SAFETY EVALUATION OF EMERGENCY VENTILATION SYSTEM DESIGN MODIFICATIONS

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TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

I. INTRODUCTION

Portland General Electric has determined that certain modifications should be made to the Control Room Emergency Ventilation System of the Trojan plant (CB-1). These modifications enhance the capability of the system to perform its isolation function for toxic gas release and its emergency ventilation function for radiological hazard conditions. The modifications involved adding an extension to the intake ducting to place the intake point at a greater distance from the containment (completed in 1986), the future installation of redundant airtight dampers and installation of supplemental high efficiency particulate (HEPA) and charcoal filtration capability (tentative conceptual design only).

A 10 Code of Federal Regulations 50.59 evaluation was performed per Portland General Electric's Nuclear Division Procedure 100-5 to determine whether these modifications involve unreviewed safety questions. Section 3.3 of the Trojan Final Safety Analysis Report requires that CB-1 be protected from tornado missiles and high winds.

Due to space limitations, it is necessary to install the dampers and filtration units on the roof of the control building. Further, due to weight limitations, it is difficult to provide tornado missile protection for the portions of the system installed on the roof of the control building. Due to the fact that dampers, filters and ducting may be exposed to tornado winds and missiles, the overall tornado induced risk of habitability loss may increase due to these modifications. This analysis quantifies this increased risk to determine if tornado missile and wind protection is required.

Nuclear plant systems are designed to provide high reliability of safe and orderly shutdown for a variety of postulated accident conditions. These accidents are very unlikely and are not

expected to occur during the plant lifetime. In some cases, systems provided to support the achievement of safe shutdown are only called upon to function in extremely unlikely conditions. In such cases, it is useful to consider the impact of modifications and design alternatives on a full spectrum of such postulated accidents to assure that the overall net impact of such modifications is understood. Probabilistic risk assessment techniques have been developed for such studies. In order to evaluate the implications of the identified modifications to the Control Room Emergency Ventilation System, a detailed probabilistic risk evaluation has been performed.

This report focuses on the overall implications of alternative design features in terms of the increase or decrease in assessed safety of the facility. These types of analyses are often called "risk assessments" as the benefit of a modification can be viewed as the reduction in risk. It is important to maintain the perspective that overall risk values such as 10^{-6} or 10^{-7}/year are exceedingly small incremental or residual risk values. They are very unlikely and are in no way expected to occur in the life of the plant.

The methodology involves the development of a baseline risk model which reflects the current design of the system and the development of model changes to reflect each design change. By analyzing the various model formulations it is possible to determine the risk for each configuration. Comparison of each result with previous results allows a determination of overall risk effectiveness of each modification.

The analysis demonstrates that the modifications have very little impact on the risk of control room habitability loss. The incremental benefit of tornado missile protection is very small relative even to the already small risk. Therefore, this additional protection is of little value and high cost.

II. SYSTEM DESCRIPTION

II.1 System Operation/Functions

Control Room Emergency Ventilation System

The control room emergency ventilation system (CB-1) is designed to provide the cooling, filtration, and ventilation required to maintain habitability of the control room and integrity of the equipment in the control room under conditions where the outside air is contaminated with toxic gas or airborne radioactive material. The system is designed to meet Seismic Category I requirements and meets the tornado design criteria outlined in Section 3.3 of the Trojan Nuclear Plant Final Safety Analysis Report (FSAR) and General Design Criteria 4 (with the exception of the current extended inlet duct on the control building roof which does not meet the tornado criteria).

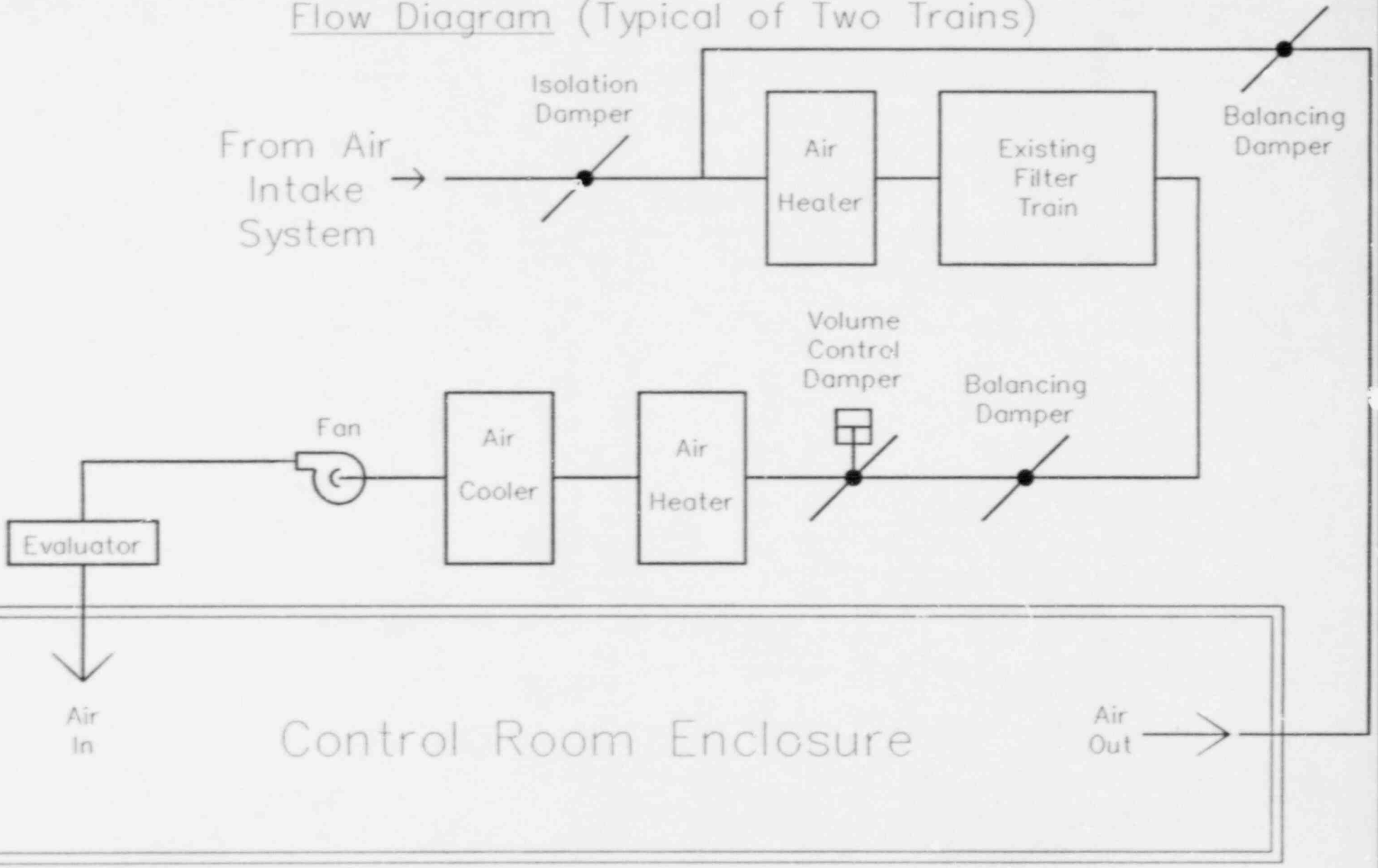
The system consists of two independent, full capacity trains each containing a recirculation fan, filter train assembly (pre-filter, pre-carbon HEPA filter, carbon filter, and HEPA filter), various dampers (isolation, fire and volume control), heaters, coolers, and filters. A system schematic of one of the trains is shown in Figure 1. This figure also shows the relationship of the air intake system to the rest of the CB-1 system.

When the plant is operating in MODEs 1 through 4, both trains of CB-1 are required to be operable to ensure that the control room personnel are prevented from receiving doses in excess of 5-rem whole-body or equivalent (General Design Criteria 19) in the event of a large break loss of coolant accident (LOCA) and are prevented from being exposed to >15 parts per million (ppm) chlorine gas within 2 minutes after they are made aware of the presence of chlorine (Regulatory Guide 1.95).

Figure 1

Control Room Emergency Ventilation System (CB-1)

Flow Diagram (Typical of Two Trains)



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In the event of failure of the normal ventilation system or a non-nuclear contamination event, the CB-1 system can be initiated either manually or automatically. Automatic initiation occurs only when a safety injection signal (SIS) is received from the Engineered Safety Features Actuation System.

When a safety injection signal or a high control room area radiation signal is received, the control room normal ventilation system stops its recirculation fan, supply fan, outside air makeup fan, and closes its outside air damper. Additionally, other control building ventilation systems are isolated. In the original CB-1 design, the operator was required to manually open the CB-1 outside air dampers to admit makeup air and maintain the control room enclosure in a pressurized condition. The system is designed to prevent the introduction of unfiltered, potentially contaminated air to the control building by maintaining a positive pressure in the control room.

When a chlorine alarm signal is received from one of the onsite chlorine monitors, all sources of outside air to the control building are isolated, except the CB-1 air intake. During the 1988 outage, the CB-1 intake will be modified to isolate automatically when a signal is received from the chlorine monitor. When CB-1 is used during a chlorine release event, it is operated in the recirculation mode only, with outside dampers remaining closed. To ensure isolation, a chlorine alarm signal overrides all signals which might cause the outside air dampers to open.

In summary, the CB-1 system has two primary functions to perform in support of control room habitability: (1) filtration in the event of radioactivity release; and (2) isolation in the event of a chlorine release.

II.2 System Modifications

The original design basis for the CB-1 control room emergency ventilation system called for 150 cubic feet per minute (cfm) of filtered outside makeup air to be provided via an intake enclosure on top of the control building. However, operational testing found that the design basis air intake flow rate was insufficient to ensure that the control room could be maintained pressurized. Further testing found that the design basis outside air makeup flow rate would have to be increased to 525 cfm. This higher flow rate resulted in calculated radiation doses to operators during an accident that exceeded 10 CFR 50 General Design Criterion 19. Therefore, to reduce the calculated doses, the CB-1 intake point was re-located in 1986 approximately 80 feet further from the containment to take advantage of atmospheric dilution of the radioactivity levels in the intake air. This configuration is shown in Figure 2.

Review of the system design also identified a potential single point failure mode for the CB-1 intake system. The original CB-1 design utilized one damper per train for isolation of the system from outside. In the unlikely event one of the dampers failed open in a toxic gas event, control room habitability could be lost. For this reason, Portland General Electric is considering modifying the design by installing a redundant set of isolation dampers on each of the CB-1 trains. The new design would use two new, zero leakage, air operated butterfly valves as dampers on each train to be installed on the roof of the control building. This design is shown in Figure 3.

The dampers to be installed are designed with air to open, spring return operators. The dampers are designed for bubble tight leakage at 1/2-inch W.G. pressure differential. Air for

Figure 2

CB-1 Air Intake System with Pipe Extension

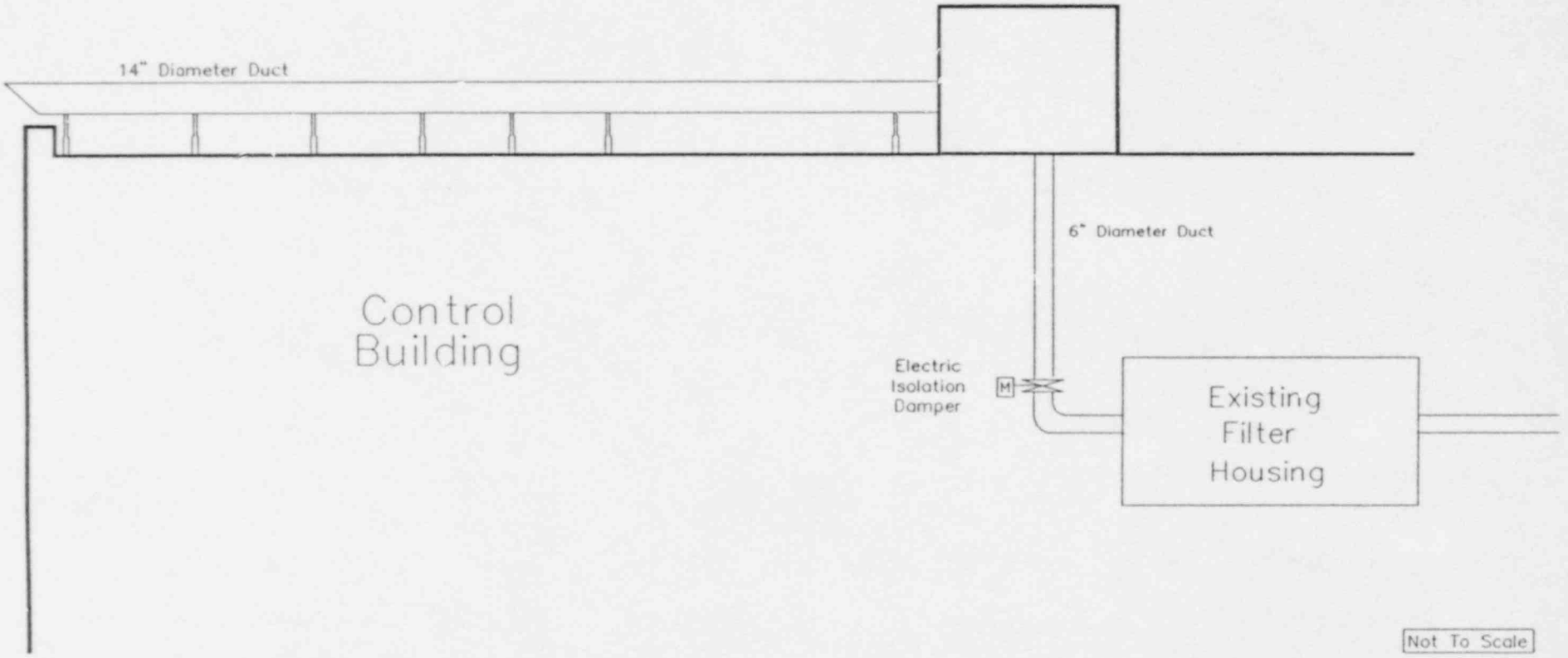
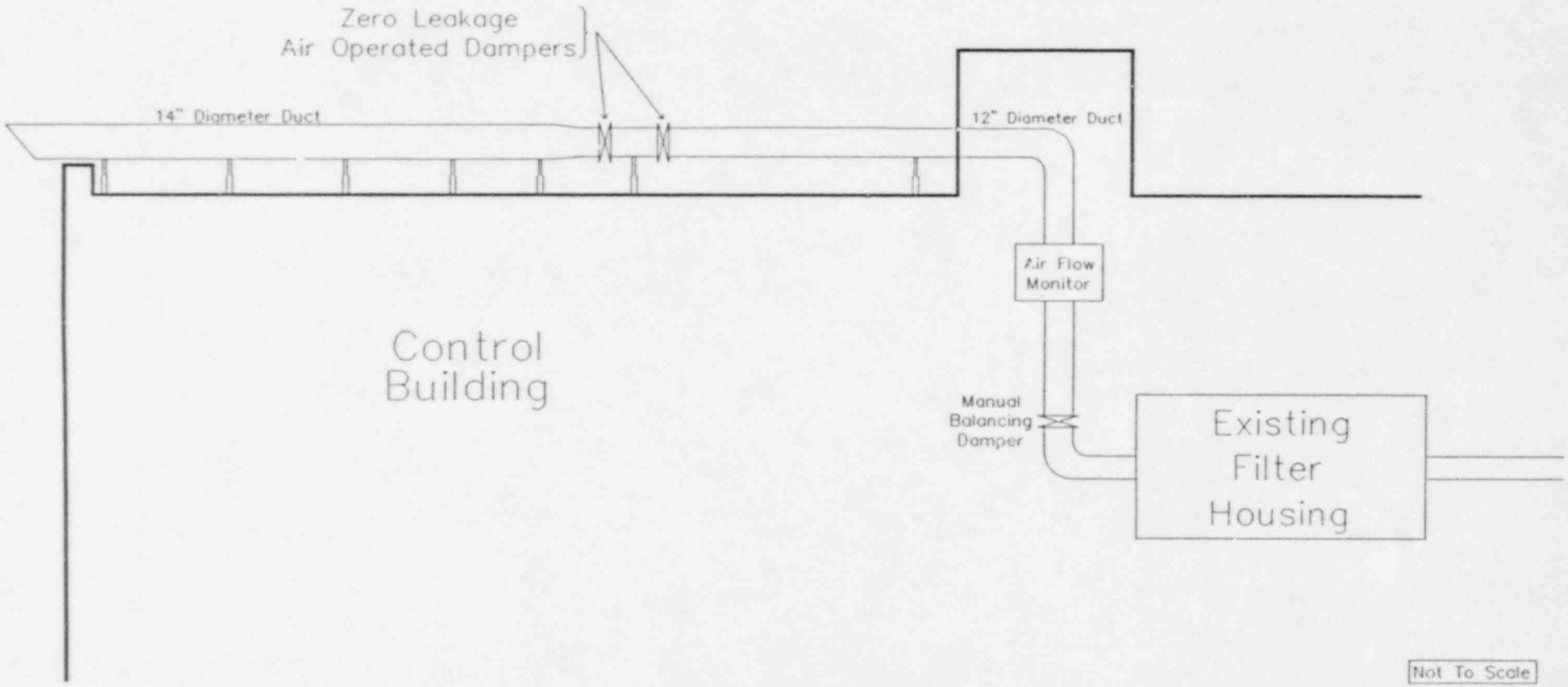


Figure 3

CB–1 Air Intake System with Pipe Extension and Dampers



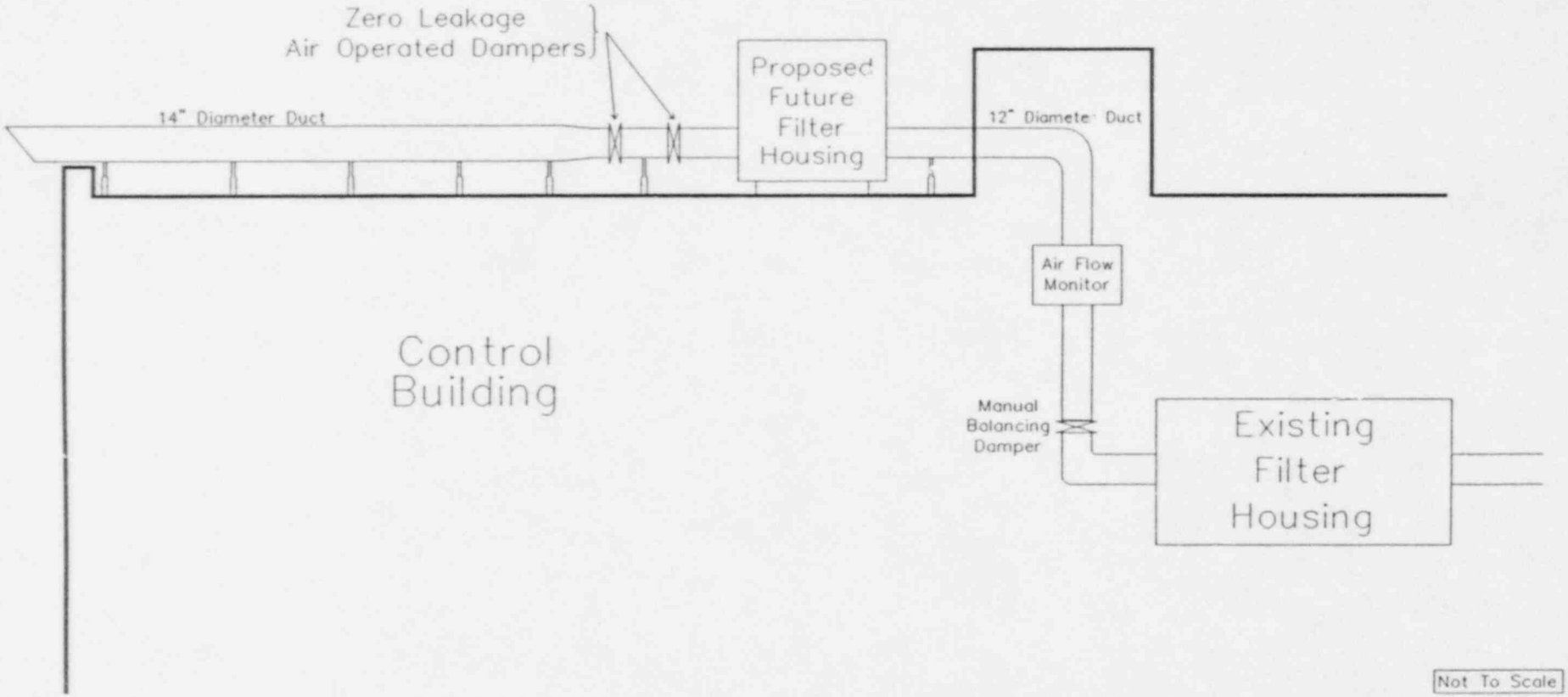
damper operation is to be provided to one accumulator per train from the existing plant instrument air system. Air to open the dampers is to be provided from the accumulators to the damper operators through electric solenoid valves. The damper system is designed to fail closed upon loss of instrument air or power to the system.

Indication of isolation damper position is provided to the control room by the use of a single pair of open/closed indicating lights for each train. In the case of the design with redundant dampers, these lights will indicate the combined system condition for each train of isolation dampers.

A further design enhancement is also being considered. This would involve adding a filter train to each of the CB-1 intake trains on the roof of the control building. This design would provide greater filtration and thereby increased margin for radioactive releases which might threaten control room habitability. The filter design has not been finalized. It is assumed that each of the filter housings would be roughly 4'x4'x10' in overall dimension. The layout of this system design is shown in Figure 4.

Figure 4

CB–1 Air Intake System with Pipe Extension, Dampers, and Filter



III. METHODOLOGY OVERVIEW

The evaluation of CB-1 system modifications is performed utilizing a standard risk assessment methodology to evaluate the potential loss of control room habitability due to failure of the CB-1 system. As discussed, control room habitability can be lost due to failure of CB-1 to perform either of two missions:

- failure to isolate in the event of a toxic gas hazard

or

- failure to provide adequate filtered makeup air to maintain the control room pressurized in the event of a radioactivity hazard.

To evaluate the performance of various CB-1 design concepts in each of these missions, a comprehensive fault tree was developed to quantitatively analyze the likelihood of loss of control room habitability. In particular, the susceptibility of the Trojan Nuclear Plant to tornado effects was modeled to allow evaluation of the risk/benefit of different design concepts. Such events are potentially capable of damaging CB-1 and causing a simultaneous release of toxic gas or radioactivity. Seismic effects were not modeled as the modifications evaluated do not change seismic capability and are therefore unaffected. Additionally, random and dependent failures of CB-1 to perform its mission were modeled. Random failures of CB-1 components include failure to open, failure to close, failure to start and failure to run. The modeled dependencies include AC power dependence, common cause failure dependence, and tornado dependent failures.

The Trojan Nuclear Plant is capable of withstanding the effects of a broad range of tornado challenges without jeopardizing the ability to achieve safe and orderly shutdown. Some failures may nevertheless be caused by tornados or severe winds.

The design basis wind velocity for all Seismic Category I and Category II buildings is 105 miles per hour (mph) at 30 ft. above the normal ground elevation. Also included in the design basis is a 1.1 gust factor above the 105 mph, effectively increasing the design basis wind loading to 116 mph. Further, structures 50 to 150 feet in height are designed for 138 mph winds (125 mph wind loadings plus 1.1 gust factor).

In addition to these minimum wind loading design bases, all structures needed to achieve and maintain a safe shutdown condition are capable of withstanding 200 mph tornado loads and many are further capable of resisting 300 mph tornado loads. Table 1 identifies these structures and their tornado resistant capabilities. In addition to effects of tornado winds, these structures have been designed to withstand other tornado threats including tornado missile impingement and differential pressure transients.

This study focuses primarily on the impacts of tornado winds and missiles on Trojan structures and, in particular, on exposed CB-1 equipment. Differential pressure effects were considered to have a negligible impact on CB-1 performance. Susceptibility of the filter to large, rapid pressure differentials was also considered of negligible significance since the isolation dampers are normally in the closed position, thereby protecting the filters from excess pressure differentials and air flows induced by the tornado.

The Pacific Northwest region of the United States is a relatively mild tornado region. However, there is some potential for a tornado to occur of sufficient severity to challenge plant structures. A thorough review of tornado sources was undertaken

TABLE 1

Capabilities of Structures to Withstand Tornados*

Design Basis Tornado Impacts	Structures
200 mph Design Basis	
- 200 mph wind loading over entire height	- Control Building Below Cable Spreading Room
- 1.5 psi pressure differential in 1.5 seconds	- Diesel Generator Rooms
- 4" x 12" x 12' wood plank on end at 200 mph	- Switchgear Rooms
- 3" diameter, 10' long ASA schedule 40 pipe at 75 mph	- Auxiliary Feedwater Pump Rooms
- 4000 lbs passenger car at 40 mph, below 25' from grade	- Auxiliary and Fuel Building Above Grade
	- Spent Fuel Pool
300 mph Design Basis	
- 300 mph wind loading over entire height	- Containment
- 3.0 psi pressure differential in 3.0 seconds	- Control and Cable Spreading Rooms
- 4" x 12" x 12' wood plank on end at 300 mph	- Auxiliary Building Below Grade
- 3" diameter, 10'long ASA schedudle 40 pipe at 100 mph	- Main Steam Penetration Areas
- 4000 lbs passenger car at 50 mph, below 25' from grade	- Cable Trays Between Containment and Control Room
	- Intake Structure

* From Trojan FSAR, Rev. 6, Section 3.3.2.1

in this study to assess the probable frequency and severity of tornado impact at the Trojan Nuclear Plant site. This evaluation is described in Section III.1.

The evaluation of tornado effects on plant designs can be divided into two potential impacts: wind related failures and tornado missile related failures. Tornado wind impacts on the plant can be evaluated in terms of the structural fragility of components and structures over the range of winds predicted in tornados. The methodology used in the evaluation of tornado wind impacts on plant structures is summarized in Section III.2.

Tornado missile impacts on the plant can be evaluated through the assessment of the likelihood of impact of tornado missiles on vulnerable areas of the plant including exposed portions of the CB-1 system, offsite power supply equipment, and cooling water supplies (i.e., condensate storage tank (CST) and refueling water storage tank (RWST)). An overview of methodology used in assessing the likelihood of tornado missile impact on plant structures is presented in Section III.3.

The methods used in the evaluation of the likelihood of release of hazardous materials (i.e., toxic gas and radioactivity) due to tornado induced damage are described in Section III.4. This area is concentrated on because of the potential for simultaneous damage to CB-1 and hazardous material release due to a tornado.

III.1 Tornado Frequency Evaluation

A number of sources of tornado severity data were consulted in the assessment of tornado frequency for the Trojan site. These sources included regulatory reports (Ref. 1,3), Electric Power Research Institute (EPRI) reports (Ref. 4,5,6), FSAR data (Ref. 12), and National Service Storm Forecast Center (NSSFC) reports (Ref. 13). The determination of a quantitative frequency of occurrence of tornados for Trojan is made difficult by two

factors. First, tornados are infrequent occurrences. This means that the data base from which to draw conclusions is small. Second, tornados are only added to a data base if they are observed. That is, unlike many other extreme weather and naturally occurring threats, tornados must be observed and reported by a person to be included in a data base. Many other natural hazards can be detected by remote means (seismograph, radar, etc.) without relying on human observations and reporting.

When considering the potential impacts of tornados on plant structures, it is necessary to consider only those tornados with Fujita scale severity of F'1, or greater. Tornados classified as less severe than F'1 are not of sufficient size nor duration to present a significant hazard. Thus, this study focused on the assessment of frequency for F'1 or greater tornados for the Trojan site.

A summary of the tornado occurrence frequency evaluation performed in this study is presented in Table 2. These data support the use of a tornado occurrence frequency of greater than 10^{-5} per square mile-year for the site and do not invalidate the licensing basis assumed tornado frequency. Nevertheless, as a conservatism, this study utilized the highest tornado occurrence frequency found in the investigation, 4.4×10^{-5} per square mile-year, from EPRI-NP-768 by Twisdale et al. (Ref. 4).

The study which developed this overall occurrence frequency also quantified the frequency of impact of tornados for a generic nuclear plant site on the basis of severity. These values were used in this study as the input frequency of occurrence of each tornado severity for the Trojan site. Based on this data, the total tornado impact frequency for the Trojan site is 1.95×10^{-4}/year. A plot of tornado frequency versus severity is presented in Figure 5.

TABLE 2

Tornado Occurrence Frequency Summary

Source	Tornado Frequency (per square mile-year)
WASH-1300 (Ref. 1)	7.9×10^{-6}
EPRI-NP-2005 (Ref. 6)	1.2×10^{-5}
Trojan FSAR Data (Ref. 12)	1.8×10^{-5}
NSSFC Data for 50 mi Radius Around Portland, OR (1950 - 1987) (Ref. 13)	3.12×10^{-5}
EPRI-NP-768 (Ref. 4)	4.4×10^{-5}
Value used in this study:	4.4×10^{-5}

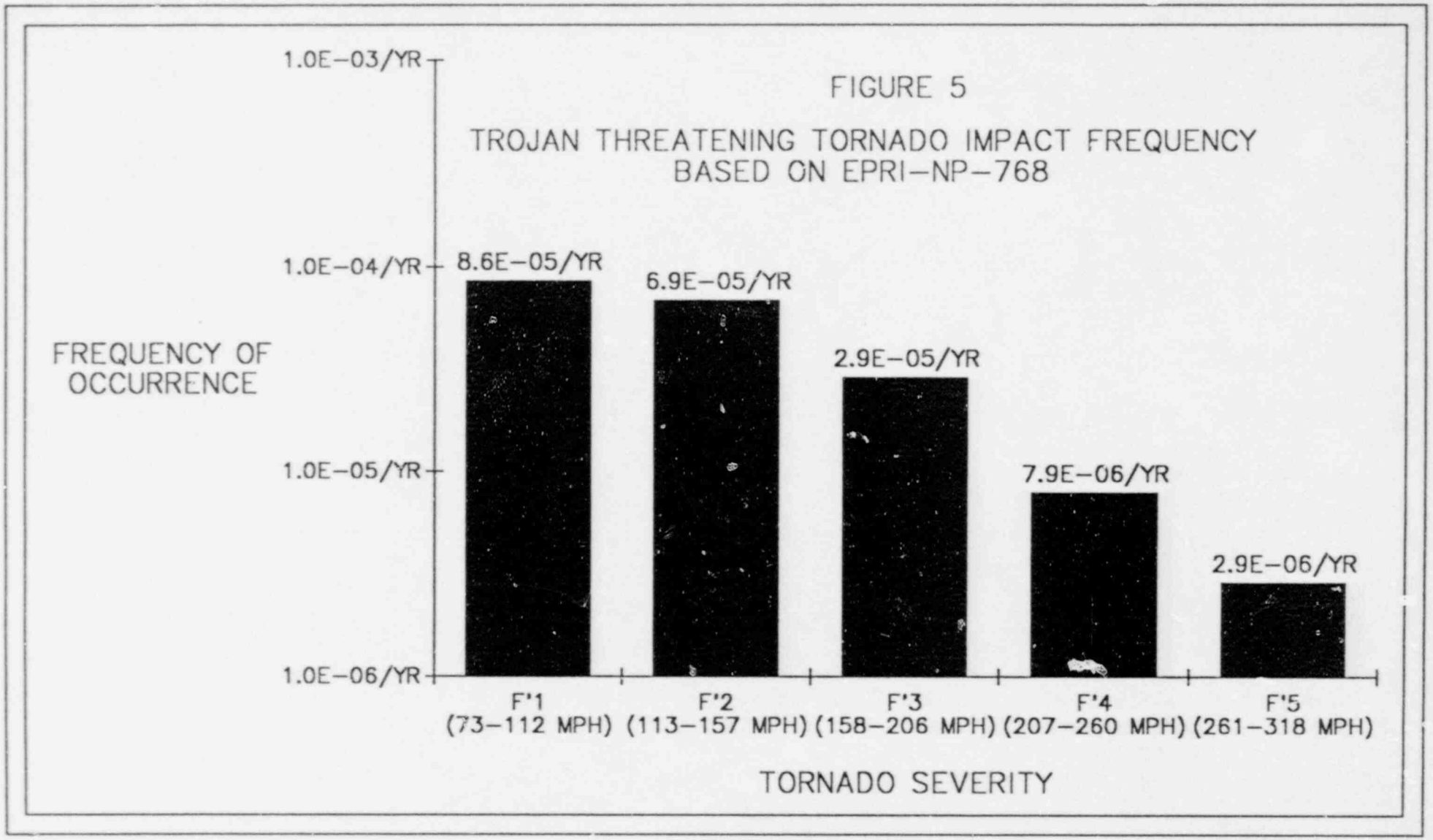


FIGURE 5
TROJAN THREATENING TORNADO IMPACT FREQUENCY
BASED ON EPRI-NP-768
1.0E-03/YR
1.0E-04/YR
1.0E-05/YR
1.0E-06/YR
FREQUENCY OF OCCURRENCE
8.6E-05/YR
6.9E-05/YR
2.9E-05/YR
7.9E-06/YR
2.9E-06/YR
F'1 (73-112 MPH)
F'2 (113-157 MPH)
F'3 (158-206 MPH)
F'4 (207-260 MPH)
F'5 (261-318 MPH)
TORNADO SEVERITY

III.2 Tornado Wind Impacts on Plant Structures

The methodology utilized in this study for the evaluation of wind impacts on plant structures is based on the concept of component fragility. The fragility or vulnerability of a component is defined as the conditional probability of its failure given a specific hazard. In the case of tornados, the hazard considered in this analysis is wind loading.

NUREG/CR-2300 (Ref. 2) develops an equation for the quantification of component fragility based on the wind loading applied and the capacity of the component. The form of the equation is as follows:

$$\text{fragility} = f' = \Phi\left[\frac{\ln(V/C) + \beta_{C,U}\Phi^{-1}(Q)}{\beta_{C,R}}\right]$$

where $\Phi(\cdot)$ is the standard Gaussian cumulative distribution function, V is a given wind loading (mph), C is the components capacity to withstand wind loadings (mph) $\beta_{C,U}$ and $\beta_{C,R}$ are the standard deviation due to uncertainty in component capacity and standard deviation due to random variations in wind loading, respectively. Q is the probability that the true component fragility is less than f', and $\Phi^{-1}(\cdot)$ is the inverse of the standard Gaussian cumulative distribution function (arc $\Phi(\cdot)$).

As described in NUREG/CR-2300, the structural capacity of a structure C can be taken as one and one-half times the design windspeed (i.e., design basis wind loadings contain approximately 50% margin). For the purposes of this study which uses best estimate values, a value of 0.50 is used for Q to calculate the median value of f'. NUREG/CR-2300 develops values for the standard deviation factors of 0.38 and 0.25 for $\beta_{C,U}$ and $\beta_{C,R}$ respectively. Substituting in these values, the equation simplifies to:

$$f' = \Phi \left[\frac{\ln \left(\frac{V}{1.5 \cdot V_d} \right)}{0.25} \right]$$

Using this simple equation, best estimate fragility curves can be developed to allow quantification of component failure probability over the range of wind speeds expected in tornados. Fragility curves for the four primary wind loading design bases of 116 mph, 138 mph, 200 mph and 300 mph are shown in Figure 6.

In the quantification of wind related hazards for the evaluation of control room habitability, several specific structures are evaluated. Table 3 lists these structures, their wind loading design basis, and the failure probability used for each of the five Fujita tornado classes. As can be seen from this list, there exists a finite probability that some structures will fail in even relatively mild tornados (F'2 or less).

III.3 Tornado Missile Impacts on Plant Structures

Missiles from a tornado can result in damage to facilities and equipment. The probability of missile damage is dependent upon several variables such as tornado intensity, the area of the target, and the number of missiles.

This analysis includes a comprehensive treatment of the frequency of damage as a result of tornado missiles to CB-1 system components and other safety and nonsafety related structures.

Many structures at Trojan are designed for 200 or 300 mph tornado impacts. These structures' susceptibility to tornado missiles are considered negligible. There are, however, several structures which could be affected by tornado missiles. These structures include buildings, tanks and components designed for

Figure 6
Component Fragility for Various Design Windspeeds

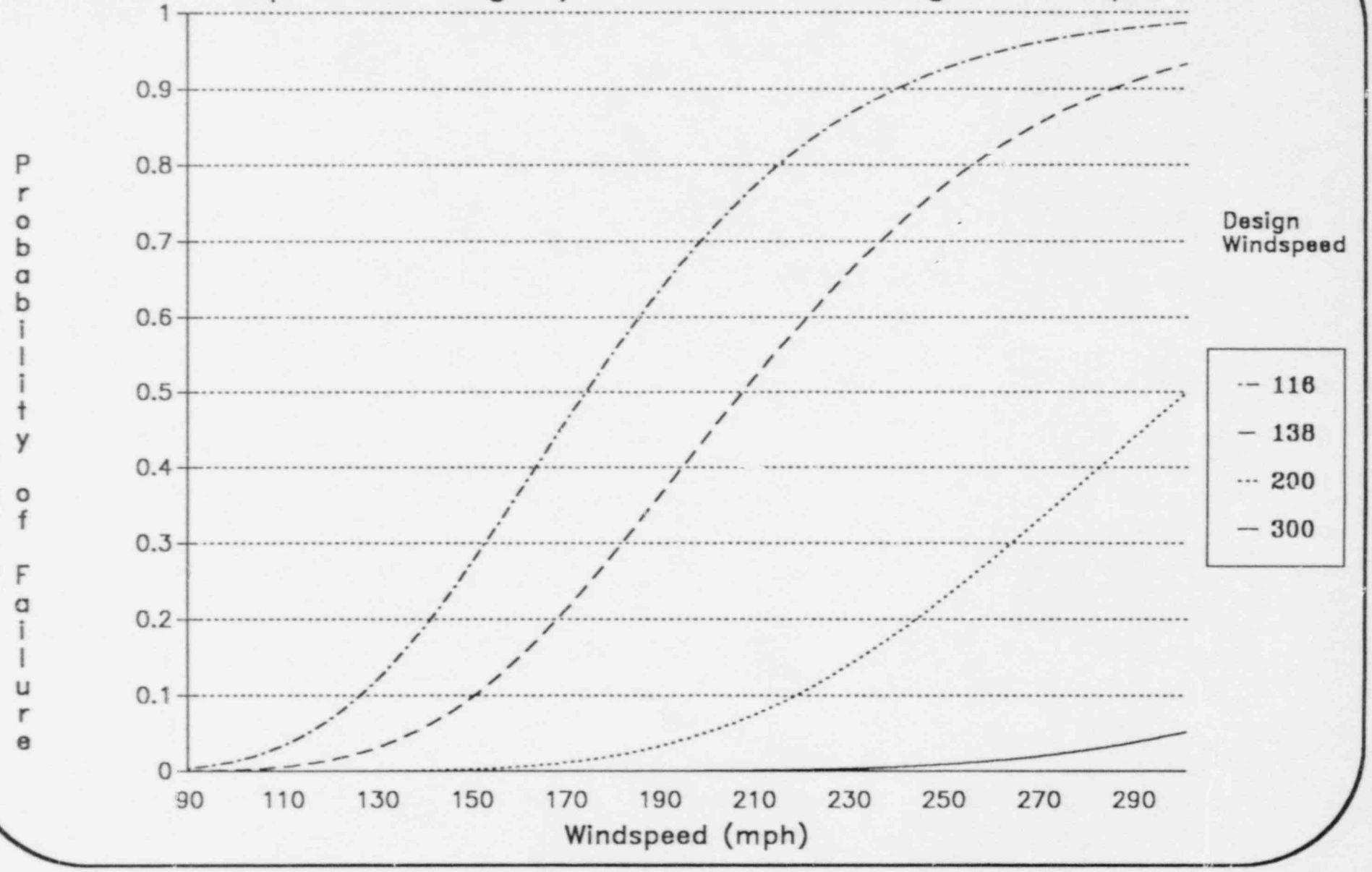


TABLE 3

Fragility of Trojan Site Structures In Tornados

Structure(s)	Wind Loading Design Basis	Conditional Probability of Failure — Tornado Severity (Average Wind Speed) F'1 (93mph)	F'2 (135 mph)	F'3 (182 mph)	F'4 (234 mph)	F'5 (290 mph)
Offsite Power Supply Conductors	116	6.0E-3*	0.16	0.57	0.90	0.98
Chlorine Building						
AFW Pump Rooms	200	<1E-5	7.0E-4	2.3E-4	0.16	0.44
Diesel Generator Rooms						
CB-1 Piping (Duct)	300	<1E-6	<1E-5	1.0E-4	4.4E-3	3.9E-2

* 6.0E-3 = 6.0×10^{-3}

winds less than 200 mph such as the chlorine building, tanks, and switchyards and transmission towers.

EPRI report NP-768, "Tornado Missile Risk Analysis" (Ref. 4,5), provides the basis necessary to determine the risk to plant facilities and equipment due to tornado missiles.

Based on the data presented in the EPRI report from numerous tornado missile computer simulations, the probability of a missile hitting any square foot of area per missile per tornado can be determined. The EPRI simulations utilized the TORMIS computer code, a state of the art model of tornado missile injection, flight and impact dynamics. These simulations can be used to calculate the mean probability of hit, moderate damage, and significant damage to all exposed vertical surfaces in a plant site based on a given tornado severity and missile population within 2000 feet of the site. In this analysis, the EPRI calculated probability of hit is conservatively applied as the probability of failure of a component or structure. The following table gives the EPRI calculated probability of missile hit per square foot per available missile per tornado for each tornado intensity, F'1 to F'5.

Tornado Intensity	Missile-Strike Probability Per Unit Area/Tornado/Missile
F'1	2.89×10^{-11}
F'2	3.57×10^{-11}
F'3	9.06×10^{-11}
F'4	6.05×10^{-11}
F'5	1.39×10^{-10}

These generic probabilities can then be applied specifically to the Trojan plant after determining the number of missiles available on the Trojan site.

In an effort to develop an estimate of the number of tornado missiles available at the Trojan plant, a tornado missile survey was conducted. This survey consisted of a thorough walkthrough of all areas of the plant site. When potential missiles were identified in the survey, conservative estimates of the number were made for use in the analysis. Since the Trojan site is surrounded by a heavily wooded forest, an estimate of the number of trees per unit area was developed during the site visit. Then, based on photographs of the plant site the amount of forested area within 2000 ft. of the plant was estimated. A summary of the tornado missile survey is presented in Table 4.

The probability of a missile hitting facility equipment at Trojan per square foot per tornado is shown in the following table by tornado intensity:

Tornado Intensity	Missile-Strike Probability For Trojan (K) (missile hits per square foot per tornado)
F'1	4.9×10^{-7}
F'2	6.1×10^{-7}
F'3	1.6×10^{-6}
F'4	1.0×10^{-6}
F'5	2.4×10^{-6}

The probability of a missile hit on any facility or equipment at Trojan can now be determined. Using the area of the facilities and equipment that could contribute to an accident initiated by a tornado involving loss of control room habitability and the missile strike probability, the probability of hit is calculated. The areas of importance for this analysis are listed in the following table:

TABLE 4

Trojan Missile Survey Results

(All Missiles within a 2,000 ft. radius of the containment building.)

Object	Quantity
Light containers	30
Truck tractors	2
Scaffolding	1900
Ladders	30
Tool boxes	60
Pallets	300
Conduit	370
Unistrut	50
Threaded rod	30
Timber - 2"x4"x8'	100
Scrap iron	200
Building siding	3500
Large pipes > 4"	15
Small pipes & tubing <1"	800
4" Pipes	20
Drums - 55 gal.	275
Scrap steel (small)	1000
Gas bottles (large)	10
Gas bottles (standard)	100
Gas bottles (small)	100
Disposable resin tanks	20
Disposable resin tanks <2"	500
Steel sided bldg. (3)	300
Angle iron- 3"x3"	25
Siding from 37 trailers	1480
Refuse dumpster	3
Cylinders (air)	30
Steel & pipe <3"	100
Barricades - wood	100
Wirespools - loaded	200
Tanks - 10' dia.	6
Telephone poles	25
Fencing material	100
Trees	5013
Cars in parking lot	300
TOTAL MISSILES:	17,194

Facility Equipment	Area (Square Feet)
Switchyard	250,000
Chlorine Building	3,480
Refueling Water Storage Tank	6,451
Condensate Storage Tank	6,500

The probability of hit to CB-1 equipment located on the control building roof requires the consideration of both a direct hit and the ricocheting of missiles. This is necessary due to the location of the turbine building relative to the control building. The likelihood of both direct and ricochet missile hits has been included to provide a more realistic probability of hit to CB-1 equipment located on the control building roof.

Another variable to be considered in evaluating CB-1 vulnerability is the equipment required to support the two intended functions of CB-1, (i.e., control room habitability during a radiological release and control room isolation during a toxic hazard release). These two functions are dependent on different portions of CB-1. For a radiological release, the equipment required is all CB-1 equipment located on the roof. This is required because missile impact may cause isolation of the system or creation of a different intake point by opening the duct. For toxic hazard release, the only CB-1 equipment vulnerable to tornado missiles is the intake duct between the proposed dual isolation dampers and the intake enclosure. If penetrated by a missile, this section of duct would bypass the isolation of the system. In cases with the proposed filter, the filter housing was also analyzed as a potential missile target and failure point.

The direct hit of a missile on the enclosure containing the two chlorine monitors was considered and determined to be negligible. The small area of target of the chlorine monitor housing and the frequency of a tornado results in a damage frequency of less than 10^{-9}/year. The monitor currently utilizes small tubing as the

sample supply line to the monitor. These tubing runs are relatively short (~2 feet), but could be damaged by small missiles. PGE currently plans to replace these sections of tubing during the 1988 outage with double heavy walled pipe to minimize the potential for tornado missile damage. Thus, loss of the chlorine monitor in a tornado would be a negligible contributor to system isolation failure.

An additional conservatism was added to the study to account for design options utilizing instrument tubing as the air supply lines to the dampers. For instrument air lines of this type, the probability of hit by small missiles is considered to be 1.0. For design options utilizing either protected instrument tubing or heavy walled pipe, the probability of damage was calculated on the basis described above, utilizing the total area surrounding the pipe, dampers, and accumulators.

III.4 Tornado Induced Hazards

Tornado impacts on the plant can result in the initiation of various hazards to the plant. Toxic gas release is a potential result of a tornado event due to the relatively low wind loading design basis for the chlorine building. Radioactivity release also has the potential to occur due to the susceptibility of the some structures to the wind loadings and missiles present in a tornado and the potential for inducing a station blackout. This evaluation of the loss of control room habitability explicitly models the potential for both of these types of tornado induced hazards impacting control room habitability.

Modeling of toxic gas release includes the potential for a release from the chlorine building due to tornado and the potential for loss of CB-1 isolation due to either random or tornado induced causes. Each tornado severity is modeled individually to allow assessment of the likelihood of release and failure on a tornado specific basis.

The release of chlorine in a tornado is conservatively treated as occurring any time the mean fragility of the chlorine building structure is exceeded and anytime a missile strikes the structure. This conservative treatment results in a conservatively high frequency of chlorine hazard due to tornados. In addition, the treatment of atmospheric dispersion of a chlorine release was conservative in that meteorological conditions capable of supporting high chlorine concentrations were always assumed to be present if the wind direction was in the quadrant in which the chlorine cloud would be transported toward the intake. Tornado induced damage to a passing chlorine rail car is of extremely small probability and was, therefore, not considered to affect the overall results. Thus, the challenge to the integrity of the CB-1 isolation is modeled in a conservative manner.

The modeling of radioactivity hazards is based on the frequency of core melt. In the case of random release of radioactivity, the frequency of core melt is taken from the draft NRC Safety Goal of 1×10^{-4}/year. The likelihood of a random event caused core melt occurring concurrent or immediately following a tornado is judged to be negligible and, as such, is not modeled.

The frequency of tornado induced core melt is modeled in a conservative, simplified manner. Based on the results of past PRA studies of tornado risks, the dominant plant core damage risks due to tornados are related to loss of all AC power, (i.e., station blackout). Typically, offsite power supplies are not tornado protected, thus, the occurrence of a tornado often results in a loss of offsite power event.

The Trojan plant has multiple offsite power supplies, but all are supplied to the plant through a common right of way and switchyard. Further, the offsite power transmission towers utilize conductors which are designed for 105 mph winds and the

switchyard is not protected from tornado missiles. Utilizing the wind fragility and tornado missile methodologies described above, it is possible to calculate the likelihood of loss of offsite power for individual tornado severities.

A loss of offsite power event automatically initiates reactor trip and diesel start signals. However, there exists some likelihood that the plant diesels will fail to start either due to random causes or due to tornado induced causes. The Trojan diesel generator rooms are designed for 200 mph tornado winds and missiles. However, some tornados generate winds in excess of 200 mph and the structural integrity of the diesel room could be challenged.

In this study, failure of both diesel generators was conservatively assumed to occur 10% of the time when the structural fragility of the diesel generator rooms was exceeded. This assumption is based on the configuration of the diesel generator room and is consistent with the treatment of room failure impacts on diesel generator operability in other probabilistic studies of tornados (Ref. 11). The diesel generator room has only one, relatively small, external wall on the west side which could be exposed to tornado loadings. The diesels are located perpendicular, in series relative to the external wall such that only one is in proximity to the external wall.

Should either one or both diesels successfully start and survive the tornado, core cooling can be maintained through either the secondary auxiliary feedwater (AFW) system or, as a backup, by RCS primary feed and bleed. The primary makeup system is dependent on AC power and coolant supply from the refueling water storage tank (RWST). The AFW system contains three pumps, two not AC powered (one steam driven and one diesel driven) and one motor driven pump which can be connected to either diesel generator in the event it is needed.

The diesel driven AFW pump does not require AC power to start, but cooling of the pump is normally provided by the service water system which is dependent upon AC power. However, in the event of loss of service water, plant operating procedures instruct the operators to install a cross connection from the fire header to the diesel motor coolant loop. This connection allows the use of the diesel fire pump as a coolant motive force in the event of a station blackout. Susceptibility of the diesel fire pump to tornado impacts was judged to be negligible due to its location in the tornado protected intake structure. Therefore, in the event of a station blackout, both the turbine driven pump and the diesel driven pump are expected to be available.

Susceptibility of the AFW system to tornado impacts is primarily limited to wind loadings on external walls of the AFW pump rooms and loss of coolant makeup due to CST failure. The same assumptions for wall failure impacting the three AFW pumps are used for AFW pump room failure as with the diesel room failure. These assumptions are considered conservative due to the location of the AFW pump room relative to the containment which should provide considerable shielding of the pump room walls. The likelihood of the CST (and RWST) failure due to tornado winds is judged to be negligible due to the increased stability of the tank in its normally full condition. However, tornado missile impacts on those tanks are possible and are treated as described in Section III.3.

In cases where onsite AC power is lost, the primary feed and bleed system is lost and plant shutdown is dependent upon the AC independent systems. In these cases, AFW system control power is provided by the station batteries. Recent analysis by PGE shows that station batteries will currently sustain operation without recharging for less than four hours. During the upcoming 1988 outage, a station battery upgrade (per Request For Design Change (RDC) 87-007) will be made to ensure a battery life of four

hours. For the purposes of this study, a battery life of four hours was assumed. Thus, given the loss of all AC power, the plant can survive for up to four hours without risk to the plant. While it is realistically expected that offsite power could be restored within 4 hours, for the purpose of this analysis, it was conservatively assumed that in the event of a tornado induced loss of power, offsite power would not be recovered within 4 hours. The capability to recover from this conservative scenario is then driven by recovery of the diesels. Diesel generator recovery is modeled using a standard exponential repair model with a mean time to repair of 19 hours (Ref. 7). This results in a very low probability of recovery within 4 hours (0.02).

A tornado related station blackout event results in the loss of the CB-1 system, since the CB-1 recirculation fans are dependent upon AC power. This dependence is a major contributor to tornado related loss of control room habitability.

Other potential tornado related core damage scenarios were investigated but determined to be of negligible importance for Trojan. These include small and large break LOCA events with loss of injection. The typical tornado induced small break LOCA is the loss of seal injection to the reactor water coolant pumps. For Trojan, this scenario is judged to be of negligible importance due to the tornado design basis of structures containing the necessary equipment (i.e., intake structure, control building, etc.). Large break LOCA in a tornado event was also judged to be negligible as no tornado related cause for a large LOCA could be identified and the independent occurrence of a LOCA during a tornado is highly unlikely.

IV. RESULTS

Utilizing the comprehensive fault tree developed to model loss of control room habitability contributors, it is possible to perform comparative analyses of the impact/benefit of different design configurations. In this study, eight different CB-1 design configurations were modeled utilizing the fault tree model shown in Appendix A. These eight configurations are represented by eight quantitative model inputs. A description of the quantification values and bases for each of these cases is provided in Appendix B. The top 20 minimal cutsets for each case are provided in Appendix C.

The control room emergency ventilation system exists to provide confidence that the control room can remain occupied for postulated accident conditions. In order to evaluate the implications of design modifications to the system, it is possible to assess the frequency of loss of control room habitability under a variety of conditions. The two dominant conditions that contribute to potential habitability loss involve toxic gas release (onsite or offsite) and radiation release. These two conditions are somewhat dissimilar. The toxic gas release involves situations in which the primary plant equipment may be unaffected due to the presence of such gases. The radiation release situation involves an event in which some plant degradation has occurred. In either situation, the capability to shut down the plant safely outside the control room is provided. Therefore, an assessment of loss of control room habitability is not equivalent to an evaluation of frequency of core damage. This evaluation addresses loss of habitability only. The results should therefore not be confused with significant release of radioactivity offsite or significant core damage situations. A brief description of the eight designs analyzed and the results of the quantitative evaluation of each is given in Table 5.

IV.1 Base Case - With Intake Pipe Extension

In order to address the original design deficiencies, the intake point for CB-1 was extended during the 1986 refueling outage approximately 80 feet further from the containment by the installation of an intake duct on the roof of the control building (Figure 2). This modification results in a calculated reduction in loss of habitability frequency of 5.18×10^{-7}/year.

In this case, the majority of the loss of control room habitability frequency (~79%) is contributed by a tornado induced station blackout resulting in loss of CB-1 and core melt related radioactivity release. Another significant contributor to loss of habitability is common cause failure of the isolation dampers (~18%) in the event of a random caused radioactivity release. As expected, tornado impacts on the plant are dominated by the more severe tornados, F'3, F'4 and F'5, which contribute to 82% of the frequency (13%, 28% and 41%, respectively).

Toxic gas impacts on control room habitability contribute to less than 1% of the overall frequency. This is primarily due to the low frequency of toxic gas hazard occurrence. This frequency is made up of two contributors: tornado induced toxic gas hazards and random caused toxic gas hazards. In this study, tornado induced toxic gas hazards are conservatively assumed to occur every time the chlorine building fragility is exceeded or the chlorine building is hit by a missile, if the wind is blowing toward the CB-1 intake. Random caused releases are assumed to occur at a frequency of 2×10^{-6}/year. This is based on a minimum design basis frequency of 1×10^{-6}/year for both onsite and offsite hazards. Sensitivity studies with the model have shown that, in order for random caused toxic gas hazards to significantly influence the results, the frequency of toxic gas hazards would have to be much higher ($\sim 1 \times 10^{-4}$/year). Since

this study was focused on tornado impacts on CB-1, it is appropriate that the random used toxic gas hazards be a non-dominant contributor.

IV.2 Case 2 - With Pipe Extension and External Dampers

This modification to CB-1 includes the installation of redundant dampers in each train of the CB-1 intake ducts on the control building roof (Figure 3). A base assumption for this design is that standard instrument tubing is used in the air lines from the instrument air loader. In this analysis, the use of this type of air line is conservatively assumed to lead to system failure due to missile impact in all tornados. The design does minimally decrease overall system reliability because of the redundant dampers. This design requires that both dampers on one train successfully open in the event of a radiological release. This modification results in a calculated frequency of loss of habitability of 5.27×10^{-7}/year.

Here again, the dominant contributor to loss of control room habitability (~77%) is a tornado induced station blackout resulting in loss of CB-1 and a radioactivity release. However, the higher reliability of the new dampers reduces the contribution of common cause failure by a factor 3 to approximately 5%. This reduction is, however, offset by the increased potential for tornado damage to CB-1 equipment due to its location on the control building roof. Failure of CB-1 equipment due to tornado impacts contributes approximately 13% of the total loss of control room habitability frequency. Nearly all of this (~11%) is contributed by failures of the CB-1 piping due to tornado wind loadings resulting in a toxic gas hazard in the control room.

IV.3 Case 3 - With Pipe Extension and External Dampers With Protected Air Supply

The design configuration of this case is similar to Case 2 except the air supply to the damper operators is assumed to be protected in some manner. This could be accomplished by either providing shielding to any instrument tubing used or by using heavy gauge pipe (schedule 80) for the air supply lines.

The analysis of this case resulted in only a slight reduction in frequency of loss of habitability to 5.18×10^{-7}/year. This incremental benefit accrues from the reduced likelihood of failure in radiological events. Failure of the instrument air supply in the case of a toxic gas event is a safe failure condition. All other contributors to loss of control room habitability remain the same as in Case 2.

IV.4 Case 4 - Pipe Extension and Dampers With Tornado Missile Protection

As previously discussed, due to weight restrictions on the control building, missile protection of equipment on the roof is very difficult and expensive. Further, space limitations prohibit the installation of the equipment inside the building. However, as a sensitivity case, tornado missile protection of all CB-1 equipment was analyzed to determine the potential impact on loss of habitability.

The addition of missile protection is calculated to reduce the total loss of control room habitability to 5.14×10^{-7}/year. The incremental decrease from Case 3 is 4×10^{-9}/year. This minimal reduction is due to the elimination of only tornado missile related failures of CB-1 equipment. Wind loading failure is assumed to occur with the same component fragility as with exposed piping since the entire control room enclosure is rated for 300 mph, the same as the piping. Such a small reduction in

frequency does not merit consideration of missile protection of CB-1 equipment.

IV.5 Case 5 - Pipe Extension, Dampers and Filter

This case is similar to Case 2 with installation of the extension pipe and dampers with instrument tubing air supply except it includes filters for each train to be located on the control building roof. It is difficult to assess the positive effects of the increased filter capacity in a quantitative manner. The filtration capability is essentially doubled by the incorporation of this modification. This would allow a release of increased severity prior to control room habitability loss. Without a detailed source probabilities term analysis, it is not possible to assess the exact or even an approximate value for the frequency of such releases. It is noted, however, that the ability to withstand a more severe release without habitability loss has positive benefit for overall safety that has not been quantified in this study. The negative impact of installing the filter on the roof can be assessed in terms of potential tornado missile or wind impact.

In this case, the wind loading design basis for the filter housing is assumed to be the same as for the piping (300 mph). The assessed value increases for this modification to 5.32×10^{-7}/year. This represents a very small increase (5×10^{-9}/year) in habitability loss due to tornado and wind conditions over Case 2. This small increase is due to the exposure of increased area to tornado missile impacts due to the filters. All other contributors to loss of habitability are the same as Case 2. This minimal increase in habitability loss is a trade off against the unquantified ability to withstand more severe radioactivity release without habitability im[illegible]t.

IV.6 Case 6 - Pipe Extension, Dampers and Filter With Reduced Wind Loading Design Basis

This case is similar to Case 5 with the pipe, dampers, and filter located on the roof of the control building except the filter housing wind loading design basis is assumed to be 200 mph instead of 300 mph. The purpose of this sensitivity case is to evaluate the need for the high wind loading design basis for the filters.

The result of this sensitivity case is that the overall frequency of loss of habitability is increased to 1.4×10^{-6}/year. This is due to the filter acting as the weak link in the intake system in tornado induced events. On a relative basis, this increase is quite high (~270%), but on a solely incremental basis the increase is still quite modest (9×10^{-7}/year). The increased component fragility of the filter housing in this design significantly changes the contributors to loss of control room habitability. For this case the dominant contributors become tornado related chlorine releases with tornado wind caused failure of the filter housing for tornado severities F'3, F'4, and F'5 which contribute a total of 55% to the total (9%, 27% and 30%, respectively). Another 29% is contributed by tornado induced station blackout related hazards. The remaining 5% is contributed from a variety of small contributors.

IV.7 Case 7 - Pipe Extension, Dampers and Filter With Protected Air Supply

This case is similar to Case 3 with the pipe extension and dampers exposed on the roof and protected air supply lines except the filter housing is included in the analysis. As expected, the frequency of loss of habitability is reduced somewhat from Case 5 (with instrument tubing) to 5.23×10^{-7}/year. Here again, the incremental benefit is small for tornado protecting the instrument tubing. The only difference in contributors between

this case and Case 3 is the exposure of the filter housings to tornado missile impacts. This is a minor contributor to the overall loss of control room habitability frequency (5×10^{-9}/year or ~1%).

IV.8 Case 8 - Pipe Extension, Dampers and Filter With Missile Protection

This case involves the installation of all equipment (pipe, dampers, and filter) on the roof of the control building with missile protection. This model is the same as Case 4 and the resultant risk reduction due to missile protection is very small (9×10^{-9}/year) as compared to Case 7. This small, but finite reduction brings the total loss of habitability frequency to 5.14×10^{-7}/year.

IV.9 Conclusions

The incorporation of tornado missile protection for: (1) the existing intake pipe extension, (2) the redundant isolation dampers in the CB-1 air intake system, and (3) the proposed roof-mounted filter trains in CB-1 would reduce the risk to control room habitability an almost insignificant amount. Therefore, it is proposed that tornado wind and missile protection is unnecessary for these design features.

These analyses contain numerous conservatisms in the assessment of tornado impacts on the plant. In all cases where clear technical evidence was unavailable to provide calculational bases, conservative assumptions were made as to the likelihood and consequence of tornado impacts. These modeling conservatisms have resulted in what is judged to be a conservatively high overall frequency of loss of control room habitability. Additionally, it is expected that the relative impact of the various design concepts have been conservatively modeled.

The analysis did not include explicit evaluation of uncertainty. It is noted that there are numerous sources of uncertainty inherent in risk evaluations. Component failure rates vary by a factor of three to ten. Tornado frequency of occurrence is expected to vary by a factor of five to ten. The frequency of tornados was chosen to reflect the higher population area data as human reporting is more likely in more densely populated areas. The treatment of wind direction, missile failure likelihood, and wind induced failures are conservative. In addition, the potential for recovery of failed equipment is not included except for the diesels. It is concluded that the results are subject to uncertainty of a factor of 10 in the direction of increased risk and a factor of 100 in the direction of lower risk. The results are thereby expected to have a conservative bias.

TABLE 5
SUMMARY OF RESULTS

Case	Description of Case: Included in Analysis	Comment	Frequency of Ventilation Loss CB-1 (#/year)
1 (base)	Existing CB-1 intake design.	Allows adequate time for system operation under wide variety of situations and increased severity.	5.18E-07
2	As base case but with redundant leak tight dampers installed on roof of control building.	Provides more reliable isolation for toxic gas releases. However, redundant dampers contribute to less reliable intake operation. Air control lines are modeled as tubing which fails in all tornados. For toxic gas hazard this is not a problem as tubing failure leads to isolation.	5.27E-07
3	As 2 but with Air Control Lines hardened to provide improved missile protection. Routine maintenance caused damage would be reduced but is not modeled.	Provides more reliable performance for wind induced radiation release case. Incremental improvement of 9E-09 is considered negligible but finite.	5.18E-07
4	As 3 but with full tornado missile protection.	Reduces risk of tornado damage. Value of 4E-09 is considered negligible but finite.	5.14E-07

TABLE 5
SUMMARY OF RESULTS
(cont'd)

Case	Description of Case: Included in Analysis	Comment	Frequency of Ventilation Loss CB-1 (#/year)
5	As 2 with new HEPA filters added (in series with existing filters). Filter located on roof and not missile protected. Filter housing designed for 300 mph wind loading.	Model does not include ability to tolerate increased release of radioactivity without loss of habitability. Filter cases are all consistent and can be compared to each other.	5.32E-07
6	As 5 but with 200 mph wind loading design basis.	Frequency of loss increased by a factor of 2.7. This is conservative as wind conditions may disperse toxic gas or radiation release.	1.4E-06
7	Intake modification, new dampers with air tubing hardened, filters added with 300 mph design value, no tornado missile protection.	Conservative treatment of filter benefit as noted above.	5.23E-07
8	As 7 but with tornado missile protection.	Overall reduction of 9E-09 considered negligible but finite. Uses same model as Case 4.	5.14E-07

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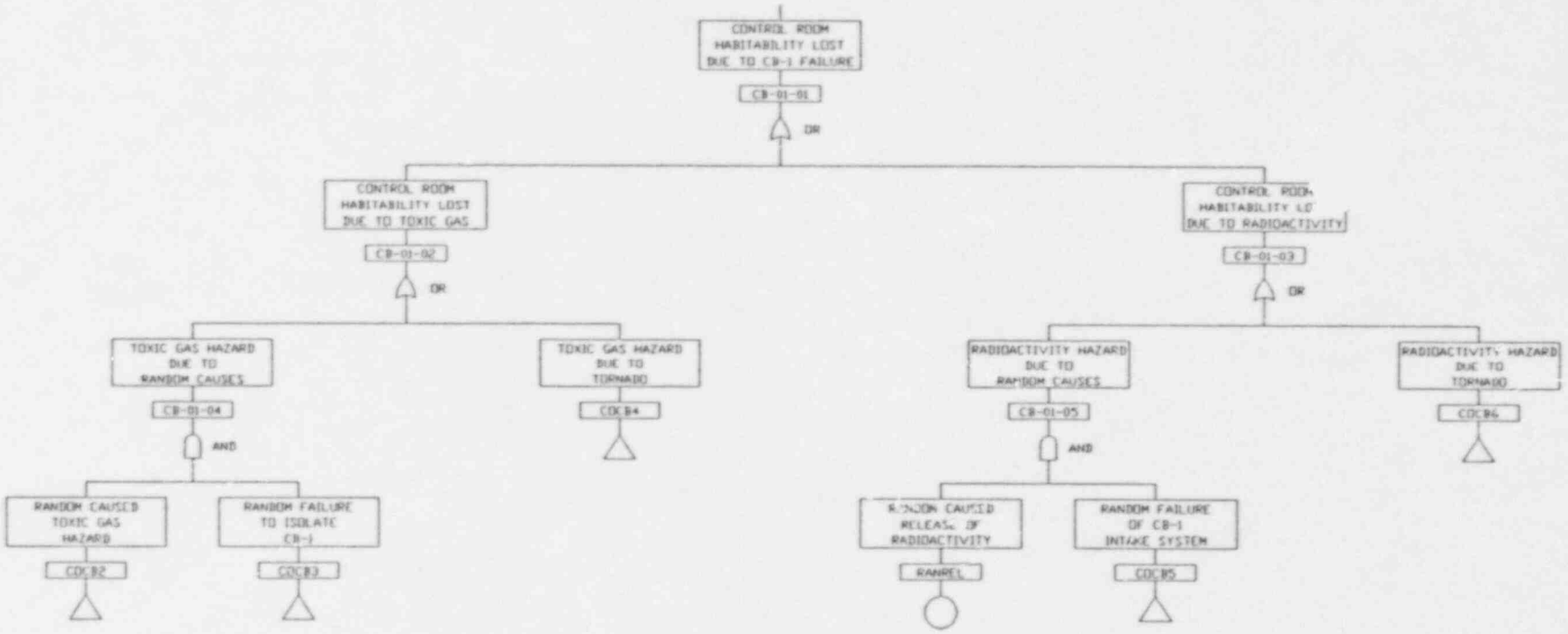
APPENDIX A

CB-1 MODIFICATION FAULT TREES

APPENDIX A

Table of Contents

CB-1 MODIFICATION FAULT TREE



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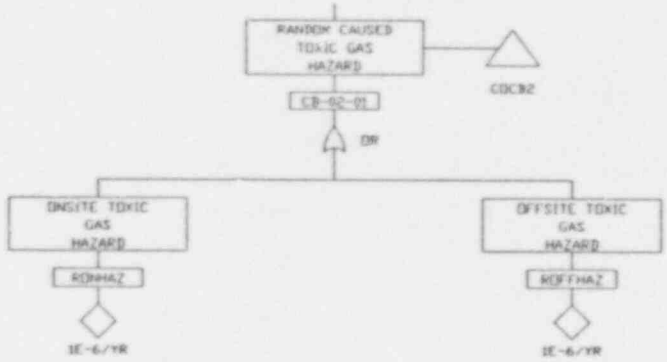

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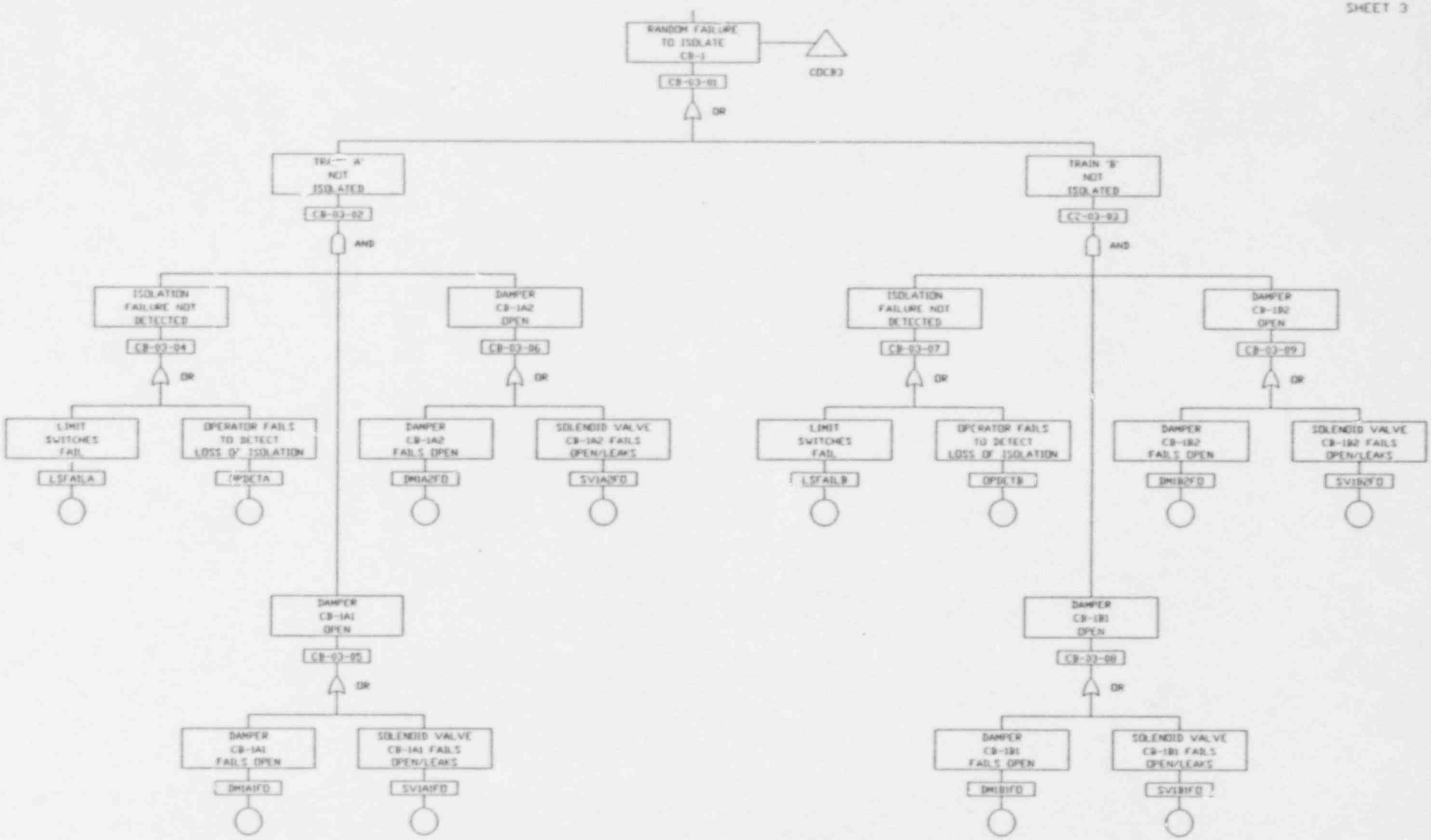

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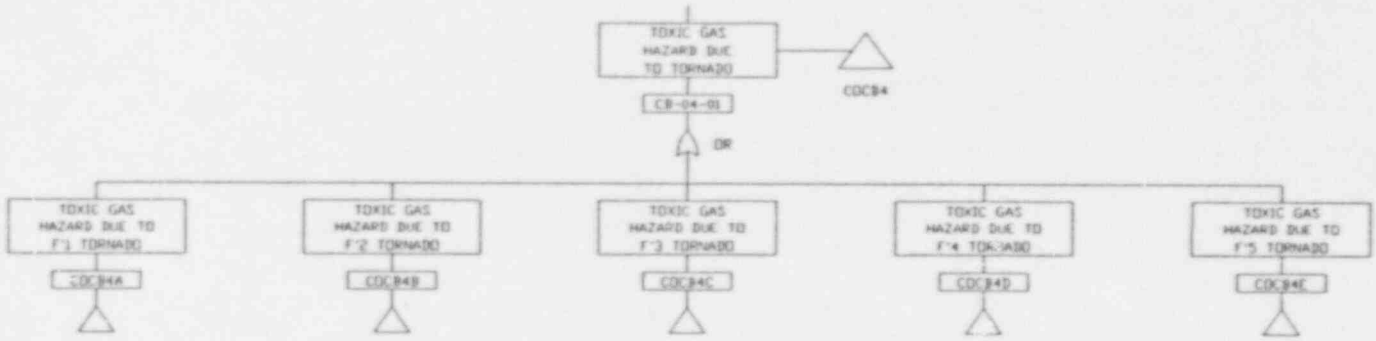

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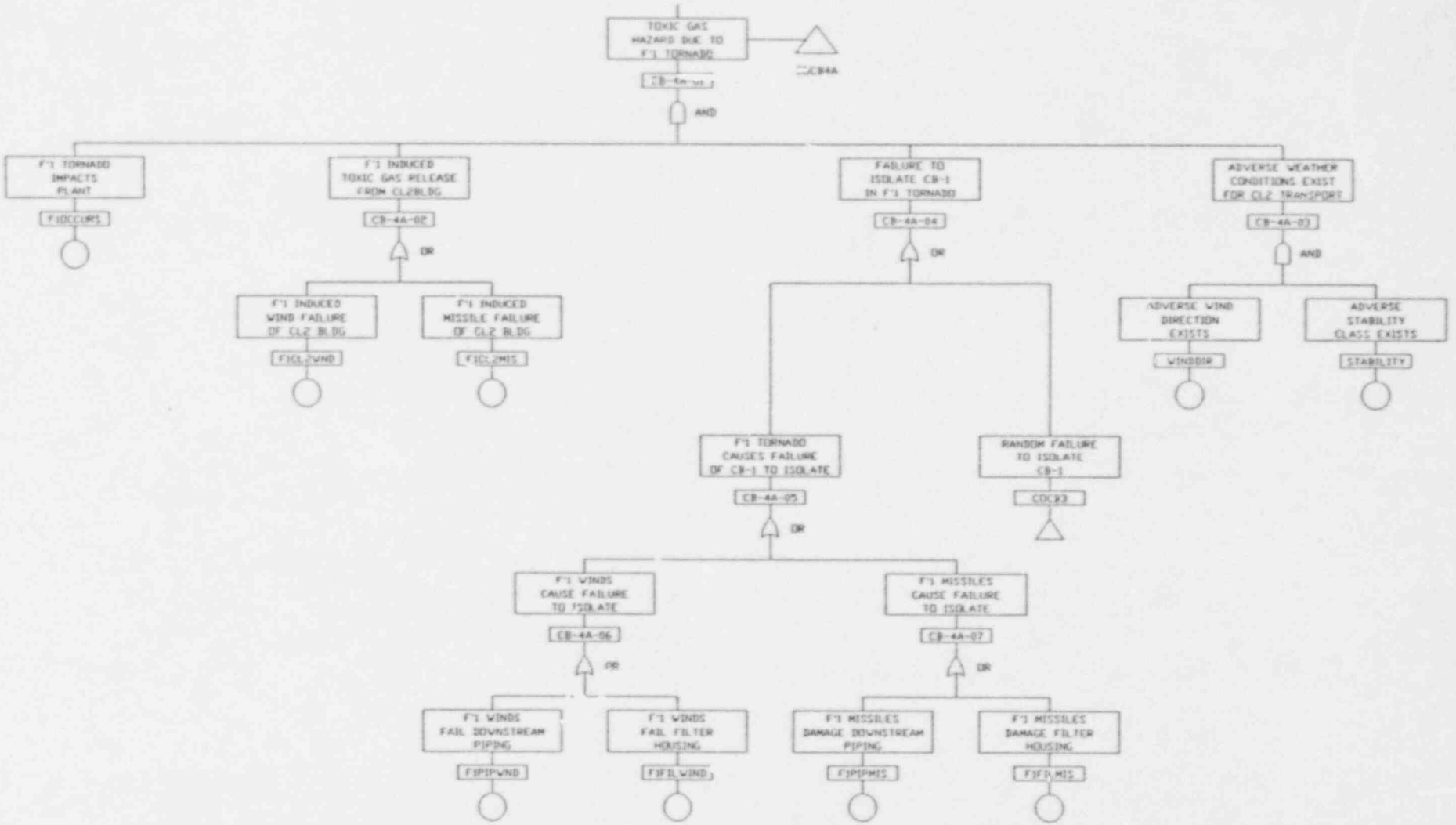

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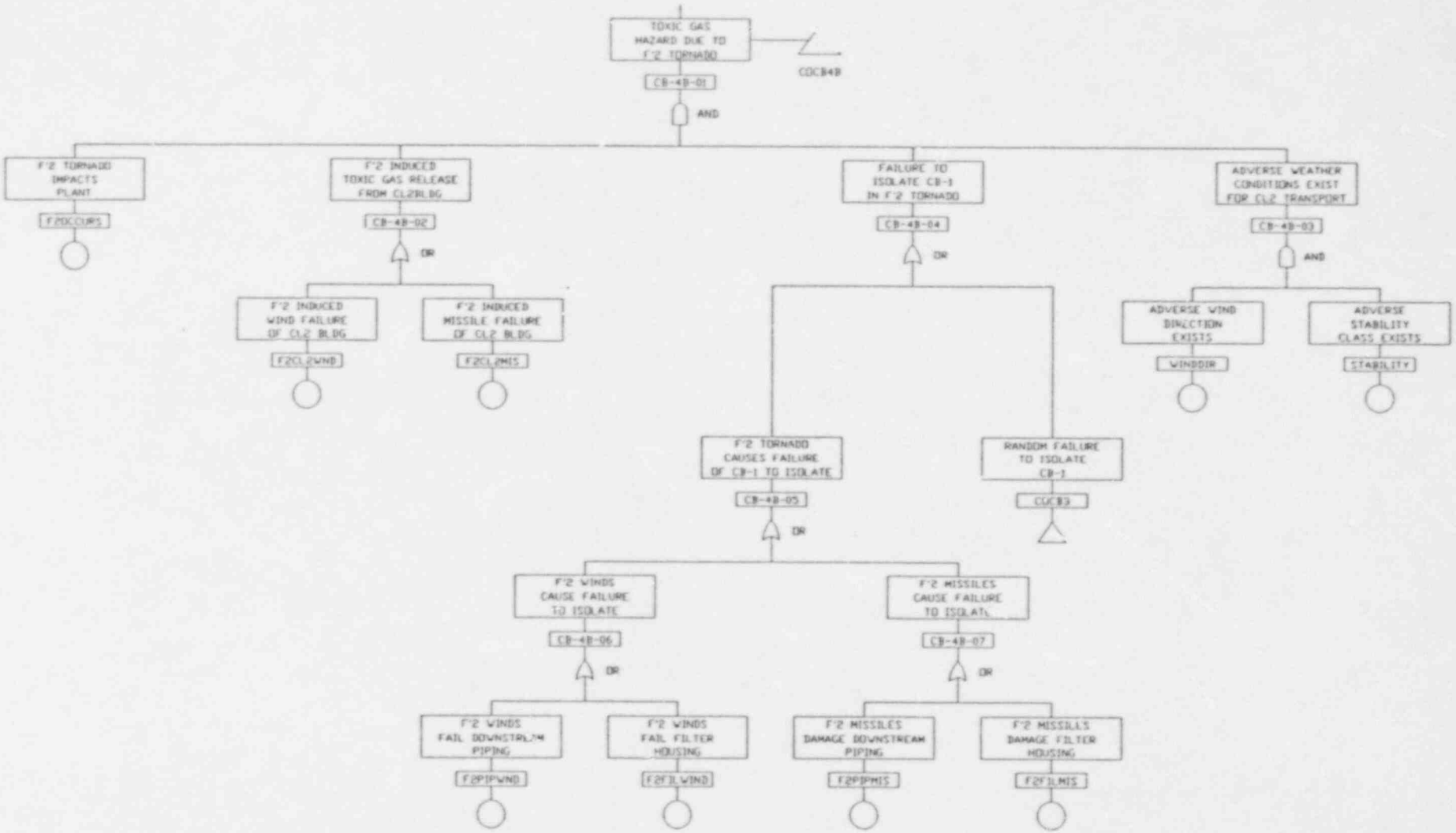

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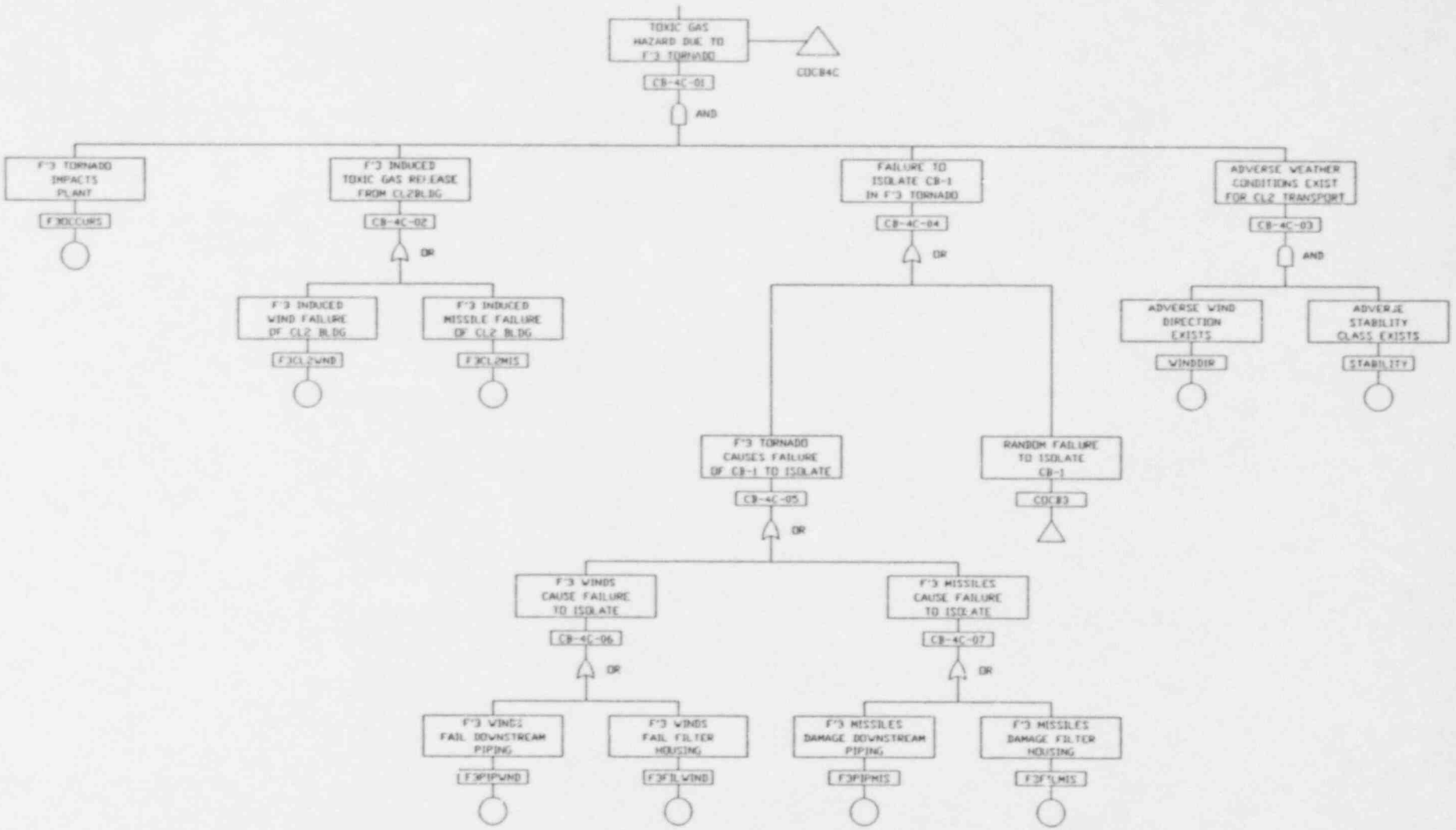

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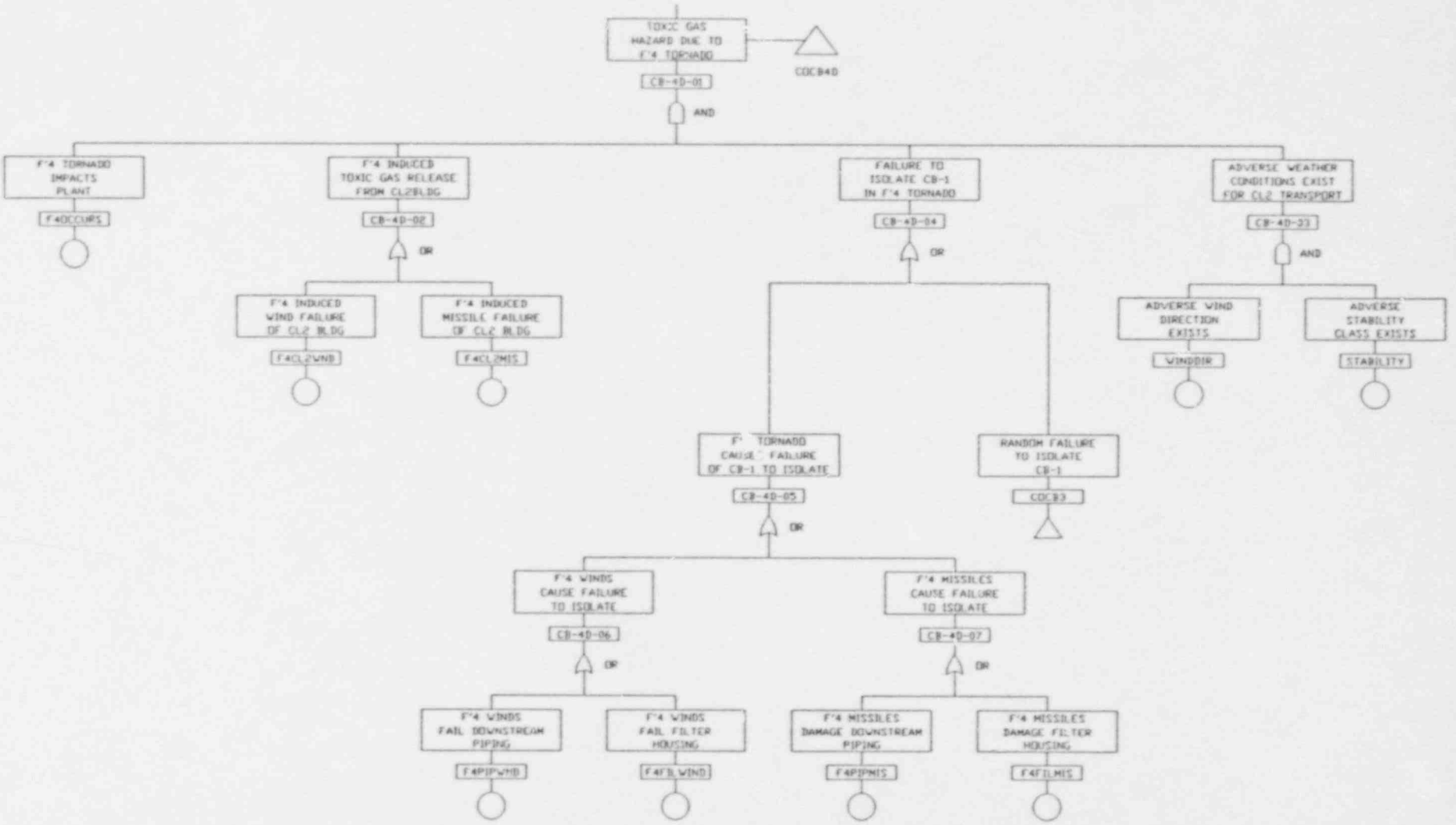

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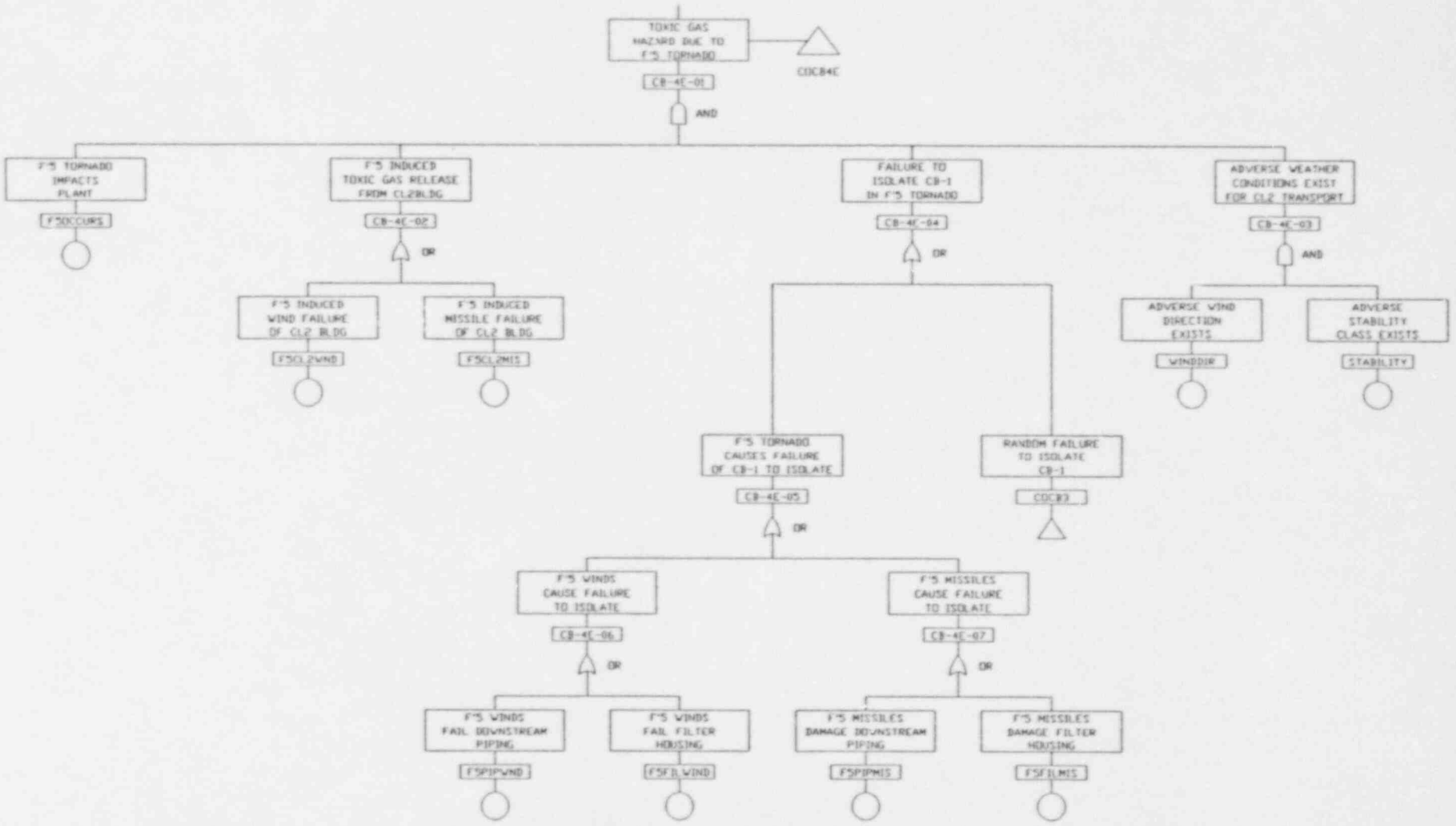

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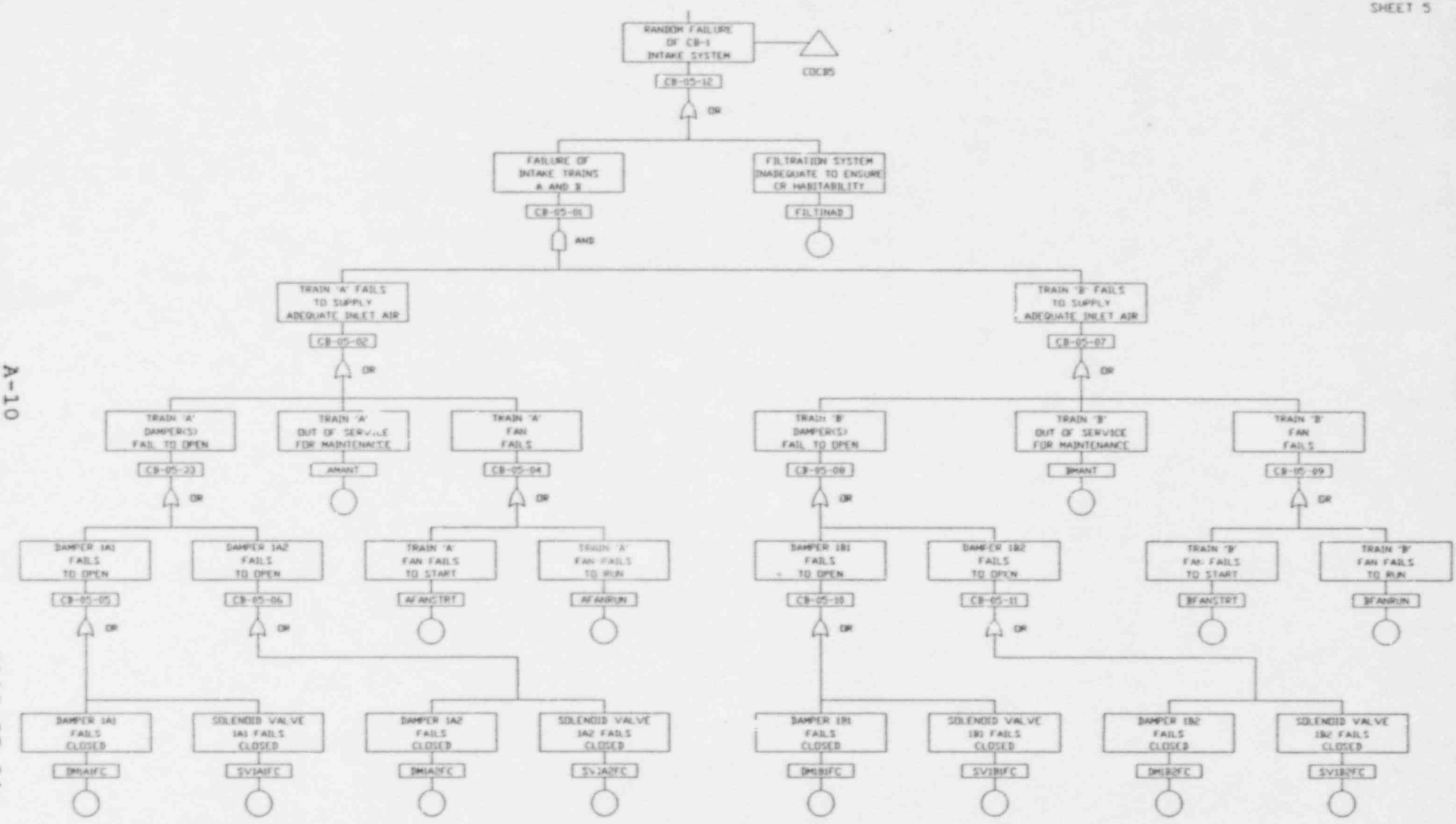

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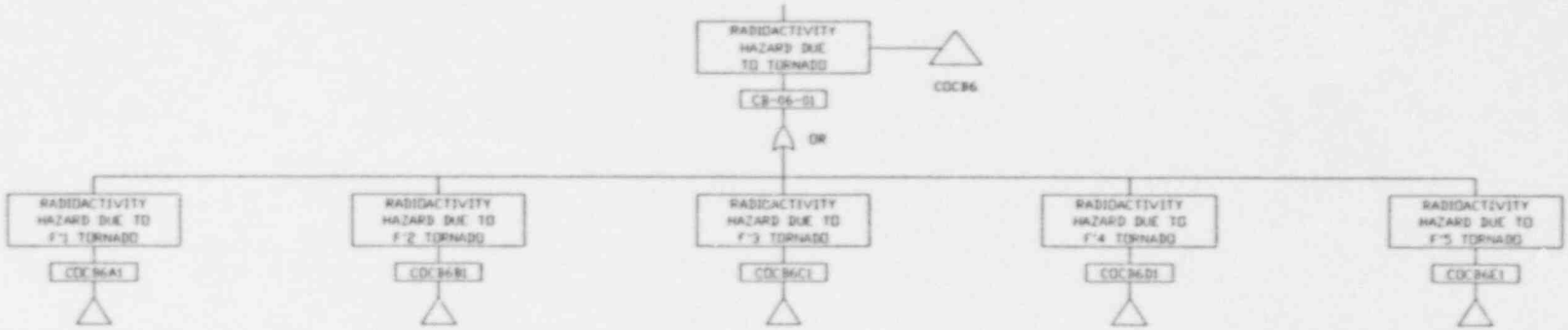

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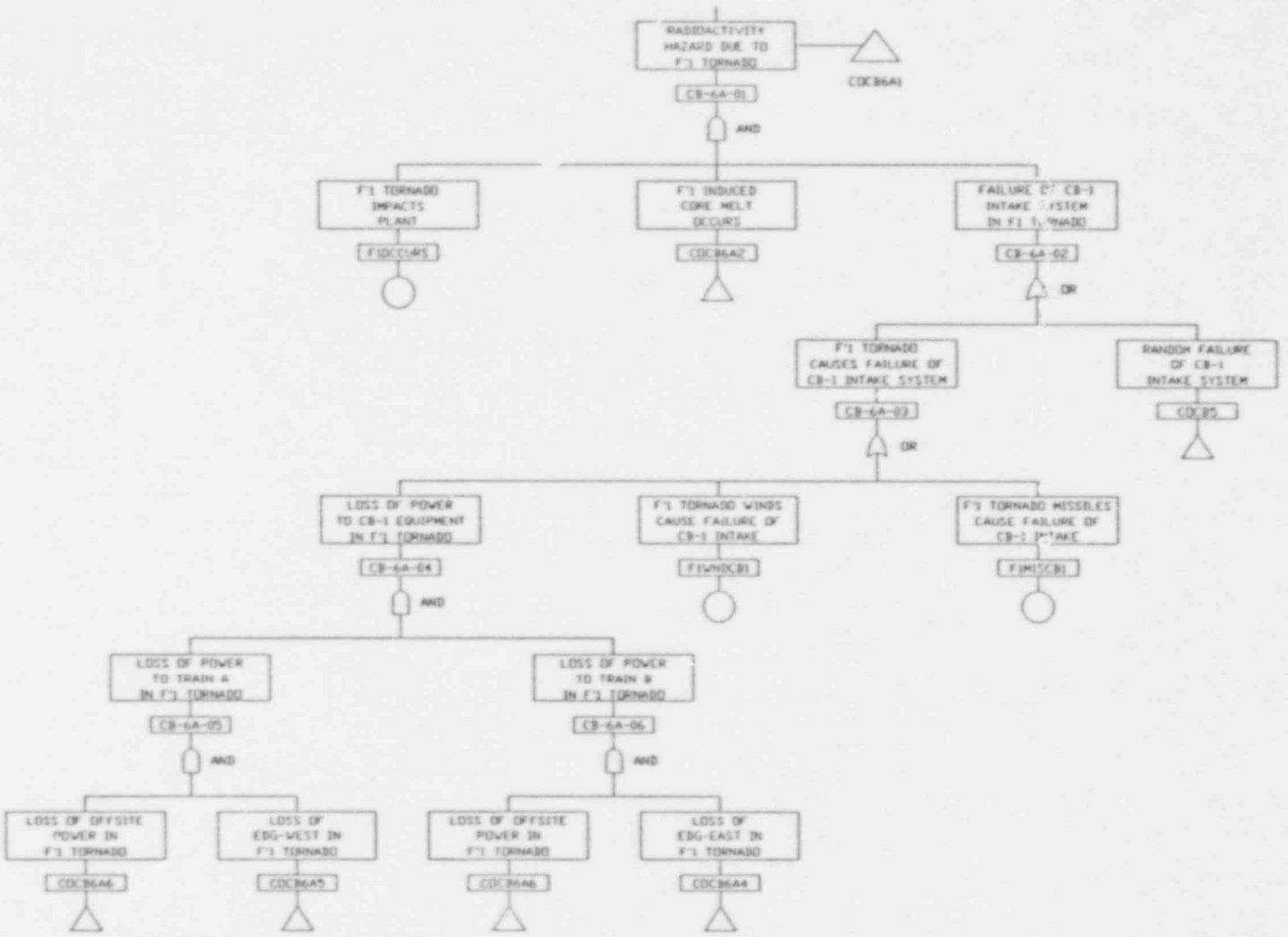

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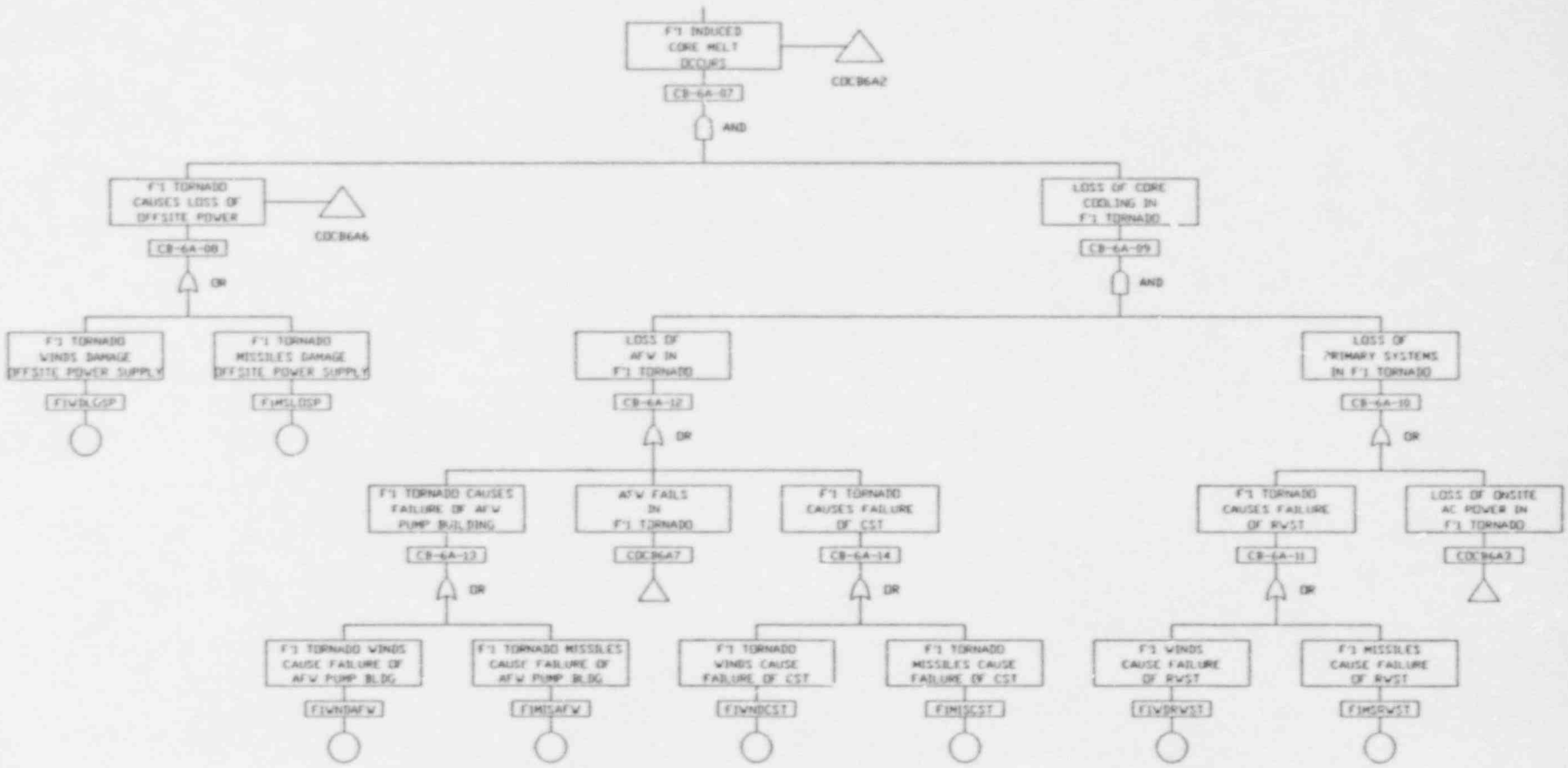

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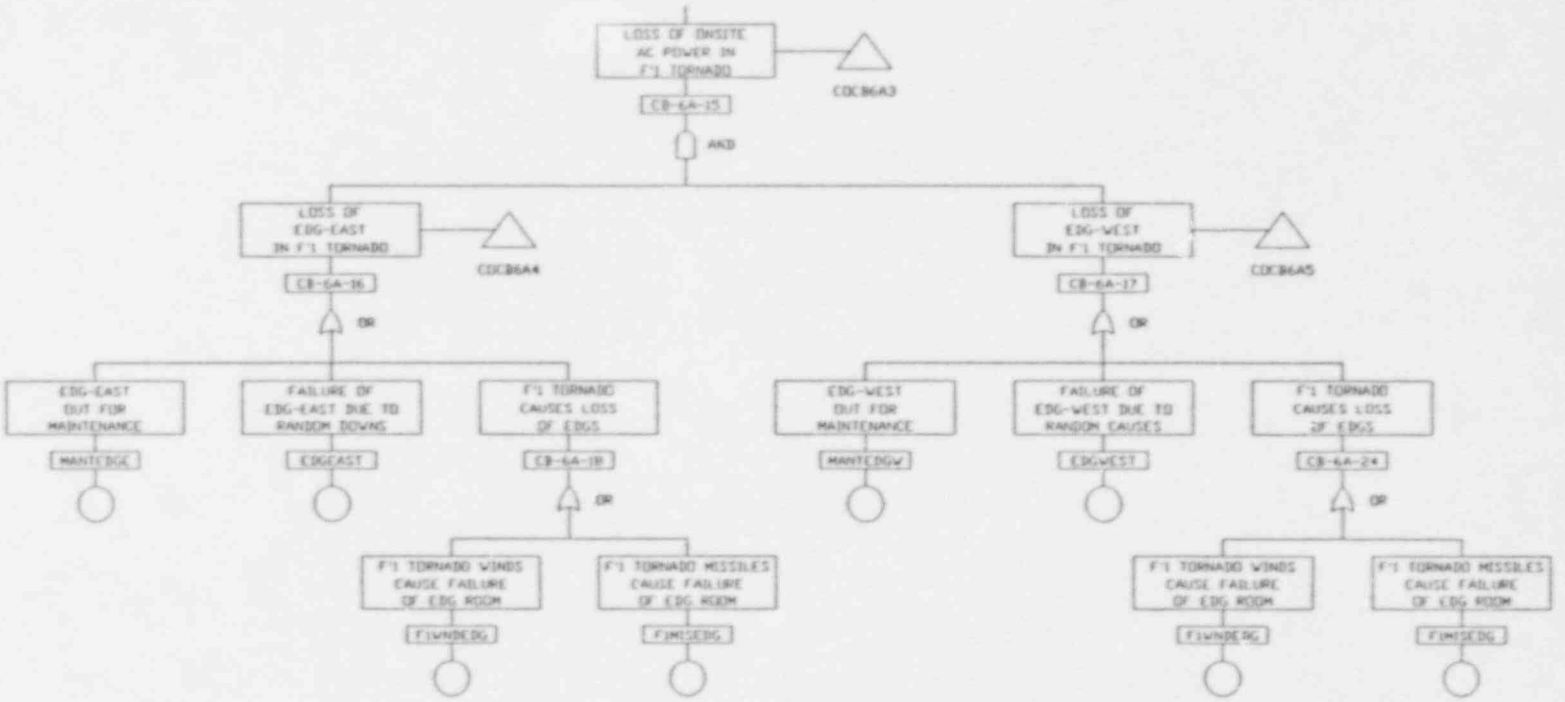

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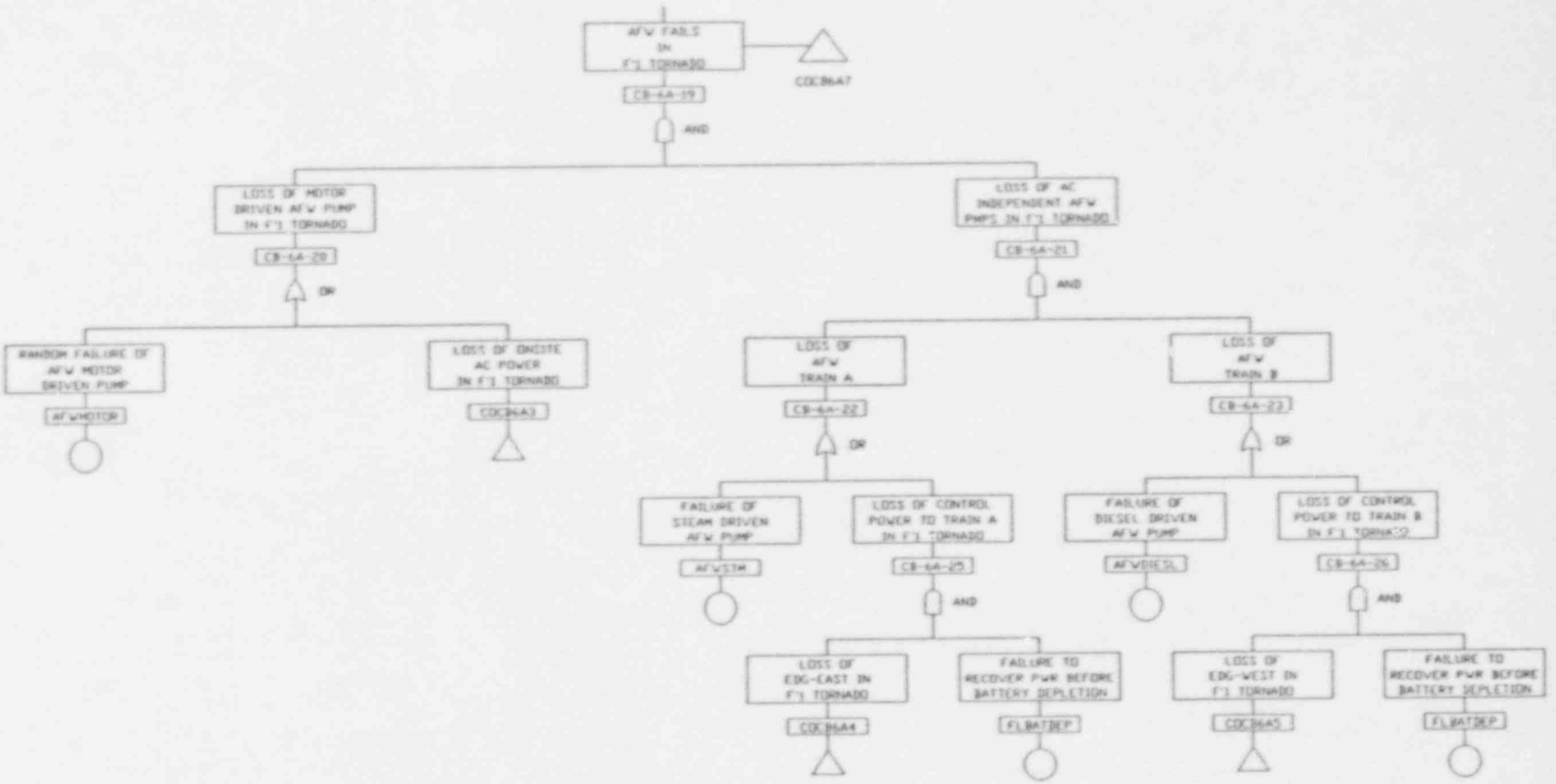

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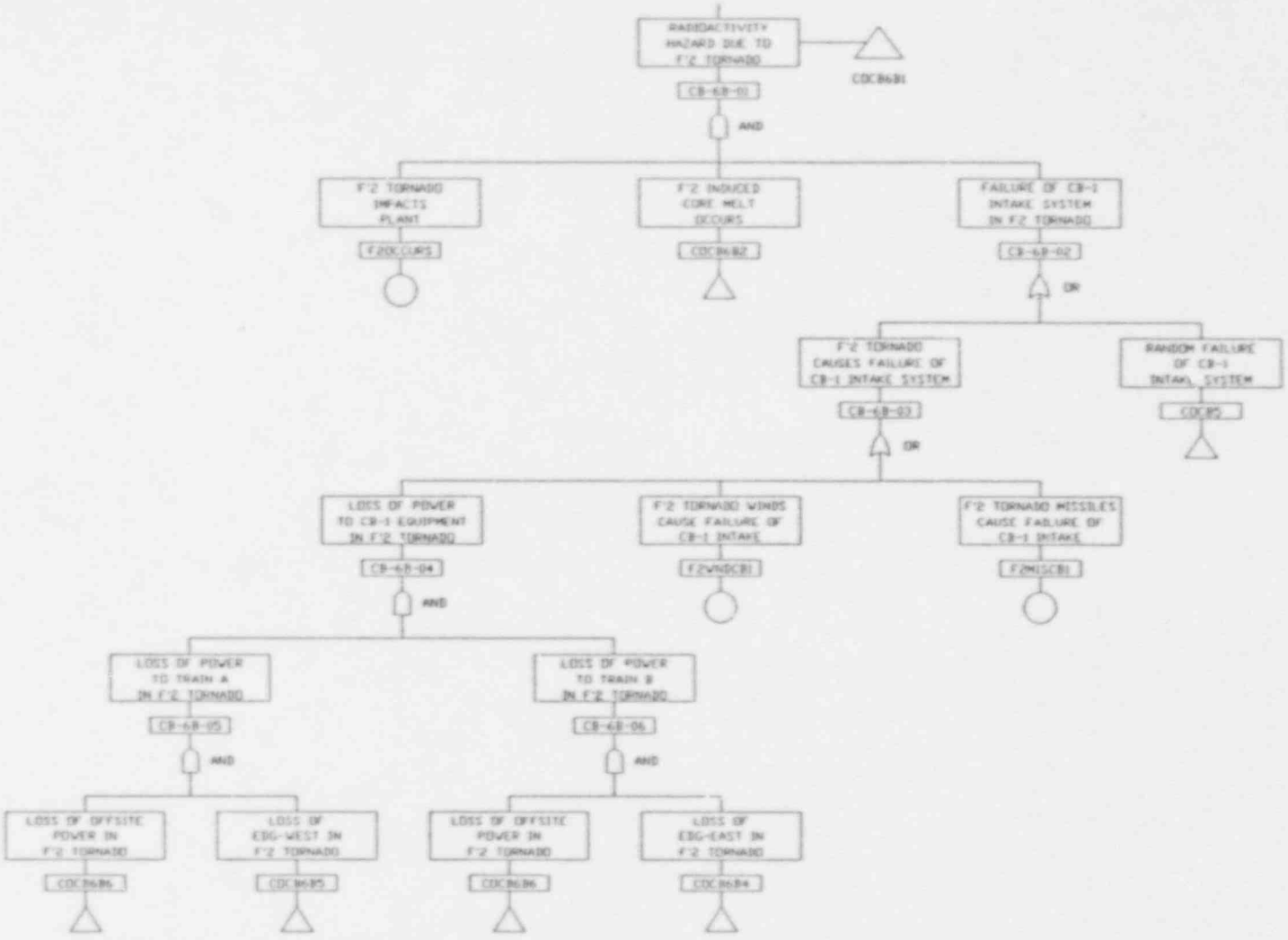

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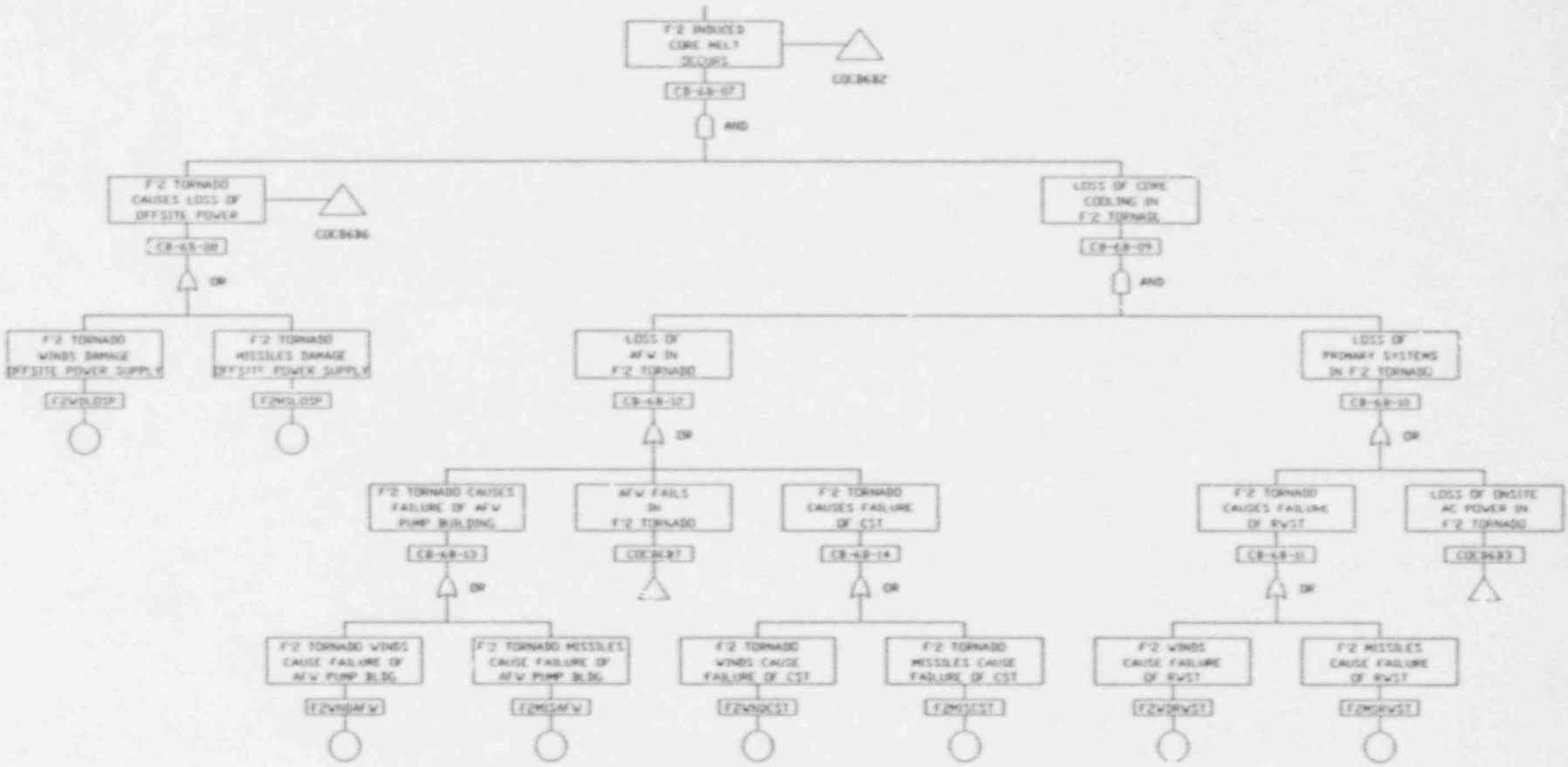

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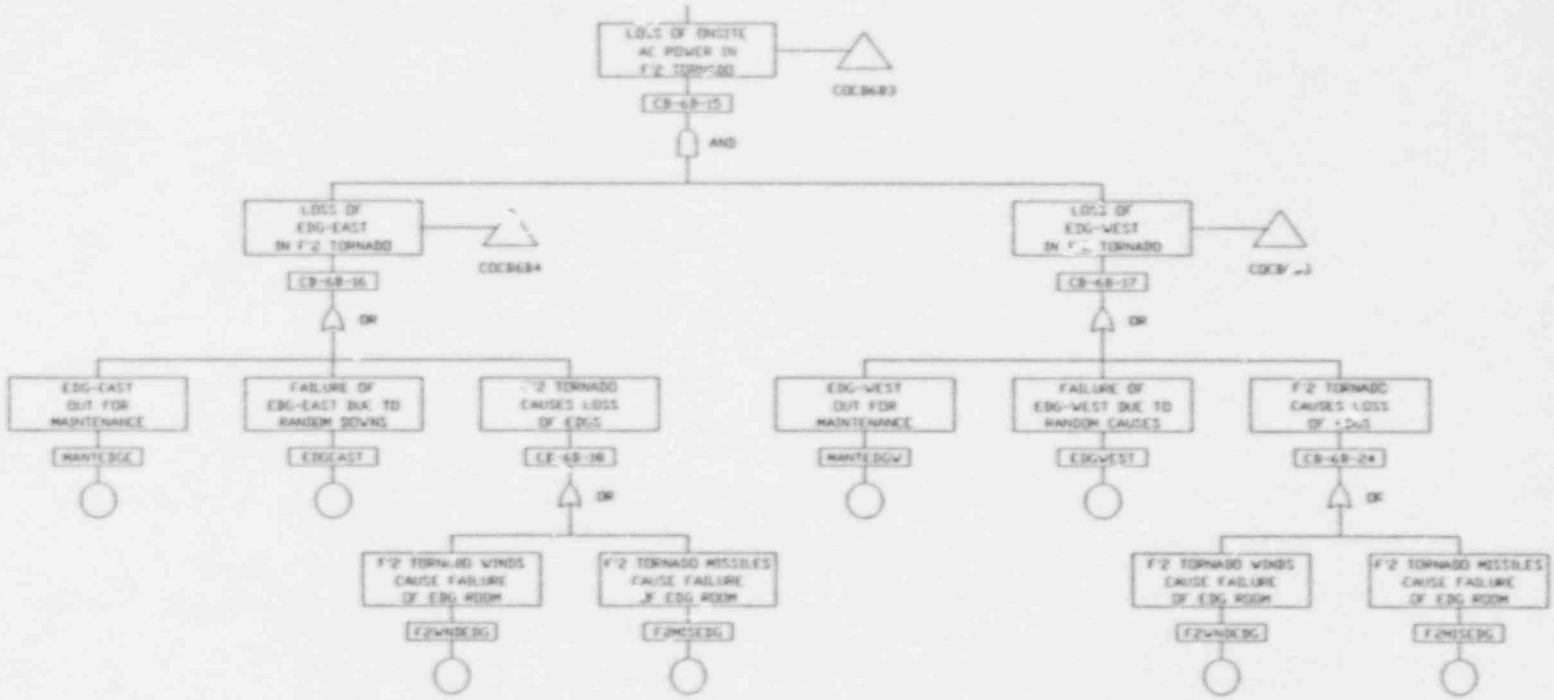

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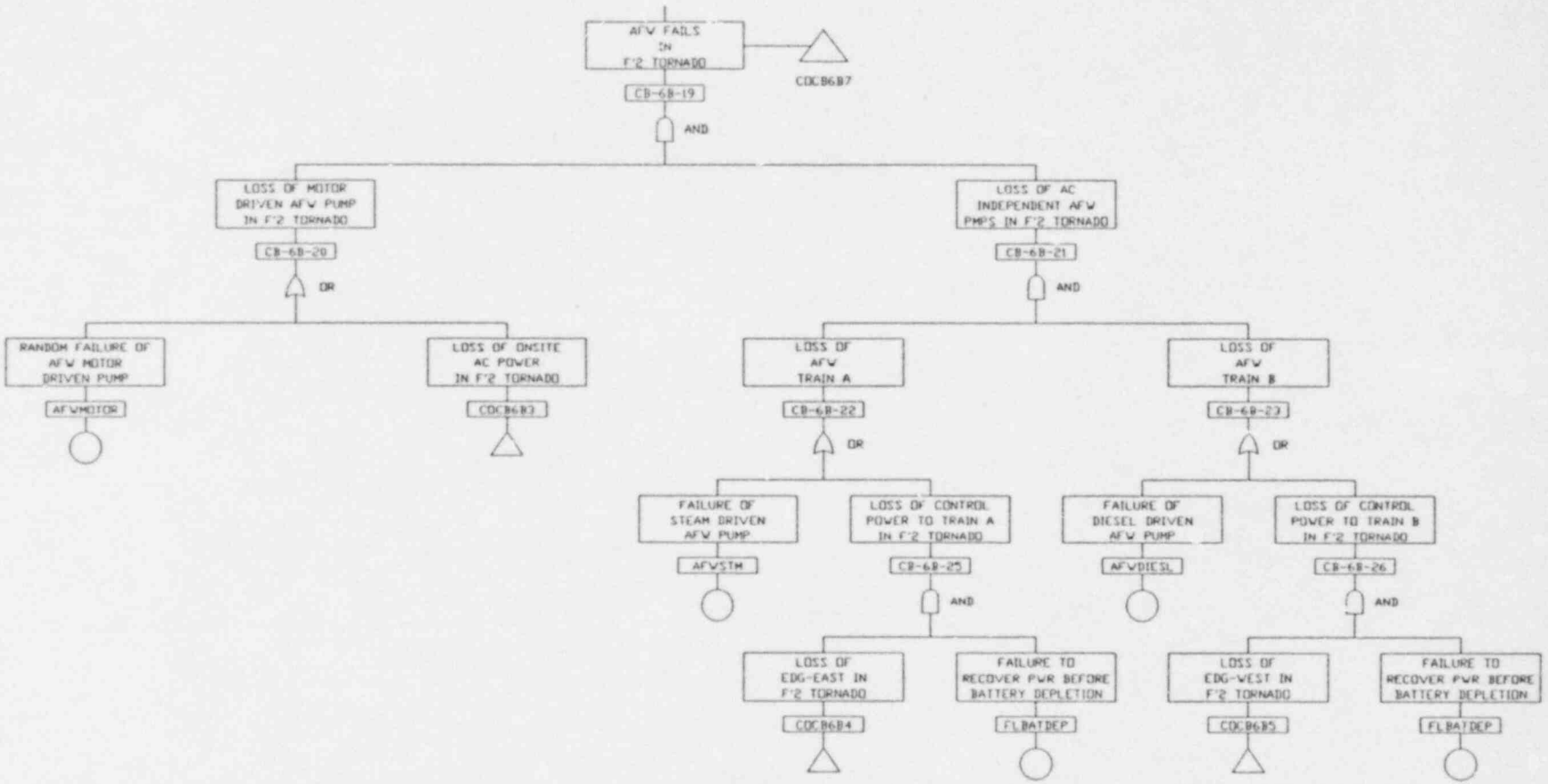

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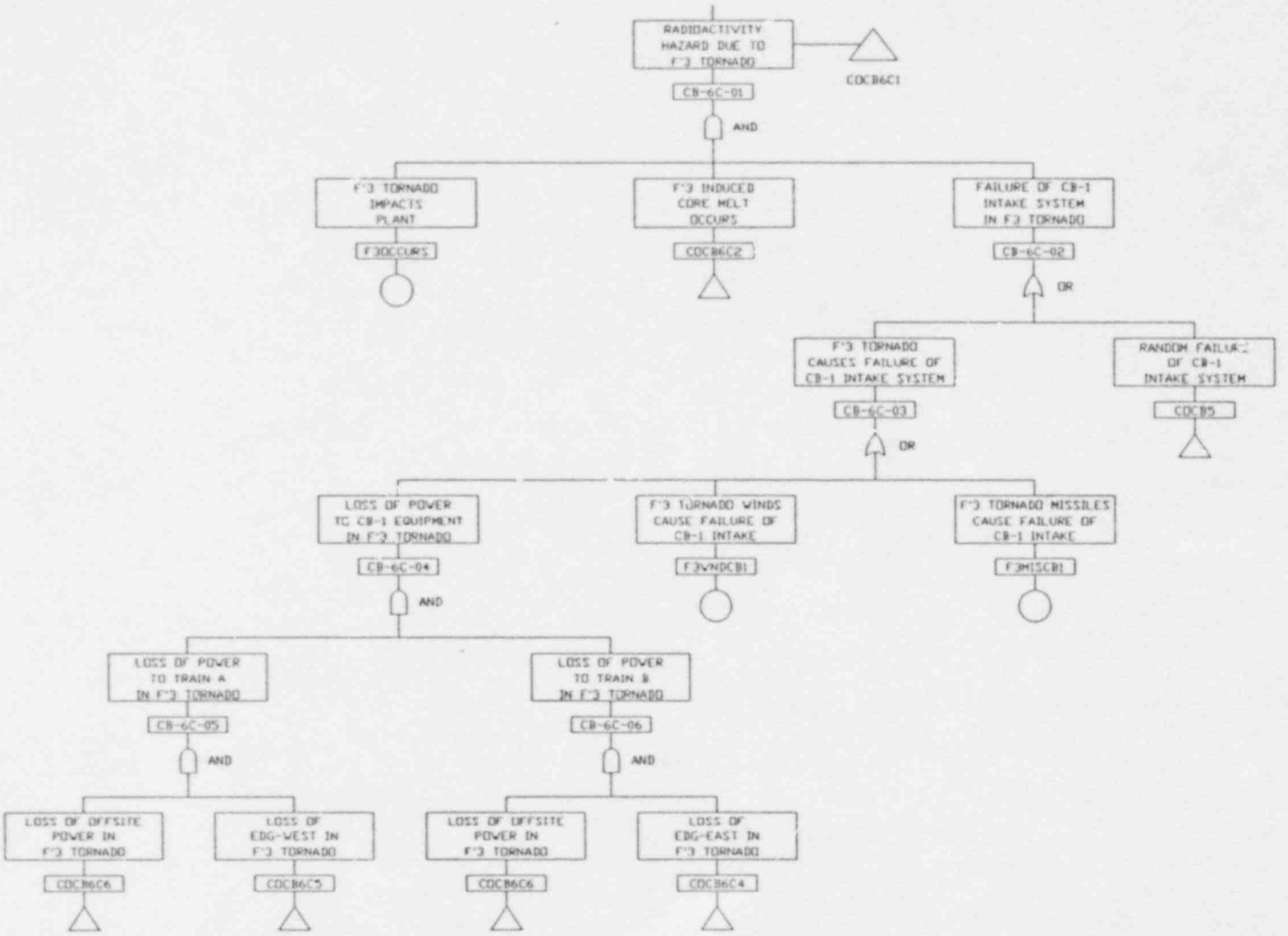

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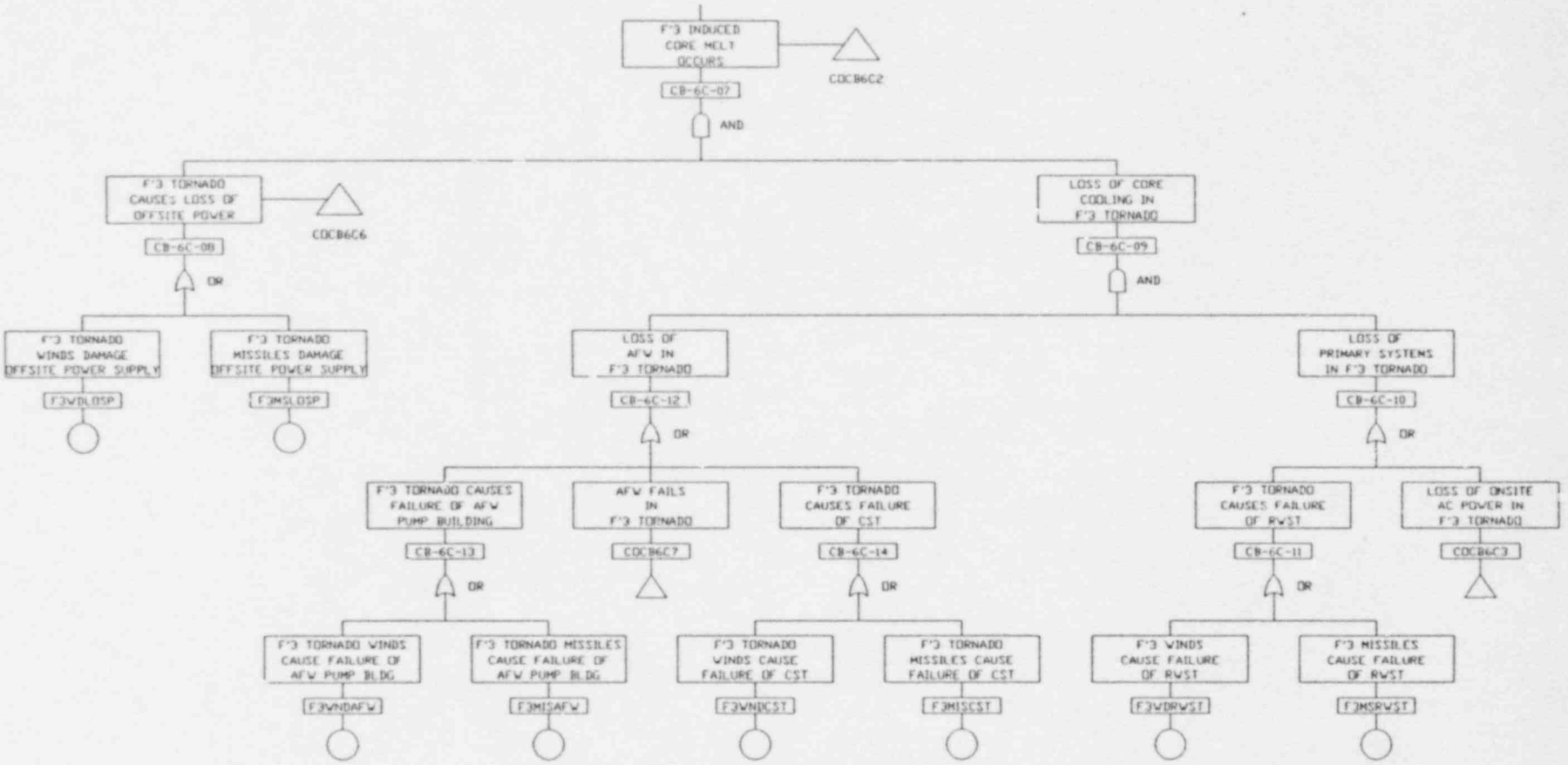

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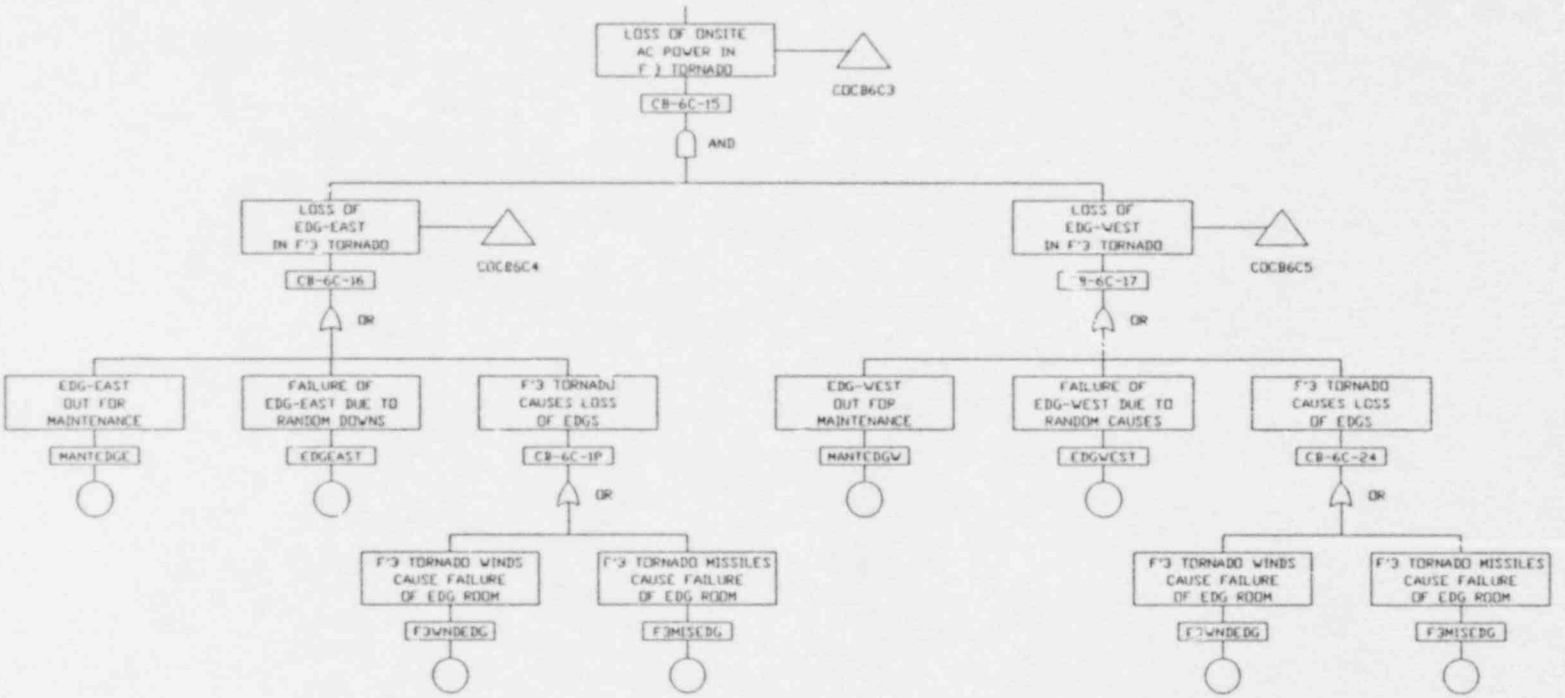

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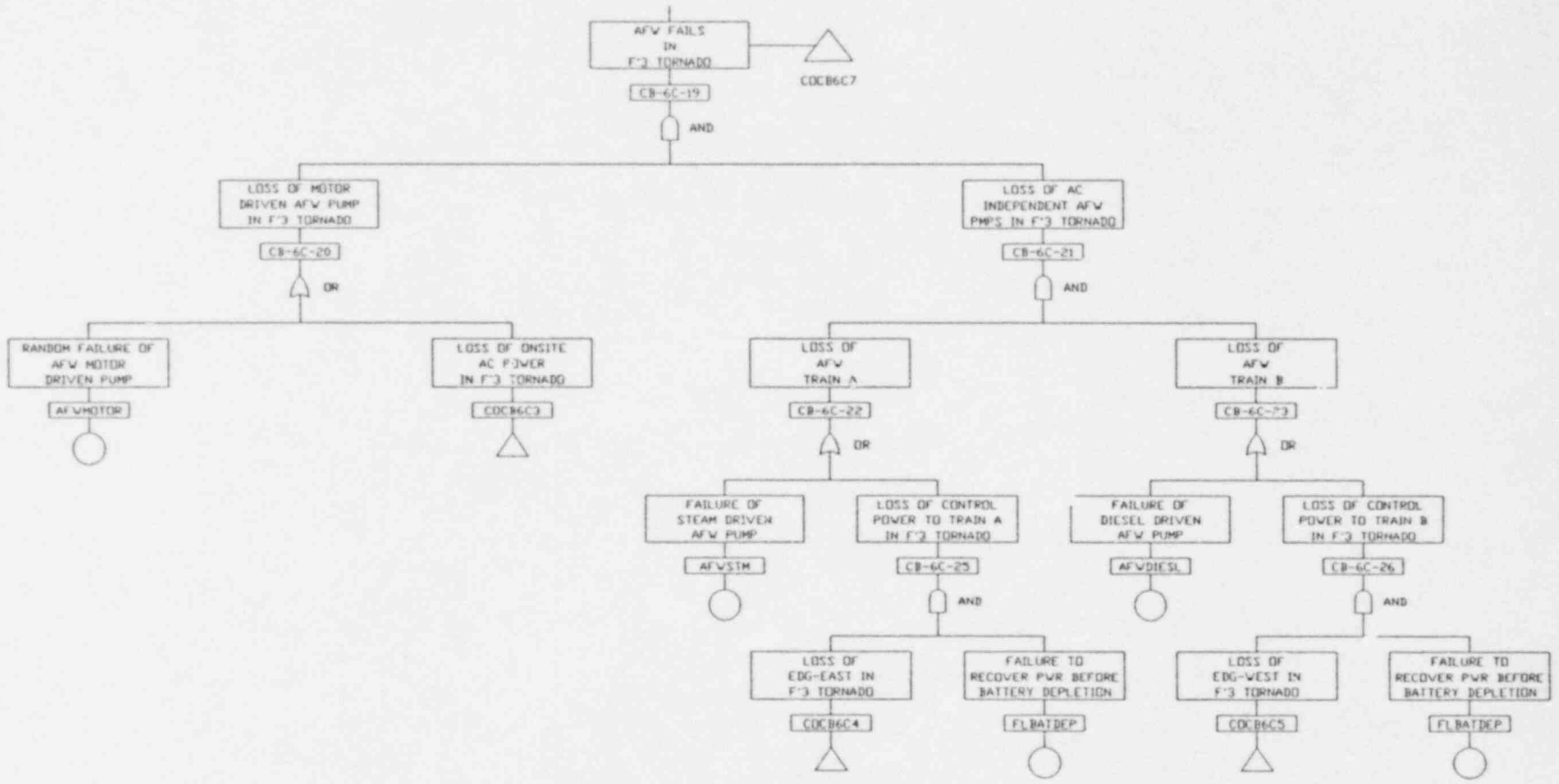

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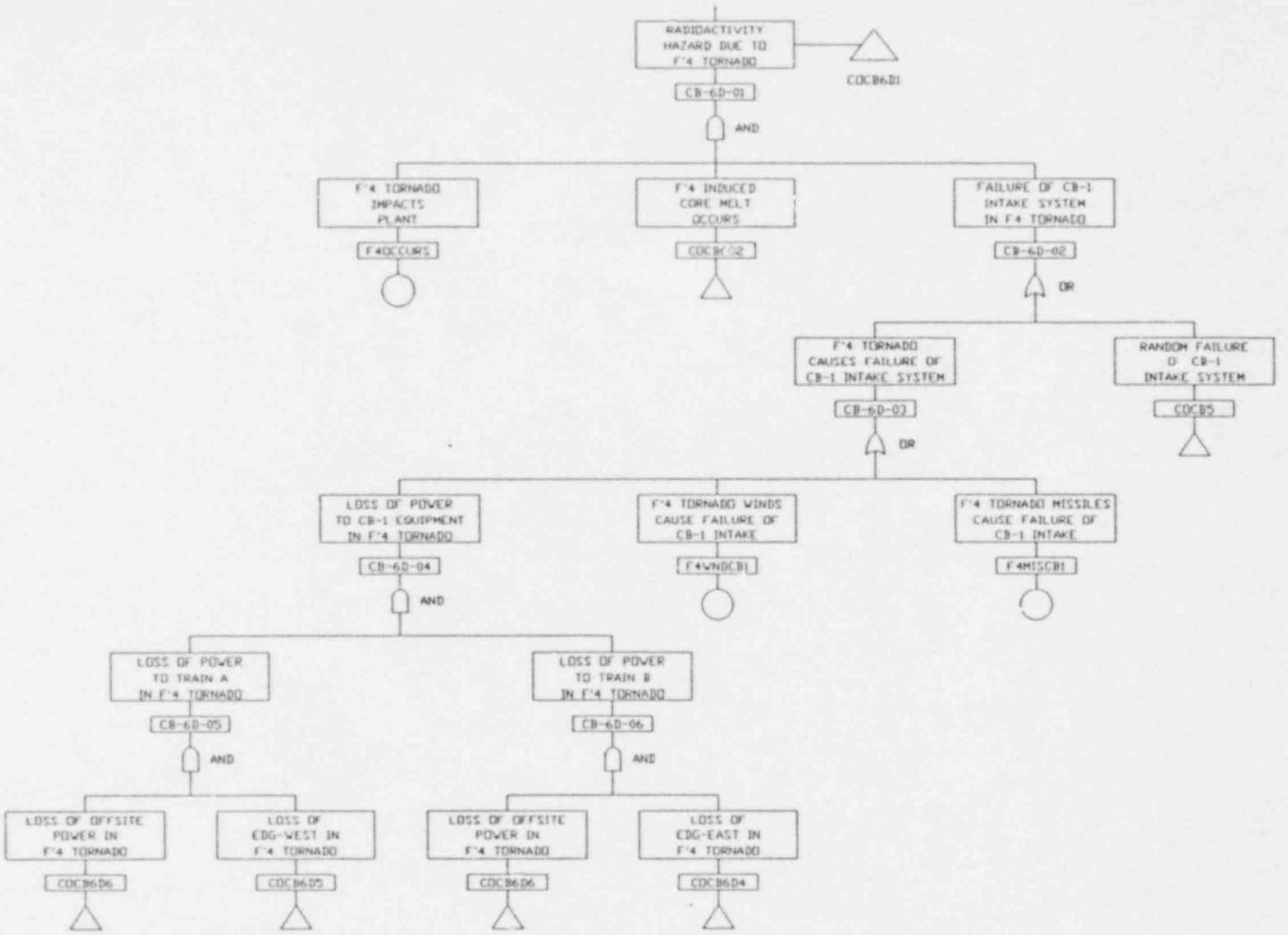

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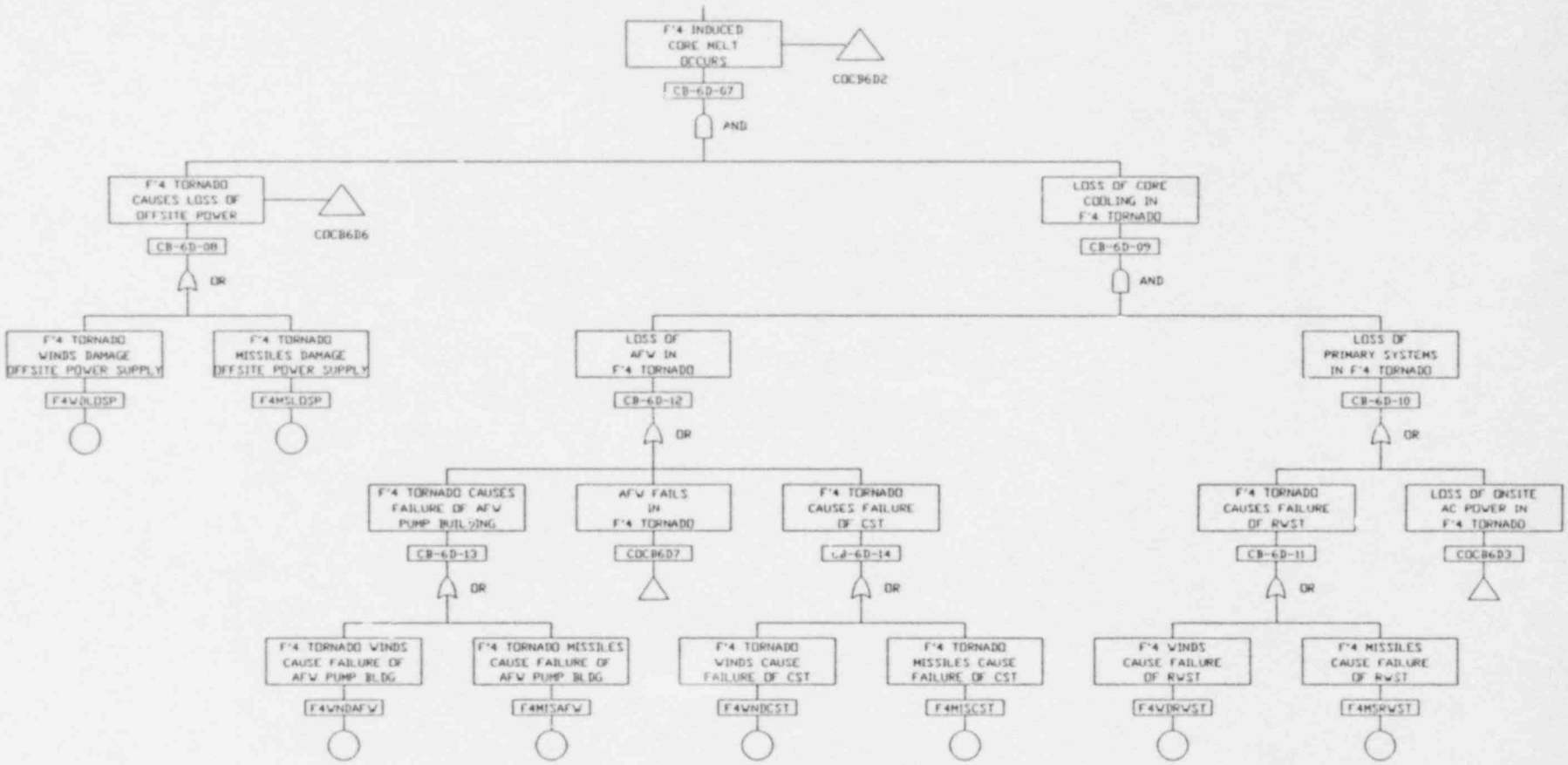

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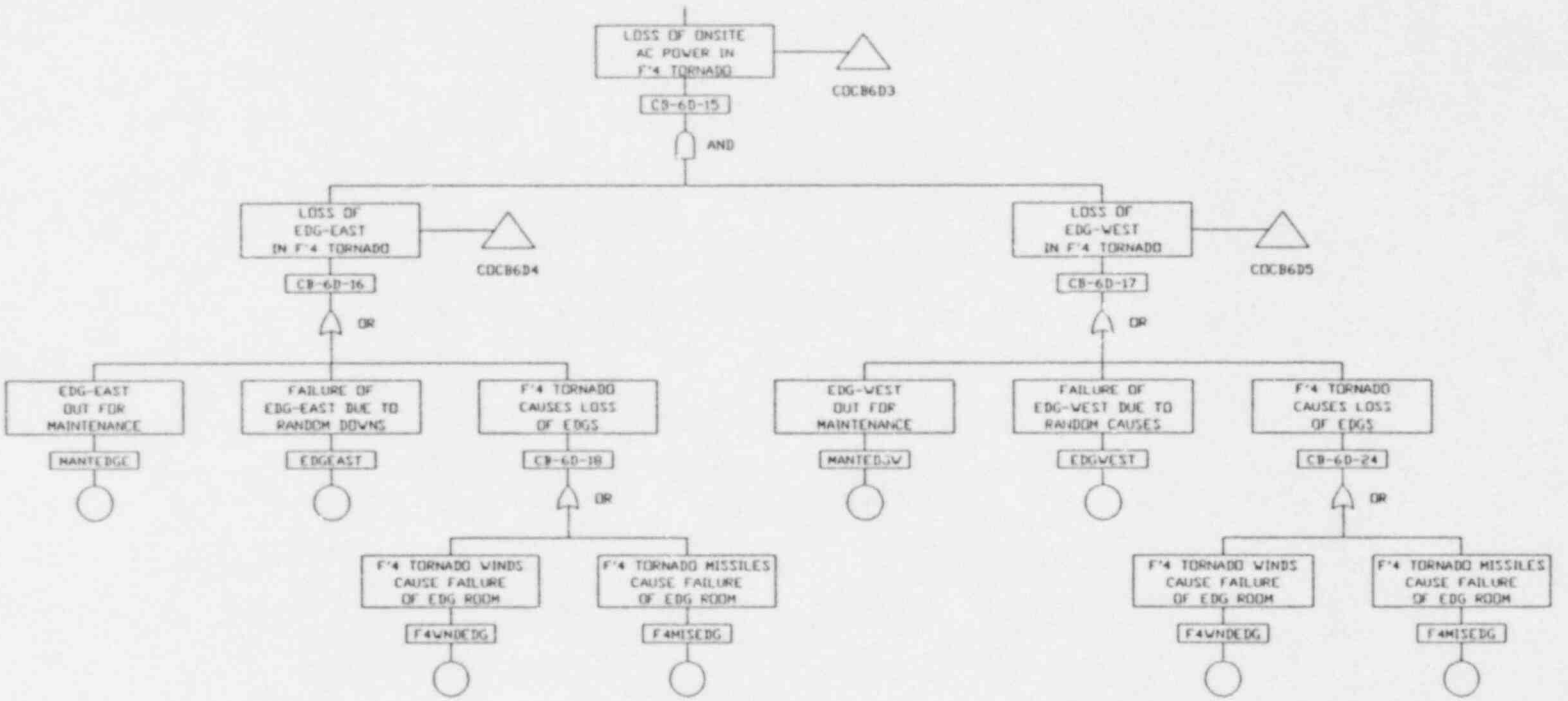

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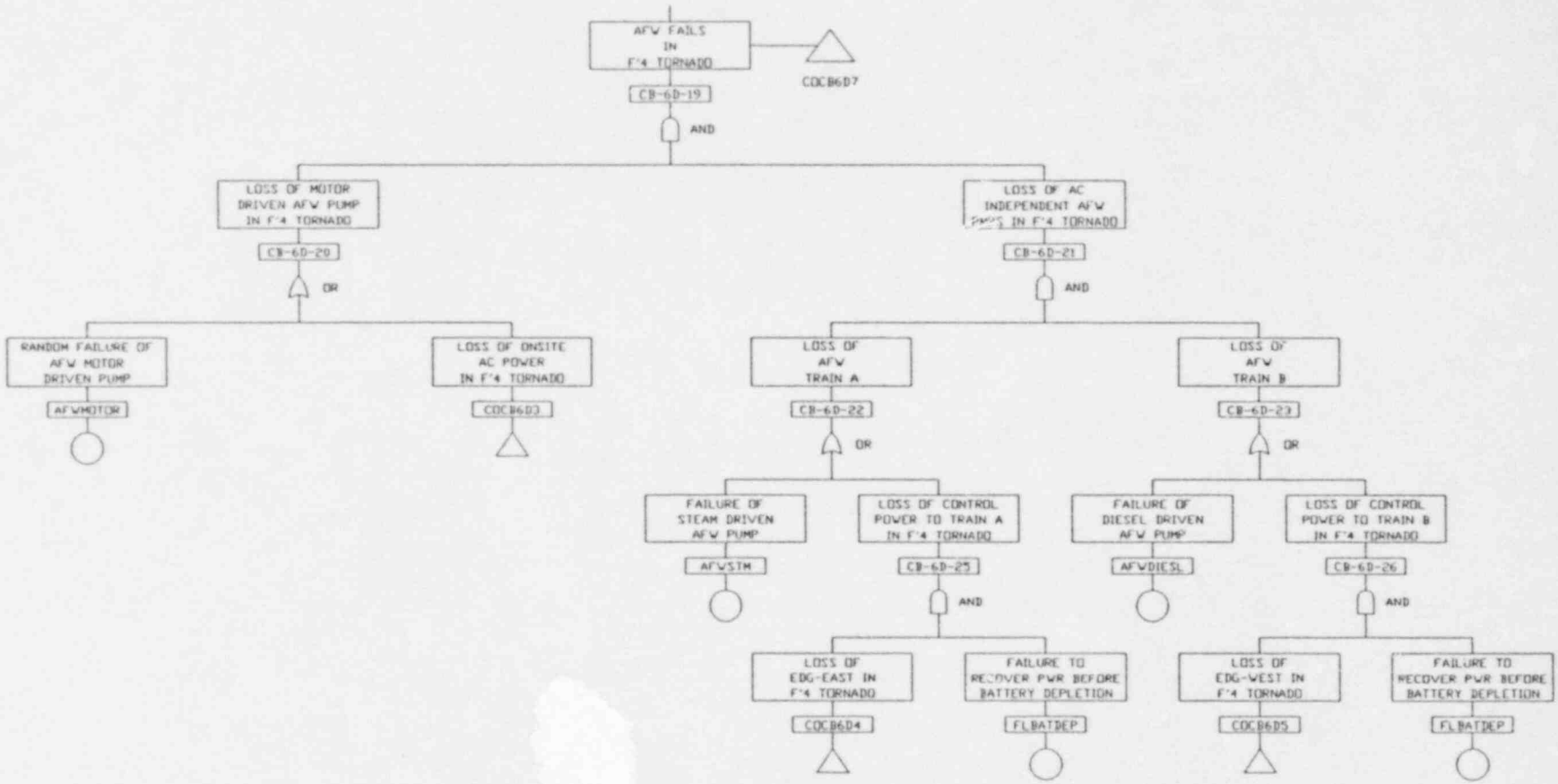

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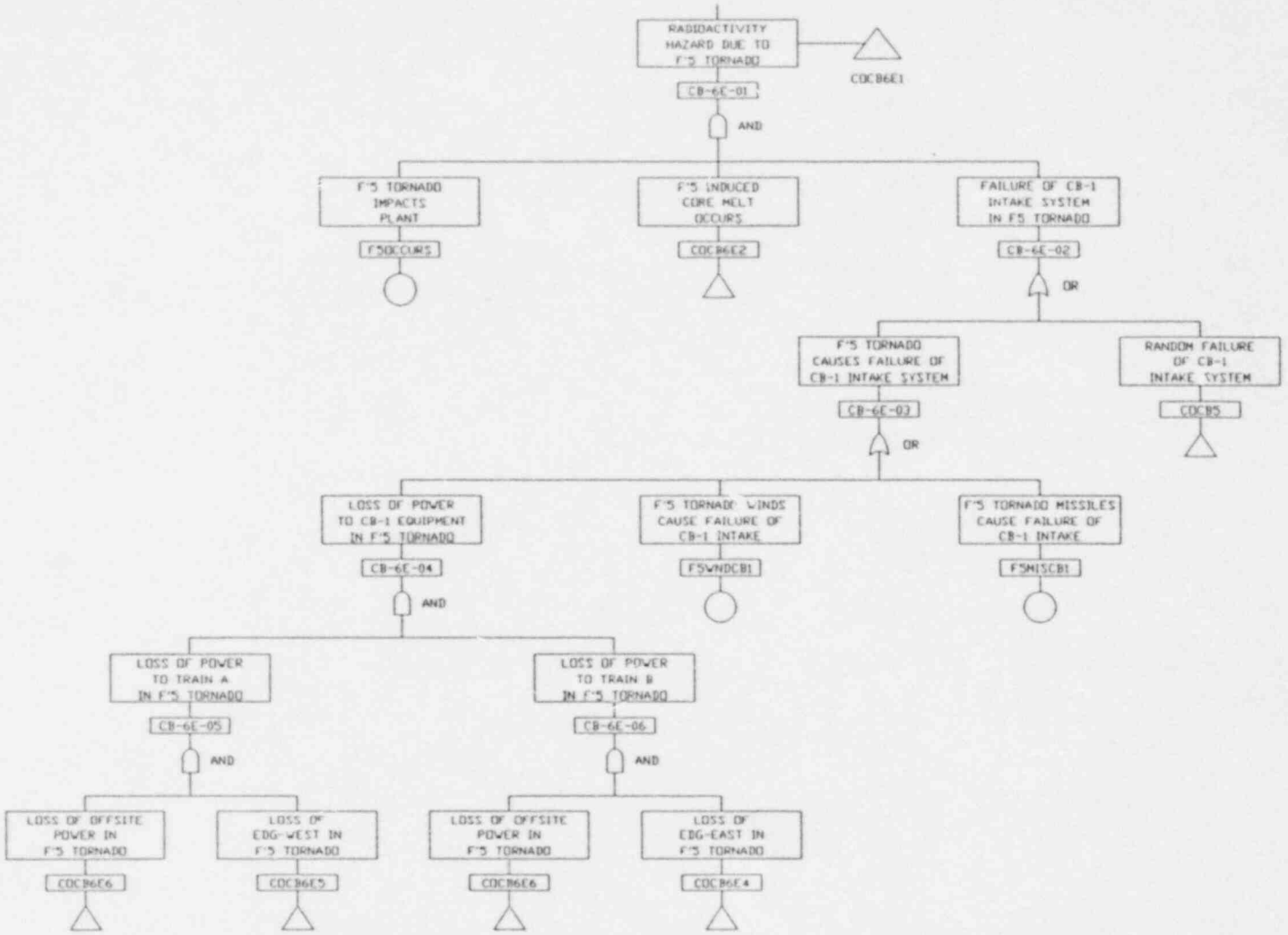

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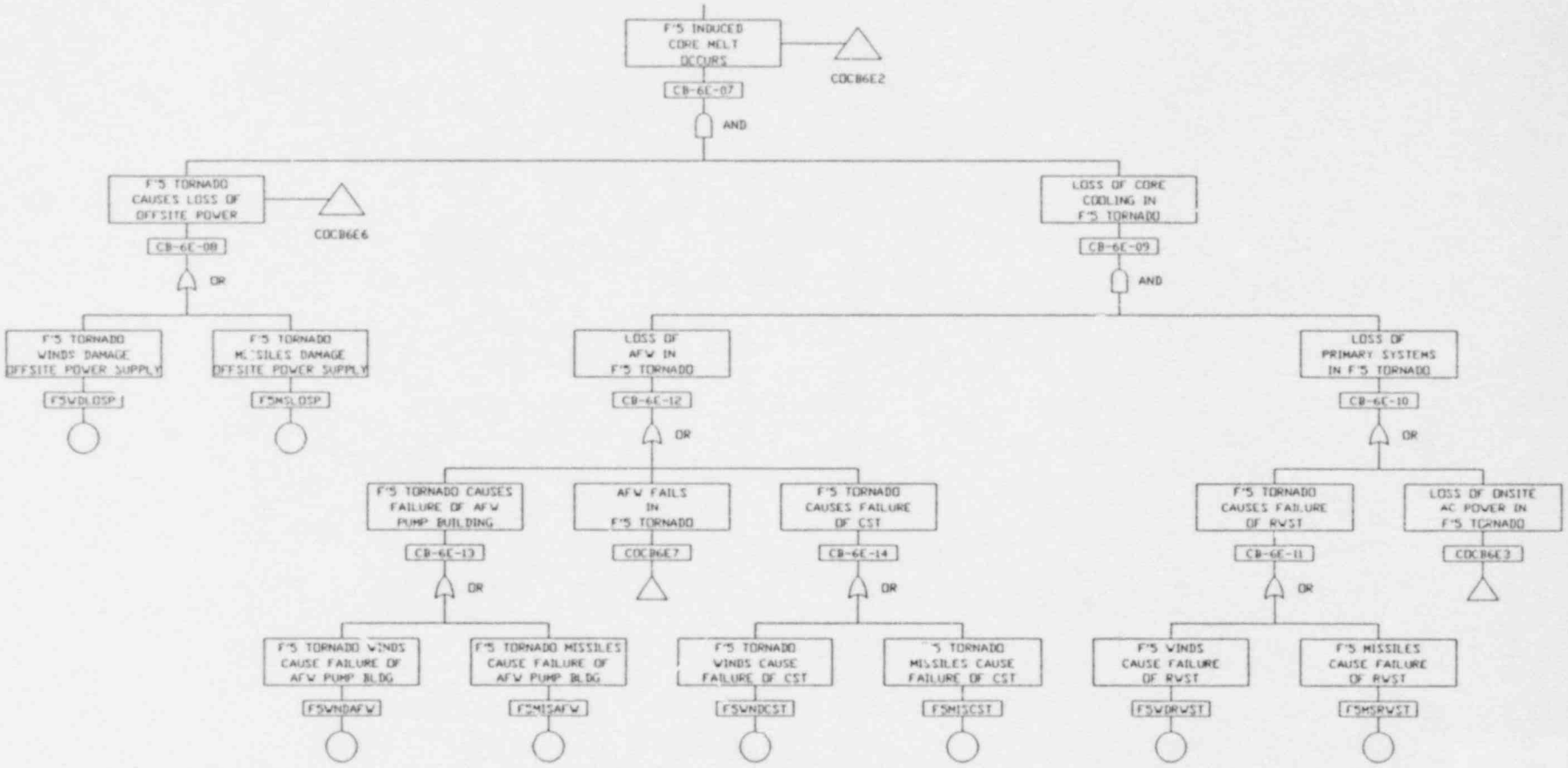

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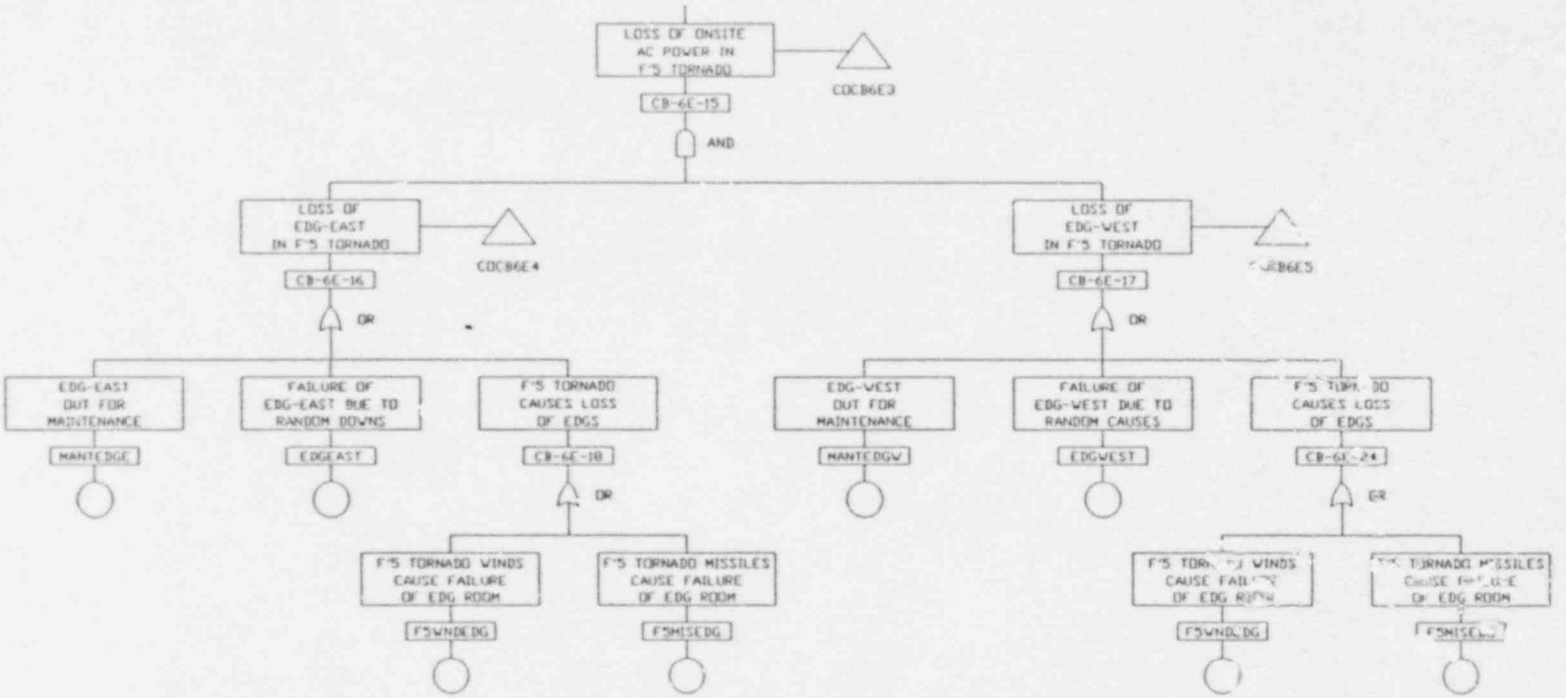

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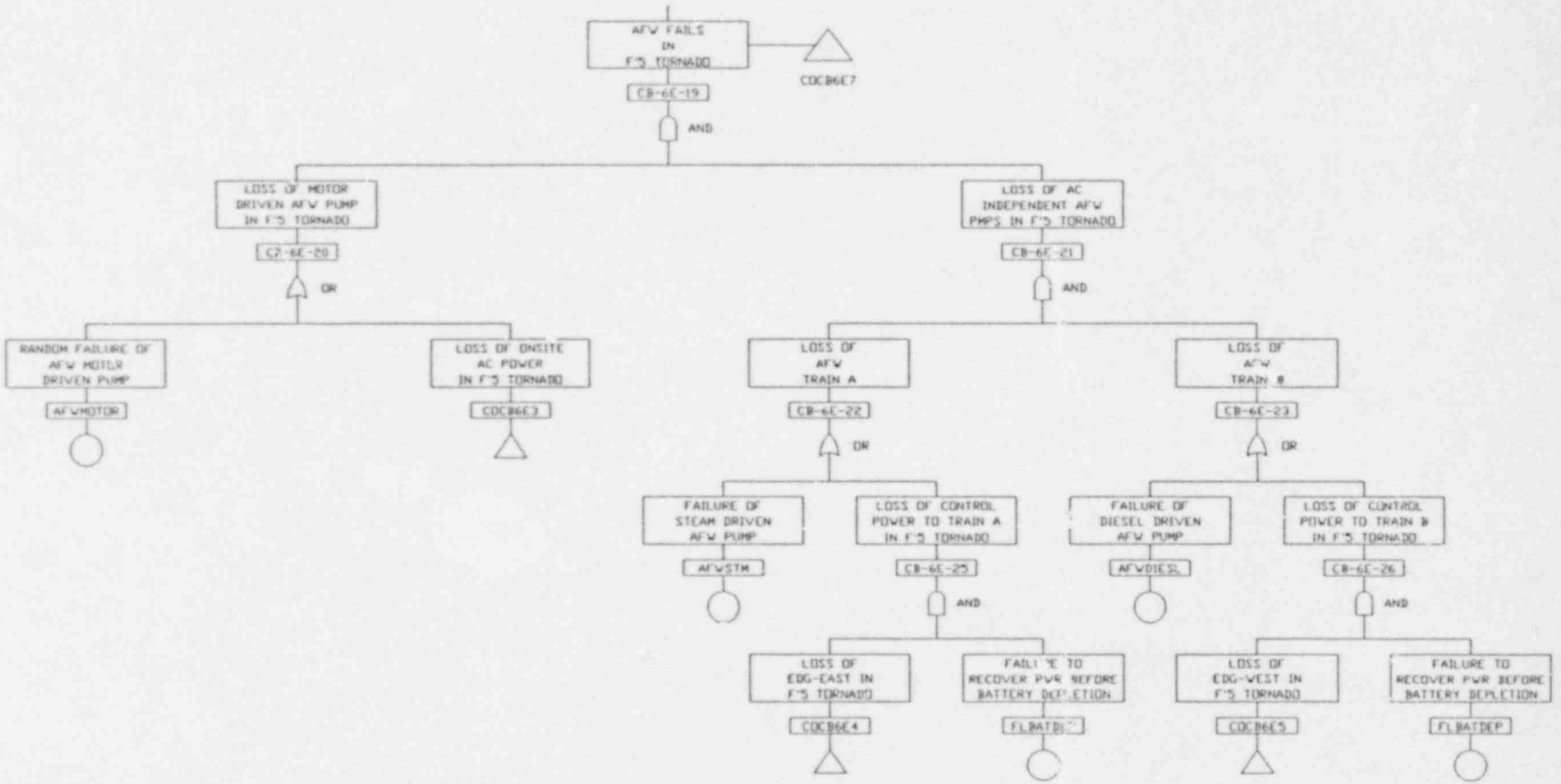

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APPENDIX B

QUANTIFICATION BASES

APPENDIX B

List of Tables

BASIC EVENT PROBABILITY BASES
TABLE B-1

BASIC EVENT(S)	NAME(S)	BASIS/SOURCE(S)
Random caused release of radioactivity (internal event caused core melt)	RANREL	Based on draft NRC Safety Goal.
Onsite toxic gas hazard	RONHAZ	Assume min. design basis event frequency (1E-6/yr)
Offsite toxic gas hazard	ROFFHAZ	Same as RONHAZ
Limit switches fail on damper operators (Train A, Train B)	LSFAILA LSFAILB	IREP database for random failure of limit switch and generic common cause failure probability
Operator fails to detect loss of isolation in CB-1 (Train A, Train B)	OPDETA OPDETB	Human Reliability Handbook NUREG/CR-1278
Dampers fail open (normally closed, air to open damper) Train A(2), Train B(2)	DM1A1FO DM1A2FO DM1B1FO DM1B2FO	IREP database for dampers modified (base case), IREP database for air operated valves (all other cases).
Solenoid valves fail open or leak (normally closed, power to open) (Train A(2), Train B(2))	SV1A1FO SV1A2FO SV1B1FO SV1B2FO	IREP database for solenoid valve failure
f' Tornado impacts the Trojan plant site (for tornado severities F'1 through F'5)	F1OCCURS F2OCCURS F3OCCURS F4OCCURS F5OCCURS	ERIN-NP-768 for Region II tornado frequency

BASIC EVENT PROBABILITY BASES
TABLE B-1 (cont.)

BASIC EVENT(S)	NAME(S)	BASIS/SOURCE(S)
Tornado winds induce failure of chlorine building resulting in release of Cl_2	F1CL2WND F2CL2WND F3CL2WND F4CL2WND F5CL2WND	Integration of wind frequency distribution and building fragility per NUREG/CR-2300 methodology
Tornado winds fail filter housing resulting in breach of CR-1 intake piping	F1FILWND F2FILWND F3FILWND F4FILWND F5FILWND	Integration of wind frequency distribution and filter fragility based on NUREG/CR-2300 methodology
Tornado winds fail piping downstream of dampers resulting in breach of piping	F1PIPWND F2PIPWND F3PIPWND F4PIPWND	Integration of wind frequency distribution and piping fragility per NUREG/CR-2300 methodology
Tornado missiles damage piping downstream of dampers resulting in breach of piping	F1PIPMIS F2PIPMIS F3PIPMIS F4PIPMIS F5PIPMIS	Strike probability for given tornado severity, missile population and impact area. Impact area taken as direct hit area plus richocet area off turbine building (EPRI-NP-768)
Tornado missiles damage filter housing resulting in breach of system	F1FILMIS F2FILMIS F3FILMIS F4FILMIS F5FILMIS	Same as above for downstream piping missile impact except areas for filter housings (EPRI-NP-768)

BASIC EVENT PROBABILITY BASES
TABLE B-1 (cont.)

BASIC EVENT(S)	NAME(S)	BASIS/SOURCE(S)
Adverse wind conditions exist which would move chlorine release toward CB-1 intake structure	WINDDIR	Assumed to be independent of tornados and severity. Uses wind rose data for 90° quadrant encompassing the CB-1 system (Trojan FSAR)
Adverse stability class exists which would support chlorine concentrations high enough to cause hazard at CB-1 intake	STABILIT	Conservatively assumed to always exist
Damper 1 fails to open on demand	DM1A1FC DM1A2FC DM1B1FC DM1B2FC	IREP database modified for damper (base case), IREP data base for air operated valve (all other cases)
Solenoid valve fails to open upon demand. This results in no control air to damper	SV1A1FC SV1A2FC SV1B1FC SV1B2FC	IREP database for solenoid operated valve failure to open
CB-1 recirculation fan fails to start (Train A, Train B)	AFANSTRT BFANSTRT	Air Force Design Features Manual database for fan failure to start
CB-1 recirculation fan fails to run for required period of time (24 hours)	AFANRUN BFANRUN	Air Force Design Features Manual database for failure to run for 24 hours

BASIC EVENT PROBABILITY BASES
TABLE B-1 (cont.)

BASIC EVENT(S)	NAME(S)	BASIS/SOURCE(S)
Recirculation fan out of service for maintenance (Train A, Train B)	AMAINT BMAINT	Based on IDCOR IPE methodology for single component maintenance unavailability
Tornado winds cause failure of CB-1 intake equipment, dampers, accumulators, solenoids, tubing	F1WNDCB1 F2WNDCB1 F3WNDCB1 F4WNDCB1 F5WNDCB1	Integration of wind frequency distribution with equipment fragility per NUREG/CR-2300 methodology
Tornado missiles cause failure of CB-1 intake equipment	F1MISCB1 F2MISCB1 F3MISCB1 F4MISCB1 F5MISCB1	Strike probability for missiles given tornado severity, missile population and area of impact. Area of impact is area of direct hit plus area for richocets (EPRI-NP-768)
Tornado winds cause loss of offsite power	F1WDLOSP F2WDLOSP F3WDLOSP F4WDLOSP F5WDLOSP	Integration of wind frequency distribution and equipment fragility based on NUREG/CR-2300 methodology
Tornado missiles cause loss of offsite power	F1MSLOSP F2MSLOSP F3MSLOSP F4MSLOSP F5MSLOSP	Strike probability for missiles given severity, missile population and area of impact. Area of impact dominated by switchyard (EPRI-NP-768)

BASIC EVENT PROBABILITY BASES
TABLE B-1 (cont.)

BASIC EVENT(S)	NAME(S)	BASIS/SOURCE(S)
Tornado winds cause failure of Diesel Generator building	F1WNDEDG F2WNDEDG F3WNDEDG F4WNDEDG F5WNDEDG	Integration of wind frequency distribution and fragility based on NUREG/CR-2300 methodology and 10% likelihood that building external wall failure causes failure of both EDGs (Seabrook PRA)
Tornado missiles cause failure of Diesel Generator building	F1MISEDG F2MISEDG F3MISEDG F4MISEDG F5MISEDG	Assumed to be zero due to missile design basis
EDG fails to start in the event of loss of offsite power	EDGEAST EDGWEST	EDG reliability data for Trojan (INPO submittals for 1984-1987)
Common cause failure of second EDG	EDGBETA	Common cause beta factor for diesels (EPRI NP-3967)
Tornado winds cause failure of RWST	F1WDRWST F2WDRWST F3WDRWST F3WDRWST F4WDRWST F5WDRWST	Assumed to be zero due to additional tank stability due to contents (water)

BASIC EVENT PROBABILITY BASES
TABLE B-1 (cont.)

BASIC EVENT(S)	NAME(S)	BASIS/SOURCE(S)
Tornado missiles cause failure of RWST	F1MSRWST F2MSRWST F3MSRWST F4MSRWST F5MSRWST	Strike probability based on severity, missile population, and area. Area based on area of tank (EPRI-NP-768)
Tornado winds cause failure of AFW pump building	F1WNDAFW F2WNDAFW F3WNDAFW F4WNDAFW F5WNDAFW	Integration of wind frequency distribution and building fragility based on NUREG/CR-2300 methodology and a 10% likelihood that all AFW pumps will be damaged by failure of external wall (Seabrook PRA)
Tornado missiles cause failure of AFW pump building	F1MISAFW F2MISAFW F3MISAFW F4MISAFW F5MISAFW	Assumed to be zero due to additional tank stability due to contents (water)
Tornado winds cause failure of CST	F1WNDCST F2WNDCST F3WNDCST F4WNDCST F5WNDCST	Assumed to be zero due to additional tank stabillity due to contents (water)
Tornado missiles cause failure of CST	F1MISCST F2MISCST F3MISCST F4MISCST F5MISCST	Strike probability based on severity, missile population, and area. Area based on size of CST tank (EPRI-NP-768)

BASIC EVENT PROBABILITY BASES
TABLE B-1 (cont.)

BASIC EVENT(S)	NAME(S)	BASIS/SOURCE(S)
Failure of steam driven AFW pump	AFWSTM	IREP database for steam driven pump failure to start
Failure of diesel driven AFW pump	AFWDIESL	IREP database for diesel driven pump failure to start
Failure of motor driven AFW pump	AFWMOTOR	IREP database for motor driven pump failure to start
EDG out of service for maintenance	MAINTDGE	IDCOR IPE methodology
Battery depletion occurs before AC power can be restored (battery life = 4 hours)	FLBATDEP	Based on likelihood of repair of diesels using 19 MTTR and standard. repair model. Offsite power recovery conservatively assumed impossible within 4 hours after tornado damage
Filtration provided by CB-1 inadequate	FILTINAD	Original filter/intake design conservatively assumed to be inadequate, filtered makeup air to maintain control room pressurized. New designs do.
Common cause failure of second solenoid valve	SVBETA	EPRI-NP-3967 (modified)
Common cause failure of second damper	DMBETA	EPRI-NP-3967 (modified)

BASIC EVENT PROBABILITY BASES
TABLE B-1 (cont.)

BASIC EVENT(S)	NAME(S)	BASIS/SOURCE(S)
Common cause failure	FANBETA	EPRI-NP-3967 (modified)

TABLE B-2
CB-1 FAULT TREE BASIC EVENT DATA

EVENT	DESCRIPTION	BASE CASE	CASE-2	CASE-3	CASE-4	CASE-5	CASE-6	CASE-7
AFANRUN	TRAIN A FAN FLS TO RUN	2.7E-03	2.7E-03	2.7E-03	2.7E-03	2.7E-03	2.7E-03	2.7E-03
FANBETA	COMMON CAUSE FAILURE OF CB-1 FANS	9.0E-06	9.0E-06	9.0E-06	9.0E-06	9.0E-06	9.0E-06	9.0E-06
AFANSTRT	TRAIN A FAN FLS TO STRT	3.0E-04	3.0E-04	3.0E-04	3.0E-04	3.0E-04	3.0E-04	3.0E-04
AFWDIESL	FAIL OF DIESEL DRIVEN AFW PMP	1.0E-03	1.0E-03	1.0E-03	1.0E-03	1.0E-03	1.0E-03	1.0E-03
AFWMOTOR	RAND FAIL OF AFW MOT DRIV PMP	3.0E-03	3.0E-03	3.0E-03	3.0E-03	3.0E-03	3.0E-03	3.0E-03
AFWSTM	FAIL OF STEAM DRIVEN AFW PMP	3.0E-02	3.0E-02	3.0E-02	3.0E-02	3.0E-02	3.0E-02	3.0E-02
AMANT	TRAIN A OUT OF SVC FOR MAINT	1.0E-03	1.0E-03	1.0E-03	1.0E-03	1.0E-03	1.0E-03	1.0E-03
BFANRUN	TRAIN B FAN FLS TO RUN	2.7E-03	2.7E-03	2.7E-03	2.7E-03	2.7E-03	2.7E-03	2.7E-03
BFANSTRT	TRAIN B FAN FLS TO STRT	3.0E-04	3.0E-04	3.0E-04	3.0E-04	3.0E-04	3.0E-04	3.0E-04
BMANT	TRAIN B OUT OF SVC FOR MAINT	1.0E-03	1.0E-03	1.0E-03	1.0E-03	1.0E-03	1.0E-03	1.0E-03
DM1A1FC	DAMPER 1A1 FAILS CLOSED	1.0E-02	3.0E-03	3.0E-03	3.0E-03	3.0E-03	3.0E-03	3.0E-03
DM1A1FO	DAMPER CB-1A1 FAILS OPEN	1.0E-02	3.0E-03	3.0E-03	3.0E-03	3.0E-03	3.0E-03	3.0E-03
DM1A2FC	DAMPER 1A2 FAILS CLOSED	0.0E+00	3.0E-03	3.0E-03	3.0E-03	3.0E-03	3.0E-03	3.0E-03
DM1A2FO	DAMPER CB-1A2 FAILS OPEN	1.0E+00	3.0E-03	3.0E-03	3.0E-03	3.0E-03	3.0E-03	3.0E-03
DM1B1FC	DAMPER 1B1 FLS CLOSED	1.0E-02	3.0E-03	3.0E-03	3.0E-03	3.0E-03	3.0E-03	3.0E-03
DM1B1FO	DAMPER CB-1B1 FAILS OPEN	1.0E-02	3.0E-03	3.0E-03	3.0E-03	3.0E-03	3.0E-03	3.0E-03
DM1B2FC	DAMPER 1B2 FLS CLOSED	0.0E+00	3.0E-03	3.0E-03	3.0E-03	3.0E-03	3.0E-03	3.0E-03
DM1B2FO	DAMPER CB-1B2 FAILS OPEN	1.0E+00	3.0E-03	3.0E-03	3.0E-03	3.0E-03	3.0E-03	3.0E-03
DMBETA	COMMON CAUSE FAILURE OF DAMPERS	8.1E-04	2.5E-04	2.5E-04	2.5E-04	2.5E-04	2.5E-04	2.5E-04
EDGBETA	COMMON CAUSE FAILURE OF EDGS	1.8E-05	1.8E-05	1.8E-05	1.8E-05	1.8E-05	1.8E-05	1.8E-05
EDGEAST	EDG-EAST FAIL DUE TO RAND DWNS	3.3E-03	3.3E-03	3.3E-03	3.3E-03	3.3E-03	3.3E-03	3.3E-03
EDGWEST	EDG-WEST FAIL DUE TO RAND CAUSE	3.3E-03	3.3E-03	3.3E-03	3.3E-03	3.3E-03	3.3E-03	3.3E-03
F1CL2MIS	F*1 INDUCED MISSILE FAIL OF CL2BLDG	1.7E-03	1.7E-03	1.7E-03	1.7E-03	1.7E-03	1.7E-03	1.7E-03
F1CL2WND	F*1 INDUCED WIND FAIL OF CL2BLDG	6.0E-03	6.0E-03	6.0E-03	6.0E-03	6.0E-03	6.0E-03	6.0E-03
F1FILMIS	F*1 MISSILES DAMAGE FILT HOUSE	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.7E-04	2.7E-04	2.7E-04
F1FILWIN	F*1 WINDS FAIL FILTER HOUSE	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.0E-06	1.0E-05	1.0E-06
F1MISAFW	F*1 TORN MIS CAUSE FAIL AFW PMP BLDG	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
F1MISCB1	F*1 TORNADO MISS CAUSE FAIL CB1 INTAKE	6.1E-04	1.0E+00	8.5E-04	0.0E+00	1.0E+00	1.0E-03	1.0E-03
F1MISCST	F*1 TORN MIS CAUS CST TO FAIL	3.2E-03	3.2E-03	3.2E-03	3.2E-03	3.2E-03	3.2E-03	3.2E-03
F1MISEDG	F*1 TORN MISL CAUSE EDG RM FAIL	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
F1MSLOSP	F*1 TORNADO MIS DMG OFFST PWR SUP	1.2E-01	1.2E-01	1.2E-01	1.2E-01	1.2E-01	1.2E-01	1.2E-01
F1MSRWST	F*1 MIS CAUSE FAIL OF RWST	3.2E-03	3.2E-03	3.2E-03	3.2E-03	3.2E-03	3.2E-03	3.2E-03
F1OCCURS	F*1 TORNADO IMPACTS PLANT	8.6E-05	8.6E-05	8.6E-05	8.6E-05	8.6E-05	8.6E-05	8.6E-05
F1PIPMIS	F*1 MISSILES DAMAGE DWNSTRM PIPE	0.0E+00	1.3E-04	1.3E-04	0.0E+00	4.1E-05	4.1E-05	4.1E-05
F1PIPWND	F*1 WINDS FAIL DWNSTRM PIPING	0.0E+00	1.0E-06	1.0E-06	1.0E-06	0.0E+00	0.0E+00	0.0E+00
F1WDLOSP	F*1 TORNADO WND DMG OFFST PWR SUP	6.0E-03	6.0E-03	6.0E-03	6.0E-03	6.0E-03	6.0E-03	6.0E-03
F1WDRWST	F*1 WNDS CAUSE FAIL OF RWST	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
F1WNDAFW	F*1 TORN WND FAIL AFW PMP BLDG	1.0E-06	1.0E-06	1.0E-06	1.0E-06	1.0E-06	1.0E-06	1.0E-06
F1WNDCB1	F*1 TORNADO WNDS CAUSE FAIL OF CB1 INTKE	1.0E-06	1.0E-06	1.0E-06	1.0E-06	1.0E-06	1.0E-05	1.0E-06
F1WNDCST	F*1 TORN WND CAUSE FAIL CST	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
F1WNDEDG	F*1 TORN WND CAUSE EDG RM FAIL	1.0E-06	1.0E-06	1.0E-06	1.0E-06	1.0E-06	1.0E-06	1.0E-06
F2CL2MIS	F*2 INDUCED MISSILE FAIL OF CL2BLDG	2.1E-03	2.1E-03	2.1E-03	2.1E-03	2.1E-03	2.1E-03	2.1E-03
F2CL2WND	F*2 INDUCED WIND FAIL OF CL2BLDG	1.6E-01	1.6E-01	1.6E-01	1.6E-01	1.6E-01	1.6E-01	1.6E-01
F2FILMIS	F*2 MISSILES DAMAGE FILT HOUSE	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.3E-04	3.3E-04	3.3E-04
F2FILWIN	F*2 WINDS FAIL FILTER HOUSE	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.0E-05	7.0E-04	1.0E-05
F2MISAFW	F*2 TORN MIS CAUSE FAIL AFW PMP BLDG	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00

TABLE B-2
CB-1 FAULT TREE BASIC EVENT DATA
(continued)

EVENT	DESCRIPTION	BASE CASE	CASE-2	CASE-3	CASE-4	CASE-5	CASE-6	CASE-7
F2MISCB1	F'2 TORNADO MISS CAUSE FAIL CB1 INTAKE	7.6E-04	1.0E+00	1.1E-03	0.0E+00	1.0E+00	1.3E-03	1.3E-03
F2MISCST	F'2 TORN MIS CAUS CST TO FAIL	3.9E-03	3.9E-03	3.9E-03	3.9E-03	3.9E-03	3.9E-03	3.9E-03
F2MISEDG	F'2 TORN MISL CAUSE EDG RM FAIL	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
F2MSLOSP	F'2 TORNADO MIS DMG OFFST PWR SUP	1.5E-01	1.5E-01	1.5E-01	1.5E-01	1.5E-01	1.5E-01	1.5E-01
F2MSRWST	F'2 MIS CAUSE FAIL OF RWST	3.9E-03	3.9E-03	3.9E-03	3.9E-03	3.9E-03	3.9E-03	3.9E-03
F2OCCURS	F'2 TORNADO IMPACTS PLANT	6.9E-05	6.9E-05	6.9E-05	6.9E-05	6.9E-05	6.9E-05	6.9E-05
F2PIPMIS	F'2 MISSILES DAMAGE DWNSTRM PIPE	0.0E+00	1.6E-04	1.6E-04	0.0E+00	5.1E-05	5.1E-05	5.1E-05
F2PIPWND	F'2 WINDS FAIL DWNSTRM PIPING	0.0E+00	1.0E-05	1.0E-05	1.0E-05	0.0E+00	0.0E+00	0.0E+00
F2WDLOSP	F'2 TORNADO WND DMG OFFST PWR SUP	1.6E-01	1.6E-01	1.6E-01	1.6E-01	1.6E-01	1.6E-01	1.6E-01
F2WDRWST	F'2 WNDS CAUSE FAIL OF RWST	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
F2WNDAFW	F'2 TORN WND FAIL AFW PMP BLDG	7.0E-05	7.0E-05	7.0E-05	7.0E-05	7.0E-05	7.0E-05	7.0E-05
F2WNDCB1	F'2 TORNADO WNDS CAUSE FAIL OF CB1 INTKE	1.0E-05	1.0E-05	1.0E-05	1.0E-05	1.0E-05	7.0E-04	1.0E-05
F2WNDCST	F'2 TORN WND CAUSE FAIL CST	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
F2WNDEDG	F'2 TORN WND CAUSE EDG RM FAIL	7.0E-05	7.0E-05	7.0E-05	7.0E-05	7.0E-05	7.0E-05	7.0E-05
F3CL2MIS	F'3 INDUCED MISSILE FAIL OF CL2BLDG	5.6E-03	5.6E-03	5.6E-03	5.6E-03	5.6E-03	5.6E-03	5.6E-03
F3CL2WND	F'3 INDUCED WIND FAIL OF CL2BLDG	5.7E-01	5.7E-01	5.7E-01	5.7E-01	5.7E-01	5.7E-01	5.7E-01
F3FILMIS	F'3 MISSILES DAMAGE FILT HOUSE	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.7E-04	8.7E-04	8.7E-04
F3FILWIN	F'3 WINDS FAIL FILTER HOUSE	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.0E-04	2.3E-02	1.0E-04
F3MISAFW	F'3 TORN MIS CAUSE FAIL AFW PMP BLDG	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
F3MISCB1	F'3 TORNADO MISS CAUSE FAIL CB1 INTAKE	2.0E-03	1.0E+00	2.8E-03	0.0E+00	1.0E+00	3.4E-03	3.4E-03
F3MISCST	F'3 TORN MIS CAUS CST TO FAIL	1.0E-02	1.0E-02	1.0E-02	1.0E-02	1.0E-02	1.0E-02	1.0E-02
F3MISEDG	F'3 TORN MISL CAUSE EDG RM FAIL	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
F3MSLOSP	F'3 TORNADO MIS DMG OFFST PWR SUP	4.0E-01	4.0E-01	4.0E-01	4.0E-01	4.0E-01	4.0E-01	4.0E-01
F3MSRWST	F'3 MIS CAUSE FAIL OF RWST	1.0E-02	1.0E-02	1.0E-02	1.0E-02	1.0E-02	1.0E-02	1.0E-02
F3OCCURS	F'3 TORNADO IMPACTS PLANT	2.9E-05	2.9E-05	2.9E-05	2.9E-05	2.9E-05	2.9E-05	2.9E-05
F3PIPMIS	F'3 MISSILES DAMAGE DWNSTRM PIPE	0.0E+00	4.2E-04	4.2E-04	0.0E+00	1.3E-04	1.3E-04	1.3E-04
F3PIPWND	F'3 WINDS FAIL DWNSTRM PIPING	0.0E+00	1.0E-04	1.0E-04	1.0E-04	0.0E+00	0.0E+00	0.0E+00
F3WDLOSP	F'3 TORNADO WND DMG OFFST PWR SUP	5.7E-01	5.7E-01	5.7E-01	5.7E-01	5.7E-01	5.7E-01	5.7E-01
F3WDRWST	F'3 WNDS CAUSE FAIL OF RWST	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
F3WNDAFW	F'3 TORN WND FAIL AFW PMP BLDG	2.3E-03	2.3E-03	2.3E-03	2.3E-03	2.3E-03	2.3E-03	2.3E-03
F3WNDCB1	F'3 TORNADO WNDS CAUSE FAIL OF CB1 INTKE	1.0E-04	1.0E-04	1.0E-04	1.0E-04	1.0E-04	2.3E-02	1.0E-04
F3WNDCST	F'3 TORN WND CAUSE FAIL CST	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
F3WNDEDG	F'3 TORN WND CAUSE EDG RM FAIL	2.3E-03	2.3E-03	2.3E-03	2.3E-03	2.3E-03	2.3E-03	2.3E-03
F4CL2MIS	F'4 INDUCED MISSILE FAIL OF CL2BLDG	3.5E-03	3.5E-03	3.5E-03	3.5E-03	3.5E-03	3.5E-03	3.5E-03
F4CL2WND	F'4 INDUCED WIND FAIL OF CL2BLDG	9.0E-01	9.0E-01	9.0E-01	9.0E-01	9.0E-01	9.0E-01	9.0E-01
F4FILMIS	F'4 MISSILES DAMAGE FILT HOUSE	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.5E-04	5.5E-04	5.5E-04
F4FILWIN	F'4 WINDS FAIL FILTER HOUSE	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.4E-03	1.6E-01	4.4E-03
F4MISAFW	F'4 TORN MIS CAUSE FAIL AFW PMP BLDG	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
F4MISCB1	F'4 TORNADO MISS CAUSE FAIL CB1 INTAKE	1.2E-03	1.0E+00	1.7E-03	0.0E+00	1.0E+00	2.1E-03	2.1E-03
F4MISCST	F'4 TORN MIS CAUS CST TO FAIL	6.5E-03	6.5E-03	6.5E-03	6.5E-03	6.5E-03	6.5E-03	6.5E-03
F4MISEDG	F'4 TORN MISL CAUSE EDG RM FAIL	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
F4MSLOSP	F'4 TORNADO MIS DMG OFFST PWR SUP	2.5E-01	2.5E-01	2.5E-01	2.5E-01	2.5E-01	2.5E-01	2.5E-01
F4MSRWST	F'4 MIS CAUSE FAIL OF RWST	6.5E-03	6.5E-03	6.5E-03	6.5E-03	6.5E-03	6.5E-03	6.5E-03
F4OCCURS	F'4 TORNADO IMPACTS PLANT	7.9E-06	7.9E-06	7.9E-06	7.9E-06	7.9E-06	7.9E-06	7.9E-06
F4PIPMIS	F'4 MISSILES DAMAGE DWNSTRM PIPE	0.0E+00	2.6E-04	2.6E-04	0.0E+00	8.0E-05	8.0E-05	8.0E-05

TABLE B-2
CB-1 FAULT TREE BASIC EVENT DATA
(continued)

EVENT	DESCRIPTION	BASE CASE	CASE-2	CASE-3	CASE-4	CASE-5	CASE-6	CASE-7
F4PIPWND	F'4 WINDS FAIL DWNSTRM PIPING	0.0E+00	4.4E-03	4.4E-03	4.4E-03	0.0E+00	0.0E+00	0.0E+00
F4WDLOSP	F'4 TORNADO WND DMG OFFST PWR SUP	9.0E-01	9.0E-01	9.0E-01	9.0E-01	9.0E-01	9.0E-01	9.0E-01
F4WDRWST	F'4 WNDS CAUSE FAIL OF RWST	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
F4WNDAFW	F'4 TORN WND FAIL AFW PMP BLDG	1.6E-02	1.6E-02	1.6E-02	1.6E-02	1.6E-02	1.6E-02	1.6E-02
F4WNDCB1	F'4 TORNADO WNDS CAUSE FAIL OF CB1 INTKE	4.4E-03	4.4E-03	4.4E-03	4.4E-03	4.4E-03	1.6E-01	4.4E-03
F4WNDCST	F'4 TORN WND CAUSE FAIL CST	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
F4WNDEDG	F'4 TORN WND CAUSE EDG RM FAIL	1.6E-02	1.6E-02	1.6E-02	1.6E-02	1.6E-02	1.6E-02	1.6E-02
F5CL2MIS	F'5 INDUCED MISSILE FAIL OF CL2BLDG	8.4E-03	8.4E-03	8.4E-03	8.4E-03	8.4E-03	8.4E-03	8.4E-03
F5CL2WND	F'5 INDUCED WIND FAIL OF CL2BLDG	9.8E-01	9.8E-01	9.8E-01	9.8E-01	9.8E-01	9.8E-01	9.8E-01
F5FILMIS	F'5 MISSILES DAMAGE FILT HOUSE	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.3E-03	1.3E-03	1.3E-03
F5FILWIN	F'5 WINDS FAIL FILTER HOUSE	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.9E-02	4.4E-01	3.9E-02
F5MISAFW	F'5 TORN MIS CAUSE FAIL AFW PMP BLDG	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
F5MISCB1	F'5 TORNADO MISS CAUSE FAIL CB1 INTAKE	3.0E-03	1.0E+00	4.2E-03	0.0E+00	1.0E+00	5.0E-03	5.0E-03
F5MISCST	F'5 TORN MIS CAUS CST TO FAIL	1.5E-02	1.5E-02	1.5E-02	1.5E-02	1.5E-02	1.5E-02	1.5E-02
F5MISEDG	F'5 TORN MISL CAUSE EDG RM FAIL	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
F5MSLOSP	F'5 TORNADO MIS DMG OFFST PWR SUP	6.0E-01	6.0E-01	6.0E-01	6.0E-01	6.0E-01	6.0E-01	6.0E-01
F5MSRWST	F'5 MIS CAUSE FAIL OF RWST	1.5E-02	1.5E-02	1.5E-02	1.5E-02	1.5E-02	1.5E-02	1.5E-02
F5OCCURS	F'5 TORNADO IMPACTS PLANT	2.9E-06	2.9E-06	2.9E-06	2.9E-06	2.9E-06	2.9E-06	2.9E-06
F5PIPMIS	F'5 MISSILES DAMAGE DWNSTRM PIPE	0.0E+00	6.3E-04	6.3E-04	0.0E+00	2.0E-04	2.0E-04	2.0E-04
F5PIPWND	F'5 WINDS FAIL DWNSTRM PIPING	0.0E+00	3.9E-02	3.9E-02	3.9E-02	0.0E+00	0.0E+00	0.0E+00
F5WDLOSP	F'5 TORNADO WND DMG OFFST PWR SUP	9.8E-01	9.8E-01	9.8E-01	9.8E-01	9.8E-01	9.8E-01	9.8E-01
F5WDRWST	F'5 WNDS CAUSE FAIL OF RWST	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
F5WNDAFW	F'5 TORN WND FAIL AFW PMP BLDG	4.6E-02	4.6E-02	4.6E-02	4.6E-02	4.4E-02	4.6E-02	4.6E-02
F5WNDCB1	F'5 TORNADO WNDS CAUSE FAIL OF CB1 INTKE	3.9E-02	3.9E-02	3.9E-02	3.9E-02	3.9E-02	4.4E-01	3.9E-02
F5WNDCST	F'5 TORN WND CAUSE FAIL CST	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
F5WNDEDG	F'5 TORN WND CAUSE EDG RM FAIL	4.4E-02	4.4E-02	4.4E-02	4.4E-02	4.4E-02	4.4E-02	4.4E-02
FILTINAD	FILT SYST INAD TO ENS CR HAB	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
FLBATDEP	FAIL TO REC PWR BEFORE BAT DEP	9.8E-01	9.8E-01	9.8E-01	9.8E-01	9.8E-01	9.8E-01	9.8E-01
LSFAILA	LIMIT SWITCHES FAIL	1.0E-04	1.0E-05	1.0E-05	1.0E-05	1.0E-05	1.0E-05	1.0E-05
LSFAILB	LIMIT SWITCHES FAIL	1.0E-04	1.0E-05	1.0E-05	1.0E-05	1.0E-05	1.0E-05	1.0E-05
MANTEDGE	EDG-EAST OUT FOR MAINT	1.0E-03	1.0E-03	1.0E-03	1.0E-03	1.0E-03	1.0E-03	1.0E-03
MANTEDGW	EDG-WEST OUT FOR MAINT	1.0E-03	1.0E-03	1.0E-03	1.0E-03	1.0E-03	1.0E-03	1.0E-03
OPDETA	OPER FAILS TO DET LOSS OF ISOL	1.0E-02	1.0E-02	1.0E-02	1.0E-02	1.0E-02	1.0E-02	1.0E-02
OPDETB	OP FLS TO DETECT LOSS OF ISOL	1.0E-02	1.0E-02	1.0E-02	1.0E-02	1.0E-02	1.0E-02	1.0E-02
RANREL	RANDOM CAUSED REL OF RADIOACTIVITY	1.0E-04	1.0E-04	1.0E-04	1.0E-04	1.0E-04	1.0E-04	1.0E-04
ROFFHAZ	OFFSITE TOXIC GAS HAZARD	1.0E-06	1.0E-06	1.0E-06	1.0E-06	1.0E-06	1.0E-06	1.0E-06
RONHAZ	ONSITE TOXIC GAS HAZARD	1.0E-06	1.0E-06	1.0E-06	1.0E-06	1.0E-06	1.0E-06	1.0E-06
STABILIT	ADVERSE STABILITY CLASS EXISTS	1.0E+00	1.0E+00	1.0E+00	1.0E+00	1.0E+00	1.0E+00	1.0E+00
SV1A1FC	SOL VLV 1A1 FAILS CLOSED	0.0E+00	1.0E-03	1.0E-03	1.0E-03	1.0E-03	1.0E-03	1.0E-03
SV1A1FO	SOLENOID VLV CB-1A1 FAILS OPEN/LEAKS	0.0E+00	1.0E-03	1.0E-03	1.0E-03	1.0E-03	1.0E-03	1.0E-03
SV1A2FC	SOL VLV 1A2 FAILS CLOSED	0.0E+00	1.0E-03	1.0E-03	1.0E-03	1.0E-03	1.0E-03	1.0E-03
SV1A2FO	SOLENOID VLV CB-1A2 FLS OPEN/LEAKS	0.0E+00	1.0E-03	1.0E-03	1.0E-03	1.0E-03	1.0E-03	1.0E-03
SV1B1FC	SOLENOID VLV 1B1 FLS CLOSED	0.0E+00	1.0E-03	1.0E-03	1.0E-03	1.0E-03	1.0E-03	1.0E-03
SV1B1FO	SOLENOID VLV CB-1B1 FLS OPEN/LEAKS	0.0E+00	1.0E-03	1.0E-03	1.0E-03	1.0E-03	1.0E-03	1.0E-03
SV1B2FC	SOLENOID VLV 1B2 FLS CLOSED	0.0E+00	1.0E-03	1.0E-03	1.0E-03	1.0E-03	1.0E-03	1.0E-03

TABLE B-2
CB-1 FAULT TREE BASIC EVENT DATA
(continued)

EVENT	DESCRIPTION	BASE CASE	CASE-2	CASE-3	CASE-4	CASE-5	CASE-6	CASE-7
SV1B2FO	SOLENOID VLV CB-1B2 FLS OPEN/LEAKS	0.0E+00	1.0E-03	1.0E-03	1.0E-03	1.0E-03	1.0E-03	1.0E-03
SVBETA	COMMON CAUSE FAILURE OF SOLENOIDS	0.0E+00	3.1E-05	3.1E-05	3.1E-05	3.1E-05	3.1E-05	3.1E-05
WINDDIR	ADVERSE WIND DIR EXISTS	3.3E-01	3.3E-01	3.3E-01	3.3E-01	3.3E-01	3.3E-01	3.3E-01

APPENDIX C

MINIMAL CUTSETS SUMMARY

APPENDIX C

List of Tables

TABLE C-1
MINIMAL CUTSETS - BASE CASE

********** TROJAN SAFETY ASSESSMENT - CR EMERG VENT SYST - BASE CASE - REV 0 **********

TOP EVENT PROBABILITY = .51784E-06

RANK	FUSSELL-VESELY IMPORTANCE					
1	.237E+00	CUT SET 62				
	MIN CUT SET PROBABILITY = .123E-06					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F5OCCURS	.290E-05	.000	CONSTANT	F'5 TORNADO IMPACTS PLANT	
	F5WDLOSP	.980E+00	.000	CONSTANT	F'5 TORNADO WND DMG OFFST PWR SUP	
	F5WNDEDG	.440E-01	.000	CONSTANT	F'5 TORN WND CAUSE EDG RM FAIL	
	FLBATDEP	.980E+00	.000	CONSTANT	FAIL TO REC PWR BEFORE BAT DEP	
2	.215E+00	CUT SET 68				
	MIN CUT SET PROBABILITY = .111E-06					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F4OCCURS	.790E-05	.000	CONSTANT	F'4 TORNADO IMPACTS PLANT	
	F4WDLOSP	.900E+00	.000	CONSTANT	F'4 TORNADO WND DMG OFFST PWR SUP	
	F4WNDEDG	.160E-01	.000	CONSTANT	F'4 TORN WND CAUSE EDG RM FAIL	
	FLBATDEP	.980E+00	.000	CONSTANT	FAIL TO REC PWR BEFORE BAT DEP	
3	.156E+00	CUT SET 3				
	MIN CUT SET PROBABILITY = .810E-07					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	DMBETA	.810E-03	.000	CONSTANT	COMMON CAUSE FAILURE OF DAMPERS	
	RANREL	.100E-03	.000	CONSTANT	RANDOM CAUSED REL OF RADIOACTIVITY	
4	.145E+00	CUT SET 64				
	MIN CUT SET PROBABILITY = .750E-07					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F5MSLOSP	.600E+00	.000	CONSTANT	F'5 TORNADO MIS DMG OFFST PWR SUP	
	F5OCCURS	.290E-05	.000	CONSTANT	F'5 TORNADO IMPACTS PLANT	
	F5WNDEDG	.440E-01	.000	CONSTANT	F'5 TORN WND CAUSE EDG RM FAIL	
	FLBATDEP	.980E+00	.000	CONSTANT	FAIL TO REC PWR BEFORE BAT DEP	

TABLE C-1
MINIMAL CUTSETS - BASE CASE

********** TROJAN SAFETY ASSESSMENT - CR EMERG VENT SYST - BASE CASE - REV 0 **********

RANK	FUSSELL-VESELY IMPORTANCE					
5	.720E-01	CUT SET 74				
	MIN CUT SET PROBABILITY = .373E-07					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F3OCCURS	.290E-04	.000	CONSTANT	F'3 TORNADO IMPACTS PLANT	
	F3WDLOSP	.570E+00	.000	CONSTANT	F'3 TORNADO WND DMG OFFST PWR SUP	
	F3WNDEDG	.230E-02	.000	CONSTANT	F'3 TORN WND CAUSE EDG RM FAIL	
	FLBATDEP	.980E+00	.000	CONSTANT	FAIL TO REC PWR BEFORE BAT DEP	
6	.598E-01	CUT SET 70				
	MIN CUT SET PROBABILITY = .310E-07					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F4MSLOSP	.250E+00	.000	CONSTANT	F'4 TORNADO MIS DMG OFFST PWR SUP	
	F4OCCURS	.790E-05	.000	CONSTANT	F'4 TORNADO IMPACTS PLANT	
	F4WNDEDG	.160E-01	.000	CONSTANT	F'4 TORN WND CAUSE EDG RM FAIL	
	FLBATDEP	.980E+00	.000	CONSTANT	FAIL TO REC PWR BEFORE BAT DEP	
7	.505E-01	CUT SET 76				
	MIN CUT SET PROBABILITY = .261E-07					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F3MSLOSP	.400E+00	.000	CONSTANT	F'3 TORNADO MIS DMG OFFST PWR SUP	
	F3OCCURS	.290E-04	.000	CONSTANT	F'3 TORNADO IMPACTS PLANT	
	F3WNDEDG	.230E-02	.000	CONSTANT	F'3 TORN WND CAUSE EDG RM FAIL	
	FLBATDEP	.980E+00	.000	CONSTANT	FAIL TO REC PWR BEFORE BAT DEP	
8	.111E-01	CUT SET 63				
	MIN CUT SET PROBABILITY = .575E-08					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F5OCCURS	.290E-05	.000	CONSTANT	F'5 TORNADO IMPACTS PLANT	
	F5WDLOSP	.980E+00	.000	CONSTANT	F'5 TORNADO WND DMG OFFST PWR SUP	
	F5WNDAFW	.460E-01	.000	CONSTANT	F'5 TORN WND FAIL AFW PMP BLDG	
	F5WNDEDG	.440E-01	.000	CONSTANT	F'5 TORN WND CAUSE EDG RM FAIL	

TABLE C-1
MINIMAL CUTSETS - BASE CASE

********** TROJAN SAFETY ASSESSMENT - CR EMERG VENT SYST - BASE CASE - REV 0 **********

RANK	FUSSELL-VESELY IMPORTANCE					
9	.680E-02	CUT SET 65				
	MIN CUT SET PROBABILITY = .352E-08					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F5MSLOSP	.600E+00	.000	CONSTANT	F'5 TORNADO MIS DMG OFFST PWR SUP	
	F5OCCURS	.290E-05	.000	CONSTANT	F'5 TORNADO IMPACTS PLANT	
	F5WNDAFW	.460E-01	.000	CONSTANT	F'5 TORN WND FAIL AFW PMP BLDG	
	F5WNDEDG	.440E-01	.000	CONSTANT	F'5 TORN WND CAUSE EDG RM FAIL	
10	.521E-02	CUT SET 22				
	MIN CUT SET PROBABILITY = .270E-08					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	BFANRUN	.270E-02	.000	CONSTANT	TRAIN B FAN FLS TO RUN	
	DM1A1FC	.100E-01	.000	CONSTANT	DAMPER 1A1 FAILS CLOSED	
	RANREL	.100E-03	.000	CONSTANT	RANDOM CAUSED REL OF RADIOACTIVITY	
10	.521E-02	CUT SET 29				
	MIN CUT SET PROBABILITY = .270E-08					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	AFANRUN	.270E-02	.000	CONSTANT	TRAIN A FAN FLS TO RUN	
	DM1B1FC	.100E-01	.000	CONSTANT	DAMPER 1B1 FLS CLOSED	
	RANREL	.100E-03	.000	CONSTANT	RANDOM CAUSED REL OF RADIOACTIVITY	
11	.362E-02	CUT SET 66				
	MIN CUT SET PROBABILITY = .188E-08					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F5MISCST	.150E-01	.000	CONSTANT	F'5 TORN MIS CAUS CST TO FAIL	
	F5OCCURS	.290E-05	.000	CONSTANT	F'5 TORNADO IMPACTS PLANT	
	F5WDLOSP	.980E+00	.000	CONSTANT	F'5 TORNADO WND DMG OFFST PWR SUP	
	F5WNDEDG	.440E-01	.000	CONSTANT	F'5 TORN WND CAUSE EDG RM FAIL	

TABLE C-1
MINIMAL CUTSETS - BASE CASE

RANK	FUSSELL-VESELY IMPORTANCE					
12	.351E-02	CUT SET 69				
	MIN CUT SET PROBABILITY = .182E-08					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F4OCCURS	.790E-05	.000	CONSTANT	F'4 TORNADO IMPACTS PLANT	
	F4WDLOSP	.900E+00	.000	CONSTANT	F'4 TORNADO WND DMG OFFST PWR SUP	
	F4WNDAFW	.160E-01	.000	CONSTANT	F'4 TORN WND FAIL AFW PMP BLDG	
	F4WNDEDG	.160E-01	.000	CONSTANT	F'4 TORN WND CAUSE EDG RM FAIL	
13	.222E-02	CUT SET 67				
	MIN CUT SET PROBABILITY = .115E-08					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F5MISCST	.150E-01	.000	CONSTANT	F'5 TORN MIS CAUS CST TO FAIL	
	F5MSLO3P	.600E+00	.000	CONSTANT	F'5 TORNADO MIS DMG OFFST PWR SUP	
	F5OCCURS	.290E-05	.000	CONSTANT	F'5 TORNADO IMPACTS PLANT	
	F5WNDEDG	.440E-01	.000	CONSTANT	F'5 TORN WND CAUSE EDG RM FAIL	
14	.193E-02	CUT SET 23				
	MIN CUT SET PROBABILITY = .100E-08					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	AMANT	.100E-02	.000	CONSTANT	TRAIN A OUT OF SVC FOR MAINT	
	DM1B1FC	.100E-01	.000	CONSTANT	DAMPER 1B1 FLS CLOSED	
	RANREL	.100E-03	.000	CONSTANT	RANDOM CAUSED REL OF RADIOACTIVITY	
14	.193E-02	CUT SET 20				
	MIN CUT SET PROBABILITY = .100E-08					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	BMANT	.100E-02	.000	CONSTANT	TRAIN B OUT OF SVC FOR MAINT	
	DM1A1FC	.100E-01	.000	CONSTANT	DAMPER 1A1 FAILS CLOSED	
	RANREL	.100E-03	.000	CONSTANT	RANDOM CAUSED REL OF RADIOACTIVITY	

TABLE C-1
MINIMAL CUTSETS - BASE CASE

********** TROJAN SAFETY ASSESSMENT - CR EMERG VENT SYST - BASE CASE - REV 0 **********

RANK	FUSSELL-VESELY IMPORTANCE					
15	.174E-02	CUT SET 2				
	MIN CUT SET PROBABILITY = .900E-09					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	FANBETA	.900E-05	.000	CONSTANT	COMMON CAUSE FAILURE OF CB-1 FANS	
	RANREL	.100E-03	.000	CONSTANT	RANDOM CAUSED REL OF RADIOACTIVITY	
15	.174E-02	CUT SET 1				
	MIN CUT SET PROBABILITY = .900E-09					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	FANBETA	.900E-05	.000	CONSTANT	COMMON CAUSE FAILURE OF CB-1 FANS	
	RANREL	.100E-03	.000	CONSTANT	RANDOM CAUSED REL OF RADIOACTIVITY	
16	.146E-02	CUT SET 80				
	MIN CUT SET PROBABILITY = .757E-09					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F2OCCURS	.790E-04	.000	CONSTANT	F'2 TORNADO IMPACTS PLANT	
	F2WDLOSP	.100E+00	.000	CONSTANT	F'2 TORNADO WND DMG OFFST PWR SUP	
	F2WNDEDG	.700E-04	.000	CONSTANT	F'2 TORN WND CAUSE EDG RM FAIL	
	FLBATDEP	.930E+00	.000	CONSTANT	FAIL TO REC PWR BEFORE BAT DEP	
17	.143E-02	CUT SET 72				
	MIN CUT SET PROBABILITY = .739E-09					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F4MISCST	.650E-02	.000	CONSTANT	F'4 TORN MIS CAUS CST TO FAIL	
	F4OCCURS	.790E-05	.000	CONSTANT	F'4 TORNADO IMPACTS PLANT	
	F4WDLOSP	.900E+00	.000	CONSTANT	F'4 TORNADO WND DMG OFFST PWR SUP	
	F4WNDEDG	.160E-01	.000	CONSTANT	F'4 TORN WND CAUSE EDG RM FAIL	

TABLE C-1
MINIMAL CUTSETS - BASE CASE

********** TROJAN SAFETY ASSESSMENT - CR EMERG VENT SYST - BASE CASE - REV 0 **********

RANK	FUSSELL-VESELY IMPORTANCE					
18	.137E-02	CUT SET 82				
	MIN CUT SET PROBABILITY = .710E-09					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F2MSLOSP	.150E+00	.000	CONSTANT	F'2 TORNADO MIS DMG OFFST PWR SUP	
	F2OCCURS	.690E-04	.000	CONSTANT	F'2 TORNADO IMPACTS PLANT	
	F2WNDEDG	.700E-04	.000	CONSTANT	F'2 TORN WND CAUSE EDG RM FAIL	
	FLBATDEP	.980E+00	.000	CONSTANT	FAIL TO REC PWR BEFORE BAT DEP	
19	.105E-02	CUT SET 319				
	MIN CUT SET PROBABILITY = .545E-09					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	DM1B1FO	.100E-01	.000	CONSTANT	DAMPER CB-1B1 FAILS OPEN	
	F3CL2WND	.570E+00	.000	CONSTANT	F'3 INDUCED WIND FAIL OF CL2BLDG	
	F3OCCURS	.290E-04	.000	CONSTANT	F'3 TORNADO IMPACTS PLANT	
	OPDETB	.100E-01	.000	CONSTANT	OP FLS TO DETECT LOSS OF ISOL	
	STABILIT	.100E+01	.000	CONSTANT	ADVERSE STABILITY CLASS EXISTS	
	WINDDIR	.330E+00	.000	CONSTANT	ADVERSE WIND DIR EXISTS	
19	.105E-02	CUT SET 339				
	MIN CUT SET PROBABILITY = .545E-09					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	DM1A1FO	.100E-01	.000	CONSTANT	DAMPER CB-1A1 FAILS OPEN	
	F3CL2WND	.570E+00	.000	CONSTANT	F'3 INDUCED WIND FAIL OF CL2BLDG	
	F3OCCURS	.290E-04	.000	CONSTANT	F'3 TORNADO IMPACTS PLANT	
	OPDETA	.100E-01	.000	CONSTANT	OPER FAILS TO DET LOSS OF ISOL	
	STABILIT	.100E+01	.000	CONSTANT	ADVERSE STABILITY CLASS EXISTS	
	WINDDIR	.330E+00	.000	CONSTANT	ADVERSE WIND DIR EXISTS	

TABLE C-1
MINIMAL CUTSETS - BASE CASE

RANK	FUSSELL-VESELY IMPORTANCE				
20	.276E-03	CUT SET 71			
	MIN CUT SE. PROBABILITY = .506E-09				
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION
	F4MSLOSP	.250E+00	.000	CONSTANT	F'4 TORNADO MIS DMG OFFST PWR SUP
	F4OCCURS	.790E-05	.000	CONSTANT	F'4 TORNADO IMPACTS PLANT
	F4WNDAFW	.160E-01	.000	CONSTANT	F'4 TORN WND FAIL AFW PMP BLDG
	F4WNDEDG	.160E-01	.000	CONSTANT	F'4 TORN WND CAUSE EDG RM FAIL

TABLE C-2
MINIMAL CUTSETS - CASE 2

********** TROJAN SAFETY ASSESSEMNT - CR EMERG VENT SYST - CASE 2 - REV 0 **********

TOP EVENT PROBABILITY = .52723E-06

RANK	FUSSELL-VESELY IMPORTANCE					
1	.232E+00	CUT SET 86				
	MIN CUT SET PROBABILITY = .123E-06					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F5OCCURS	.290E-05	.000	CONSTANT	F'5 TORNADO IMPACTS PLANT	
	F5WDLOSP	.980E+00	.000	CONSTANT	F'5 TORNADO WND DMG OFFST PWR SUP	
	F5WNDEDG	.440E-01	.000	CONSTANT	F'5 TORN WND CAUSE EDG RM FAIL	
	FLBATDEP	.980E+00	.000	CONSTANT	FAIL TO REC PWR BEFORE BAT DEP	
2	.211E+00	CUT SET 92				
	MIN CUT SET PROBABILITY = .111E-06					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F4OCCURS	.790E-05	.000	CONSTANT	F'4 TORNADO IMPACTS PLANT	
	F4WDLOSP	.900E+00	.000	CONSTANT	F'4 TORNADO WND DMG OFFST PWR SUP	
	F4WNDEDG	.160E-01	.000	CONSTANT	F'4 TORN WND CAUSE EDG RM FAIL	
	FLBATDEP	.980E+00	.000	CONSTANT	FAIL TO REC PWR BEFORE BAT DEP	
3	.142E+00	CUT SET 88				
	MIN CUT SET PROBABILITY = .750E-07					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F5MSLOSP	.600E+00	.000	CONSTANT	F'5 TORNADO MIS DMG OFFST PWR SUP	
	F5OCCURS	.290E-05	.000	CONSTANT	F'5 TORNADO IMPACTS PLANT	
	F5WNDEDG	.440E-01	.000	CONSTANT	F'5 TORN WND CAUSE EDG RM FAIL	
	FLBATDEP	.980E+00	.000	CONSTANT	FAIL TO REC PWR BEFORE BAT DEP	

TABLE C-2
MINIMUM CUTSETS - CASE 2

********** TROJAN SAFETY ASSESSEMNT - CR EMERG VENT SYST - CASE 2 - REV 0 **********

RANK	FUSSELL-VESELY IMPORTANCE					
4	.707E-01	CUT SET 98				
	MIN CUT SET PROBABILITY = .373E-07					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F3OCCURS	.290E-04	.000	CONSTANT	F'3 TORNADO IMPACTS PLANT	
	F3WDLOSP	.570E+00	.000	CONSTANT	F'3 TORNADO WND DMG OFFST PWR SUP	
	F3WNDEDG	.230E-02	.000	CONSTANT	F'3 TORN WND CAUSE EDG RM FAIL	
	FLBATDEP	.980E+00	.000	CONSTANT	FAIL TO REC PWR BEFORE BAT DEP	
5	.694E-01	CUT SET 158				
	MIN CUT SET PROBABILITY = .366E-07					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F5CL2WND	.980E+00	.000	CONSTANT	F'5 INDUCED WIND FAIL OF CL2BLDG	
	F5OCCURS	.290E-05	.000	CONSTANT	F'5 TORNADO IMPACTS PLANT	
	F5PIPWND	.390E-01	.000	CONSTANT	F'5 WINDS FAIL DWNSTRM PIPING	
	STABILIT	.100E+01	.000	CONSTANT	ADVERSE STABILITY CLASS EXISTS	
	WINDDIR	.330E+00	.000	CONSTANT	ADVERSE WIND DIR EXISTS	
6	.587E-01	CUT SET 94				
	MIN CUT SET PROBABILITY = .310E-07					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F4MSLOSP	.250E+00	.000	CONSTANT	F'4 TORNADO MIS DMG OFFST PWR SUP	
	F4OCCURS	.790E-05	.000	CONSTANT	F'4 TORNADO IMPACTS PLANT	
	F4WNDEDG	.160E-01	.000	CONSTANT	F'4 TORN WND CAUSE EDG RM FAIL	
	FLBATDEP	.980E+00	.000	CONSTANT	FAIL TO REC PWR BEFORE BAT DEP	
7	.496E-01	CUT SET 100				
	MIN CUT SET PROBABILITY = .261E-07					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F3MSLOSP	.400E+00	.000	CONSTANT	F'3 TORNADO MIS DMG OFFST PWR SUP	
	F3OCCURS	.290E-04	.000	CONSTANT	F'3 TORNADO IMPACTS PLANT	
	F3WNDEDG	.230E-02	.000	CONSTANT	F'3 TORN WND CAUSE EDG RM FAIL	
	FLBATDEP	.980E+00	.000	CONSTANT	FAIL TO REC PWR BEFORE BAT DEP	

TABLE C-2
MINIMUM CUTSETS - CASE 2

********** TROJAN SAFETY ASSESSEMNT - CR EMERG VENT SYST - CASE 2 - REV 0 **********

RANK	FUSSELL-VESELY IMPORTANCE					
8	.474E-01	CUT SET 3				
	MIN CUT SET PROBABILITY = .250E-07					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	DMBETA	.250E-03	.000	CONSTANT	COMMON CAUSE FAILURE OF DAMPERS	
	RANREL	.100E-03	.000	CONSTANT	RANDOM CAUSED REL OF RADIOACTIVITY	
9	.196E-01	CUT SET 179				
	MIN CUT SET PROBABILITY = .103E-07					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F4CL2WND	.900E+00	.000	CONSTANT	F'4 INDUCED WIND FAIL OF CL2BLDG	
	F4OCCURS	.790E-05	.000	CONSTANT	F'4 TORNADO IMPACTS PLANT	
	F4PIPWND	.440E-02	.000	CONSTANT	F'4 WINDS FAIL DWNSTRM PIPING	
	STABILIT	.100E+01	.000	CONSTANT	ADVERSE STABILITY CLASS EXISTS	
	WINDDIR	.330E+00	.000	CONSTANT	ADVERSE WIND DIR EXISTS	
10	.109E-01	CUT SET 87				
	MIN CUT SET PROBABILITY = .575E-08					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F5OCCURS	.290E-05	.000	CONSTANT	F'5 TORNADO IMPACTS PLANT	
	F5WDLOSP	.980E+00	.000	CONSTANT	F'5 TORNADO WND DMG OFFST PWR SUP	
	F5WNDAFW	.460E-01	.000	CONSTANT	F'5 TORN WND FAIL AFW PMP BLDG	
	F5WNDEDG	.440E-01	.000	CONSTANT	F'5 TORN WND CAUSE EDG RM FAIL	
11	.668E-02	CUT SET 89				
	MIN CUT SET PROBABILITY = .352E-08					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F5MSLOSP	.600E+00	.000	CONSTANT	F'5 TORNADO MIS DMG OFFST PWR SUP	
	F5OCCURS	.290E-05	.000	CONSTANT	F'5 TORNADO IMPACTS PLANT	
	F5WNDAFW	.460E-01	.000	CONSTANT	F'5 TORN WND FAIL AFW PMP BLDG	
	F5WNDEDG	.440E-01	.000	CONSTANT	F'5 TORN WND CAUSE EDG RM FAIL	

TABLE C-2
MINIMUM CUTSETS - CASE 2

RANK	FUSSELL-VESELY IMPORTANCE					
12	.588E-02	CUT SET 4				
	MIN CUT SET PROBABILITY = .310E-08					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	RANREL	.100E-03	.000	CONSTANT	RANDOM CAUSED REL OF RADIOACTIVITY	
	SVBETA	.310E-04	.000	CONSTANT	COMMON CAUSE FAILURE OF SOLENOIDS	
13	.435E-02	CUT SET 204				
	MIN CUT SET PROBABILITY = .229E-08					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F3CL2WND	.570E+00	.000	CONSTANT	F'3 INDUCED WIND FAIL OF CL2BLDG	
	F3OCCURS	.290E-04	.000	CONSTANT	F'3 TORNADO IMPACTS PLANT	
	F3PIPMIS	.420E-03	.000	CONSTANT	F'3 MISSILES DAMAGE DWNSTRM PIPE	
	STABILIT	.100E+01	.000	CONSTANT	ADVERSE STABILITY CLASS EXISTS	
	WINDDIR	.330E+00	.000	CONSTANT	ADVERSE WIND DIR EXISTS	
14	.372E-02	CUT SET 154				
	MIN CUT SET PROBABILITY = .196E-08					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F5MISCB1	.100E+01	.000	CONSTANT	F'5 TORNADO MISS CAUSE FAIL CB1 INTAKE	
	F5MSRWST	.150E-01	.000	CONSTANT	F'5 MIS CAUSE FAIL OF RWST	
	F5OCCURS	.290E-05	.000	CONSTANT	F'5 TORNADO IMPACTS PLANT	
	F5WDLOSP	.980E+00	.000	CONSTANT	F'5 TORNADO WND DMG OFFST PWR SUP	
	F5WNDAFW	.460E-01	.000	CONSTANT	F'5 TORN WND FAIL AFW PMP BLDG	
15	.356E-02	CUT SET 90				
	MIN CUT SET PROBABILITY = .188E-08					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F5MISCST	.150E-01	.000	CONSTANT	F'5 TORN MIS CAUS CST TO FAIL	
	F5OCCURS	.290E-05	.000	CONSTANT	F'5 TORNADO IMPACTS PLANT	
	F5WDLOSP	.980E+00	.000	CONSTANT	F'5 TORNADO WND DMG OFFST PWR SUP	
	F5WNDEDG	.440E-01	.000	CONSTANT	F'5 TORN WND CAUSE EDG RM FAIL	

TABLE C-2
MINIMUM CUTSETS - CASE 2

RANK	FUSSELL-VESELY IMPORTANCE					
16	.345E-02	CUT SET 93				
	MIN CUT SET PROBABILITY = .182E-08					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F4OCCURS	.790E-05	.000	CONSTANT	F'4 TORNADO IMPACTS PLANT	
	F4WDLOSP	.900E+00	.000	CONSTANT	F'4 TORNADO WND DMG OFFST PWR SUP	
	F4WNDAFW	.160E-01	.000	CONSTANT	F'4 TORN WND FAIL AFW PMP BLDG	
	F4WNDEDG	.160E-01	.000	CONSTANT	F'4 TORN WND CAUSE EDG RM FAIL	
17	.314E-02	CUT SET 201				
	MIN CUT SET PROBABILITY = .165E-08					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F3MISCB1	.100E+01	.000	CONSTANT	F'3 TORNADO MISS CAUSE FAIL CB1 INTAKE	
	F3MISCST	.100E-01	.000	CONSTANT	F'3 TORN MIS CAUS CST TO FAIL	
	F3MSRWST	.100E-01	.000	CONSTANT	F'3 MIS CAUSE FAIL OF RWST	
	F3OCCURS	.290E-04	.000	CONSTANT	F'3 TORNADO IMPACTS PLANT	
	F3WDLOSP	.570E+00	.000	CONSTANT	F'3 TORNADO WND DMG OFFST PWR SUP	
18	.228E-02	CUT SET 155				
	MIN CUT SET PROBABILITY = .120E-08					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F5MISCB1	.100E+01	.000	CONSTANT	F'5 TORNADO MISS CAUSE FAIL CB1 INTAKE	
	F5MSLOSP	.600E+00	.000	CONSTANT	F'5 TORNADO MIS DMG OFFST PWR SUP	
	F5MSRWST	.150E-01	.000	CONSTANT	F'5 MIS CAUSE FAIL OF RWST	
	F5OCCURS	.290E-05	.000	CONSTANT	F'5 TORNADO IMPACTS PLANT	
	F5WNDAFW	.460E-01	.000	CONSTANT	F'5 TORN WND FAIL AFW PMP BLDG	
19	.220E-02	CUT SET 202				
	MIN CUT SET PROBABILITY = .116E-08					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F3MISCB1	.100E+01	.000	CONSTANT	F'3 TORNADO MISS CAUSE FAIL CB1 INTAKE	
	F3MISCST	.100E-01	.000	CONSTANT	F'3 TORN MIS CAUS CST TO FAIL	
	F3MSLOSP	.400E+00	.000	CONSTANT	F'3 TORNADO MIS DMG OFFST PWR SUP	
	F3MSRWST	.100E-01	.000	CONSTANT	F'3 MIS CAUSE FAIL OF RWST	
	F3OCCURS	.290E-04	.000	CONSTANT	F'3 TORNADO IMPACTS PLANT	

TABLE C-2
MINIMUM CUTSETS - CASE 2

********** TROJAN SAFETY ASSESSEMNT - CR EMERG VENT SYST - CASE 2 - REV 0 **********

RANK	FUSSELL-VESELY IMPORTANCE				
20	.218E-02	CUT SET 91			
	MIN CUT SET PROBABILITY = .115E-08				
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION
	F5MISCST	.150E-01	.000	CONSTANT	F'5 TORN MIS CAUS CST TO FAIL
	F5MSLOSP	.600E+00	.000	CONSTANT	F'5 TORNADO MIS DMG OFFST PWR SUP
	F5OCCURS	.290E-05	.000	CONSTANT	F'5 TORNADO IMPACTS PLANT
	F5WNDEDG	.440E-01	.000	CONSTANT	F'5 TORN WND CAUSE EDG PM FAIL

TABLE C-3
MINIMAL CUTSETS - CASE 3

********** TROJAN SAFETY ASSESSMENT - CR EMERG VENT SYST - CASE 3 - REV 0 **********

TOP EVENT PROBABILITY = .51784E-06

RANK	FUSSELL-VESELY IMPORTANCE					
1	.237E+00	CUT SET 86				
	MIN CUT SET PROBABILITY = .123E-06					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F5OCCURS	.290E-05	.000	CONSTANT	F'5 TORNADO IMPACTS PLANT	
	F5WDLOSP	.980E+00	.000	CONSTANT	F'5 TORNADO WND DMG OFFST PWR SUP	
	F5WNDEDG	.440E-01	.000	CONSTANT	F'5 TORN WND CAUSE EDG RM FAIL	
	FLBATDEP	.980E+00	.000	CONSTANT	FAIL TO REC PWR BEFORE BAT DEP	
2	.215E+00	CUT SET 92				
	MIN CUT SET PROBABILITY = .111E-06					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F4OCCURS	.790E-05	.000	CONSTANT	F'4 TORNADO IMPACTS PLANT	
	F4WDLOSP	.900E+00	.000	CONSTANT	F'4 TORNADO WND DMG OFFST PWR SUP	
	F4WNDEDG	.160E-01	.000	CONSTANT	F'4 TORN WND CAUSE EDG RM FAIL	
	FLBATDEP	.980E+00	.000	CONSTANT	FAIL TO REC PWR BEFORE BAT DEP	
3	.145E+00	CUT SET 88				
	MIN CUT SET PROBABILITY = .750E-07					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F5MSLOSP	.600E+00	.000	CONSTANT	F'5 TORNADO MIS DMG OFFST PWR SUP	
	F5OCCURS	.290E-05	.000	CONSTANT	F'5 TORNADO IMPACTS PLANT	
	F5WNDEDG	.440E-01	.000	CONSTANT	F'5 TORN WND CAUSE EDG RM FAIL	
	FLBATDEP	.980E+00	.000	CONSTANT	FAIL TO REC PWR BEFORE BAT DEP	
4	.720E-01	CUT SET 98				
	MIN CUT SET PROBABILITY = .373E-07					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F3OCCURS	.290E-04	.000	CONSTANT	F'3 TORNADO IMPACTS PLANT	
	F3WDLOSP	.570E+00	.000	CONSTANT	F'3 TORNADO WND DMG OFFST PWR SUP	
	F3WNDEDG	.230E-02	.000	CONSTANT	F'3 TORN WND CAUSE EDG RM FAIL	
	FLBATDEP	.980E+00	.000	CONSTANT	FAIL TO REC PWR BEFORE BAT DEP	

TABLE C-3
MINIMAL CUTSETS - CASE 3

********** TROJAN SAFETY ASSESSMENT - CR EMERG VENT SYST - CASE 3 - REV 0 **********

RANK	FUSSELL-VESELY IMPORTANCE					
5	.706E-01	CUT SET 158				
	MIN CUT SET PROBABILITY = .366E-07					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F5CL2WND	.980E+00	.000	CONSTANT	F'5 INDUCED WIND FAIL OF CL2BLDG	
	F5OCCURS	.290E-05	.000	CONSTANT	F'5 TORNADO IMPACTS PLANT	
	F5PIPWND	.390E-01	.000	CONSTANT	F'5 WINDS FAIL DWNSTRM PIPING	
	STABILIT	.100E+01	.000	CONSTANT	ADVERSE STABILITY CLASS EXISTS	
	WINDDIR	.330E+00	.000	CONSTANT	ADVERSE WIND DIR EXISTS	
6	.598E-01	CUT SET 94				
	MIN CUT SET PROBABILITY = .310E-07					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F4MSLOSP	.250E+00	.000	CONSTANT	F'4 TORNADO MIS DMG OFFST PWR SUP	
	F4OCCURS	.790E-05	.000	CONSTANT	F'4 TORNADO IMPACTS PLANT	
	F4WNDEDG	.160E-01	.000	CONSTANT	F'4 TORN WND CAUSE EDG RM FAIL	
	FLBATDEP	.980E+00	.000	CONSTANT	FAIL TO REC PWR BEFORE BAT DEP	
7	.505E-01	CUT SET 100				
	MIN CUT SET PROBABILITY = .261E-07					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F3MSLOSP	.400E+00	.000	CONSTANT	F'3 TORNADO MIS DMG OFFST PWR SUP	
	F3OCCURS	.290E-04	.000	CONSTANT	F'3 TORNADO IMPACTS PLANT	
	F3WNDEDG	.230E-02	.000	CONSTANT	F'3 TORN WND CAUSE EDG RM FAIL	
	FLBATDEP	.980E+00	.000	CONSTANT	FAIL TO REC PWR BEFORE BAT DEP	
8	.483E-01	CUT SET 3				
	MIN CUT SET PROBABILITY = .250E-07					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	DMBETA	.250E-03	.000	CONSTANT	COMMON CAUSE FAILURE OF DAMPERS	
	RANREL	.100E-03	.000	CONSTANT	RANDOM CAUSED REL OF RADIOACTIVITY	

TABLE C-3
MINIMAL CUTSETS - CASE 3

RANK	FUSSELL-VESELY IMPORTANCE					
9	.199E-01	CUT SET 179				
	MIN CUT SET PROBABILITY = .103E-07					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F4CL2WND	.900E+00	.000	CONSTANT	F'4 INDUCED WIND FAIL OF CL2BLDG	
	F4OCCURS	.790E-05	.000	CONSTANT	F'4 TORNADO IMPACTS PLANT	
	F4PIPWND	.440E-02	.000	CONSTANT	F'4 WINDS FAIL DWNSTRM PIPING	
	STABILIT	.100E+01	.000	CONSTANT	ADVERSE STABILITY CLASS EXISTS	
	WINDDIR	.330E+00	.000	CONSTANT	ADVERSE WIND DIR EXISTS	
10	.111E-01	CUT SET 87				
	MIN CUT SET PROBABILITY = .575E-08					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F5OCCURS	.290E-05	.000	CONSTANT	F'5 TORNADO IMPACTS PLANT	
	F5WDLOSP	.980E+00	.000	CONSTANT	F'5 TORNADO WND DMG OFFST PWR SUP	
	F5WNDAFW	.460E-01	.000	CONSTANT	F'5 TORN WND FAIL AFW PMP BLDG	
	F5WNDEDG	.440E-01	.000	CONSTANT	F'5 TORN WND CAUSE EDG RM FAIL	
11	.680E-02	CUT SET 89				
	MIN CUT SET PROBABILITY = .352E-08					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F5MSLOSP	.600E+00	.000	CONSTANT	F'5 TORNADO MIS DMG OFFST PWR SUP	
	F5OCCURS	.290E-05	.000	CONSTANT	F'5 TORNADO IMPACTS PLANT	
	F5WNDAFW	.460E-01	.000	CONSTANT	F'5 TORN WND FAIL AFW PMP BLDG	
	F5WNDEDG	.440E-01	.000	CONSTANT	F'5 TORN WND CAUSE EDG RM FAIL	
12	.599E-02	CUT SET 4				
	MIN CUT SET PROBABILITY = .310E-08					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	RANREL	.100E-03	.000	CONSTANT	RANDOM CAUSED REL OF RADIOACTIVITY	
	SVBETA	.310E-04	.000	CONSTANT	COMMON CAUSE FAILURE OF SOLENOIDS	

TABLE C-3
MINIMAL CUTSETS - CASE 3

********** TROJAN SAFETY ASSESSMENT - CR ENERG VENT SYST - CASE 3 - REV 0 **********

RANK	FUSSELL-VESELY IMPORTANCE					
13	.442E-02	CUT SET 204				
	MIN CUT SET PROBABILITY = .229E-08					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F3CL2WND	.570E+00	.000	CONSTANT	F*3 INDUCED WIND FAIL OF CL2BLDG	
	F3OCCURS	.290E-04	.000	CONSTANT	F*3 TORNADO IMPACTS PLANT	
	F3PIPMIS	.420E-03	.000	CONSTANT	F*3 MISSILES DAMAGE DWNSTRM PIPE	
	STABILIT	.100E+01	.000	CONSTANT	ADVERSE STABILITY CLASS EXISTS	
	WINDDIR	.330E+00	.000	CONSTANT	ADVERSE WIND DIR EXISTS	
14	.362E-02	CUT SET 90				
	MIN CUT SET PROBABILITY = .188E-08					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F5MISCST	.150E-01	.000	CONSTANT	F*5 TORN MIS CAUS CST TO FAIL	
	F5OCCURS	.290E-05	.000	CONSTANT	F*5 TORNADO IMPACTS PLANT	
	F5WDLOSP	.980E+00	.000	CONSTANT	F*5 TORNADO WND DMG OFFST PWR SUP	
	F5WNDEDG	.440E-01	.000	CONSTANT	F*5 TORN WND CAUSE EDG RM FAIL	
15	.351E-02	CUT SET 93				
	MIN CUT SET PROBABILITY = .182E-08					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F4OCCURS	.290E-05	.000	CONSTANT	F*4 TORNADO IMPACTS PLANT	
	F4WDLOSP	.900E+00	.000	CONSTANT	F*4 TORNADO WND DMG OFFST PWR SUP	
	F4WNDAFW	.160E-01	.000	CONSTANT	F*4 TORN WND FAIL AFW PMP BLDG	
	F4WNDEDG	.160E-01	.000	CONSTANT	F*4 TORN WND CAUSE EDG RM FAIL	
16	.222E-02	CUT SET 91				
	MIN CUT SET PROBABILITY = .115E-08					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F5MISCST	.150E-01	.000	CONSTANT	F*5 TORN MIS CAUS CST TO FAIL	
	F5MSLOSP	.600E+00	.000	CONSTANT	F*5 TORNADO MIS DMG OFFST PWR SUP	
	F5OCCURS	.290E-05	.000	CONSTANT	F*5 TORNADO IMPACTS PLANT	
	F5WNDEDG	.440E-01	.000	CONSTANT	F*5 TORN WND CAUSE EDG RM FAIL	

TABLE C-3
MINIMAL CUTSETS - CASE 3

********** TROJAN SAFETY ASSESSMENT - CR EMERG VENT SYST - CASE 3 - REV 0 **********

RANK	FUSSELL-VESELY IMPORTANCE					
17	.174E-02	CUT SET 1				
	MIN CUT SET PROBABILITY = .900E-09					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	FANBETA	.900E-05	.000	CONSTANT	COMMON CAUSE FAILURE OF CB-1 FANS	
	RANREL	.100E-03	.000	CONSTANT	RANDOM CAUSED REL OF RADIOACTIVITY	
17	.174E-02	CUT SET 23				
	MIN CUT SET PROBABILITY = .900E-09					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	DM1A2FC	.300E-02	.000	CONSTANT	DAMPER 1A2 FAILS CLOSED	
	DM1B1FC	.300E-02	.000	CONSTANT	DAMPER 1B1 FLS CLOSED	
	RANREL	.100E-03	.000	CONSTANT	RANDOM CAUSED REL OF RADIOACTIVITY	
17	.174E-02	CUT SET 2				
	MIN CUT SET PROBABILITY = .900E-09					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	FANBETA	.900E-05	.000	CONSTANT	COMMON CAUSE FAILURE OF CB-1 FANS	
	RANREL	.100E-03	.000	CONSTANT	RANDOM CAUSED REL OF RADIOACTIVITY	
17	.174E-02	CUT SET 22				
	MIN CUT SET PROBABILITY = .900E-09					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	DM1A2FC	.300E-02	.000	CONSTANT	DAMPER 1A2 FAILS CLOSED	
	DM1B2FC	.300E-02	.000	CONSTANT	DAMPER 1B2 FLS CLOSED	
	RANREL	.100E-03	.000	CONSTANT	RANDOM CAUSED REL OF RADIOACTIVITY	

TABLE C-3
MINIMAL CUTSETS - CASE 3

********** TROJAN SAFETY ASSESSMENT - CR EMERG VENT SYST - CASE 3 - REV 0 **********

RANK	FUSSELL-VESELY IMPORTANCE					
17	.174E-02	CUT SET 26				
	MIN CUT SET PROBABILITY = .900E-09					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	DM1A1FC	.300E-02	.000	CONSTANT	DAMPER 1A1 FAILS CLOSED	
	DM1B2FC	.300E-02	.000	CONSTANT	DAMPER 1B2 FLS CLOSED	
	RANREL	.100E-03	.000	CONSTANT	RANDOM CAUSED REL OF RADIOACTIVITY	
18	.156E-02	CUT SET 37				
	MIN CUT SET PROBABILITY = .810E-09					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	BFANRUN	.270E-02	.000	CONSTANT	TRAIN B FAN FLS TO RUN	
	DM1A2FC	.300E-02	.000	CONSTANT	DAMPER 1A2 FAILS CLOSED	
	RANREL	.100E-03	.000	CONSTANT	RANDOM CAUSED REL OF RADIOACTIVITY	
18	.156E-02	CUT SET 38				
	MIN CUT SET PROBABILITY = .810E-09					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	BFANRUN	.270E-02	.000	CONSTANT	TRAIN B FAN FLS TO RUN	
	DM1A1FC	.300E-02	.000	CONSTANT	DAMPER 1A1 FAILS CLOSED	
	RANREL	.100E-03	.000	CONSTANT	RANDOM CAUSED REL OF RADIOACTIVITY	
18	.156E-02	CUT SET 54				
	MIN CUT SET PROBABILITY = .810E-09					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	AFANRUN	.270E-02	.000	CONSTANT	TRAIN A FAN FLS TO RUN	
	DM1B1FC	.300E-02	.000	CONSTANT	DAMPER 1B1 FLS CLOSED	
	RANREL	.100E-03	.000	CONSTANT	RANDOM CAUSED REL OF RADIOACTIVITY	

TABLE C-3
MINIMAL CUTSETS - CASE 3

********** TROJAN SAFETY ASSESSMENT - CR EMERG VENT SYST - CASE 3 - REV 0 **********

RANK	FUSSELL-VESELY IMPORTANCE					
18	.156E-02	CUT SET 53				
	MIN CUT SET PROBABILITY = .810E-09					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	AFANRUN	.270E-02	.000	CONSTANT	TRAIN A FAN FLS TO RUN	
	DM1B2FC	.300E-02	.000	CONSTANT	DAMPER 1B2 FLS CLOSED	
	RANREL	.100E-03	.000	CONSTANT	RANDOM CAUSED REL OF RADIOACTIVITY	
19	.146E-02	CUT SET 104				
	MIN CUT SET PROBABILITY = .757E-09					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F2OCCURS	.690E-04	.000	CONSTANT	F'2 TORNADO IMPACTS PLANT	
	F2WDLOSP	.160E+00	.000	CONSTANT	F'2 TORNADO WND DMG OFFST PWR SUP	
	F2WNDEDG	.700E-04	.000	CONSTANT	F'2 TORN WND CAUSE EDG RM FAIL	
	FL8ATDEP	.980E+00	.000	CONSTANT	FAIL TO REC PWR BEFORE BAT DEP	
20	.143E-02	CUT SET 96				
	MIN CUT SET PROBABILITY = .739E-09					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F4MISCST	.650E-02	.000	CONSTANT	F'4 TORN MIS CAUS CST TO FAIL	
	F4OCCURS	.790E-05	.000	CONSTANT	F'4 TORNADO IMPACTS PLANT	
	F4WDLOSP	.900E+00	.000	CONSTANT	F'4 TORNADO WND DMG OFFST PWR SUP	
	F4WNDEDG	.160E-01	.000	CONSTANT	F'4 TORN WND CAUSE EDG RM FAIL	

TABLE C-4
MINIMAL CUTSETS - CASE 4

********** TROJAN SAFETY ASSESSMENT - CR EMERG VENT SYST - CASE 4 - REV 0 **********

TOP EVENT PROBABILITY = .51366E-06

RANK	FUSSELL-VESELY IMPORTANCE					
1	.239E+00	CUT SET 86				
	MIN CUT SET PROBABILITY = .123E-06					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F5OCCURS	.290E-05	.000	CONSTANT	F'5 TORNADO IMPACTS PLANT	
	F5WDLOSP	.980E+00	.000	CONSTANT	F'5 TORNADO WND DMG OFFST PWR SUP	
	F5WNDEDG	.440E-01	.000	CONSTANT	F'5 TORN WND CAUSE EDG RM FAIL	
	FLBATDEP	.980E+00	.000	CONSTANT	FAIL TO REC PWR BEFORE BAT DEP	
2	.217E+00	CUT SET 92				
	MIN CUT SET PROBABILITY = .111E-06					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F4OCCURS	.790E-05	.000	CONSTANT	F'4 TORNADO IMPACTS PLANT	
	F4WDLOSP	.900E+00	.000	CONSTANT	F'4 TORNADO WND DMG OFFST PWR SUP	
	F4WNDEDG	.160E-01	.000	CONSTANT	F'4 TORN WND CAUSE EDG RM FAIL	
	FLBATDEP	.980E+00	.000	CONSTANT	FAIL TO REC PWR BEFORE BAT DEP	
3	.146E+00	CUT SET 88				
	MIN CUT SET PROBABILITY = .750E-07					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F5MSLOSP	.600E+00	.000	CONSTANT	F'5 TORNADO MIS DMG OFFST PWR SUP	
	F5OCCURS	.290E-05	.000	CONSTANT	F'5 TORNADO IMPACTS PLANT	
	F5WNDEDG	.440E-01	.000	CONSTANT	F'5 TORN WND CAUSE EDG RM FAIL	
	FLBATDEP	.980E+00	.000	CONSTANT	FAIL TO REC PWR BEFORE BAT DEP	
4	.725E-01	CUT SET 98				
	MIN CUT SET PROBABILITY = .373E-07					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F3OCCURS	.290E-04	.000	CONSTANT	F'3 TORNADO IMPACTS PLANT	
	F3WDLOSP	.570E+00	.000	CONSTANT	F'3 TORNADO WND DMG OFFST PWR SUP	
	F3WNDEDG	.230E-02	.000	CONSTANT	F'3 TORN WND CAUSE EDG RM FAIL	
	FLBATDEP	.980E+00	.000	CONSTANT	FAIL TO REC PWR BEFORE BAT DEP	

TABLE C-4
MINIMAL CUTSETS - CASE 4

********** TROJAN SAFETY ASSESSMENT - CR EMERG VENT SYST - CASE 4 - REV 0 **********

RANK	FUSSELL-VESELY IMPORTANCE					
5	.712E-01	CUT SET 158				
	MIN CUT SET PROBABILITY = .366E-07					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F5CL2WND	.980E+00	.000	CONSTANT	F'5 INDUCED WIND FAIL OF CL2BLDG	
	F5OCCURS	.290E-05	.000	CONSTANT	F'5 TORNADO IMPACTS PLANT	
	F5PIPWND	.390E-01	.000	CONSTANT	F'5 WINDS FAIL DWNSTRM PIPING	
	STABILIT	.100E+01	.000	CONSTANT	ADVERSE STABILITY CLASS EXISTS	
	WINDDIR	.330E+00	.000	CONSTANT	ADVERSE WIND DIR EXISTS	
6	.603E-01	CUT SET 94				
	MIN CUT SET PROBABILITY = .310E-07					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F4MSLOSP	.250E+00	.000	CONSTANT	F'4 TORNADO MIS DMG OFFST PWR SUP	
	F4OCCURS	.790E-05	.000	CONSTANT	F'4 TORNADO IMPACTS PLANT	
	F4WNDEDG	.160E-01	.000	CONSTANT	F'4 TORN WND CAUSE EDG RM FAIL	
	FLBATDEP	.980E+00	.000	CONSTANT	FAIL TO REC PWR BEFORE BAT DEP	
7	.509E-01	CUT SET 100				
	MIN CUT SET PROBABILITY = .261E-07					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F3MSLOSP	.400E+00	.000	CONSTANT	F'3 TORNADO MIS DMG OFFST PWR SUP	
	F3OCCURS	.290E-04	.000	CONSTANT	F'3 TORNADO IMPACTS PLANT	
	F3WNDEDG	.230E-02	.000	CONSTANT	F'3 TORN WND CAUSE EDG RM FAIL	
	FLBATDEP	.980E+00	.000	CONSTANT	FAIL TO REC PWR BEFORE BAT DEP	
8	.487E-01	CUT SET 3				
	MIN CUT SET PROBABILITY = .250E-07					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	DMBETA	.250E-03	.000	CONSTANT	COMMON CAUSE FAILURE OF DAMPERS	
	RANREL	.100E-03	.000	CONSTANT	RANDOM CAUSED REL OF RADIOACTIVITY	

TABLE C-4
MINIMAL CUTSETS - CASE 4

********** TROJAN SAFETY ASSESSMENT - CR EMERG VENT SYST - CASE 4 - REV 0 **********

RANK	FUSSELL-VESELY IMPORTANCE					
9	.201E-01	CUT SET 179				
	MIN CUT SET PROBABILITY = .103E-07					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F4CL2WND	.900E+00	.000	CONSTANT	F'4 INDUCED WIND FAIL OF CL2BLDG	
	F4OCCURS	.790E-05	.000	CONSTANT	F'4 TORNADO IMPACTS PLANT	
	F4PIPWND	.440E-02	.000	CONSTANT	F'4 WINDS FAIL DWNSTRM PIPING	
	STABILIT	.100E+01	.000	CONSTANT	ADVERSE STABILITY CLASS EXISTS	
	WINDDIR	330E+00	.000	CONSTANT	ADVERSE WIND DIR EXISTS	
10	.112E-01	CUT SET 87				
	MIN CUT SET PROBABILITY = .575E-08					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F5OCCURS	.290E-05	.000	CONSTANT	F'5 TORNADO IMPACTS PLANT	
	F5WDLOSP	.980E+00	.000	CONSTANT	F'5 TORNADO WND DMG OFFST PWR SUP	
	F5WNDAFW	.460E-01	.000	CONSTANT	F'5 TORN WND FAIL AFW PMP BLDG	
	F5WNDEDG	.440E-01	.000	CONSTANT	F'5 TORN WND CAUSE EDG RM FAIL	
11	.686E-02	CUT SET 89				
	MIN CUT SET PROBABILITY = .352E-08					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F5MSLOSP	.600E+00	.000	CONSTANT	F'5 TORNADO MIS DMG OFFST PWR SUP	
	F5OCCURS	.290E-05	.000	CONSTANT	F'5 TORNADO IMPACTS PLANT	
	F5WNDAFW	.460E-01	.000	CONSTANT	F'5 TORN WND FAIL AFW PMP BLDG	
	F5WNDEDG	.440E-01	.000	CONSTANT	F'5 TORN WND CAUSE EDG RM FAIL	
12	.604E-02	CUT SET 4				
	MIN CUT SET PROBABILITY = .310E-08					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	RANREL	.100E-03	.000	CONSTANT	RANDOM CAUSED REL OF RADIOACTIVITY	
	SVBETA	.310E-04	.000	CONSTANT	COMMON CAUSE FAILURE OF SOLENOIDS	

TABLE C-4
MINIMAL CUTSETS - CASE 4

********** TROJAN SAFETY ASSESSMENT - CR EMERG VENT SYST - CASE 4 - REV 0 **********

RANK FUSSELL-VESELY IMPORTANCE

13 .355E-02 CUT SET 90

MIN CUT SET PROBABILITY = .188E-08

BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION
F5MISCST	.150E-01	.000	CONSTANT	F'5 TORN MIS CAUS CST TO FAIL
F5OCCURS	.290E-05	.000	CONSTANT	F'5 TORNADO IMPACTS PLANT
F5WDLOSP	.980E+00	.000	CONSTANT	F'5 TORNADO WND DMG OFFST PWR SUP
F5WNDEDG	.440E-01	.000	CONSTANT	F'5 TORN WND CAUSE EDG RM FAIL

14 .354E-02 CUT SET 93

MIN CUT SET PROBABILITY = .182E-08

BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION
F4OCCURS	.790E-05	.000	CONSTANT	F'4 TORNADO IMPACTS PLANT
F4WDLOSP	.900E+00	.000	CONSTANT	F'4 TORNADO WND DMG OFFST PWR SUP
F4WNDAFW	.160E-01	.000	CONSTANT	F'4 TORN WND FAIL AFW PMP BLDG
F4WNDEDG	.160E-01	.000	CONSTANT	F'4 TORN WND CAUSE EDG RM FAIL

15 .224E-02 CUT SET 91

MIN CUT SET PROBABILITY = .115E-08

BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION
F5MISCST	.150E-01	.000	CONSTANT	F'5 TORN M'S CAUS CST TO FAIL
F5MSLOSP	.600E+00	.000	CONSTANT	F'5 TORNADO MIS DMG OFFST PWR SUP
F5OCCURS	.290E-05	.000	CONSTANT	F'5 TORNADO IMPACTS PLANT
F5WNDEDG	.440E-01	.000	CONSTANT	F'5 TORN WND CAUSE EDG RM FAIL

16 .175E-02 CUT SET 2

MIN CUT SET PROBABILITY = .900E-09

BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION
FANBETA	.900E-05	.000	CONSTANT	COMMON CAUSE FAILURE OF CB-1 FANS
RANREL	.100E-03	.000	CONSTANT	RANDOM CAUSED REL OF RADIOACTIVITY

TABLE C-4
MINIMAL CUTSETS - CASE 4

RANK	FUSSELL-VESELY IMPORTANCE					
16	.175E-02	CUT SET 1				
	MIN CUT SET PROBABILITY = .900E-09					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	BANBETA	.500E-05	.000	CONSTANT	COMMON CAUSE FAILURE OF CB-1 FANS	
	RANREL	.100E-03	.000	CONSTANT	RANDOM CAUSED REL OF RADIOACTIVITY	
16	.175E-02	CUT SET 23				
	MIN CUT SET PROBABILITY = .900E-09					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	DM1A2FC	.300E-02	.000	CONSTANT	DAMPER 1A2 FAILS CLOSED	
	DM1B1FC	.300E-02	.000	CONSTANT	DAMPER 1B1 FLS CLOSED	
	RANREL	.100E-03	.000	CONSTANT	RANDOM CAUSED REL OF RADIOACTIVITY	
16	.175E-02	CUT SET 25				
	MIN CUT SET PROBABILITY = .900E-09					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	DM1A1FC	.300E-02	.000	CONSTANT	DAMPER 1A1 FAILS CLOSED	
	DM1B2FC	.300E-02	.000	CONSTANT	DAMPER 1B2 FLS CLOSED	
	RANREL	.100E-03	.000	CONSTANT	RANDOM CAUSED REL OF RADIOACTIVITY	
16	.175E-02	CUT SET 22				
	MIN CUT SET PROBABILITY = .900E-09					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	DM1A2FC	.300E-02	.000	CONSTANT	DAMPER 1A2 FAILS CLOSED	
	DM1B2FC	.300E-02	.000	CONSTANT	DAMPER 1B2 FLS CLOSED	
	RANREL	.100E-03	.000	CONSTANT	RANDOM CAUSED REL OF RADIOACTIVITY	

TABLE C-4
MINIMAL CUTSETS - CASE 4

********** TROJAN SAFETY ASSESSMENT - CR EMERG VENT SYST - CASE 4 - REV 0 **********

RANK	FUSSELL-VESELY IMPORTANCE					
17	.158E-02	CUT SET 37				
	MIN CUT SET PROBABILITY = .810E-09					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	BFANRUN	.270E-02	.000	CONSTANT	TRAIN B FAN FLS TO RUN	
	DM1A2FC	.300E-02	.000	CONSTANT	DAMPER 1A2 FAILS CLOSED	
	RANREL	.100E-03	.000	CONSTANT	RANDOM CAUSED REL OF RADIOACTIVITY	
17	.158E-02	CUT SET 38				
	MIN CUT SET PROBABILITY = .810E-09					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	BFANRUN	.270E-02	.000	CONSTANT	TRAIN B FAN FLS TO RUN	
	DM1A1FC	.300E-02	.000	CONSTANT	DAMPER 1A1 FAILS CLOSED	
	RANREL	.100E-03	.000	CONSTANT	RANDOM CAUSED REL OF RADIOACTIVITY	
17	.158E-02	CUT SET 54				
	MIN CUT SET PROBABILITY = .810E-09					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	AFANRUN	.270E-02	.000	CONSTANT	TRAIN A FAN FLS TO RUN	
	DM1B1FC	.300E-02	.000	CONSTANT	DAMPER 1B1 FLS CLOSED	
	RANREL	.100E-03	.000	CONSTANT	RANDOM CAUSED REL OF RADIOACTIVITY	
17	.158E-02	CUT SET 53				
	MIN CUT SET PROBABILITY = .810E-09					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	AFANRUN	.270E-02	.000	CONSTANT	TRAIN A FAN FLS TO RUN	
	DM1B2FC	.300E-02	.000	CONSTANT	DAMPER 1B2 FLS CLOSED	
	RANREL	.100E-03	.000	CONSTANT	RANDOM CAUSED REL OF RADIOACTIVITY	

TABLE C-4
MINIMAL CUTSETS - CASE 4

********** TROJAN SAFETY ASSESSMENT - CR EMERG VENT SYST CASE 4 - REV 0 **********

RANK	FUSSELL-VESELY IMPORTANCE					
18	.147E-02	CUT SET 104				
	MIN CUT SET PROBABILITY = .757E-09					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F2OCCURS	.690E-04	.000	CONSTANT	F*2 TORNADO IMPACTS PLANT	
	F2WDLOSP	.160E+00	.000	CONSTANT	F*2 TORNADO WND DMG OFFST PWR SUP	
	F2WNDEDG	.700E-04	.000	CONSTANT	F*2 TORN WND CAUSE EDG RM FAIL	
	FLBATDEP	.980E+00	.000	CONSTANT	FAIL TO REC PWR BEFORE BAT DEP	
19	.144E-02	CUT SET 96				
	MIN CUT SET PROBABILITY = .739E-09					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F4MISCST	.650E-02	.000	CONSTANT	F*4 TORN MIS CAUSE CST TO FAIL	
	F4OCCURS	.790E-05	.000	CONSTANT	F*4 TORNADO IMPACTS PLANT	
	F4WDLOSP	.900E+00	.000	CONSTANT	F*4 TORNADO WND DMG OFFST PWR SUP	
	F4WNDEDG	.160E-01	.000	CONSTANT	F*4 TORN WND CAUSE EDG RM FAIL	
20	.138E-02	CUT SET 106				
	MIN CUT SET PROBABILITY = .710E-09					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F2MSLOSP	.150E+00	.000	CONSTANT	F*2 TORNADO MIS DMG OFFST PWR SUP	
	F2OCCURS	.690E-04	.000	CONSTANT	F*2 TORNADO IMPACTS PLANT	
	F2WNDEDG	.700E-04	.000	CONSTANT	F*2 TORN WND CAUSE EDG RM FAIL	
	FLBATDEP	.980E+00	.000	CONSTANT	FAIL TO REC PWR BEFORE BAT DEP	

TABLE C-5
MINIMAL CUTSETS - CASE 5

********** TROJAN SAFETY ASSESSMENT - CR EMERG VENT SYST - CASE 5 - REV 0 **********

TOP EVENT PROBABILITY = .53150E-06

RANK	FUSSELL-VESELY IMPORTANCE					
1	.231E+00	CUT SET 67				
	MIN CUT SET PROBABILITY = .123E-06					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F5OCCURS	.290E-05	.000	CONSTANT	F'5 TORNADO IMPACTS PLANT	
	F5WDLOSP	.980E+00	.000	CONSTANT	F'5 TORNADO WND DMG OFFST PWR SUP	
	F5WNDEDG	.440E-01	.000	CONSTANT	F'5 TORN WND CAUSE EDG RM FAIL	
	FLBATDEP	.980E+00	.000	CONSTANT	FAIL TO REC PWR BEFORE BAT DEP	
2	.210E+00	CUT SET 73				
	MIN CUT SET PROBABILITY = .111E-06					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F4OCCURS	.790E-05	.000	CONSTANT	F'4 TORNADO IMPACTS PLANT	
	F4WDLOSP	.900E+00	.000	CONSTANT	F'4 TORNADO WND DMG OFFST PWR SUP	
	F4WNDEDG	.160E-01	.000	CONSTANT	F'4 TORN WND CAUSE EDG RM FAIL	
	FLBATDEP	.980E+00	.000	CONSTANT	FAIL TO REC PWR BEFORE BAT DEP	
3	.141E+00	CUT SET 69				
	MIN CUT SET PROBABILITY = .750E-07					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F5MSLOSP	.600E+00	.000	CONSTANT	F'5 TORNADO MIS DMG OFFST PWR SUP	
	F5OCCURS	.290E-05	.000	CONSTANT	F'5 TORNADO IMPACTS PLANT	
	F5WNDEDG	.440E-01	.000	CONSTANT	F'5 TORN WND CAUSE EDG RM FAIL	
	FLBATDEP	.980E+00	.000	CONSTANT	FAIL TO REC PWR BEFORE BAT DEP	
4	.701E-01	CUT SET 79				
	MIN CUT SET PROBABILITY = .373E-07					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F3OCCURS	.290E-04	.000	CONSTANT	F'3 TORNADO IMPACTS PLANT	
	F3WDLOSP	.570E+00	.000	CONSTANT	F'3 TORNADO WND DMG OFFST PWR SUP	
	F3WNDEDG	.230E-02	.000	CONSTANT	F'3 TORN WND CAUSE EDG RM FAIL	
	FLBATDEP	.980E+00	.000	CONSTANT	FAIL TO REC PWR BEFORE BAT DEP	

TABLE C-5
MINIMAL CUTSETS - CASE 5

********** TROJAN SAFETY ASSESSMENT - CR EMERG VENT SYST - CASE 5 - REV 0 **********

RANK	FUSSELL-VESELY IMPORTANCE					
5	.688E-01	CUT SET 103				
	MIN CUT SET PROBABILITY = .366E-07					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F5CL2WND	.980E+00	.000	CONSTANT	F'5 INDUCED WIND FAIL OF CL2BLDG	
	F5FILWIN	.390E-01	.000	CONSTANT	F'5 WINDS FAIL FILTER HOUSE	
	F5OCCURS	.290E-05	.000	CONSTANT	F'5 TORNADO IMPACTS PLANT	
	STABILIT	.100E+01	.000	CONSTANT	ADVERSE STABILITY CLASS EXISTS	
	WINDDIR	.330E+00	.000	CONSTANT	ADVERSE WIND DIR EXISTS	
6	.583E-01	CUT SET 75				
	MIN CUT SET PROBABILITY = .310E-07					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F4MSLOSP	.250E+00	.000	CONSTANT	F'4 TORNADO MIS DMG OFFST PWR SUP	
	F4OCCURS	.790E-05	.000	CONSTANT	F'4 TORNADO IMPACTS PLANT	
	F4WNDEDG	.160E-01	.000	CONSTANT	F'4 TORN WND CAUSE EDG RM FAIL	
	FLBATDEP	.980E+00	.000	CONSTANT	FAIL TO REC PWR BEFORE BAT DEP	
7	.492E-01	CUT SET 81				
	MIN CUT SET PROBABILITY = .261E-07					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F3MSLOSP	.400E+00	.000	CONSTANT	F'3 TORNADO MIS DMG OFFST PWR SUP	
	F3OCCURS	.290E-04	.000	CONSTANT	F'3 TORNADO IMPACTS PLANT	
	F3WNDEDG	.230E-02	.000	CONSTANT	F'3 TORN WND CAUSE EDG RM FAIL	
	FLBATDEP	.980E+00	.000	CONSTANT	FAIL TO REC PWR BEFORE BAT DEP	
8	.470E-01	CUT SET 3				
	MIN CUT SET PROBABILITY = .250E-07					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	DMBETA	.250E-03	.000	CONSTANT	COMMON CAUSE FAILURE OF DAMPERS	
	RANREL	.100E-03	.000	CONSTANT	RANDOM CAUSED REL OF RADIOACTIVITY	

TABLE C-5
MINIMAL CUTSETS - CASE 5

********** TROJAN SAFETY ASSESSMENT - CR EMERG VENT SYST - CASE 5 - REV 0 **********

RANK	FUSSELL-VESELY IMPORTANCE					
9	.194E-01	CUT SET 117				
	MIN CUT SET PROBABILITY = .103E-07					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F4CL2WND	.900E+00	.000	CONSTANT	F'4 INDUCED WIND FAIL OF CL2BLDG	
	F4FILWIN	.440E-02	.000	CONSTANT	F'4 WINDS FAIL FILTER HOUSE	
	F4OCCURS	.790E-05	.000	CONSTANT	F'4 TORNADO IMPACTS PLANT	
	STABILIT	.100E+01	.000	CONSTANT	ADVERSE STABILITY CLASS EXISTS	
	WINDDIR	.330E+00	.000	CONSTANT	ADVERSE WIND DIR EXISTS	
10	.104E-01	CUT SET 68				
	MIN CUT SET PROBABILITY = .550E-08					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F5OCCURS	.290E-05	.000	CONSTANT	F'5 TORNADO IMPACTS PLANT	
	F5WDLOSP	.980E+00	.000	CONSTANT	F'5 TORNADO WND DMG OFFST PWR SUP	
	F5WNDAFW	.440E-01	.000	CONSTANT	F'5 TORN WND FAIL AFW PMP BLDG	
	F5WNDEDG	.440E-01	.000	CONSTANT	F'5 TORN WND CAUSE EDG RM FAIL	
11	.893E-02	CUT SET 133				
	MIN CUT SET PROBABILITY = .475E-08					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F3CL2WND	.570E+00	.000	CONSTANT	F'3 INDUCED WIND FAIL OF CL2BLDG	
	F3FILMIS	.870E-03	.000	CONSTANT	F'3 MISSILES DAMAGE FILT HOUSE	
	F3OCCURS	.290E-04	.000	CONSTANT	F'3 TORNADO IMPACTS PLANT	
	STABILIT	.100E+01	.000	CONSTANT	ADVERSE STABILITY CLASS EXISTS	
	WINDDIR	.330E+00	.000	CONSTANT	ADVERSE WIND DIR EXISTS	
12	.634E-02	CUT SET 70				
	MIN CUT SET PROBABILITY = .337E-08					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F5MSLOSP	.600E+00	.000	CONSTANT	F'5 TORNADO MIS DMG OFFST PWR SUP	
	F5OCCURS	.290E-05	.000	CONSTANT	F'5 TORNADO IMPACTS PLANT	
	F5WNDAFW	.440E-01	.000	CONSTANT	F'5 TORN WND FAIL AFW PMP BLDG	
	F5WNDEDG	.440E-01	.000	CONSTANT	F'5 TORN WND CAUSE EDG RM FAIL	

TABLE C-5
MINIMAL CUTSETS - CASE 5

********** TROJAN SAFETY ASSESSMENT - CR EMERG VENT SYST - CASE 5 - REV 0 **********

RANK	FUSSELL-VESELY IMPORTANCE					
13	.583E-02	CUT SET 4				
	MIN CUT SET PROBABILITY = .310E-08					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	RANREL	.100E-03	.000	CONSTANT	RANDOM CAUSED REL OF RADIOACTIVITY	
	SVBETA	.310E-04	.000	CONSTANT	COMMON CAUSE FAILURE OF SOLENOIDS	
14	.353E-02	CUT SET 97				
	MIN CUT SET PROBABILITY = .188E-08					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F5MISCB1	.100E+01	.000	CONSTANT	F'5 TORNADO MISS CAUSE FAIL CB1 INTAKE	
	F5MSRWST	.150E-01	.000	CONSTANT	F'5 MIS CAUSE FAIL OF RWST	
	F5OCCURS	.290E-05	.000	CONSTANT	F'5 TORNADO IMPACTS PLANT	
	F5WDLOSP	.980E+00	.000	CONSTANT	F'5 TORNADO WND DMG OFFST PWR SUP	
	F5WNDAFW	.440E-01	.000	CONSTANT	F'5 TORN WND FAIL AFW PMP BLDG	
14	.353E-02	CUT SET 71				
	MIN CUT SET PROBABILITY = .188E-08					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F5MISCST	.150E-01	.000	CONSTANT	F'5 TORN MIS CAUS CST TO FAIL	
	F5OCCURS	.290E-05	.000	CONSTANT	F'5 TORNADO IMPACTS PLANT	
	F5WDLOSP	.980E+00	.000	CONSTANT	F'5 TORNADO WND DMG OFFST PWR SUP	
	F5WNDEDG	.440E-01	.000	CONSTANT	F'5 TORN WND CAUSE EDG RM FAIL	
15	.342E-02	CUT SET 74				
	MIN CUT SET PROBABILITY = .182E-08					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F4OCCURS	.790E-05	.000	CONSTANT	F'4 TORNADO IMPACTS PLANT	
	F4WDLOSP	.900E+00	.000	CONSTANT	F'4 TORNADO WND DMG OFFST PWR SUP	
	F4WNDAFW	.160E-01	.000	CONSTANT	F'4 TORN WND FAIL AFW PMP BLDG	
	F4WNDEDG	.160E-01	.000	CONSTANT	F'4 TORN WND CAUSE EDG RM FAIL	

TABLE C-5
MINIMAL CUTSETS - CASE 5

********** TROJAN SAFETY ASSESSMENT - CR EMERG VENT SYST - CASE 5 - REV 0 **********

RANK	FUSSELL-VESELY IMPORTANCE					
16	.311E-02	CUT SET 128				
	MIN CUT SET PROBABILITY = .165E-08					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F3MISCB1	.100E+01	.000	CONSTANT	F'3 TORNADO MISS CAUSE FAIL CB1 INTAKE	
	F3MISCST	.100E-01	.000	CONSTANT	F'3 TORN MIS CAUS CST TO FAIL	
	F3MSRWST	.100E-01	.000	CONSTANT	F'3 MIS CAUSE FAIL OF RWST	
	F3OCCURS	.290E-04	.000	CONSTANT	F'3 TORNADO IMPACTS PLANT	
	F3WDLOSP	.570E+00	.000	CONSTANT	F'3 TORNADO WND DMG OFFST PWR SUP	
17	.243E-02	CUT SET 118				
	MIN CUT SET PROBABILITY = .129E-08					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F4CL2WND	.900E+00	.000	CONSTANT	F'4 INDUCED WIND FAIL OF CL2BLDG	
	F4FILMIS	.550E-03	.000	CONSTANT	F'4 MISSILES DAMAGE FILT HOUSE	
	F4OCCURS	.790E-05	.000	CONSTANT	F'4 TORNADO IMPACTS PLANT	
	STABILIT	.100E+01	.000	CONSTANT	ADVERSE STABILITY CLASS EXISTS	
	WINDDIR	.330E+00	.000	CONSTANT	ADVERSE WIND DIR EXISTS	
18	.229E-02	CUT SET 104				
	MIN CUT SET PROBABILITY = .122E-08					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F5CL2WND	.980E+00	.000	CONSTANT	F'5 INDUCED WIND FAIL OF CL2BLDG	
	F5FILMIS	.130E-02	.000	CONSTANT	F'5 MISSILES DAMAGE FILT HOUSE	
	F5OCCURS	.290E-05	.000	CONSTANT	F'5 TORNADO IMPACTS PLANT	
	STABILIT	.100E+01	.000	CONSTANT	ADVERSE STABILITY CLASS EXISTS	
	WINDDIR	.330E+00	.000	CONSTANT	ADVERSE WIND DIR EXISTS	

TABLE C-5
MINIMAL CUTSETS - CASE 5

********** TROJAN SAFETY ASSESSMENT - CR EMERG VENT SYST - CASE 5 - REV 0 **********

RANK	FUSSELL-VESELY IMPORTANCE					
19	.226E-02	CUT SET 141				
	MIN CUT SET PROBABILITY = .120E-08					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F2CL2WND	.160E+00	.000	CONSTANT	F'2 INDUCED WIND FAIL OF CL2BLDG	
	F2FILMIS	.330E-03	.000	CONSTANT	F'2 MISSILES DAMAGE FILT HOUSE	
	F2OCCURS	.690E-04	.000	CONSTANT	F'2 TORNADO IMPACTS PLANT	
	STABILIT	.100E+01	.000	CONSTANT	ADVERSE STABILITY CLASS EXISTS	
	WINDDIR	.330E+00	.000	CONSTANT	ADVERSE WIND DIR EXISTS	
20	.218E-02	CUT SET 129				
	MIN CUT SET PROBABILITY = .116E-08					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F3MISCB1	.100E+01	.000	CONSTANT	F'3 TORNADO MISS CAUSE FAIL CB1 INTAKE	
	F3MISCST	.100E-01	.000	CONSTANT	F'3 TORN MIS CAUS CST TO FAIL	
	F3MSLOSP	.400E+00	.000	CONSTANT	F'3 TORNADO MIS DMG OFFST PWR SUP	
	F3MSRWST	.100E-01	.000	CONSTANT	F'3 MIS CAUSE FAIL OF RWST	
	F3OCCURS	.290E-04	.000	CONSTANT	F'3 TORNADO IMPACTS PLANT	

TABLE C-6
MINIMAL CUTSETS - CASE 6

********** TROJAN SAFETY ASSESSMENT - CR EMERG VENT SYST - CASE 6 - REV 0 **********

TOP EVENT PROBABILITY = .14000E-05

RANK	FUSSELL-VESELY IMPORTANCE					
1	.295E+00	CUT SET 103				
	MIN CUT SET PROBABILITY = .413E-06					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F5CL2WND	.980E+00	.000	CONSTANT	F'5 INDUCED WIND FAIL OF CL2BLDG	
	F5FILWIN	.440E+00	.000	CONSTANT	F'5 WINDS FAIL FILTER HOUSE	
	F5OCCURS	.290E-05	.000	CONSTANT	F'5 TORNADO IMPACTS PLANT	
	STABILIT	.100E+01	.000	CONSTANT	ADVERSE STABILITY CLASS EXISTS	
	WINDDIR	.330E+00	.000	CONSTANT	ADVERSE WIND DIR EXISTS	
2	.268E+00	CUT SET 117				
	MIN CUT SET PROBABILITY = .375E-06					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F4CL2WND	.900E+00	.000	CONSTANT	F'4 INDUCED WIND FAIL OF CL2BLDG	
	F4FILWIN	.160E+00	.000	CONSTANT	F'4 WINDS FAIL FILTER HOUSE	
	F4OCCURS	.790E-05	.000	CONSTANT	F'4 TORNADO IMPACTS PLANT	
	STABILIT	.100E+01	.000	CONSTANT	ADVERSE STABILITY CLASS EXISTS	
	WINDDIR	.330E+00	.000	CONSTANT	ADVERSE WIND DIR EXISTS	
3	.896E-01	CUT SET 132				
	MIN CUT SET PROBABILITY = .125E-06					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F3CL2WND	.570E+00	.000	CONSTANT	F'3 INDUCED WIND FAIL OF CL2BLDG	
	F3FILWIN	.230E-01	.000	CONSTANT	F'3 WINDS FAIL FILTER HOUSE	
	F3OCCURS	.290E-04	.000	CONSTANT	F'3 TORNADO IMPACTS PLANT	
	STABILIT	.100E+01	.000	CONSTANT	ADVERSE STABILITY CLASS EXISTS	
	WINDDIR	.330E+00	.000	CONSTANT	ADVERSE WIND DIR EXISTS	

TABLE C-6
MINIMAL CUTSETS - CASE 6

********** TROJAN SAFETY ASSESSMENT - CR EMERG VENT SYST - CASE 6 - REV 0 **********

RANK	FUSSELL-VESELY IMPORTANCE					
4	.875E-01	CUT SET 67				
	MIN CUT SET PROBABILITY = .123E-06					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F5OCCURS	.290E-05	.000	CONSTANT	F'5 TORNADO IMPACTS PLANT	
	F5WDLOSP	.980E+00	.000	CONSTANT	F'5 TORNADO WND DMG OFFST PWR SUP	
	F5WNDEDG	.440E-01	.000	CONSTANT	F'5 TORN WND CAUSE EDG RM FAIL	
	FLBATDEP	.980E+00	.000	CONSTANT	FAIL TO REC PWR BEFORE BAT DEP	
5	.796E-01	CUT SET 73				
	MIN CUT SET PROBABILITY = .111E-06					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F4OCCURS	.790E-05	.000	CONSTANT	F'4 TORNADO IMPACTS PLANT	
	F4WDLOSP	.900E+00	.000	CONSTANT	F'4 TORNADO WND DMG OFFST PWR SUP	
	F4WNDEDG	.160E-01	.000	CONSTANT	F'4 TORN WND CAUSE EDG RM FAIL	
	FLBATDEP	.980E+00	.000	CONSTANT	FAIL TO REC PWR BEFORE BAT DEP	
6	.536E-01	CUT SET 69				
	MIN CUT SET PROBABILITY = .750E-07					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F5MSLOSP	.600E+00	.000	CONSTANT	F'5 TORNADO MIS DMG OFFST PWR SUP	
	F5OCCURS	.290E-05	.000	CONSTANT	F'5 TORNADO IMPACTS PLANT	
	F5WNDEDG	.440E-01	.000	CONSTANT	F'5 TORN WND CAUSE EDG RM FAIL	
	FLBATDEP	.980E+00	.000	CONSTANT	FAIL TO REC PWR BEFORE BAT DEP	
7	.266E-01	CUT SET 79				
	MIN CUT SET PROBABILITY = .373E-07					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F3OCCURS	.290E-04	.000	CONSTANT	F'3 TORNADO IMPACTS PLANT	
	F3WDLOSP	.570E+00	.000	CONSTANT	F'3 TORNADO WND DMG OFFST PWR SUP	
	F3WNDEDG	.230E-02	.000	CONSTANT	F'3 TORN WND CAUSE EDG RM FAIL	
	FLBATDEP	.980E+00	.000	CONSTANT	FAIL TO REC PWR BEFORE BAT DEP	

TABLE C-6
MINIMAL CUTSETS - CASE 6

********** TROJAN SAFETY ASSESSMENT - CR EMERG VENT SYST - CASE 6 - REV 0 **********

RANK	FUSSELL-VESELY IMPORTANCE					
8	.221E-01	CUT SET 75				
	MIN CUT SET PROBABILITY = .310E-07					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F4MSLOSP	.250E+00	.000	CONSTANT	F'4 TORNADO MIS DMG OFFST PWR SUP	
	F4OCCURS	.790E-05	.000	CONSTANT	F'4 TORNADO IMPACTS PLANT	
	F4WNDEDG	.160E-01	.000	CONSTANT	F'4 TORN WND CAUSE EDG RM FAIL	
	FLBATDEP	.980E+00	.000	CONSTANT	FAIL TO REC PWR BEFORE BAT DEP	
9	.187E-01	CUT SET 81				
	MIN CUT SET PROBABILITY = .261E-07					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F3MSLOSP	.400E+00	.000	CONSTANT	F'3 TORNADO MIS DMG OFFST PWR SUP	
	F3OCCURS	.290E-04	.000	CONSTANT	F'3 TORNADO IMPACTS PLANT	
	F3WNDEDG	.230E-02	.000	CONSTANT	F'3 TORN WND CAUSE EDG RM FAIL	
	FLBATDEP	.980E+00	.000	CONSTANT	FAIL TO REC PWR BEFORE BAT DEP	
10	.179E-01	CUT SET 3				
	MIN CUT SET PROBABILITY = .250E-07					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	DMBETA	.250E-03	.000	CONSTANT	COMMON CAUSE FAILURE OF DAMPERS	
	RANREL	.100E-03	.000	CONSTANT	RANDOM CAUSED REL OF RADIOACTIVITY	
11	.411E-02	CUT SET 68				
	MIN CUT SET PROBABILITY = .575E-08					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F5OCCURS	.290E-05	.000	CONSTANT	F'5 TORNADO IMPACTS PLANT	
	F5WDLOSP	.980E+00	.000	CONSTANT	F'5 TORNADO WND DMG OFFST PWR SUP	
	F5WNDAFW	.460E-01	.000	CONSTANT	F'5 TORN WND FAIL AFW PMP BLDG	
	F5WNDEDG	.440E-01	.000	CONSTANT	F'5 TORN WND CAUSE EDG RM FAIL	

TABLE C-6
MINIMAL CUTSETS - CASE 6

********** TROJAN SAFETY ASSESSMENT - CR EMERG VENT SYST - CASE 6 - REV 0 **********

RANK	FUSSELL-VESELY IMPORTANCE					
12	.339E-02	CUT SET 133				
	MIN CUT SET PROBABILITY = .475E-08					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F3CL2WND	.570E+00	.000	CONSTANT	F'3 INDUCED WIND FAIL OF CL2BLDG	
	F3FILMIS	.870E-03	.000	CONSTANT	F'3 MISSILES DAMAGE FILT HOUSE	
	F3OCCURS	.290E-04	.000	CONSTANT	F'3 TORNADO IMPACTS PLANT	
	STABILIT	.100E+01	.000	CONSTANT	ADVERSE STABILITY CLASS EXISTS	
	WINDDIR	.330E+00	.000	CONSTANT	ADVERSE WIND DIR EXISTS	
13	.253E-02	CUT SET 107				
	MIN CUT SET PROBABILITY = .354E-08					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F5CL2MIS	.840E-02	.000	CONSTANT	F'5 INDUCED MISSILE FAIL OF CL2BLDG	
	F5FILWIN	.440E+00	.000	CONSTANT	F'5 WINDS FAIL FILTER HOUSE	
	F5OCCURS	.290E-05	.000	CONSTANT	F'5 TORNADO IMPACTS PLANT	
	STABILIT	.100E+01	.000	CONSTANT	ADVERSE STABILITY CLASS EXISTS	
	WINDDIR	.330E+00	.000	CONSTANT	ADVERSE WIND DIR EXISTS	
14	.252E-02	CUT SET 70				
	MIN CUT SET PROBABILITY = .352E-08					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F5MSLOSP	.600E+00	.000	CONSTANT	F'5 TORNADO MIS DMG OFFST PWR SUP	
	F5OCCURS	.290E-05	.000	CONSTANT	F'5 TORNADO IMPACTS PLANT	
	F5WNDAFW	.460E-01	.000	CONSTANT	F'5 TORN WND FAIL AFW PMP BLDG	
	F5WNDEDG	.440E-01	.000	CONSTANT	F'5 TORN WND CAUSE EDG RM FAIL	
15	.221E-02	CUT SET 4				
	MIN CUT SET PROBABILITY = .310E-08					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	RANREL	.100E-03	.000	CONSTANT	RANDOM CAUSED REL OF RADIOACTIVITY	
	SVBETA	.310E-04	.000	CONSTANT	COMMON CAUSE FAILURE OF SOLENOIDS	

TABLE C-6
MINIMAL CUTSETS - CASE 6

********** TROJAN SAFETY ASSESSMENT - CR EMERG VENT SYST - CASE 6 - REV 0 **********

RANK	FUSSELL-VESELY IMPORTANCE					
16	.182E-02	CUT SET 140				
	MIN CUT SET PROBABILITY = .255E-08					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F2CL2WND	.160E+00	.000	CONSTANT	F'2 INDUCED WIND FAIL OF CL2BLDG	
	F2FILWIN	.700E-03	.000	CONSTANT	F'2 WINDS FAIL FILTER HOUSE	
	F2OCCURS	.690E-04	.000	CONSTANT	F'2 TORNADO IMPACTS PLANT	
	STABILIT	.100E+01	.000	CONSTANT	ADVERSE STABILITY CLASS EXISTS	
	WINDDIR	.330E+00	.000	CONSTANT	ADVERSE WIND DIR EXISTS	
17	.134E-02	CUT SET 71				
	MIN CUT SET PROBABILITY = .188E-08					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F5MISCST	.150E-01	.000	CONSTANT	F'5 TORN MIS CAUS CST TO FAIL	
	F5OCCURS	.290E-05	.000	CONSTANT	F'5 TORNADO IMPACTS PLANT	
	F5WDLOSP	.980E+00	.000	CONSTANT	F'5 TORNADO WND DMG OFFST PWR SUP	
	F5WNDEDG	.440E-01	.000	CONSTANT	F'5 TORN WND CAUSE EDG RM FAIL	
18	.130E-02	CUT SET 74				
	MIN CUT SET PROBABILITY = .182E-08					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F4OCCURS	.790E-05	.000	CONSTANT	F'4 TORNADO IMPACTS PLANT	
	F4WDLOSP	.900E+00	.000	CONSTANT	F'4 TORNADO WND DMG OFFST PWR SUP	
	F4WNDAFW	.160E-01	.000	CONSTANT	F'4 TORN WND FAIL AFW PMP BLDG	
	F4WNDEDG	.160E-01	.000	CONSTANT	F'4 TORN WND CAUSE EDG RM FAIL	
19	.104E-02	CUT SET 121				
	MIN CUT SET PROBABILITY = .146E-08					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F4CL2MIS	.350E-02	.000	CONSTANT	F'4 INDUCED MISSILE FAIL OF CL2BLDG	
	F4FILWIN	.160E+00	.000	CONSTANT	F'4 WINDS FAIL FILTER HOUSE	
	F4OCCURS	.790E-05	.000	CONSTANT	F'4 TORNADO IMPACTS PLANT	
	STABILIT	.100E+01	.000	CONSTANT	ADVERSE STABILITY CLASS EXISTS	
	WINDDIR	.330E+00	.000	CONSTANT	ADVERSE WIND DIR EXISTS	

TABLE C-6
MINIMAL CUTSETS - CASE 6

********** TROJAN SAFETY ASSESSMENT - CR EMERG VENT SYST - CASE 6 - REV 0 **********

RANK	FUSSELL-VESELY IMPORTANCE				
20	.922E-03	CUT SET 118			
	MIN CUT SET PROBABILITY = .129E-08				
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION
	F4CL2WND	.900E+00	.000	CONSTANT	F'4 INDUCED WIND FAIL OF CL2BLDG
	F4FILMIS	.550E-03	.000	CONSTANT	F'4 MISSILES DAMAGE FILT HOUSE
	F4OCCURS	.790E-05	.000	CONSTANT	F'4 TORNADO IMPACTS PLANT
	STABILIT	.100E+01	.000	CONSTANT	ADVERSE STABILITY CLASS EXISTS
	WINDDIR	.330E+00	.000	CONSTANT	ADVERSE WIND DIR EXISTS

TABLE C-7
MINIMAL CUTSETS - CASE 7

********** TROJAN SAFETY ASSESSMENT - CR EMERG VENT SYST - CASE 7 - REV 0 **********

TOP EVENT PROBABILITY = .52348E-06

RANK	FUSSELL-VESELY IMPORTANCE					
1	.234E+00	CUT SET 67				
	MIN CUT SET PROBABILITY = .123E-06					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F5OCCURS	.290E-05	.000	CONSTANT	F'5 TORNADO IMPACTS PLANT	
	F5WDLOSP	.980E+00	.000	CONSTANT	F'5 TORNADO WND DMG OFFST PWR SUP	
	F5WNDEDG	.440E-01	.000	CONSTANT	F'5 TORN WND CAUSE EDG RM FAIL	
	FLBATDEP	.980E+00	.000	CONSTANT	FAIL TO REC PWR BEFORE BAT DEP	
2	.213E+00	CUT SET 73				
	MIN CUT SET PROBABILITY = .111E-06					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F4OCCURS	.790E-05	.000	CONSTANT	F'4 TORNADO IMPACTS PLANT	
	F4WDLOSP	.900E+00	.000	CONSTANT	F'4 TORNADO WND DMG OFFST PWR SUP	
	F4WNDEDG	.160E-01	.000	CONSTANT	F'4 TORN WND CAUSE EDG RM FAIL	
	FLBATDEP	.980E+00	.000	CONSTANT	FAIL TO REC PWR BEFORE BAT DEP	
3	.143E+00	CUT SET 69				
	MIN CUT SET PROBABILITY = .750E-07					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F5MSLOSP	.600E+00	.000	CONSTANT	F'5 TORNADO MIS DMG OFFST PWR SUP	
	F5OCCURS	.290E-05	.000	CONSTANT	F'5 TORNADO IMPACTS PLANT	
	F5WNDEDG	.440E-01	.000	CONSTANT	F'5 TORN WND CAUSE EDG RM FAIL	
	FLBATDEP	.980E+00	.000	CONSTANT	FAIL TO REC PWR BEFORE BAT DEP	
4	.712E-01	CUT SET 79				
	MIN CUT SET PROBABILITY = .373E-07					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F3OCCURS	.290E-04	.000	CONSTANT	F'3 TORNADO IMPACTS PLANT	
	F3WDLOSP	.570E+00	.000	CONSTANT	F'3 TORNADO WND DMG OFFST PWR SUP	
	F3WNDEDG	.230E-02	.000	CONSTANT	F'3 TORN WND CAUSE EDG RM FAIL	
	FLBATDEP	.980E+00	.000	CONSTANT	FAIL TO REC PWR BEFORE BAT DEP	

TABLE C-7
MINIMAL CUTSETS - CASE 7

********** TROJAN SAFETY ASSESSMENT - CR EMERG VENT SYST - CASE 7 - REV 0 **********

RANK	FUSSELL-VESELY IMPORTANCE					
5	.699E-07	CUT SET 103				
	MIN CUT SET PROBABILITY = .366E-07					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F5CL2WND	.980E+00	.000	CONSTANT	F'5 INDUCED WIND FAIL OF CL2BLDG	
	F5FILWIN	.390E-01	.000	CONSTANT	F'5 WINDS FAIL FILTER HOUSE	
	F5OCCURS	.290E-05	.000	CONSTANT	F'5 TORNADO IMPACTS PLANT	
	STABILIT	.100E+01	.000	CONSTANT	ADVERSE STABILITY CLASS EXISTS	
	WINDDIR	.330E+00	.000	CONSTANT	ADVERSE WIND DIR EXISTS	
6	.592E-01	CUT SET 75				
	MIN CUT SET PROBABILITY = .310E-07					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F4MSLOSP	.250E+00	.000	CONSTANT	F'4 TORNADO MIS DMG OFFST PWR SUP	
	F4OCCURS	.790E-05	.000	CONSTANT	F'4 TORNADO IMPACTS PLANT	
	F4WNDEDG	.160E-01	.000	CONSTANT	F'4 TORN WND CAUSE EDG RM FAIL	
	FLBATDEP	.980E+00	.000	CONSTANT	FAIL TO REC PWR BEFORE BAT DEP	
7	.499E-01	CUT SET 81				
	MIN CUT SET PROBABILITY = .261E-07					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F3MSLOSP	.400E+00	.000	CONSTANT	F'3 TORNADO MIS DMG OFFST PWR SUP	
	F3OCCURS	.290E-04	.000	CONSTANT	F'3 TORNADO IMPACTS PLANT	
	F3WNDEDG	.230E-02	.000	CONSTANT	F'3 TORN WND CAUSE EDG RM FAIL	
	FLBATDEP	.980E+00	.000	CONSTANT	FAIL TO REC PWR BEFORE BAT DEP	
8	.478E-01	CUT SET 3				
	MIN CUT SET PROBABILITY = .250E-07					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	DMBETA	.250E-03	.000	CONSTANT	COMMON CAUSE FAILURE OF DAMPERS	
	RANREL	.100E-03	.000	CONSTANT	RANDOM CAUSED REL OF RADIOACTIVITY	

TABLE C-7
MINIMAL CUTSETS - CASE 7

********** TROJAN SAFETY ASSESSMENT - CR EMERG VENT SYST - CASE 7 - REV 0 **********

RANK	FUSSELL-VESELY IMPORTANCE					
9	.197E-01	CUT SET 117				
	MIN CUT SET PROBABILITY = .103E-07					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F4CL2WND	.900E+00	.000	CONSTANT	F'4 INDUCED WIND FAIL OF CL2BLDG	
	F4FILWIN	.440E-02	.000	CONSTANT	F'4 WINDS FAIL FILTER HOUSE	
	F4OCCURS	.790E-05	.000	CONSTANT	F'4 TORNADO IMPACTS PLANT	
	STABILIT	.100E+01	.000	CONSTANT	ADVERSE STABILITY CLASS EXISTS	
	WINDDIR	.330E+00	.000	CONSTANT	ADVERSE WIND DIR EXISTS	
10	.110E-01	CUT SET 68				
	MIN CUT SET PROBABILITY = .575E-08					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F5OCCURS	.290E-05	.000	CONSTANT	F'5 TORNADO IMPACTS PLANT	
	F5WDLOSP	.980E+00	.000	CONSTANT	F'5 TORNADO WND DMG OFFST PWR SUP	
	F5WNDAFW	.460E-01	.000	CONSTANT	F'5 TORN WND FAIL AFW PMP BLDG	
	F5WNDEDG	.440E-01	.000	CONSTANT	F'5 TORN WND CAUSE EDG RM FAIL	
11	.907E-02	CUT SET 133				
	MIN CUT SET PROBABILITY = .475E-08					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F3CL2WND	.570E+00	.000	CONSTANT	F'3 INDUCED WIND FAIL OF CL2BLDG	
	F3FILMIS	.870E-03	.000	CONSTANT	F'3 MISSILES DAMAGE FILT HOUSE	
	F3OCCURS	.290E-04	.000	CONSTANT	F'3 TORNADO IMPACTS PLANT	
	STABILIT	.100E+01	.000	CONSTANT	ADVERSE STABILITY CLASS EXISTS	
	WINDDIR	.330E+00	.000	CONSTANT	ADVERSE WIND DIR EXISTS	
12	.673E-02	CUT SET 70				
	MIN CUT SET PROBABILITY = .352E-08					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F5MSLOSP	.600E+00	.000	CONSTANT	F'5 TORNADO MIS DMG OFFST PWR SUP	
	F5OCCURS	.290E-05	.000	CONSTANT	F'5 TORNADO IMPACTS PLANT	
	F5WNDAFW	.460E-01	.000	CONSTANT	F'5 TORN WND FAIL AFW PMP BLDG	
	F5WNDEDG	.440E-01	.000	CONSTANT	F'5 TORN WND CAUSE EDG RM FAIL	

TABLE C-7
MINIMAL CUTSETS - CASE 7

********** TROJAN SAFETY ASSESSMENT - CR EMERG VENT SYST - CASE 7 - REV 0 **********

RANK	FUSSELL-VESELY IMPORTANCE					
13	.592E-02	CUT SET 4				
	MIN CUT SET PROBABILITY = .310E-08					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	RANREL	.100E-03	.000	CONSTANT	RANDOM CAUSED REL OF RADIOACTIVITY	
	SVBETA	.310E-04	.000	CONSTANT	COMMON CAUSE FAILURE OF SOLENOIDS	
14	.358E-02	CUT SET 71				
	MIN CUT SET PROBABILITY = .188E-08					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F5MISCST	.150E-01	.000	CONSTANT	F'5 TORN MIS CAUS CST TO FAIL	
	F5OCCURS	.290E-05	.000	CONSTANT	F'5 TORNADO IMPACTS PLANT	
	F5WDLOSP	.980E+00	.000	CONSTANT	F'5 TORNADO WND DMG OFFST PWR SUP	
	F5WNDEDG	.440E-01	.000	CONSTANT	F'5 TORN WND CAUSE EDG RM FAIL	
15	.348E-02	CUT SET 74				
	MIN CUT SET PROBABILITY = .182E-08					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F4OCCURS	.790E-05	.000	CONSTANT	F'4 TORNADO IMPACTS PLANT	
	F4WDLOSP	.900E+00	.000	CONSTANT	F'4 TORNADO WND DMG OFFST PWR SUP	
	F4WNDAFW	.160E-01	.000	CONSTANT	F'4 TORN WND FAIL AFW PMP BLDG	
	F4WNDEDG	.160E-01	.000	CONSTANT	F'4 TORN WND CAUSE EDG RM FAIL	
16	.247E-02	CUT SET 118				
	MIN CUT SET PROBABILITY = .129E-08					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F4CL2WND	.900E+00	.000	CONSTANT	F'4 INDUCED WIND FAIL OF CL2BLDG	
	F4FILMIS	.550E-03	.000	CONSTANT	F'4 MISSILES DAMAGE FILT HOUSE	
	F4OCCURS	.790E-05	.000	CONSTANT	F'4 TORNADO IMPACTS PLANT	
	STABILIT	.100E+01	.000	CONSTANT	ADVERSE STABILITY CLASS EXISTS	
	WINDDIR	.330E+00	.000	CONSTANT	ADVERSE WIND DIR EXISTS	

TABLE C-7
MINIMAL CUTSETS - CASE 7

********** TROJAN SAFETY ASSESSMENT - CR EMERG VENT SYST - CASE 7 - REV 0 **********

RANK	FUSSELL-VESELY IMPORTANCE					
17	.233E-02	CUT SET 104				
	MIN CUT SET PROBABILITY = .122E-08					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F5CL2WND	.980E+00	.000	CONSTANT	F'5 INDUCED WIND FAIL OF CL2BLDG	
	F5FILMIS	.130E-02	.000	CONSTANT	F'5 MISSILES DAMAGE FILT HOUSE	
	F5OCCURS	.290E-05	.000	CONSTANT	F'5 TORNADO IMPACTS PLANT	
	STABILIT	.100E+01	.000	CONSTANT	ADVERSE STABILITY CLASS EXISTS	
	WINDDIR	.330E+00	.000	CONSTANT	ADVERSE WIND DIR EXISTS	
18	.230E-02	CUT SET 141				
	MIN CUT SET PROBABILITY = .120E-08					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F2CL2WND	.160E+00	.000	CONSTANT	F'2 INDUCED WIND FAIL OF CL2BLDG	
	F2FILMIS	.330E-03	.000	CONSTANT	F'2 MISSILES DAMAGE FILT HOUSE	
	F2OCCURS	.690E-04	.000	CONSTANT	F'2 TORNADO IMPACTS PLANT	
	STABILIT	.100E+01	.000	CONSTANT	ADVERSE STABILITY CLASS EXISTS	
	WINDDIR	.330E+00	.000	CONSTANT	ADVERSE WIND DIR EXISTS	
19	.219E-02	CUT SET 72				
	MIN CUT SET PROBABILITY = .115E-08					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	F5NISCST	.150E-01	.000	CONSTANT	F'5 TORN MIS CAUS CST TO FAIL	
	F5MSLOSP	.600E+00	.000	CONSTANT	F'5 TORNADO MIS DMG OFFST PWR SUP	
	F5OCCURS	.290E-05	.000	CONSTANT	F'5 TORNADO IMPACTS PLANT	
	F5WNDEDG	.440E-01	.000	CONSTANT	F'5 TORN WND CAUSE EDG RM FAIL	
20	.172E-02	CUT SET 2				
	MIN CUT SET PROBABILITY = .900E-09					
	BASIC EVENT	MEAN PROBABILITY	ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION	
	FANBETA	.900E-05	.000	CONSTANT	COMMON CAUSE FAILURE OF CB-1 FANS	
	RANREL	.100E-03	.000	CONSTANT	RANDOM CAUSED REL OF RADIOACTIVITY	

TABLE C-7
MINIMAL CUTSETS - CASE 7

RANK	FUSSELL-VESELY IMPORTANCE					
20	.172E-02	CUT SET	1			
	MIN CUT SET PROBABILITY = .900E-09					
	BASIC EVENT	MEAN PROBABILITY		ERROR FACTOR	DISTRIBUTION	BASIC EVENT DESCRIPTION
	FANBETA	.900E-05		.000	CONSTANT	COMMON CAUSE FAILURE OF CB-1 FANS
	RANREL	.100E-03		.000	CONSTANT	RANDOM CAUSED REL OF RADIOACTIVITY