct Freq M		764.6	792.6	792.7	792.6	3.6	1020.9	68.1	793.2	793.1
%CUMULATIVE		99.9	99.9	99.9	99.9	100	100	100	100	100