13 PROBABILISTIC FLOOD ANALYSIS

Contents

List of Tables

13 PROBABILISTIC FLOOD ANALYSIS

This section documents the internal flooding analysis of the ESBWR PRA.

13.1 INTRODUCTION

The objective of the ESBWR internal flood analysis is to identify and provide a quantitative assessment of the core damage frequency (CDF) and large release frequency (LRF) due to internal flood events. The flood analysis models potential flood vulnerabilities, in conjunction with random failures modeled as part of the internal events PRA. Through this process, flood vulnerabilities that could jeopardize core integrity and containment integrity are identified.

As part of the PRA internal flood analysis, floods to be considered include events caused by large leaks due to rupture or cracking of pipes, piping components, or water containers such as storage tanks. Consideration of flooding caused by the operation of fire protection equipment is also considered. Excluded from this flood analysis is flooding associated with spray because areas susceptible to spray damage will be avoided by moving the required equipment or pipe, or providing spray protection. (Reference 13-4)

The scope of the flooding analysis includes both at-power and shutdown flood-induced accident scenarios and releases.

13.2 METHODOLOGY

The internal PRA flooding analysis is conducted by identifying and classifying potential flooding sources and events. Data is compiled to generate a frequency of occurrence to represent each of the potential flooding events. In addition, an evaluation is performed to identify, screen and quantify specific plant impacts/failures associated with each flooding event. Finally, the ESBWR-specific flooding frequencies and plant impacts are applied to the PRA model to obtain CDF and LRF results. For Revision 2 ESBWR Flooding PRA model development, the following task were performed:

- Identification of Flood Sources
- Development of Flooding Scenarios
- Development of Flooding Frequencies
- Analysis of Flooding Scenarios

The internal PRA flooding analysis is based on the design basis for the ESBWR structures, components, equipment and systems. Critical to the flooding analysis is the location of these features and their interaction with other ESBWR structures, components, equipment and systems. The current list of system components and location of equipment is assumed based on the current design and plant layout drawings.

The development of ESBWR-specific flooding scenarios requires a detailed analysis of data including plant component location, system capacity and potential failure mechanisms. Following the identification of potential flooding scenarios, a characteristic scenario is selected as representative of flood areas and subject to quantitative analysis.

In order to develop the severity and impact of potential flooding scenarios, data is collected from industry sources (Reference 13-1) for the ESBWR equipment and system components. Failure data for consideration in the flooding analysis includes piping runs, pumps, valves, tanks, heat exchangers, and circulating water expansion joints. These failure rates in combination with types and capacity of system components located within specific flood zones are used to develop the flooding frequencies.

Finally, the flood scenario for each flood area are quantified to calculate a probabilistic risk value and summed to provide a risk analysis for the ESBWR.

13.2.1 Assumptions

The assumptions listed below are used in support of the ESBWR flooding analysis.

(1) Flooding resulting from component ruptures is considered in this analysis.

(2) For each tank rupture, the entire tank inventory is drained.

(3) Non-qualified submerging equipment (motors or solenoids for valves, control cabinets and circuitry) is assumed to fail if the water level in the flood zone reaches a level of 1 foot above floor elevation.

(4) If equipment is failed, it is assumed the equipment is failed at the start of the flood.

(5) The expected effect of flooding electrical equipment such as motor control centers, electrical cabinets, and terminal boxes, is a short to ground, removing power from the loads served by the component. This analysis addresses all such failures of electrical equipment as ground shorts.

(6) Motor-operated valves (MOVs) require the application of current to the motor to change the valve position. Without power, the valve will remain in its current position. Flooding and/or spraying of a motor-operated valve will therefore cause the valve to fail as is.

(7) Passive components, such as check valves, pipes, and tanks are not considered to be vulnerable to flooding effects because of the passive nature of the components.

(8) Flooding has no effect on test and maintenance unavailability. Additional testing and maintenance may be required after a flood. Prior to and during a flood, the unavailability of equipment from test and maintenance is unaffected by flooding.

(9) Flooding has no effect on common cause failures.

(10) Water collecting in a stairwell or propagating into a stairwell preferentially continues to travel down the stairwell as opposed to propagating under a door adjacent to the stairwell.

(11) The mission time of the active equipment credited in the flooding risk analysis is 24 hours. This is the same as the internal events PRA.

(12) Concurrent flooding events from different sources are not considered in the flooding analysis.

(13) Components that are environmentally qualified inside containment are considered to be invulnerable to the effects of flooding because they are qualified for a post-LOCA environment inside containment. Environmentally qualified equipment outside containment may not be qualified to as severe an environment and is considered vulnerable to flooding.

(14) Insulation properties are not lost at any point of cable routing and interaction with water can only occur at termination points, except environmentally qualified termination points inside containment.

(15) The internal flooding analysis uses the same systemic success criteria as used in the internal events PRA. The shutdown flooding analysis uses the same systemic success criteria as used in the shutdown PRA.

(16) Electrical connections in the termination boxes on the containment wall are adequately protected to prevent flood-induced failure.

(17) The solenoid valve associated with an air-operated valve is located in the vicinity of the air-operated valve.

(18) Fire doors are not watertight.

(19) Only concrete walls are considered flood barriers. Concrete walls are assumed to be capable of withstanding the expected maximum flood loading and are assumed to remain intact throughout a flooding event.

(20) Electrical circuit fault protection has been designed to provide protection for plant electric circuits via protective relaying, circuit breakers, and fuses. Therefore, loss of a component due to flooding will not result in the loss of the bus that supplies power to the affected component.

(21) For floor drains, appropriate precautions such as check valves, back flow preventers, and siphon breaks are assumed to prevent back flow and any potential flooding. Because detail routing of the drain system is not available, propagation of flooding through the drain system via failed check valves is not considered.

(22) Doors that connect the Control and Reactor Buildings with the Electrical Building galleries are watertight, for flooding of the galleries up to the ground level elevation. For the flooding analysis, the watertight doors are normally closed at power. Opening of these doors would generate an alarm in the Control Room, and procedures would direct their immediate closure upon receipt of an alarm.

(23) The operation of the components located in Containment would not be affected in the event of a LOCA or if the Drywell was flooded to a level equivalent to the level of the suppression pool.

(24) The opening of the hatches, which communicate the Containment with others buildings, would be carried out in Mode 5, Mode 5 Open and Mode 6-Unflooded.

(25) During shutdown, manual and automatic depressurization (ADS) of the vessel are available while the vessel head is in place.

(26) The actuation of Gravity Driven Cooling System (GDCS) due to an Reactor Pressure Vessel (RPV) Level 1 signal is available during the entire shutdown period.

(27) Dry pipe systems (such as a pre-action Fire Protection System) are not modeled as flood sources due to the low frequency of a failure of the dry pipe coincident with spurious opening of the actuation valve.

(28) Flooding in the containment during shutdown will not affect Isolation Condenser System components or the DPVs because these components are located relatively high in the containment.

(29) Equipment located in the yard is not considered susceptible to internal flooding damage.

(30) Human induced mechanisms such as overfilling tanks or diversion of flow created by maintenance are not applicable since operating procedures have not been developed, maintenance procedures have not been developed, frequency of maintenance and duration of maintenance have not been determined.

(31) Other events which could result in a release into a flood area based on plant experience are not applicable since there is no ESBWR plant experience.

(32) The drain system is not credited in the flooding analysis. Therefore, the capacity of the drain system has not been estimated.

(32) The amount of water retained by sumps, berms, dikes, and curbs is assumed to be negligible. This is conservative since retained water would provide additional time for flooding response.

13.3 IDENTIFICATION OF FLOOD SOURCES

A preliminary screening of flood sources was performed on all systems for the ESBWR. This screening removed systems not be considered flood sources from further consideration. After the general screening, a more detailed review of the remaining systems was performed. This review included the consideration of available system volumes. If the volume of the system was not sufficient to cause equipment failure, the system was screened from further consideration. Where surge tanks were available, the volume of the surge tank was used as the volume of the system available for flooding. Once the surge tank empties, it is expected the pumps will trip on low NPSH. In addition, a review of the flood sources was performed to identify flood sources not available at shutdown. The screening results for the flood sources are provided in Table 13.3-1. The ESBWR systems considered as potential flood sources for at power operations are:

- Nuclear Boiler System (NBS, B21),
- Control Rod Drive System (CRDS, C12),
- Standby Liquid Control System (SLCS, C41),
- Fuel and Auxiliary Pools Cooling System (FAPCS, G21),
- Reactor Water Cleanup and Shutdown Cooling System (RWCU/SDCS, G31),
- Resin Transfer System (RTS, K15),
- Turbine Main Steam System (TMSS, N11),
- Condensate and Feedwater System (C&FS, N21),
- Heater Drain and Vent System (HDVS, N22),
- Condensate Purification System (CPS, N25),
- Moisture Separator Reheater System (MSRS, N35),
- Extraction Steam System (ESS, N36),
- Circulating Water System (CWS, N71),
- Make Up Water System (MWS, P10),
- Condensate Storage and Transfer System (CS&TS, P30),
- Plant Service Water System (PSWS, P41),
- Fire Protection System (FPS, U43),
- Station Water System (SWS, Y41), and
- Aux Boiler Oil Storage and Transfer System (OS&TS, Y52).

Systems, located inside containment and considered in the flooding analysis as potential flood sources, are those in which a break would cause a loss of coolant accident (LOCA). LOCA scenarios in containment are already modeled in the internal events PRA analysis and as such are not analyzed as part of the internal flooding analysis. Therefore, there are no flood scenarios in containment that are analyzed further in the at-power operations internal flooding analysis.

The plant systems considered as potential flood sources during shutdown are:

- Nuclear Boiler System (NBS, B21),
- Isolation Condenser System (ICS, B32),
- Control Rod Drive System (CRDS, C12),
- Standby Liquid Control System (SLCS, C41),
- Gravity Driven Cooling System (GDCS, E50),
- Fuel and Auxiliary Pools Cooling System (FAPCS, G31),
- Reactor Water Cleanup and Shutdown Cooling System (RWCU/SDCS, G31),
- Resin Transfer System (RTS, K15),
- Condensate Purification System (CPS, N25),
- Make Up Water System (MWS, P10),
- Condensate Storage and Transfer System (CS&TS, P30),
- Plant Service Water System (PSWS, P41),
- Fire Protection System (FPS, U43),
- Station Water System (SWS, Y41), and
- Aux Boiler Oil Storage and Transfer System (OS&TS, Y52).

Breaks in the RWCU/SDCS drain lines from the reactor vessel inside containment are already modeled in the shutdown PRA (Section 16) and are not analyzed as part of the internal flooding analysis.

Table 13.3-1

Preliminary Flood Source Screening - Systems Excluded

SYSTEM CODE	SYSTEM ACRONYM	SYSTEM NAME	REASON EXCLUDED	CAPACITY OF SOURCE (gal)
B11	RPVS	Reactor Pressure Vessel System	Analyzed as Excessive LOCA in Section 2	
C11	RC&IS	Rod Control and Information System	Dry System	
C21	LD&IS	Leak Detection and Isolation System	Dry System	
C31	FWCS	Feedwater Control System	Dry System	
C51	NMS	Neutron Monitoring System	Dry System	
C61	RSS	Remote Shutdown System	Dry System	
C62	N-DCIS	Nonsafety DCIS	Dry System	
C63	Q-DCIS	Safety Related DCIS	Dry System	
C71	RPS	Reactor Protection System	Dry System	
C72	DPS	Diverse Protection System	Dry System	
C74	SSLC	Safety System Logic and Control	Dry System	
C82	PAS	Plant Automation System	Dry System	
C85	SB&PCS	Steam Bypass and Pressure Control System	Dry System	
C93	PSS	Plant Simulator System	Dry System	
D11	PRMS	Process Radiation Monitoring System	Dry System	
D21	ARMS	Area Radiation Monitoring System	Dry System	
F11	FSE	Fuel Servicing Equipment	Dry System	
F12	MSE	Miscellaneous Servicing Equipment	Dry System	
F13	RPVSE	Reactor Pressure Vessel Servicing Equipment	Dry System	
F14	RPVISE	RPV Internal Servicing Equipment	Dry System	
F15	RFE	Refueling Equipment	Dry System	
F16	FSR	Fuel Storage Racks	Dry System	
F17		Under-RPV Servicing Equipment	Dry System	
F21	CRDME	CRD Maintenance Equipment	Dry System	
F32	FCCE	Fuel Cask Cleaning Equipment	Dry System	
F41	PS&TE	Plant Startup and Test Equipment	Dry System	
F42	FTS	Fuel Transfer System	Dry System at Power	
H11	MCRP	Main Control Room (MCR) Panels	Dry System	
H12	MCRB	Main Control Room Back Room Panels	Dry System	
H14	RWCP	Radwaste Control Room Panels	Dry System	

Table 13.3-1

Preliminary Flood Source Screening - Systems Excluded

SYSTEM CODE	SYSTEM ACRONYM	SYSTEM NAME	REASON EXCLUDED	CAPACITY OF SOURCE (gal)
H21	LCPR	Local Panels and Racks	Dry System	
J10	CFS	Core & Fuel Services	Dry System	
J11	FUEL	Nuclear Fuel	Dry System	
J12	CHAN	Fuel Channel	Dry System	
K10	LWMS	Liquid Waste Management System	Dry System during normal operation	
K20	SWMS	Solid Waste Management System	Dry System	
K30	OGS	Offgas System	Dry System	
N31	TURB	Main Turbine	Subsumed by Turbine Bldg Analysis	
N32	TGCS	Turbine Generator Control System	Dry System	
N33	TGSS	Turbine Gland Seal System	Subsumed by Turbine Bldg Analysis	
N34	TLOS	Turbine Lube Oil System	Subsumed by Turbine Bldg Analysis	
N37	TBS	Turbine Bypass System	Dry System during normal operation	
N38	TH	Turbine Hydraulics	Subsumed by Turbine Bldg Analysis	
N39	TASS	Turbine Auxiliary Steam System	Subsumed by Turbine Bldg Analysis	
N41	GEN	Generator	Dry System	
N42	HGCS	Hydrogen Gas Control System	Dry System	
N43	SCWS	Stator Cooling Water System	Subsumed by Turbine Bldg Analysis	
N44	GLSOS	Generator Lube and Seal Oil System	Subsumed by Turbine Bldg Analysis	
N45	H2&CO2	Hydrogen & Carbon Dioxide Bulk Gas Storage	Dry System	
N51	GES	Generator Excitation System	Dry System	
N61	CDSR	Main Condenser and Auxiliaries	Subsumed by Turbine Bldg Analysis	

Table 13.3-1

Preliminary Flood Source Screening - Systems Excluded

SYSTEM CODE	SYSTEM ACRONYM	SYSTEM NAME	REASON EXCLUDED	CAPACITY OF SOURCE (gal)
P21A	RCCWSA	Reactor Component Cooling Water System A	Insufficient Volume	4227
P21B	RCCWSB	Reactor Component Cooling Water System B	Insufficient Volume	4227
P22	TCCWS	Turbine Component Cooling Water System	Insufficient Volume	4227
P25	CWS	BOP Chilled Water System	Insufficient Volume	4227
P25A	CWSA	NI Chilled Water System A	Insufficient Volume	4227
P25B	CWSB	NI Chilled Water System B	Insufficient Volume	4227
P32	OIS	Oxygen Injection System	Dry System	
P33	PSS	Process Sampling System	Leakage within capacity of sump pumps	
P51	SAS	Service Air System	Dry System	
P52	IAS	Instrument Air System	Dry System	
P54	HPNSS	High Pressure Nitrogen Supply System	Dry System	
P62	ABS	Auxiliary Boiler System	Insufficient Volume	5000
P73	HWCS	Hydrogen Water Chemistry System	Subsumed by Turbine Bldg Analysis	
P74	ZNIS	Zinc Injection System	Subsumed by Turbine Bldg Analysis	
R10	EPDS	Electric Power Distribution System	Dry System	
R11	MVDS	Medium Voltage Distribution System	Dry System	
R12	LVDS	Low Voltage Distribution System	Dry System	
R13	UAC	Uninterruptible AC Power Supply	Dry System	
R14	ICP	Instrumentation and Control Power Supply	Dry System	
R15	LSP	Lighting and Servicing Power Supply	Dry System	
R16	DC	Direct Current Power Supply	Dry System	
R21	DG	Standby Onsite AC Power Supply	Dry System	
R31	RCWY	Raceway System	Dry System	
R41	GND	Plant Grounding System	Dry System	
R51		Communication System	Dry System	
S21	SWYD	Switchyard	Dry System	
T10	CONS	Containment System	Dry System	

Table 13.3-1

Preliminary Flood Source Screening - Systems Excluded

SYSTEM CODE	SYSTEM ACRONYM	SYSTEM NAME	REASON EXCLUDED	CAPACITY OF SOURCE (gal)
T11	CV	Containment Vessel	Dry System	
T12	COIST	Containment Internal Structures	Dry System	
T15	PCCS	Passive Containment Cooling System	In Containment and Pool	
T31	CIS	Containment Inerting System	Dry System	
T41	DCS	Drywell Cooling System	Dry System	
T62	CMS	Containment Monitoring System	Dry System	
T64	EMS	Environmental Monitoring System	Dry System	
U31	CH&E	Cranes, Hoists, and Elevators	Dry System	
U36	EBHVS	Electrical Building HVAC	Dry System	
U37	SBHVS	Service Building HVAC	Dry System	
U38	RWBHVS	Radwaste Building HVAC	Dry System	
U39	TBHVS	Turbine Building HVAC	Dry System	
U40	RBHVS	Reactor Building HVAC	Dry System	
U41	OBHVS	Other Building HVAC	Dry System	
U42	PWSWS	Potable Water and Sanitary Waste System	Subsumed by Turbine Bldg Analysis	
U44	SWDS	Sanitary Waste Discharge System	Dry System during normal operation	
U50	EFDS	Equipment and Floor Drain System	Dry System during normal operation	
U65	OBS	Other Building Structures	Dry System	
U66	ATS	Access Tunnel Structures	Dry System	
U67	RT	Radwaste Tunnel	Dry System	
U71	RB	Reactor Building Structure	Dry System	
U72	TB	Turbine Building Structure	Dry System	
U73	CB	Control Building Structure	Dry System	
U74	RW	Radwaste Building Structure	Dry System	
U75	SB	Service Building Structure	Dry System	
U77	CBHVS	Control Building HVAC	Dry System	
U78	CMCH	Cold Machine Shop	Dry System	
U80	EB	Electrical Building	Dry System	
U81	SMS	Seismic Monitoring System	Dry System	
U84	SWB	Service Water Building Structure	Dry System	
U85	SWBHVS	Service Water Building HVAC	Dry System	

Table 13.3-1

Preliminary Flood Source Screening - Systems Excluded

SYSTEM CODE	SYSTEM ACRONYM	SYSTEM NAME	REASON EXCLUDED	CAPACITY OF SOURCE (gal)
U91	ADM	Administration Building Structure	Dry System	
U93	TC	Training Center	Dry System	
U95	MCH	Hot Machine Shop	Dry System	
U97	FB	Fuel Building Structure	Dry System	
U98	FBHVS	Fuel Building HVAC System	Dry System	
U99	STACK	Stack	Dry System	
W12	I&DS	Intake and Discharge Structures	Dry System	
W24	CT	Cooling Tower	Outside	
W32	SCF	Screen Cleaning Facility	Dry System	
W33	SRR	Screens, Racks, & Rakes	Dry System	
W41	ISPS	Intake Structure Power Supply	Dry System	
Y12	ROAD	Roads and Walkways	Dry System	
Y21	PADS	Tank and Equipment Pads	Dry System	
Y46	CATH	Cathodic Protection System	Dry System	
Y47	MET	Meteorological Observation System	Dry System	
Y51	YDRN	Yard Miscellaneous Drain System	Outside	
Y53	CHEM	Chemical Storage and Transfer System	Subsumed by Turbine Bldg Analysis	
Y71	YPT	Yard Pipe Trench	Dry System	
Y72	DB	Ductbank	Dry System	
Y86	SSEC	Site Security	Dry System	

13.4 DEVELOPMENT OF FLOODING SCENARIOS

A flooding event may result in an initiating event and may also disable mitigating systems. As such, buildings containing mitigating equipment credited in the PRA accident sequence analysis, or equipment whose loss could cause an initiating event, are of interest to the flooding analysis. In the development of ESBWR flooding scenarios, the analysis considers flood scenarios in the following buildings:

- Reactor Building
- Control Building
- Fuel Building
- Turbine Building
- Electrical Building,
- Service Water Building
- Circulating Water Pumphouse
- Fire Protection Enclosure
- Tunnels and Galleries connected with the buildings indicated above.

Floods in the remaining ESBWR buildings are not considered for the PRA risk analysis because flooding from these other areas cannot propagate to any of the above mentioned buildings.

The internal PRA flooding analysis is based on the design basis for the ESBWR structures, components, equipment and systems. Critical to the development of flooding scenarios is the location of these features and their interaction with other ESBWR structures, components, equipment and systems. The development of internal flooding scenarios is performed with the understanding that final piping configurations are not yet known. The current location of equipment is assumed based on the current design and plant layout drawings.

In some cases, even preliminary details of piping and equipment layout are not available. In these cases, it is assumed that the pipe routed to or from equipment would follow certain logical paths. For example, pipe routing is through pipe chases in battery rooms instead of routing the pipe through the battery room. Another logical path would be to assume the shortest path between locations as this reduces pipe and fabrication cost.

For the PRA internal flood analysis, buildings were divided into flood zones based on separation for flooding. Zones, not hydraulically coupled, are considered independent flood zones. For example, zones which are separated by walls and watertight doors are considered separate flood zones. Stairwells are considered part of the flood zone located at the bottom of the stairwell because it is assumed that there is no mechanism to retain the water at higher elevations of the stairwells. Flood zone drawings are provided in NEDE-33386, Rev. 0. Flood zone drawings have not been provided for buildings outside the GEH scope of work (e.g., flood zone PH [circulating water pump house] and SF). In addition, flood zones must receive or maintain a sufficient capacity of flood water to result in impact to surrounding systems and/or components. When a system volume is less than the critical volume required to reach a flood height of 1 foot in the flood zone, the system can be screened as a potential flood source within the flood zone.

Flooding propagation between flood zones is accounted for in the internal flooding analysis. Where propagation is likely, hydraulic conductivity between zones is included in the flooding analysis. However, the availability of certain design features may affect flood propagation and should also be considered as part the hydraulic conductivity between flood zones. Depending on the flood zones and design features, the following aspects are considered:

- Automatic flood detection systems,
- Automatic systems to terminate flooding,
- Watertight doors to prevent the progression of flooding,
- Walls which prevent progression of flooding (Only concrete walls are credited)
- Sump pumps, and
- Other design or construction characteristics that contribute to minimize the consequences of flooding.

Flooding propagation paths identified and considered for the ESBWR internal flooding are provided in Table 13.4-1 with features available to provide mitigation are identified in Table 13.4-2.

A summary of the screening of flood zones is documented in Table 13.4-3. This table provides a list of ESBWR systems which have not been considered as potential flood sources, their reason for exclusion and estimated flood water capacity of the system. Flood zones not containing flood sources (see Section 13.3) or PRA equipment are screened from consideration since these zones would not have no probabilistic impact.

Table 13.4-1

Flooding Scenario Screening - Propagation

From Zone	To Zone	For Flood Initiators
RB+17500	RBA-11500	G31A, G31B, G21, B21, C41, P10
RB+17500	RBB-11500	G31A, G31B, G21, B21, C41, P10
TB+4650	TB-1400	U43, P10, N21
TB+12000	TB-1400	U43, N11, N21, N35, N36, P10
TB+20000	TB-1400	U43, P10
TB+28000	TB-1400	U43, N11, N22, N35
TBTC+4650	TB-1400	P41A, P41B
EB+18000	EB+4650	U43, P25A, P25B
EB+27000	EB+4650	U43, P25A, P25B
EB+9800	EB+4650	U43, P25A, P25B
CB+4650	CB-7400	P25A, P25B
CB+9060	CB-7400	P25A, P25B
CB-2000	CB-7400	P25A, P25B
FB+4650	FB-11500	U43
FB-6400	FB-11500	G21
FB+22500	FB-11500	P25A, P25B
RB+13570	RBA-11500	U43
RB+13570	RBB-11500	U43
RBCRD-6400	RBB-11500	P21A, P21B, C12, P30
TB+33000	TB-1400	P25, P10, P22, P21A, P21B
TBAN+20000	TB-1400	P25A, P25B, P21A
TBBN+20000	TB-1400	P21B, P25B
TBBP+20000	TB-1400	P25, P22
TBPU+4650	TB-1400	P25

Note: Propagation prior to screening on system volume.

Table 13.4-2

Flooding Scenario Screening - Flood Mitigating Features

Flood Area	Description	Flood Mitigating Features
RBA-11500	RX BLDG TRAIN A (-11500)	Watertight doors, sump pumps
RBB-11500	RX BLDG TRAIN B (-11500)	Watertight doors, sump pumps
CBD4-7400	DIVISION 4 DCIS ELECTRICAL ROOM	Watertight doors, normal closed valves on drains
CBD1-7400	DIVISION 1 DCIS ELECTRICAL ROOM	Watertight doors, normal closed valves on drains
CBD3-7400	DIVISION 3 DCIS ELECTRICAL ROOM	Watertight doors, normal closed valves on drains
CBD2-7400	DIVISION 2 DCIS ELECTRICAL ROOM	Watertight doors, normal closed valves on drains
FB-11500	FUEL BUILDING (-11500)	Watertight doors to RB, 2 sump pump @ 135 gpm/ pump
RBH-11500	RX BLDG HCU (-11500)	Watertight doors
EB+4650	ELECTRICAL BUILDING (+4650)	Watertight door to tunnel
CBCR-2000	MAIN CONTROL ROOM	Airlocks
CB+9060	CONTROL BUILDING (+9060)	8" curbs all floor openings, NC valves on drains
TB-1400	TURBINE BUILDING (-1400)	6-Sump pumps @ 135 gpm/pump
CB-7400	CONTROL BUILDING (-7400)	4-Sump pumps @ 135 gpm/pump

Table 13.4-3

Flood Scenario Screening – Sources, Components and Capacity

Flood_Zone	Description	Flood Sources[1]	PRA[2] Components	Screened	Vol_ (gal) 6"	Vol _(gal) 1'
CB+4650	CONTROL BUILDING (+4650)	NO	YES	YES	17662.4	35324.8
CB+9060	CONTROL BUILDING (+9060)	NO	NO	YES	17662.4	35324.8
CB-2000	CONTROL BUILDING (-2000)	NO	NO	YES	4802.9	9605.9
CB-7400	CONTROL BUILDING (-7400)	YES	YES	NO	6157.9	12315.8
CBCR-2000	MAIN CONTROL ROOM	NO	NO	YES	12859.5	25718.9
CBD1-7400	DIVISION 1 DCIS ELECTRICAL ROOM	NO	YES	YES	3011.3	6022.7
CBD2-7400	DIVISION 2 DCIS ELECTRICAL ROOM	NO	YES	YES	3295.9	6591.7
CBD3-7400	DIVISION 3 DCIS ELECTRICAL ROOM	NO	YES	YES	3011.3	6022.7
CBD4-7400	DIVISION 4 DCIS ELECTRICAL ROOM	NO	YES	YES	3281.8	6563.5
CLNT	CLEAN PERSONNEL ACCESS TUNNEL	NO	NO	YES	15811.6	31623.3
CONTAINMENT	CONTAINMENT	YES	YES	NO	2774.7	5549.4
CPAT	CONTROLLED PERSONNEL ACCESS TUNNEL	NO	NO	YES	10991.8	21983.6
CTA	SERVICE WATER COOLING TOWER A	YES	YES	NO	6586.1	13172.1
CTB	SERVICE WATER COOLING TOWER B	YES	YES	NO	5836.8	11673.5
DG+4650	AUX BOILER ROOM	YES	NO	YES	8217.1	16434.2
DGA+4650	A DIESEL GENERATOR	YES	YES	NO	11701.7	23403.4
DGB+4650	B DIESEL GENERATOR	YES	YES	NO	11546.8	23093.5
EB+18000	ELECTRICAL BUILDING (+18000)	NO	YES	YES	5467.7	10935.5
EB+27000	ELECTRICAL BUILDING (+27000)	NO	NO	YES	26479.5	52959
EB+4650	ELECTRICAL BUILDING (+4650)	YES	YES	NO	50857.5	101715.1

Table 13.4-3

Flood Scenario Screening – Sources, Components and Capacity

Flood_Zone	Description	Flood Sources[1]	PRA[2] Components	Screened	Vol_ (gal) 6"	Vol _(gal) 1'
EB+9800	ELECTRICAL BUILDING (+9800)	YES	YES	NO	4262.1	8524.1
EBA+18000	6.9 KV SWITCHGEAR TRAIN A	NO	NO	YES	23282.2	46564.5
EBA+4650	ELECTRICAL BUILDING A BATTERY ROOMS	NO	YES	YES	9172	18344.1
EBA+9800	13.8 KV SWITCHGEAR TRAIN A	YES	YES	NO	15789.1	31578.2
EBB+18000	6.9 KV SWITCHGEAR TRAIN B	NO	NO	YES	23282.2	46564.5
EBB+4650	ELECTRICAL BUILDING B BATTERY ROOMS	NO	YES	YES	9172	18344.1
EBB+9800	13.8 KV SWITCHGEAR TRAIN B	YES	YES	NO	23282.2	46564.5
EBC+9800	ELECTRICAL BUILDING C BATTERY ROOMS	NO	YES	YES	7493.1	14986.3
FB+22500	HVAC PENTHOUSE	NO	YES	YES	28223.2	56446.4
FB+4650	FUEL BUILDING (+4650)	YES	YES	NO	30366.9	60733.8
FB-1000	FUEL BUILDING (-1000)	NO	NO	YES	22572.4	45144.7
FB-11500	FUEL BUILDING (-11500)	YES	YES	NO	24831.6	49663.1
FB-6400	FUEL BUILDING (-6400)	NO	NO	YES	22597.7	45195.4
FBSP-11500	FUEL BUILDING STORAGE POOL (-11500)	YES	NO	NO	5383.2	10766.5
FPE	FIRE PUMPHOUSE ENCLOSURE	YES	YES	NO	4684.6	9369.2
PH	PUMPHOUSE	YES	YES	NO	16817.3	33634.6
RB+13570	RX BLDG (+13570)	YES	YES	NO	23149.8	46299.7
RB+17500	RX BLDG (+17500)	YES	YES	NO	23772.4	47544.8
RB+34000	REACTOR BUILDING (+34000)	YES	YES	NO	59607	119214.1
RB+4650	RX BLDG (+4650)	NO	YES	YES	21885	43770

Table 13.4-3

Flood Scenario Screening – Sources, Components and Capacity

Flood_Zone	Description	Flood Sources[1]	PRA[2] Components	Screened	Vol_ (gal) 6"	Vol _(gal) 1'
RB+9060	RX BLDG (+9060)	NO	YES	YES	21885	43770
RB-1000	RX BLDG (-1000)	NO	YES	YES	51111.1	102222.1
RB5A+27000	ISOLATION CONDENSER/PASSIVE CONTAINMENT COOLING EXPANSION POOL 5A	NO	NO	YES	966.2	1932.4
RB5B+27000	ISOLATION CONDENSER/PASSIVE CONTAINMENT COOLING EXPANSION POOL 5B	NO	NO	YES	4169.1	8338.2
RB5C+27000	ISOLATION CONDENSER/PASSIVE CONTAINMENT COOLING EXPANSION POOL 5C	NO	NO	YES	5738.2	11476.3
RB-6400	RX BLDG (-6400)	NO	YES	YES	23285.1	46570.1
RB6A+27000	ISOLATION CONDENSER/PASSIVE CONTAINMENT COOLING EXPANSION POOL 6A	NO	NO	YES	966.2	1932.4
RB6B+27000	ISOLATION CONDENSER/PASSIVE CONTAINMENT COOLING EXPANSION POOL 6B	NO	NO	YES	4169.1	8338.2
RB6C+27000	ISOLATION CONDENSER/PASSIVE CONTAINMENT COOLING EXPANSION POOL 6C	NO	NO	YES	5738.2	11476.3
RBA-11500	RX BLDG TRAIN A (-11500)	YES	YES	NO	19961	39922.1
RBB-11500	RX BLDG TRAIN B (-11500)	YES	YES	NO	20597.7	41195.3
RBBP+17500	BUFFER POOL	NO	NO	YES	4515.6	9031.2
RBCRD-6400	CONTROL ROD DRIVE PUMP ROOM	YES	YES	NO	2645.1	5290.3
RBDP+27000	DRYER/SEP STG POOL (+27000)	NO	NO	YES	4673.3	9346.7
RBH-11500	RX BLDG HCU (-11500)	YES	YES	NO	8000.2	16000.4
RBICA+27000	ISOLATION CONDENSER HEAT EXCHANGER ROOM A	NO	YES	YES	470.4	940.9

Table 13.4-3

Flood Scenario Screening – Sources, Components and Capacity

Flood_Zone	Description	Flood Sources[1]	PRA[2] Components	Screened	Vol_ (gal) 6"	Vol _(gal) 1'
RBICB+27000	ISOLATION CONDENSER HEAT EXCHANGER ROOM B	NO	YES	YES	470.4	940.9
RBICC+27000	ISOLATION CONDENSER HEAT EXCHANGER ROOM C	NO	YES	YES	470.4	940.9
RBICD+27000	ISOLATION CONDENSER HEAT EXCHANGER ROOM D	NO	YES	YES	470.4	940.9
RBPCA+27000	PASSIVE CONTAINMENT COOLING HEAT EXCHANGER ROOM A	NO	YES	YES	712.7	1425.4
RBPCB+27000	PASSIVE CONTAINMENT COOLING HEAT EXCHANGER ROOM B	NO	YES	YES	712.7	1425.4
RBPCC+27000	PASSIVE CONTAINMENT COOLING HEAT EXCHANGER ROOM C	NO	YES	YES	712.7	1425.4
RBPCD+27000	PASSIVE CONTAINMENT COOLING HEAT EXCHANGER ROOM D	NO	YES	YES	712.7	1425.4
RBPCE+27000	PASSIVE CONTAINMENT COOLING HEAT EXCHANGER ROOM E	NO	YES	YES	712.7	1425.4
RBPCF+27000	PASSIVE CONTAINMENT COOLING HEAT EXCHANGER ROOM F	NO	YES	YES	712.7	1425.4
RBRW+27000	REACTOR WELL (+27000)	NO	NO	YES	4191.6	8383.3
RBVA+27000	IC/PCC POOL VLV ROOM A (+27000)	NO	YES	YES	383.1	766.2
RBVB+27000	IC/PCC POOL VLV ROOM B (+27000)	NO	YES	YES	383.1	766.2
RBW+4650	RX BLDG (+4650)	NO	NO	YES	22501.9	45003.9
RWB	RADWASTE BUILDING	YES	YES	NO	55899.9	111799.8
RWT	RADWASTE TUNNEL	NO	NO	YES	8245.3	16490.5
SF	SERVICE WATER BUILDING	YES	YES	NO	37113.6	74227.1

Table 13.4-3

Flood Scenario Screening – Sources, Components and Capacity

Flood_Zone	Description	Flood Sources(1)	PRA(2) Components	Screened	Vol_ (gal) 6"	Vol _(gal) 1'
TB+12000	TURBINE BUILDING (+12000)	YES	YES	NO	181440.9	362881.8
TB+20000	TURBINE BUILDING (+20000)	YES	YES	NO	152181.1	304362.1
TB+28000	TURBINE BUILDING (+28000)	YES	YES	NO	181440.9	362881.8
TB+33000	TURBINE BUILDING (+33000)	YES	YES	NO	181440.9	362881.8
TB+4650	TURBINE BUILDING (+4650)	YES	YES	NO	141048.4	282096.8
TB-1400	TURBINE BUILDING (-1400)	YES	YES	NO	170187.1	340374.2
TBA-1400	RCCW PUMP/HX ROOM TRAIN A	YES	YES	NO	7324.1	14648.2
TBAN+20000	WATER CHILLER AND PUMP ROOM A	NO	YES	YES	9200.2	18400.4
TBB-1400	RCCW PUMP/HX ROOM TRAIN B	YES	YES	NO	7324.1	14648.2
TBBN+20000	WATER CHILLER AND PUMP ROOM B	NO	YES	YES	8290.3	16580.7
TBBP+20000	BOP WATER CHILLER AND PUMP AREA	NO	YES	YES	11766.5	23533
TBPU+4650	RFP ADJUSTABLE SPEED DRIVER POWER UNITS ROOM	NO	YES	YES	20479.4	40958.7
TBTC+4650	TCCW HX AND PUMP ROOM	NO	YES	YES	19913.1	39826.3
YARD	YARD(3)	YES	YES	YES	0	0

Notes:

(1) Flood sources sufficient to damage equipment modeled in the PRA

(2) PRA components which can be damaged by flooding and are modeled in the PRA

(3) PRA components in the Yard are not considered susceptible to internal flooding damage because of the area of the Yard.

13.5 FLOODING FREQUENCIES

The flooding sources considered in the internal flooding analysis include the piping, pumps, valves, tanks, heat exchangers, and circulating water expansion joints. Data was collected from a industry source providing failure frequency data for a list of rupture groups considered in the flooding analysis. The data used for the ESBWR flood analysis is shown in Table 13.5.1. As part of this data, the frequencies of piping leaks/breaks for both small and large failures are included.. These failure frequencies for piping leaks are based on the in-service flow rates and are classified as either small, less than or equal to 50 gpm, or large, greater than 50 gpm. Based on this data, the piping failure data is independent of the pipe size.

In developing the ESBWR frequencies of flood scenarios, the location of equipment is based on best available equipment location information. Using available information along with conservative assumptions, an estimated length of pipe for each flood zone is multiplied by a failure probability per of pipe length for the given pipe type and size of leak. In additional to the piping contributions to the flood scenario frequencies, equipment containing potential flood sources also contribute to the overall flooding frequencies. These include pumps, valves, heat exchangers, tanks and expansion joints. All of the flood initiator contributions are summed to provide the initiating event frequency for each flood zone. Initiators are further divided by system and/or train impact. For example, an RWCU/SDC Train A pipe may break failing all the equipment in the zone. In addition, to the equipment lost due to flooding, RWCU/SDC Train A equipment is lost. This is a different sequence than a pipe break in the CRD piping which again will flood the equipment in the room, but now fails the CRD system instead of the RWCU/SDC Train A.

13.5.1 At-Power Flooding Frequencies

At-power flooding frequencies are included for analysis of the following conditions:

(1) The failure of the system(s) to directly cause a reactor trip, OR

(2) The flooding caused by the failure fails equipment which leads to a reactor trip, OR

(3) PRA-related equipment would be expected to be affected.

13.5.2 Shutdown Flooding Frequencies

The postulated shutdown initiating events addressed for the internal events flooding will challenge:

(1) Decay Heat Removal (includes Loss of RWCU/SDC, Loss of Preferred Power, and Loss of all Service Water), or

(2) Reactor Coolant System Inventory Control (includes several postulated LOCAs during shutdown).

All initiating event frequencies for shutdown are obtained from the at-power frequencies. However, the shutdown frequencies are adjusted to account for the number of hours in each operating mode and that the plant is assumed to be shutdown once every two years. The calculations for the shutdown initiating event frequencies are shown below.

Calculation of ESBWR - Flood Initiating Event Frequencies

Shutdown Flooding

Mode 5	Initiating Event Frequency	IE	occurrence/yr
	Total Operating Hours	8760	hrs
	Annual Number of Outages	0.5	yr
	Duration of Mode 5	192	hrs
	Mode 5 IE Frequency	0.011 IE	occurrence
Mode 5 Open	Initiating Event Frequency	IE	occurrence/yr
	Total Operating Hours	8760	hrs
	Annual Number of Outages	0.5	yr
	Duration of Mode 5 Open	48	hrs
	Mode 5 Open IE Frequency	0.0027 IE	occurrence
Mode 6 Unflooded	Initiating Event Frequency	IE	occurrence/yr
	Total Operating Hours	8760	hrs
	Annual Number of Outages	0.5	yr
	Duration of Mode 6 Unflooded	59	hrs
	Mode 5 IE Frequency	0.0034 IE	occurrence

Table 13.5-1

Flooding Frequency - Rupture Group Failure Data

Failure (RuptureGrp)	Frequency		Component Failed (CompType)	Reference
	SprayRate	MajRate		
SW	5.85E-06	1.17E-06	PIPE	13-1, Table 5-1
FP	2.15E-06	2.15E-07	PIPE	13-1, Table 5-1
SIR	2.15E-06	2.15E-07	PIPE	13-1, Table 5-1
CCW and CST	2.15E-06	2.15E-07	PIPE	13-1, Table 5-1
BWR FWC - CS Piping	2.15E-06	2.15E-07	PIPE	13-1, Table 5-1
BWR FWC - FAC Suscept Comp	2.15E-06	2.15E-07	PIPE	13-1, Table 5-1
BWR FW - SS Piping	2.15E-06	2.15E-07	PIPE	13-1, Table 5-1
Circ Water Piping	2.15E-06	2.15E-07	PIPE	13-1, Table 5-1
High Pressure Steam Piping	2.15E-06	2.15E-07	PIPE	13-1, Table 5-1
ACV	1.09E-04	7.65E-06	VALVE	13-1, Table 5-1 AOV
MOV	1.20E-04	8.35E-06	VALVE	13-1, Table 5-1 MOV
SOV	7.92E-05	5.54E-06	VALVE	13-1, Table 5-1 SOV
SRV	4.99E-05	3.75E-06	VALVE	13-2 with L=S*0.07 per 13-1
UV_	2.50E-04	1.75E-05	VALVE	13-1, Table 5-1 CKV
NMO	1.20E-04	8.35E-06	VALVE	13-1, Table 5-1 MOV
NPO	1.09E-04	7.65E-06	VALVE	13-1, Table 5-1 AOV
HOV	1.26E-04	8.74E-06	VALVE	13-1, Table 5-1 HOV
TNK	3.34E-04	2.33E-05	TANK	13-1, Table 5-1 TNK Press
HX_	4.24E-04	2.97E-05	HX	13-1, Table 5-1 HTX Shell
MP_	9.76E-04	6.83E-05	PUMP	13-1, Table 5-1 MDP

Table 13.5-1

Flooding Frequency - Rupture Group Failure Data

Failure (RuptureGrp)	Frequency		Component Failed (CompType)	Reference
	SprayRate	MajRate		
MPF	9.76E-04	6.83E-05	PUMP	13-1, Table 5-1 MDP
MPC	9.76E-04	6.83E-05	PUMP	13-1, Table 5-1 MDP
MPW	9.76E-04	6.83E-05	PUMP	13-1, Table 5-1 MDP
EDP	2.09E-03	1.46E-04	PUMP	13-1, Table 5-1 DDP
EJ	4.57E-04	3.04E-04	EXP JOINT	13-3 with S=0.6, L=0.4
SQV	7.92E-05	5.54E-06	VALVE	13-1, Table 5-1 SOV

13.6 ANALYSIS OF FLOODING SCENARIOS

Flooding initiating events are the starting point for flood-induced accident sequence analysis. The magnitude of the flood and the associated plant damage impact from the flood effects is used to determine the appropriate accident sequence analysis. The accident sequence analysis is further subdivided based on whether the plant is at-power or shutdown. No grouping of flooding scenarios is performed. The at-power CDF for each flooding scenario is obtained using the internal events L1 PRA model (discussed in Sections 7) at a truncation of 1.0E-14 and the %T-GEN initiator. Similarly, the at-power LRF for each flooding scenario is obtained by using the L2 PRA model identified in (Section 8) run at a truncation of 1.0E-14 and the %T-GEN initiator.

For the ESBWR PRA model, the internal event initiator and accident sequence structure for %T-GEN is adjusted for the equipment failed associated with the specific flooding scenario. This is done by the addition of a flag file that represents the flooding scenario and is used during the quantification. In general, if equipment is located in a flood zone which is being flooded, the equipment is assumed to fail. The exception is containment where equipment located in the upper section of containment is not failed by flooding in containment. This is due in part to the equipment being located a minimum of about 18.2 m (60 feet) above the bottom of containment and a large volume of containment available for flooding below the equipment. The damage caused by the flood is manipulated through the use of a flooding flag file to set the basic event for the affected equipment to TRUE (failed).

The shutdown CDF for each flood damage state is obtained via quantification of the shutdown PRA model (as discussed in Section 16) run at a truncation of 1.0E-14. Shutdown flooding quantification for the flooding analysis uses the shutdown initiators %M5-G31 (Mode 5 loss of RWCU/SDCS), %M5O-G31 (Mode 5 Open loss of RWCU/SDCS), and %M6U-G31 (Mode 6 Unflooded loss of RWCU/SDCS). For the ESBWR flooding PRA risk analysis, shutdown Mode 6 Flooded is not considered since in this mode adequate water level is available above the core to provide cooling. The shutdown accident sequence structure for each flooding scenario was used and adjusted to include the appropriate equipment failures. Like the at-power scenarios, the damage caused by the flooding event is quantified through the use of flag files which set the basic event for the affected equipment to TRUE (failed), as appropriate.

The initiating basic event identifier uniquely identifies each flooding scenario. The first character – "%" identifies the basic event as an initiating event. The next group of characters identifies the flood zone being analyzed and the floor elevation of that flood zone. For example, CB-7400 is the flood zone in the Control Building at elevation –7400 mm. EBA+4650 is the Electric Building area "A" elevation +4650 mm. This is followed by a hyphen and the system causing the flooding with the train causing the flooding if applicable. P21A would be the "A" train of Reactor Component Cooling Water (P21). N71 would be the Circulating Water System. This is followed by an "_" then an "L" for a large flood greater than 50 gpm or an "S" for a small flood less than or equal to 50 gpm. Next, in the naming of flooding scenarios comes another "_" and the event tree used for the accident sequence. For all at-power accident sequences, the event tree is "T-GEN", general transient. For shutdown accident sequences, the event tree is the branch in the shutdown top logic model used for the accident sequence. The designator for shutdown will be either "SD_M5_G31", Mode 5 RWCU/SDC flood, "SD_M5O_G31", Mode 5 Containment Open, RWCU/SDC flood, and "SD_M6U_G31", Mode 6 Unflooded, RWCU/SDC flood.

13.6.1 At-Power Flooding Scenarios

For postulated flood events occurring at-power, the general transient initiating event category and associated accident sequence logic is used to model the accident sequence progression. The calculated flood initiator frequency and associated equipment impacts are propagated through the general transient L1 internal events accident sequence logic for the flood scenario. The component location information within the individual flood zones is provided in NEDE-33386 (Reference 13-5). Equipment located in the flood zone which is susceptible to flooding is failed by setting the equipment basic event to TRUE in a flag file used for quantification of the scenario.

A recovery factor of 1E-02 was applied to circulating water flooding scenarios in the turbine building to account for automatic closure of isolation valves and automatic trip of circulating water pumps. This recovery value is very conservative given the common cause failure of the level transmitters is approximately 6E-07, failure of MOV is about 4E-03, and failure of a pump to trip is 9E-04 (see NEDO-33201, Table 5.2-2 & 5.2-3). No operator actions beyond those included in the internal events PRA which are used to isolate or mitigate the consequences of at-power flooding scenarios have been added to the flooding scenarios. Initiating event frequencies (%T-GEN) used for at-power scenarios are shown in Table 13.6-1.

For several reason, no engineering calculations are required to calculate the time for flooding events to reach susceptible equipment. First, timing for operator actions is not required for at-power flooding scenarios since no operator actions are used to isolate or mitigate the consequences of at-power flooding scenarios beyond those included in the internal events PRA. Second, if the equipment in the flood zone will be failed by the flood, the equipment is assumed to be failed from the start of the flood.

A L2 analysis was performed for the at-power flooding scenarios in the same way the L1 at-power flooding analysis had been performed. Equipment located in the flood zone which is susceptible to flooding is failed by setting the equipment basic event to TRUE in a flag file used for quantification of the scenario. A recovery factor of 1E-02 was applied to circulating water flooding scenarios in the Turbine Building to account for automatic closure of isolation valves and automatic trip of circulating water pumps. The flag files for L2 are identical to the L1 flag files. This was made possible because the flag files used contain both the L1 and L2 equipment affected. Setting the L2 equipment to failed does not impact the L1 results. This method ensures that the LRF analysis is modified as necessary to account for any unique flood induced scenarios.

13.6.2 Shutdown Flooding Scenarios

For postulated flood events occurring during shutdown, the Mode 5 (M5), Mode 5 Open (M5O) and Mode 6 Unflooded (M6U) transient initiating event categories and associated accident sequence logics are used to model the accident sequence progression. The calculated flood initiator frequencies and associated equipment impacts are propagated through the shutdown events accident sequence logic for the flood scenario. NEDE-33386 (Reference 13-5) contains the equipment location information. Equipment located in the flood zone which is susceptible to flooding is failed by setting the equipment basic event to TRUE in a flag file used for quantification of the scenario.

The only operator actions beyond those included in the Shutdown PRA which are used to isolate or mitigate the consequences of shutdown floods are closure of the two lower drywell hatches following an RWCU break inside containment (1E-01) and failure to close the two lower drywell hatches following an instrument line break on the bottom of the reactor vessel (1E-02) (see Section 16.3.4.3 and Table 16.3-6).

The shutdown scenarios are all assumed to be bypass scenarios. Therefore, the shutdown CDF is equal to the containment bypass frequency. The contribution of shutdown flooding to releases was calculated and is provided in the summary Table 13.6-2. Since it has been conservatively assumed that every shutdown CDF leads to an early release, it is not necessary to review each flood scenario for applicability of the LRF analysis. Every flood scenario leads to the worst case LRF.

Table 13.6-1
Flooding Analysis – At-Power Flooding Frequencies, # Failed Components and CDF

At-Power Flooding Scenario	# Components Failed/ Initiating Event Frequency	CDF
CB-7400-U43_L	27 failed events. %T-GEN set to 3.44E-5	0(1)
CTA-U43_L	27 failed events. %T-GEN set to 4.73E-5	0(1)
CTA-U43_S	27 failed events. %T-GEN set to 4.73E-4	4.74E-13
CTB-U43_L	27 failed events. %T-GEN set to 4.73E-5	0(1)
CTB-U43_S	27 failed events. %T-GEN set to 4.73E-4	4.74E-13
DGA+4650-P25A_L	23 failed events. %T-GEN set to 1.29E-5	0(1)
DGA+4650-P25A_S	23 failed events. %T-GEN set to 1.29E-4	1.03E-13
DGA+4650-Y52A_L	23 failed events. %T-GEN set to 1.075E-5	0(1)
DGA+4650-Y52A_S	23 failed events. %T-GEN set to 1.075E-4	8.59E-14
DGB+4650-P25B_L	18 failed events. %T-GEN set to 1.29E-5	0(1)
DGB+4650-P25B_S	18 failed events. %T-GEN set to 1.29E-4	1.03E-13
DGB+4650-Y52B_L	18 failed events. %T-GEN set to 1.075E-5	0(1)
DGB+4650-Y52B_S	18 failed events. %T-GEN set to 1.075E-4	8.59E-14
EB+4650-U43_L	29 failed events. %T-GEN set to 3.268E-4	7.79E-12
EB+9800-U43_L	29 failed events. %T-GEN set to 1.075E-5	1.46E-13
EBA+9800-U43_L	36 failed events. %T-GEN set to 6.45E-5	5.15E-14
EBA+9800-U43_S	36 failed events. %T-GEN set to 6.45E-4	6.46E-13
EBB+9800-U43_L	35 failed events. %T-GEN set to 6.45E-5	5.15E-14
EBB+9800-U43_S	35 failed events. %T-GEN set to 6.45E-4	6.46E-13
FB+4650-U43_L	49 failed events. %T-GEN set to 1.72E-5	0(1)
FB-11500-G21_L	77 failed events. %T-GEN set to 5.878E-4	7.83E-13
FB-11500-U43_L	49 failed events. %T-GEN set to 1.001E-4	8.00E-14
FBSP-11500-C41_L	13 failed events. %T-GEN set to 1.075E-5	2.69E-12
FBSP-11500-C41_S	13 failed events. %T-GEN set to 1.075E-4	2.69E-11
FBSP-11500-G21_L	55 failed events. %T-GEN set to 2.15E-5	0(1)
FBSP-11500-G21_S	55 failed events. %T-GEN set to 2.15E-4	2.04E-13
FBSP-11500-U43_L	27 failed events. %T-GEN set to 1.075E-5	0(1)
FBSP-11500-U43_S	27 failed events. %T-GEN set to 1.075E-4	8.59E-14
FPE-U43_L	35 failed events. %T-GEN set to 6.717E-4	6.73E-13
FPE-U43_S	35 failed events. %T-GEN set to 9.515E-3	1.53E-11
PH-N71_L	15 failed events. %T-GEN set to 2.947E-4	2.73E-13
PH-N71_S	15 failed events. %T-GEN set to 4.119E-3	6.24E-12
PH-U43_L	34 failed events. %T-GEN set to 2.15E-5	0(1)
PH-U43_S	34 failed events. %T-GEN set to 2.15E-4	1.72E-13
RB+13570-U43_L	49 failed events. %T-GEN set to 3.44E-5	9.29E-13
RB+17500-B21A_L	51 failed events. %T-GEN set to 1.72E-5	3.26E-11
RB+17500-B21B_L	55 failed events. %T-GEN set to 1.72E-5	2.31E-11
RB+17500-C41_L	35 failed events. %T-GEN set to 2.141E-4	5.67E-11
RB+17500-G21_L	77 failed events. %T-GEN set to 4.33E-5	1.38E-11

Table 13.6-1
Flooding Analysis – At-Power Flooding Frequencies, # Failed Components and CDF

At-Power Flooding Scenario	# Components Failed/ Initiating Event Frequency	CDF
RB+17500-G31A_L	68 failed events. %T-GEN set to 7.938E-5	2.33E-11
RB+17500-G31B_L	67 failed events. %T-GEN set to 7.938E-5	2.10E-11
RB+17500-P10_L	22 failed events. %T-GEN set to 5.913E-5	1.57E-11
RB+34000-G21_L	55 failed events. %T-GEN set to 3.87E-5	0(1)
RBA-11500-G21_L	94 failed events. %T-GEN set to 9.82E-5	7.85E-14
RBA-11500-G31A_L	85 failed events. %T-GEN set to 3.723E-4	2.12E-12
RBA-11500-G31B_L	84 failed events. %T-GEN set to 1.042E-4	8.33E-14
RBA-11500-U43_L	66 failed events. %T-GEN set to 9.95E-5	7.95E-14
RBB-11500-C12_L	54 failed events. %T-GEN set to 1.075E-5	7.42E-14
RBB-11500-G31A_L	68 failed events. %T-GEN set to 2.795E-5	0(1)
RBB-11500-G31B_L	67 failed events. %T-GEN set to 2.961E-4	2.74E-13
RBB-11500-P30_L	25 failed events. %T-GEN set to 3.548E-5	0(1)
RBB-11500-U43_L	49 failed events. %T-GEN set to 8.17E-5	6.53E-14
RBCRD-6400-C12_L	54 failed events. %T-GEN set to 3.857E-4	6.00E-12
RBCRD-6400-C12_S	38 failed events. %T-GEN set to 5.277E-3	8.80E-11
RBCRD-6400-P21A_L	38 failed events. %T-GEN set to 1.72E-5	0(1)
RBCRD-6400-P21A_S	22 failed events. %T-GEN set to 1.72E-4	9.55E-13
RBCRD-6400-P21B_L	42 failed events. %T-GEN set to 1.72E-5	0(1)
RBCRD-6400-P21B_S	26 failed events. %T-GEN set to 1.72E-4	9.55E-13
RBCRD-6400-P30_L	25 failed events. %T-GEN set to 2.15E-5	5.80E-13
RBCRD-6400-P30_S	9 failed events. %T-GEN set to 2.15E-4	5.98E-12
RBH-11500-C12_L	43 failed events. %T-GEN set to 1.559E-4	2.40E-12
RBH-11500-C12_S	43 failed events. %T-GEN set to 1.559E-3	2.53E-11
RBH-11500-G31A_L	57 failed events. %T-GEN set to 1.174E-4	6.51E-13
RBH-11500-G31A_S	57 failed events. %T-GEN set to 1.239E-3	7.33E-12
RBH-11500-G31B_L	56 failed events. %T-GEN set to 1.443E-4	1.15E-13
RBH-11500-G31B_S	56 failed events. %T-GEN set to 1.508E-3	1.67E-12
RBH-11500-P30_L	14 failed events. %T-GEN set to 3.225E-5	0(1)
RBH-11500-P30_S	14 failed events. %T-GEN set to 3.225E-4	7.20E-13
RWB-U43_L	27 failed events. %T-GEN set to 2.494E-4	2.22E-13
RWB-U43_S	27 failed events. %T-GEN set to 2.494E-3	2.89E-12
SF-P10_L	26 failed events. %T-GEN set to 4.3E-5	5.34E-12
SF-P10_S	26 failed events. %T-GEN set to 4.3E-4	5.97E-11
SF-P41A_L	43 failed events. %T-GEN set to 5.335E-4	7.41E-11
SF-P41A_S	43 failed events. %T-GEN set to 4.418E-3	6.40E-10
SF-P41B_L	43 failed events. %T-GEN set to 5.335E-4	7.41E-11
SF-P41B_S	43 failed events. %T-GEN set to 4.418E-3	6.40E-10
SF-Y41_L	26 failed events. %T-GEN set to 9.36E-5	1.17E-11
SF-Y41_S	26 failed events. %T-GEN set to 4.68E-4	6.50E-11

Table 13.6-1
Flooding Analysis – At-Power Flooding Frequencies, # Failed Components and CDF

At-Power Flooding Scenario	# Components Failed/ Initiating Event Frequency	CDF
TB+12000-N11_L	50 failed events. %T-GEN set to 1.763E-4	3.44E-12
TB+12000-N21_L	107 failed events. %T-GEN set to 4.392E-4	8.93E-12
TB+12000-N22_L	50 failed events. %T-GEN set to 3.225E-5	4.99E-13
TB+12000-N35_L	50 failed events. %T-GEN set to 3.87E-5	5.99E-13
TB+12000-N36_L	50 failed events. %T-GEN set to 1.398E-4	2.72E-12
TB+12000-P10_L	50 failed events. %T-GEN set to 1.29E-5	1.75E-13
TB+12000-U43_L	77 failed events. %T-GEN set to 6.02E-5	1.05E-12
TB+20000-N11_L	50 failed events. %T-GEN set to 1.72E-5	2.58E-13
TB+20000-N21_L	107 failed events. %T-GEN set to 1.565E-4	3.06E-12
TB+20000-N22_L	50 failed events. %T-GEN set to 1.935E-5	2.90E-13
TB+20000-N35_L	50 failed events. %T-GEN set to 2.15E-5	3.33E-13
TB+20000-N36_L	50 failed events. %T-GEN set to 1.29E-5	1.75E-13
TB+20000-P10_L	50 failed events. %T-GEN set to 4.3E-5	6.75E-13
TB+20000-U43_L	77 failed events. %T-GEN set to 6.45E-5	1.13E-12
TB+28000-N11_L	50 failed events. %T-GEN set to 1.118E-4	1.88E-12
TB+28000-N21_L	107 failed events. %T-GEN set to 1.935E-5	2.90E-13
TB+28000-N22_L	50 failed events. %T-GEN set to 1.29E-5	1.75E-13
TB+28000-N35_L	50 failed events. %T-GEN set to 4.73E-5	7.43E-13
TB+4650-N21_L	107 failed events. %T-GEN set to 6.02E-5	1.60E-11
TB+4650-P10_L	50 failed events. %T-GEN set to 2.365E-5	6.28E-12
TB+4650-P41A_L	67 failed events. %T-GEN set to 2.34E-4	6.23E-11
TB+4650-P41B_L	67 failed events. %T-GEN set to 2.34E-4	6.23E-11
TB+4650-U43_L	77 failed events. %T-GEN set to 1.914E-4	5.12E-11
TB-1400-K15_L	50 failed events. %T-GEN set to 6.45E-5	1.06E-12
TB-1400-N71_L	58 failed events. %T-GEN set to 3.687E-3	8.88E-11
TB-1400-P10_L	50 failed events. %T-GEN set to 4.3E-5	6.75E-13
TB-1400-P30_L	53 failed events. %T-GEN set to 8.6E-5	6.13E-12
TB-1400-U43_L	77 failed events. %T-GEN set to 2.258E-4	4.70E-12
TBA-1400-P41A_L	37 failed events. %T-GEN set to 5.265E-4	3.24E-12
TBA-1400-P41A_S	37 failed events. %T-GEN set to 2.633E-3	1.85E-11
TBB-1400-P41B_L	33 failed events. %T-GEN set to 5.265E-4	7.24E-13
TBB-1400-P41B_S	33 failed events. %T-GEN set to 2.633E-3	5.78E-12

Notes: (1) A value of 0 indicates no cutsets were generated at 1.0E-14 truncation.

Table 13.6-2
Flooding Analysis – Shutdown Flooding Scenarios CDF

Shutdown Flooding Scenario	CDF[2]
CB-7400-U43_L_SD	6.93E-14
CONTAINMENT-B21A_L_SD	4.78E-11
CONTAINMENT-B21B_L_SD	2.60E-11
CONTAINMENT-B32_L_SD	3.19E-11
CONTAINMENT-C41_L_SD	8.66E-14
CONTAINMENT-E50A_L_SD	7.47E-10
CONTAINMENT-E50B_L_SD	1.51E-11
CONTAINMENT-E50C_L_SD	1.49E-11
CONTAINMENT-E50D_L_SD	7.47E-10
CONTAINMENT-G31A_L_SD	6.79E-12
CONTAINMENT-G31B_L_SD	2.33E-13
CTA-U43_L_SD	1.61E-13
CTA-U43_S_SD	6.07E-12
CTB-U43_L_SD	1.61E-13
CTB-U43_S_SD	6.07E-12
DGA+4650-Y52A_L_SD	0[1]
DGA+4650-Y52A_S_SD	7.96E-13
DGB+4650-P25B_L_SD	0[1]
DGB+4650-Y52B_L_SD	0[1]
DGB+4650-Y52B_S_SD	7.96E-13
EB+4650-U43_L_SD	1.68E-11
EB+9800-U43_L_SD	1.28E-14
EBA+9800-U43_L_SD	2.44E-13
EBA+9800-U43_S_SD	8.43E-12
EBB+9800-U43_L_SD	2.44E-13
EBB+9800-U43_S_SD	8.43E-12
FB+4650-U43_L_SD	3.06E-12
FB-11500-G21_L_SD	1.81E-10
FB-11500-U43_L_SD	2.25E-11
FBSP-11500-C41_L_SD	0[1]
FBSP-11500-G21_L_SD	4.88E-12
FBSP-11500-U43_L_SD	0[1]
FPE-U43_L_SD	8.84E-12
FPE-U43_S_SD	1.68E-10
PH-N71_L_SD	3.15E-12
PH-N71_S_SD	6.24E-11

Table 13.6-2
Flooding Analysis – Shutdown Flooding Scenarios CDF

Shutdown Flooding Scenario	CDF[(2)]
PH-U43_L_SD	1.32E-14
PH-U43_S_SD	1.92E-12
RB+13570-U43_L_SD	7.23E-12
RB+17500-B21A_L_SD	3.18E-12
RB+17500-B21B_L_SD	1.79E-12
RB+17500-C41_L_SD	1.91E-12
RB+17500-G21_L_SD	1.21E-11
RB+17500-G31A_L_SD	8.99E-12
RB+17500-G31B_L_SD	5.63E-13
RB+17500-P10_L_SD	2.24E-13
RB+34000-G21_L_SD	9.69E-12
RBA-11500-G21_L_SD	2.76E-11
RBA-11500-G31A_L_SD	4.28E-11
RBA-11500-G31B_L_SD	7.96E-13
RBA-11500-U43_L_SD	7.37E-13
RBB-11500-C12_L_SD	1.07E-12
RBB-11500-G31A_L_SD	2.90E-12
RBB-11500-G31B_L_SD	3.80E-12
RBB-11500-P30_L_SD	1.90E-13
RBB-11500-U43_L_SD	5.68E-13
RBCRD-6400-C12_L_SD	4.43E-11
RBCRD-6400-C12_S_SD	6.25E-10
RBCRD-6400-P21A_L_SD	1.78E-12
RBCRD-6400-P21A_S_SD	1.94E-11
RBCRD-6400-P21B_L_SD	1.78E-12
RBCRD-6400-P21B_S_SD	1.94E-11
RBCRD-6400-P30_L_SD	2.23E-12
RBCRD-6400-P30_S_SD	2.43E-11
RBH-11500-C12_L_SD	1.76E-11
RBH-11500-C12_S_SD	1.83E-10
RBH-11500-G31A_L_SD	1.31E-11
RBH-11500-G31A_S_SD	1.45E-10
RBH-11500-G31B_L_SD	1.20E-12
RBH-11500-G31B_S_SD	2.56E-11
RBH-11500-P30_L_SD	1.63E-13
RBH-11500-P30_S_SD	5.12E-12
RWB-U43_L_SD	2.70E-12

Table 13.6-2
Flooding Analysis – Shutdown Flooding Scenarios CDF

Shutdown Flooding Scenario	CDF[(2)]
RWB-U43_S_SD	3.90E-11
SF-P10_L_SD	4.83E-12
SF-P10_S_SD	5.15E-11
SF-P41A_L_SD	6.42E-11
SF-P41A_S_SD	5.48E-10
SF-P41B_L_SD	6.42E-11
SF-P41B_S_SD	5.48E-10
SF-Y41_L_SD	1.07E-11
SF-Y41_S_SD	5.62E-11
TB+12000-P10_L_SD	1.20E-14
TB+12000-U43_L_SD	4.87E-13
TB+20000-P10_L_SD	2.42E-13
TB+20000-U43_L_SD	5.22E-13
TB+33000-P10_L_SD	1.46E-12
TB+4650-P10_L_SD	8.64E-14
TB+4650-P41A_L_SD	3.79E-12
TB+4650-P41B_L_SD	3.79E-12
TB+4650-U43_L_SD	2.62E-12
TB-1400-K15_L_SD	5.22E-13
TB-1400-P10_L_SD	2.42E-13
TB-1400-P30_L_SD	9.49E-12
TB-1400-U43_L_SD	3.15E-12
TBA-1400-P41A_L_SD	6.07E-11
TBA-1400-P41A_S_SD	3.12E-10
TBB-1400-P41B_L_SD	7.69E-12
TBB-1400-P41B_S_SD	4.66E-11

Notes: [(1)] A value of 0 indicates no cutsets were generated at 1.0E-14 truncation.

[(2)] CDF contributions for shutdown flood scenarios are the combined CDF from three scenarios, Mode 5, Mode 5 Open and Mode 6 Unflooded. Each have a different initiating event frequency and credits only systems available in each operating mode.

13.7 RESULTS

The ESBWR flooding risk analysis was quantified with equipment affected by the flooding having basic events set to TRUE (failed) at a truncation of 1E-14. The flooding risk is a summation of the CDFs for each of the flooding scenarios. No quantitative screening was performed on the flood scenarios to eliminate low probability flooding initiating events or sequences.

The CDF and LRF results of the ESBWR probabilistic flooding analysis are summarized in the following tables:

- CDF Contribution of At-Power Flooding Scenarios (Table 13.6-1),
- Level 2 LRF Results (Table 13.7-1), and
- CDF Contribution of Shutdown Flooding Scenarios (Table 13.6-2).

Each table lists the flooding scenario and the resulting CDF. As shown in these tables, the at-power internal flooding CDF is estimated at 1.62E-09/yr, the at-power flooding LRF excluding Technical Specification Leakage (TSL) is 2.07E-10/yr. For the shutdown internal flooding, CDF is 5.24E-09/yr and the shutdown flooding LRF, which is the same as the shutdown internal flooding CDF, is estimated at 5.24E-09/yr.

The top 200 cutsets for the at-power internal flooding CDF are provided in Table 13.7-2, and those for shutdown internal flooding CDF are provided in Table 13.7-3.

The risk importance measures for the at-power internal flooding CDF are provided in Table 13.7-4, and those for shutdown internal flooding CDF are provided in Table 13.7-5.

Table 13.7-1

Results – Level 2 LRF

Release Category	LRF (per year)[1]
TSL	1.41E-09
FR	ε[2]
BYP (At-Power)	1.29E-10
BYP (Shutdown)	5.24E-09
OPVB	ε
OPW1	6.4E-11
OPW2	1E-12
CCIW	1.2E-11
CCID	ε
EVE	0.00
DCH	0.00
BOC	0.00

[1] The frequency is the summed contribution to the release category from all accident classes, as shown in Table 8A-3. BYP is also augmented with frequency from shutdown operations that assume all shutdown core damage sequences are bypass sequences.

[2] Calculated frequencies less than 1E-12 are reported as "ε".

Table 13.7-2

Results - Internal Flooding At-Power Cutset Report

Cutsets with Descriptions Report Flooding At-Power Core Damage Frequency = 1.62E-09 Top 200 Cutsets				
#	**Cutset Prob**	**Event Prob**	**Event**	**Description**
1	5.35E-11	2.14E-04	%RB+17500-C41_L_T-GEN	
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
2	4.42E-11	4.42E-03	%SF-P41A_S_T-GEN	
		1.00E-04	C63-CCFSOFTWARE	Common cause failure of software
		1.00E-04	C72-CCFSOFTWARE	COMMON CAUSE FAILURE OF DPS PROCESSORS
3	4.42E-11	4.42E-03	%SF-P41B_S_T-GEN	
		1.00E-04	C63-CCFSOFTWARE	Common cause failure of software
		1.00E-04	C72-CCFSOFTWARE	COMMON CAUSE FAILURE OF DPS PROCESSORS
4	2.69E-11	1.07E-04	%FBSP-11500-C41_S_T-GEN	
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
5	2.37E-11	5.28E-03	%RBCRD-6400-C12_S_T-GEN	
		4.50E-05	C71-SLU-FC-R_ALL	CCF of all components in group 'C71-SLU-FC-R'
		1.00E-04	C72-CCFSOFTWARE	COMMON CAUSE FAILURE OF DPS PROCESSORS
6	2.14E-11	4.42E-03	%SF-P41A_S_T-GEN	
		1.00E+00	B32-NONCONDENSE	Non condensable gasses form in ICS sufficiently to require venting
		1.00E-04	C63-CCFSOFTWARE	Common cause failure of software
		3.00E-04	E50-UV_OC_ALL	CCF of all components in group 'E50-UV_OC'
		1.61E-01	XXX-XHE-FO-DEPRESS	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION
7	2.14E-11	4.42E-03	%SF-P41A_S_T-GEN	
		1.00E-04	C63-CCFSOFTWARE_S	Common cause failure of software, for spurious
		3.00E-04	E50-UV_OC_ALL	CCF of all components in group 'E50-UV_OC'

Table 13.7-2

Results - Internal Flooding At-Power Cutset Report

Cutsets with Descriptions Report Flooding At-Power Core Damage Frequency = 1.62E-09 Top 200 Cutsets				
#	**Cutset Prob**	**Event Prob**	**Event**	**Description**
		1.61E-01	XXX-XHE-FO-DEPRESS	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION
8	2.14E-11	4.42E-03	%SF-P41B_S_T-GEN	
		1.00E+00	B32-NONCONDENSE	Non condensable gasses form in ICS sufficiently to require venting
		1.00E-04	C63-CCFSOFTWARE	Common cause failure of software
		3.00E-04	E50-UV_OC_ALL	CCF of all components in group 'E50-UV_OC'
		1.61E-01	XXX-XHE-FO-DEPRESS	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION
9	2.14E-11	4.42E-03	%SF-P41B_S_T-GEN	
		1.00E-04	C63-CCFSOFTWARE_S	Common cause failure of software, for spurious
		3.00E-04	E50-UV_OC_ALL	CCF of all components in group 'E50-UV_OC'
		1.61E-01	XXX-XHE-FO-DEPRESS	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION
10	1.98E-11	7.94E-05	%RB+17500-G31A_L_T-GEN	
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
11	1.98E-11	7.94E-05	%RB+17500-G31B_L_T-GEN	
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
12	1.78E-11	3.69E-03	%TB-1400-N71_L_T-GEN	
		1.00E-04	C63-CCFSOFTWARE_S	Common cause failure of software, for spurious
		3.00E-04	E50-UV_OC_ALL	CCF of all components in group 'E50-UV_OC'
		1.61E-01	XXX-XHE-FO-DEPRESS	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION
13	1.50E-11	6.02E-05	%TB+4650-N21_L_T-GEN	
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
14	1.48E-11	5.91E-05	%RB+17500-P10_L_T-GEN	
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT

Table 13.7-2

Results - Internal Flooding At-Power Cutset Report

Cutsets with Descriptions Report Flooding At-Power Core Damage Frequency = 1.62E-09 Top 200 Cutsets				
#	**Cutset Prob**	**Event Prob**	**Event**	**Description**
15	1.27E-11	5.28E-03	%RBCRD-6400-C12_S_T-GEN	
		2.40E-05	C71-OLU-FC-R_ALL	CCF of all components in group 'C71-OLU-FC-R'
		1.00E-04	C72-CCFSOFTWARE	COMMON CAUSE FAILURE OF DPS PROCESSORS
16	1.08E-11	4.33E-05	%RB+17500-G21_L_T-GEN	
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
17	1.07E-11	4.42E-03	%SF-P41A_S_T-GEN	
		1.50E-04	B21-SQV-CC_ALL	CCF of all components in group 'B21-SQV-CC'
		1.00E+00	B32-NONCONDENSE	Non condensable gasses form in ICS sufficiently to require venting
		1.00E-04	C63-CCFSOFTWARE	Common cause failure of software
		1.61E-01	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION
18	1.07E-11	4.42E-03	%SF-P41A_S_T-GEN	
		1.50E-04	B21-SQV-CC_ALL	CCF of all components in group 'B21-SQV-CC'
		1.00E+00	B32-NONCONDENSE	Non condensable gasses form in ICS sufficiently to require venting
		1.00E-04	C63-CCFSOFTWARE	Common cause failure of software
		1.61E-01	XXX-XHE-FO-DEPRESS	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION
19	1.07E-11	4.42E-03	%SF-P41A_S_T-GEN	
		1.50E-04	B21-SQV-CC_ALL	CCF of all components in group 'B21-SQV-CC'
		1.00E-04	C63-CCFSOFTWARE_S	Common cause failure of software, for spurious
		1.61E-01	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION
20	1.07E-11	4.42E-03	%SF-P41A_S_T-GEN	
		1.50E-04	B21-SQV-CC_ALL	CCF of all components in group 'B21-SQV-CC'
		1.00E-04	C63-CCFSOFTWARE_S	Common cause failure of software, for spurious

Table 13.7-2

Results - Internal Flooding At-Power Cutset Report

Cutsets with Descriptions Report Flooding At-Power Core Damage Frequency = 1.62E-09 Top 200 Cutsets				
#	**Cutset Prob**	**Event Prob**	**Event**	**Description**
		1.61E-01	XXX-XHE-FO-DEPRESS	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION
21	1.07E-11	4.42E-03	%SF-P41A_S_T-GEN	
		1.00E+00	B32-NONCONDENSE	Non condensable gasses form in ICS sufficiently to require venting
		1.00E-04	C63-CCFSOFTWARE	Common cause failure of software
		1.50E-04	E50-SQV-CC_ALL	CCF of all components in group 'E50-SQV-CC'
		1.61E-01	XXX-XHE-FO-DEPRESS	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION
22	1.07E-11	4.42E-03	%SF-P41A_S_T-GEN	
		1.00E-04	C63-CCFSOFTWARE_S	Common cause failure of software, for spurious
		1.50E-04	E50-SQV-CC_ALL	CCF of all components in group 'E50-SQV-CC'
		1.61E-01	XXX-XHE-FO-DEPRESS	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION
23	1.07E-11	4.42E-03	%SF-P41B_S_T-GEN	
		1.50E-04	B21-SQV-CC_ALL	CCF of all components in group 'B21-SQV-CC'
		1.00E+00	B32-NONCONDENSE	Non condensable gasses form in ICS sufficiently to require venting
		1.00E-04	C63-CCFSOFTWARE	Common cause failure of software
		1.61E-01	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION
24	1.07E-11	4.42E-03	%SF-P41B_S_T-GEN	
		1.50E-04	B21-SQV-CC_ALL	CCF of all components in group 'B21-SQV-CC'
		1.00E+00	B32-NONCONDENSE	Non condensable gasses form in ICS sufficiently to require venting
		1.00E-04	C63-CCFSOFTWARE	Common cause failure of software
		1.61E-01	XXX-XHE-FO-DEPRESS	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION
25	1.07E-11	4.42E-03	%SF-P41B_S_T-GEN	
		1.50E-04	B21-SQV-CC_ALL	CCF of all components in group 'B21-SQV-CC'
		1.00E-04	C63-CCFSOFTWARE_S	Common cause failure of software, for spurious

Table 13.7-2

Results - Internal Flooding At-Power Cutset Report

Cutsets with Descriptions Report Flooding At-Power Core Damage Frequency = 1.62E-09 Top 200 Cutsets				
#	**Cutset Prob**	**Event Prob**	**Event**	**Description**
		1.61E-01	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION
26	1.07E-11	4.42E-03	%SF-P41B_S_T-GEN	
		1.50E-04	B21-SQV-CC_ALL	CCF of all components in group 'B21-SQV-CC'
		1.00E-04	C63-CCFSOFTWARE_S	Common cause failure of software, for spurious
		1.61E-01	XXX-XHE-FO-DEPRESS	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION
27	1.07E-11	4.42E-03	%SF-P41B_S_T-GEN	
		1.00E+00	B32-NONCONDENSE	Non condensable gasses form in ICS sufficiently to require venting
		1.00E-04	C63-CCFSOFTWARE	Common cause failure of software
		1.50E-04	E50-SQV-CC_ALL	CCF of all components in group 'E50-SQV-CC'
		1.61E-01	XXX-XHE-FO-DEPRESS	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION
28	1.07E-11	4.42E-03	%SF-P41B_S_T-GEN	
		1.00E-04	C63-CCFSOFTWARE_S	Common cause failure of software, for spurious
		1.50E-04	E50-SQV-CC_ALL	CCF of all components in group 'E50-SQV-CC'
		1.61E-01	XXX-XHE-FO-DEPRESS	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION
29	8.90E-12	3.69E-03	%TB-1400-N71_L_T-GEN	
		1.50E-04	B21-SQV-CC_ALL	CCF of all components in group 'B21-SQV-CC'
		1.00E-04	C63-CCFSOFTWARE_S	Common cause failure of software, for spurious
		1.61E-01	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION
30	8.90E-12	3.69E-03	%TB-1400-N71_L_T-GEN	
		1.50E-04	B21-SQV-CC_ALL	CCF of all components in group 'B21-SQV-CC'
		1.00E-04	C63-CCFSOFTWARE_S	Common cause failure of software, for spurious
		1.61E-01	XXX-XHE-FO-DEPRESS	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION
31	8.90E-12	3.69E-03	%TB-1400-N71_L_T-GEN	

Table 13.7-2

Results - Internal Flooding At-Power Cutset Report

Cutsets with Descriptions Report Flooding At-Power Core Damage Frequency = 1.62E-09 Top 200 Cutsets				
#	**Cutset Prob**	**Event Prob**	**Event**	**Description**
		1.00E-04	C63-CCFSOFTWARE_S	Common cause failure of software, for spurious
		1.50E-04	E50-SQV-CC_ALL	CCF of all components in group 'E50-SQV-CC'
		1.61E-01	XXX-XHE-FO-DEPRESS	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION
32	7.02E-12	1.56E-03	%RBH-11500-C12_S_T-GEN	
		4.50E-05	C71-SLU-FC-R_ALL	CCF of all components in group 'C71-SLU-FC-R'
		1.00E-04	C72-CCFSOFTWARE	COMMON CAUSE FAILURE OF DPS PROCESSORS
33	6.63E-12	4.42E-03	%SF-P41A_S_T-GEN	
		6.00E-03	B21-SRV-OO-ANYSRV1	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
34	6.63E-12	4.42E-03	%SF-P41A_S_T-GEN	
		6.00E-03	B21-SRV-OO-ANYSRV10	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
35	6.63E-12	4.42E-03	%SF-P41A_S_T-GEN	
		6.00E-03	B21-SRV-OO-ANYSRV11	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
36	6.63E-12	4.42E-03	%SF-P41A_S_T-GEN	
		6.00E-03	B21-SRV-OO-ANYSRV12	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
37	6.63E-12	4.42E-03	%SF-P41A_S_T-GEN	
		6.00E-03	B21-SRV-OO-ANYSRV13	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
38	6.63E-12	4.42E-03	%SF-P41A_S_T-GEN	
		6.00E-03	B21-SRV-OO-ANYSRV14	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE

Table 13.7-2

Results - Internal Flooding At-Power Cutset Report

Cutsets with Descriptions Report Flooding At-Power Core Damage Frequency = 1.62E-09 Top 200 Cutsets				
#	**Cutset Prob**	**Event Prob**	**Event**	**Description**
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
39	6.63E-12	4.42E-03	%SF-P41A_S_T-GEN	
		6.00E-03	B21-SRV-OO-ANYSRV15	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
40	6.63E-12	4.42E-03	%SF-P41A_S_T-GEN	
		6.00E-03	B21-SRV-OO-ANYSRV16	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
41	6.63E-12	4.42E-03	%SF-P41A_S_T-GEN	
		6.00E-03	B21-SRV-OO-ANYSRV17	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
42	6.63E-12	4.42E-03	%SF-P41A_S_T-GEN	
		6.00E-03	B21-SRV-OO-ANYSRV18	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
43	6.63E-12	4.42E-03	%SF-P41A_S_T-GEN	
		6.00E-03	B21-SRV-OO-ANYSRV2	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
44	6.63E-12	4.42E-03	%SF-P41A_S_T-GEN	
		6.00E-03	B21-SRV-OO-ANYSRV3	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
45	6.63E-12	4.42E-03	%SF-P41A_S_T-GEN	
		6.00E-03	B21-SRV-OO-ANYSRV4	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
46	6.63E-12	4.42E-03	%SF-P41A_S_T-GEN	

Table 13.7-2

Results - Internal Flooding At-Power Cutset Report

Cutsets with Descriptions Report Flooding At-Power Core Damage Frequency = 1.62E-09 Top 200 Cutsets				
#	**Cutset Prob**	**Event Prob**	**Event**	**Description**
		6.00E-03	B21-SRV-OO-ANYSRV5	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
47	6.63E-12	4.42E-03	%SF-P41A_S_T-GEN	
		6.00E-03	B21-SRV-OO-ANYSRV6	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
48	6.63E-12	4.42E-03	%SF-P41A_S_T-GEN	
		6.00E-03	B21-SRV-OO-ANYSRV7	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
49	6.63E-12	4.42E-03	%SF-P41A_S_T-GEN	
		6.00E-03	B21-SRV-OO-ANYSRV8	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
50	6.63E-12	4.42E-03	%SF-P41A_S_T-GEN	
		6.00E-03	B21-SRV-OO-ANYSRV9	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
51	6.63E-12	4.42E-03	%SF-P41B_S_T-GEN	
		6.00E-03	B21-SRV-OO-ANYSRV1	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
52	6.63E-12	4.42E-03	%SF-P41B_S_T-GEN	
		6.00E-03	B21-SRV-OO-ANYSRV10	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
53	6.63E-12	4.42E-03	%SF-P41B_S_T-GEN	
		6.00E-03	B21-SRV-OO-ANYSRV11	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT

Table 13.7-2

Results - Internal Flooding At-Power Cutset Report

Cutsets with Descriptions Report Flooding At-Power Core Damage Frequency = 1.62E-09 Top 200 Cutsets				
#	**Cutset Prob**	**Event Prob**	**Event**	**Description**
54	6.63E-12	4.42E-03	%SF-P41B_S_T-GEN	
		6.00E-03	B21-SRV-OO-ANYSRV12	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
55	6.63E-12	4.42E-03	%SF-P41B_S_T-GEN	
		6.00E-03	B21-SRV-OO-ANYSRV13	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
56	6.63E-12	4.42E-03	%SF-P41B_S_T-GEN	
		6.00E-03	B21-SRV-OO-ANYSRV14	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
57	6.63E-12	4.42E-03	%SF-P41B_S_T-GEN	
		6.00E-03	B21-SRV-OO-ANYSRV15	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
58	6.63E-12	4.42E-03	%SF-P41B_S_T-GEN	
		6.00E-03	B21-SRV-OO-ANYSRV16	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
59	6.63E-12	4.42E-03	%SF-P41B_S_T-GEN	
		6.00E-03	B21-SRV-OO-ANYSRV17	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
60	6.63E-12	4.42E-03	%SF-P41B_S_T-GEN	
		6.00E-03	B21-SRV-OO-ANYSRV18	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
61	6.63E-12	4.42E-03	%SF-P41B_S_T-GEN	
		6.00E-03	B21-SRV-OO-ANYSRV2	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE

Table 13.7-2

Results - Internal Flooding At-Power Cutset Report

Cutsets with Descriptions Report Flooding At-Power Core Damage Frequency = 1.62E-09 Top 200 Cutsets				
#	**Cutset Prob**	**Event Prob**	**Event**	**Description**
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
62	6.63E-12	4.42E-03	%SF-P41B_S_T-GEN	
		6.00E-03	B21-SRV-OO-ANYSRV3	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
63	6.63E-12	4.42E-03	%SF-P41B_S_T-GEN	
		6.00E-03	B21-SRV-OO-ANYSRV4	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
64	6.63E-12	4.42E-03	%SF-P41B_S_T-GEN	
		6.00E-03	B21-SRV-OO-ANYSRV5	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
65	6.63E-12	4.42E-03	%SF-P41B_S_T-GEN	
		6.00E-03	B21-SRV-OO-ANYSRV6	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
66	6.63E-12	4.42E-03	%SF-P41B_S_T-GEN	
		6.00E-03	B21-SRV-OO-ANYSRV7	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
67	6.63E-12	4.42E-03	%SF-P41B_S_T-GEN	
		6.00E-03	B21-SRV-OO-ANYSRV8	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
68	6.63E-12	4.42E-03	%SF-P41B_S_T-GEN	
		6.00E-03	B21-SRV-OO-ANYSRV9	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
69	6.43E-12	4.42E-03	%SF-P41A_S_T-GEN	

Table 13.7-2

Results - Internal Flooding At-Power Cutset Report

Cutsets with Descriptions Report Flooding At-Power Core Damage Frequency = 1.62E-09 Top 200 Cutsets				
#	**Cutset Prob**	**Event Prob**	**Event**	**Description**
		1.00E+00	B32-NONCONDENSE	Non condensable gasses form in ICS sufficiently to require venting
		1.00E-04	C63-CCFSOFTWARE	Common cause failure of software
		3.00E-04	E50-UV_OC_ALL	CCF of all components in group 'E50-UV_OC'
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
70	6.43E-12	4.42E-03	%SF-P41A_S_T-GEN	
		1.00E-04	C63-CCFSOFTWARE_S	Common cause failure of software, for spurious
		3.00E-04	E50-UV_OC_ALL	CCF of all components in group 'E50-UV_OC'
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
71	6.43E-12	4.42E-03	%SF-P41B_S_T-GEN	
		1.00E+00	B32-NONCONDENSE	Non condensable gasses form in ICS sufficiently to require venting
		1.00E-04	C63-CCFSOFTWARE	Common cause failure of software
		3.00E-04	E50-UV_OC_ALL	CCF of all components in group 'E50-UV_OC'
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
72	6.43E-12	4.42E-03	%SF-P41B_S_T-GEN	
		1.00E-04	C63-CCFSOFTWARE_S	Common cause failure of software, for spurious
		3.00E-04	E50-UV_OC_ALL	CCF of all components in group 'E50-UV_OC'
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
73	5.91E-12	2.37E-05	%TB+4650-P10_L_T-GEN	
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
74	5.36E-12	3.69E-03	%TB-1400-N71_L_T-GEN	
		1.00E-04	C63-CCFSOFTWARE_S	Common cause failure of software, for spurious
		3.00E-04	E50-UV_OC_ALL	CCF of all components in group 'E50-UV_OC'
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334

Table 13.7-2

Results - Internal Flooding At-Power Cutset Report

Cutsets with Descriptions Report Flooding At-Power Core Damage Frequency = 1.62E-09 Top 200 Cutsets				
#	**Cutset Prob**	**Event Prob**	**Event**	**Description**
75	5.33E-12	5.33E-04	%SF-P41A_L_T-GEN	
		1.00E-04	C63-CCFSOFTWARE	Common cause failure of software
		1.00E-04	C72-CCFSOFTWARE	COMMON CAUSE FAILURE OF DPS PROCESSORS
76	5.33E-12	5.33E-04	%SF-P41B_L_T-GEN	
		1.00E-04	C63-CCFSOFTWARE	Common cause failure of software
		1.00E-04	C72-CCFSOFTWARE	COMMON CAUSE FAILURE OF DPS PROCESSORS
77	5.16E-12	1.72E-05	%RB+17500-B21A_L_T-GEN	
		3.00E-03	B21-SQV-CC-F004E	EXPLOSIVE VALVE DPV E FAILS TO OPERATE
		1.00E-04	C63-CCFSOFTWARE_S	Common cause failure of software, for spurious
78	5.16E-12	1.72E-05	%RB+17500-B21A_L_T-GEN	
		3.00E-03	B21-SQV-CC-F004F	EXPLOSIVE VALVE DPV F FAILS TO OPERATE
		1.00E-04	C63-CCFSOFTWARE_S	Common cause failure of software, for spurious
79	5.16E-12	1.72E-05	%RB+17500-B21A_L_T-GEN	
		3.00E-03	B21-SQV-CC-F004G	EXPLOSIVE VALVE DPV G FAILS TO OPERATE
		1.00E-04	C63-CCFSOFTWARE_S	Common cause failure of software, for spurious
80	5.16E-12	1.72E-05	%RB+17500-B21A_L_T-GEN	
		3.00E-03	B21-SQV-CC-F004H	EXPLOSIVE VALVE DPV H FAILS TO OPERATE
		1.00E-04	C63-CCFSOFTWARE_S	Common cause failure of software, for spurious
81	5.02E-12	4.42E-03	%SF-P41A_S_T-GEN	
		1.00E-04	C63-CCFSOFTWARE	Common cause failure of software
		1.14E-05	R13-INV-FC-CCFNSR_ALL	CCF of all components in group 'R13-INV-FC-CCFNSR'
82	5.02E-12	4.42E-03	%SF-P41B_S_T-GEN	
		1.00E-04	C63-CCFSOFTWARE	Common cause failure of software

Table 13.7-2

Results - Internal Flooding At-Power Cutset Report

Cutsets with Descriptions Report Flooding At-Power Core Damage Frequency = 1.62E-09 Top 200 Cutsets				
#	**Cutset Prob**	**Event Prob**	**Event**	**Description**
		1.14E-05	R13-INV-FC-CCFNSR_ALL	CCF of all components in group 'R13-INV-FC-CCFNSR'
83	4.68E-12	4.68E-04	%SF-Y41_S_T-GEN	
		1.00E-04	C63-CCFSOFTWARE	Common cause failure of software
		1.00E-04	C72-CCFSOFTWARE	COMMON CAUSE FAILURE OF DPS PROCESSORS
84	4.30E-12	1.72E-05	%RB+17500-B21A_L_T-GEN	
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
85	4.30E-12	1.72E-05	%RB+17500-B21B_L_T-GEN	
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
86	4.30E-12	4.30E-04	%SF-P10_S_T-GEN	
		1.00E-04	C63-CCFSOFTWARE	Common cause failure of software
		1.00E-04	C72-CCFSOFTWARE	COMMON CAUSE FAILURE OF DPS PROCESSORS
87	3.74E-12	1.56E-03	%RBH-11500-C12_S_T-GEN	
		2.40E-05	C71-OLU-FC-R_ALL	CCF of all components in group 'C71-OLU-FC-R'
		1.00E-04	C72-CCFSOFTWARE	COMMON CAUSE FAILURE OF DPS PROCESSORS
88	3.21E-12	4.42E-03	%SF-P41A_S_T-GEN	
		1.50E-04	B21-SQV-CC_ALL	CCF of all components in group 'B21-SQV-CC'
		1.00E+00	B32-NONCONDENSE	Non condensable gasses form in ICS sufficiently to require venting
		1.00E-04	C63-CCFSOFTWARE	Common cause failure of software
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
89	3.21E-12	4.42E-03	%SF-P41A_S_T-GEN	
		1.50E-04	B21-SQV-CC_ALL	CCF of all components in group 'B21-SQV-CC'
		1.00E-04	C63-CCFSOFTWARE_S	Common cause failure of software, for spurious
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334

Table 13.7-2

Results - Internal Flooding At-Power Cutset Report

Cutsets with Descriptions Report Flooding At-Power Core Damage Frequency = 1.62E-09 Top 200 Cutsets				
#	**Cutset Prob**	**Event Prob**	**Event**	**Description**
90	3.21E-12	4.42E-03	%SF-P41A_S_T-GEN	
		1.00E+00	B32-NONCONDENSE	Non condensable gasses form in ICS sufficiently to require venting
		1.00E-04	C63-CCFSOFTWARE	Common cause failure of software
		1.50E-04	E50-SQV-CC_ALL	CCF of all components in group 'E50-SQV-CC'
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
91	3.21E-12	4.42E-03	%SF-P41A_S_T-GEN	
		1.00E-04	C63-CCFSOFTWARE_S	Common cause failure of software, for spurious
		1.50E-04	E50-SQV-CC_ALL	CCF of all components in group 'E50-SQV-CC'
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
92	3.21E-12	4.42E-03	%SF-P41B_S_T-GEN	
		1.50E-04	B21-SQV-CC_ALL	CCF of all components in group 'B21-SQV-CC'
		1.00E+00	B32-NONCONDENSE	Non condensable gasses form in ICS sufficiently to require venting
		1.00E-04	C63-CCFSOFTWARE	Common cause failure of software
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
93	3.21E-12	4.42E-03	%SF-P41B_S_T-GEN	
		1.50E-04	B21-SQV-CC_ALL	CCF of all components in group 'B21-SQV-CC'
		1.00E-04	C63-CCFSOFTWARE_S	Common cause failure of software, for spurious
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
94	3.21E-12	4.42E-03	%SF-P41B_S_T-GEN	
		1.00E+00	B32-NONCONDENSE	Non condensable gasses form in ICS sufficiently to require venting
		1.00E-04	C63-CCFSOFTWARE	Common cause failure of software
		1.50E-04	E50-SQV-CC_ALL	CCF of all components in group 'E50-SQV-CC'
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334

Table 13.7-2

Results - Internal Flooding At-Power Cutset Report

Cutsets with Descriptions Report Flooding At-Power Core Damage Frequency = 1.62E-09 Top 200 Cutsets				
#	**Cutset Prob**	**Event Prob**	**Event**	**Description**
95	3.21E-12	4.42E-03	%SF-P41B_S_T-GEN	
		1.00E-04	C63-CCFSOFTWARE_S	Common cause failure of software, for spurious
		1.50E-04	E50-SQV-CC_ALL	CCF of all components in group 'E50-SQV-CC'
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
96	2.95E-12	4.42E-03	%SF-P41A_S_T-GEN	
		1.00E-04	C63-CCFSOFTWARE	Common cause failure of software
		6.67E-06	C72-LOG-FC-D_1_2_3	CCF of three components: C72-LOG-FC-D1DPS & C72-LOG-FC-D2DPS & C72-LOG-FC-D3DPS
97	2.95E-12	4.42E-03	%SF-P41B_S_T-GEN	
		1.00E-04	C63-CCFSOFTWARE	Common cause failure of software
		6.67E-06	C72-LOG-FC-D_1_2_3	CCF of three components: C72-LOG-FC-D1DPS & C72-LOG-FC-D2DPS & C72-LOG-FC-D3DPS
98	2.70E-12	5.28E-03	%RBCRD-6400-C12_S_T-GEN	
		4.50E-05	C71-SLU-FC-R_ALL	CCF of all components in group 'C71-SLU-FC-R'
		1.14E-05	R13-INV-FC-CCFNSR_ALL	CCF of all components in group 'R13-INV-FC-CCFNSR'
99	2.69E-12	1.08E-05	%FBSP-11500-C41_L_T-GEN	
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
100	2.68E-12	3.69E-03	%TB-1400-N71_L_T-GEN	
		1.50E-04	B21-SQV-CC_ALL	CCF of all components in group 'B21-SQV-CC'
		1.00E-04	C63-CCFSOFTWARE_S	Common cause failure of software, for spurious
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
101	2.68E-12	3.69E-03	%TB-1400-N71_L_T-GEN	
		1.00E-04	C63-CCFSOFTWARE_S	Common cause failure of software, for spurious
		1.50E-04	E50-SQV-CC_ALL	CCF of all components in group 'E50-SQV-CC'

Table 13.7-2

Results - Internal Flooding At-Power Cutset Report

Cutsets with Descriptions Report Flooding At-Power Core Damage Frequency = 1.62E-09 Top 200 Cutsets				
#	**Cutset Prob**	**Event Prob**	**Event**	**Description**
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
102	2.58E-12	5.33E-04	%SF-P41A_L_T-GEN	
		1.00E+00	B32-NONCONDENSE	Non condensable gasses form in ICS sufficiently to require venting
		1.00E-04	C63-CCFSOFTWARE	Common cause failure of software
		3.00E-04	E50-UV_OC_ALL	CCF of all components in group 'E50-UV_OC'
		1.61E-01	XXX-XHE-FO-DEPRESS	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION
103	2.58E-12	5.33E-04	%SF-P41A_L_T-GEN	
		1.00E-04	C63-CCFSOFTWARE_S	Common cause failure of software, for spurious
		3.00E-04	E50-UV_OC_ALL	CCF of all components in group 'E50-UV_OC'
		1.61E-01	XXX-XHE-FO-DEPRESS	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION
104	2.58E-12	5.33E-04	%SF-P41B_L_T-GEN	
		1.00E+00	B32-NONCONDENSE	Non condensable gasses form in ICS sufficiently to require venting
		1.00E-04	C63-CCFSOFTWARE	Common cause failure of software
		3.00E-04	E50-UV_OC_ALL	CCF of all components in group 'E50-UV_OC'
		1.61E-01	XXX-XHE-FO-DEPRESS	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION
105	2.58E-12	5.33E-04	%SF-P41B_L_T-GEN	
		1.00E-04	C63-CCFSOFTWARE_S	Common cause failure of software, for spurious
		3.00E-04	E50-UV_OC_ALL	CCF of all components in group 'E50-UV_OC'
		1.61E-01	XXX-XHE-FO-DEPRESS	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION
106	2.26E-12	4.68E-04	%SF-Y41_S_T-GEN	
		1.00E+00	B32-NONCONDENSE	Non condensable gasses form in ICS sufficiently to require venting
		1.00E-04	C63-CCFSOFTWARE	Common cause failure of software
		3.00E-04	E50-UV_OC_ALL	CCF of all components in group 'E50-UV_OC'

Table 13.7-2

Results - Internal Flooding At-Power Cutset Report

Cutsets with Descriptions Report Flooding At-Power Core Damage Frequency = 1.62E-09 Top 200 Cutsets				
#	**Cutset Prob**	**Event Prob**	**Event**	**Description**
		1.61E-01	XXX-XHE-FO-DEPRESS	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION
107	2.26E-12	4.68E-04	%SF-Y41_S_T-GEN	
		1.00E-04	C63-CCFSOFTWARE_S	Common cause failure of software, for spurious
		3.00E-04	E50-UV_OC_ALL	CCF of all components in group 'E50-UV_OC'
		1.61E-01	XXX-XHE-FO-DEPRESS	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION
108	2.12E-12	4.39E-04	%TB+12000-N21_L_T-GEN	
		1.00E-04	C63-CCFSOFTWARE_S	Common cause failure of software, for spurious
		3.00E-04	E50-UV_OC_ALL	CCF of all components in group 'E50-UV_OC'
		1.61E-01	XXX-XHE-FO-DEPRESS	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION
109	2.08E-12	4.30E-04	%SF-P10_S_T-GEN	
		1.00E+00	B32-NONCONDENSE	Non condensable gasses form in ICS sufficiently to require venting
		1.00E-04	C63-CCFSOFTWARE	Common cause failure of software
		3.00E-04	E50-UV_OC_ALL	CCF of all components in group 'E50-UV_OC'
		1.61E-01	XXX-XHE-FO-DEPRESS	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION
110	2.08E-12	4.30E-04	%SF-P10_S_T-GEN	
		1.00E-04	C63-CCFSOFTWARE_S	Common cause failure of software, for spurious
		3.00E-04	E50-UV_OC_ALL	CCF of all components in group 'E50-UV_OC'
		1.61E-01	XXX-XHE-FO-DEPRESS	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION
111	1.90E-12	9.51E-03	%FPE-U43_S_T-GEN	
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
		7.99E-04	C41-UV_-CC-F004A	CHECK VALVE F004A FAILS TO OPEN
112	1.90E-12	9.51E-03	%FPE-U43_S_T-GEN	
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT

Table 13.7-2

Results - Internal Flooding At-Power Cutset Report

Cutsets with Descriptions Report Flooding At-Power Core Damage Frequency = 1.62E-09 Top 200 Cutsets				
#	**Cutset Prob**	**Event Prob**	**Event**	**Description**
		7.99E-04	C41-UV_-CC-F004B	CHECK VALVE F004B FAILS TO OPEN
113	1.90E-12	9.51E-03	%FPE-U43_S_T-GEN	
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
		7.99E-04	C41-UV_-CC-F005A	CHECK VALVE F005A FAILS TO OPEN
114	1.90E-12	9.51E-03	%FPE-U43_S_T-GEN	
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
		7.99E-04	C41-UV_-CC-F005B	CHECK VALVE F005B FAILS TO OPEN
115	1.78E-12	3.69E-03	%TB-1400-N71_L_T-GEN	
		4.84E-02	C12-BV_-RE-F065	MISPOSITION OF LOCKED OPEN VALVE F065
		1.00E-04	C63-CCFSOFTWARE	Common cause failure of software
		1.00E-04	C72-CCFSOFTWARE	COMMON CAUSE FAILURE OF DPS PROCESSORS
116	1.74E-12	3.86E-04	%RBCRD-6400-C12_L_T-GEN	
		4.50E-05	C71-SLU-FC-R_ALL	CCF of all components in group 'C71-SLU-FC-R'
		1.00E-04	C72-CCFSOFTWARE	COMMON CAUSE FAILURE OF DPS PROCESSORS
117	1.58E-12	5.28E-03	%RBCRD-6400-C12_S_T-GEN	
		4.50E-05	C71-SLU-FC-R_ALL	CCF of all components in group 'C71-SLU-FC-R'
		6.67E-06	C72-LOG-FC-D_1_2_3	CCF of three components: C72-LOG-FC-D1DPS & C72-LOG-FC-D2DPS & C72-LOG-FC-D3DPS
118	1.58E-12	3.27E-04	%EB+4650-U43_L_T-GEN	
		1.00E-04	C63-CCFSOFTWARE_S	Common cause failure of software, for spurious
		3.00E-04	E50-UV_OC_ALL	CCF of all components in group 'E50-UV_OC'
		1.61E-01	XXX-XHE-FO-DEPRESS	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION
119	1.47E-12	4.42E-03	%SF-P41A_S_T-GEN	

Table 13.7-2

Results - Internal Flooding At-Power Cutset Report

Cutsets with Descriptions Report Flooding At-Power Core Damage Frequency = 1.62E-09 Top 200 Cutsets				
#	**Cutset Prob**	**Event Prob**	**Event**	**Description**
		1.00E-04	C63-CCFSOFTWARE	Common cause failure of software
		3.33E-06	C72-LOG-FC-D_1_2	CCF of two components: C72-LOG-FC-D1DPS & C72-LOG-FC-D2DPS
120	1.47E-12	4.42E-03	%SF-P41A_S_T-GEN	
		1.00E-04	C63-CCFSOFTWARE	Common cause failure of software
		3.33E-06	C72-LOG-FC-D_1_3	CCF of two components: C72-LOG-FC-D1DPS & C72-LOG-FC-D3DPS
121	1.47E-12	4.42E-03	%SF-P41A_S_T-GEN	
		1.00E-04	C63-CCFSOFTWARE	Common cause failure of software
		3.33E-06	C72-LOG-FC-D_2_3	CCF of two components: C72-LOG-FC-D2DPS & C72-LOG-FC-D3DPS
122	1.47E-12	4.42E-03	%SF-P41B_S_T-GEN	
		1.00E-04	C63-CCFSOFTWARE	Common cause failure of software
		3.33E-06	C72-LOG-FC-D_1_2	CCF of two components: C72-LOG-FC-D1DPS & C72-LOG-FC-D2DPS
123	1.47E-12	4.42E-03	%SF-P41B_S_T-GEN	
		1.00E-04	C63-CCFSOFTWARE	Common cause failure of software
		3.33E-06	C72-LOG-FC-D_1_3	CCF of two components: C72-LOG-FC-D1DPS & C72-LOG-FC-D3DPS
124	1.47E-12	4.42E-03	%SF-P41B_S_T-GEN	
		1.00E-04	C63-CCFSOFTWARE	Common cause failure of software
		3.33E-06	C72-LOG-FC-D_2_3	CCF of two components: C72-LOG-FC-D2DPS & C72-LOG-FC-D3DPS
125	1.44E-12	5.28E-03	%RBCRD-6400-C12_S_T-GEN	
		2.40E-05	C71-OLU-FC-R_ALL	CCF of all components in group 'C71-OLU-FC-R'
		1.14E-05	R13-INV-FC-CCFNSR_ALL	CCF of all components in group 'R13-INV-FC-CCFNSR'
126	1.39E-12	5.28E-03	%RBCRD-6400-C12_S_T-GEN	

Table 13.7-2

Results - Internal Flooding At-Power Cutset Report

Cutsets with Descriptions Report Flooding At-Power Core Damage Frequency = 1.62E-09 Top 200 Cutsets				
#	**Cutset Prob**	**Event Prob**	**Event**	**Description**
		6.00E-03	B21-SRV-OO-ANYSRV1	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
		1.76E-01	N21-XHE-FO-FWRERUN	OPERATOR FAILS TO RESTART FDW AFTER RUNBACK - ATWS
127	1.39E-12	5.28E-03	%RBCRD-6400-C12_S_T-GEN	
		6.00E-03	B21-SRV-OO-ANYSRV10	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
		1.76E-01	N21-XHE-FO-FWRERUN	OPERATOR FAILS TO RESTART FDW AFTER RUNBACK - ATWS
128	1.39E-12	5.28E-03	%RBCRD-6400-C12_S_T-GEN	
		6.00E-03	B21-SRV-OO-ANYSRV11	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
		1.76E-01	N21-XHE-FO-FWRERUN	OPERATOR FAILS TO RESTART FDW AFTER RUNBACK - ATWS
129	1.39E-12	5.28E-03	%RBCRD-6400-C12_S_T-GEN	
		6.00E-03	B21-SRV-OO-ANYSRV12	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
		1.76E-01	N21-XHE-FO-FWRERUN	OPERATOR FAILS TO RESTART FDW AFTER RUNBACK - ATWS
130	1.39E-12	5.28E-03	%RBCRD-6400-C12_S_T-GEN	
		6.00E-03	B21-SRV-OO-ANYSRV13	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
		1.76E-01	N21-XHE-FO-FWRERUN	OPERATOR FAILS TO RESTART FDW AFTER RUNBACK - ATWS

Table 13.7-2

Results - Internal Flooding At-Power Cutset Report

Cutsets with Descriptions Report Flooding At-Power Core Damage Frequency = 1.62E-09 Top 200 Cutsets				
#	**Cutset Prob**	**Event Prob**	**Event**	**Description**
131	1.39E-12	5.28E-03	%RBCRD-6400-C12_S_T-GEN	
		6.00E-03	B21-SRV-OO-ANYSRV14	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
		1.76E-01	N21-XHE-FO-FWRERUN	OPERATOR FAILS TO RESTART FDW AFTER RUNBACK - ATWS
132	1.39E-12	5.28E-03	%RBCRD-6400-C12_S_T-GEN	
		6.00E-03	B21-SRV-OO-ANYSRV15	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
		1.76E-01	N21-XHE-FO-FWRERUN	OPERATOR FAILS TO RESTART FDW AFTER RUNBACK - ATWS
133	1.39E-12	5.28E-03	%RBCRD-6400-C12_S_T-GEN	
		6.00E-03	B21-SRV-OO-ANYSRV16	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
		1.76E-01	N21-XHE-FO-FWRERUN	OPERATOR FAILS TO RESTART FDW AFTER RUNBACK - ATWS
134	1.39E-12	5.28E-03	%RBCRD-6400-C12_S_T-GEN	
		6.00E-03	B21-SRV-OO-ANYSRV17	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
		1.76E-01	N21-XHE-FO-FWRERUN	OPERATOR FAILS TO RESTART FDW AFTER RUNBACK - ATWS
135	1.39E-12	5.28E-03	%RBCRD-6400-C12_S_T-GEN	
		6.00E-03	B21-SRV-OO-ANYSRV18	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT

Table 13.7-2

Results - Internal Flooding At-Power Cutset Report

Cutsets with Descriptions Report Flooding At-Power Core Damage Frequency = 1.62E-09 Top 200 Cutsets				
#	**Cutset Prob**	**Event Prob**	**Event**	**Description**
		1.76E-01	N21-XHE-FO-FWRERUN	OPERATOR FAILS TO RESTART FDW AFTER RUNBACK - ATWS
136	1.39E-12	5.28E-03	%RBCRD-6400-C12_S_T-GEN	
		6.00E-03	B21-SRV-OO-ANYSRV2	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
		1.76E-01	N21-XHE-FO-FWRERUN	OPERATOR FAILS TO RESTART FDW AFTER RUNBACK - ATWS
137	1.39E-12	5.28E-03	%RBCRD-6400-C12_S_T-GEN	
		6.00E-03	B21-SRV-OO-ANYSRV3	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
		1.76E-01	N21-XHE-FO-FWRERUN	OPERATOR FAILS TO RESTART FDW AFTER RUNBACK - ATWS
138	1.39E-12	5.28E-03	%RBCRD-6400-C12_S_T-GEN	
		6.00E-03	B21-SRV-OO-ANYSRV4	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
		1.76E-01	N21-XHE-FO-FWRERUN	OPERATOR FAILS TO RESTART FDW AFTER RUNBACK - ATWS
139	1.39E-12	5.28E-03	%RBCRD-6400-C12_S_T-GEN	
		6.00E-03	B21-SRV-OO-ANYSRV5	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
		1.76E-01	N21-XHE-FO-FWRERUN	OPERATOR FAILS TO RESTART FDW AFTER RUNBACK - ATWS
140	1.39E-12	5.28E-03	%RBCRD-6400-C12_S_T-GEN	
		6.00E-03	B21-SRV-OO-ANYSRV6	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE

Table 13.7-2

Results - Internal Flooding At-Power Cutset Report

Cutsets with Descriptions Report Flooding At-Power Core Damage Frequency = 1.62E-09 Top 200 Cutsets				
#	**Cutset Prob**	**Event Prob**	**Event**	**Description**
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
		1.76E-01	N21-XHE-FO-FWRERUN	OPERATOR FAILS TO RESTART FDW AFTER RUNBACK - ATWS
141	1.39E-12	5.28E-03	%RBCRD-6400-C12_S_T-GEN	
		6.00E-03	B21-SRV-OO-ANYSRV7	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
		1.76E-01	N21-XHE-FO-FWRERUN	OPERATOR FAILS TO RESTART FDW AFTER RUNBACK - ATWS
142	1.39E-12	5.28E-03	%RBCRD-6400-C12_S_T-GEN	
		6.00E-03	B21-SRV-OO-ANYSRV8	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
		1.76E-01	N21-XHE-FO-FWRERUN	OPERATOR FAILS TO RESTART FDW AFTER RUNBACK - ATWS
143	1.39E-12	5.28E-03	%RBCRD-6400-C12_S_T-GEN	
		6.00E-03	B21-SRV-OO-ANYSRV9	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
		1.76E-01	N21-XHE-FO-FWRERUN	OPERATOR FAILS TO RESTART FDW AFTER RUNBACK - ATWS
144	1.30E-12	4.33E-05	%RB+17500-G21_L_T-GEN	
		1.00E-04	C63-CCFSOFTWARE_S	Common cause failure of software, for spurious
		3.00E-04	E50-UV_OC_ALL	CCF of all components in group 'E50-UV_OC'
145	1.29E-12	5.33E-04	%SF-P41A_L_T-GEN	
		1.50E-04	B21-SQV-CC_ALL	CCF of all components in group 'B21-SQV-CC'
		1.00E+00	B32-NONCONDENSE	Non condensable gasses form in ICS sufficiently to require venting
		1.00E-04	C63-CCFSOFTWARE	Common cause failure of software

Table 13.7-2

Results - Internal Flooding At-Power Cutset Report

Cutsets with Descriptions Report Flooding At-Power Core Damage Frequency = 1.62E-09 Top 200 Cutsets				
#	**Cutset Prob**	**Event Prob**	**Event**	**Description**
		1.61E-01	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION
146	1.29E-12	5.33E-04	%SF-P41A_L_T-GEN	
		1.50E-04	B21-SQV-CC_ALL	CCF of all components in group 'B21-SQV-CC'
		1.00E+00	B32-NONCONDENSE	Non condensable gasses form in ICS sufficiently to require venting
		1.00E-04	C63-CCFSOFTWARE	Common cause failure of software
		1.61E-01	XXX-XHE-FO-DEPRESS	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION
147	1.29E-12	5.33E-04	%SF-P41A_L_T-GEN	
		1.50E-04	B21-SQV-CC_ALL	CCF of all components in group 'B21-SQV-CC'
		1.00E-04	C63-CCFSOFTWARE_S	Common cause failure of software, for spurious
		1.61E-01	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION
148	1.29E-12	5.33E-04	%SF-P41A_L_T-GEN	
		1.50E-04	B21-SQV-CC_ALL	CCF of all components in group 'B21-SQV-CC'
		1.00E-04	C63-CCFSOFTWARE_S	Common cause failure of software, for spurious
		1.61E-01	XXX-XHE-FO-DEPRESS	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION
149	1.29E-12	5.33E-04	%SF-P41A_L_T-GEN	
		1.00E+00	B32-NONCONDENSE	Non condensable gasses form in ICS sufficiently to require venting
		1.00E-04	C63-CCFSOFTWARE	Common cause failure of software
		1.50E-04	E50-SQV-CC_ALL	CCF of all components in group 'E50-SQV-CC'
		1.61E-01	XXX-XHE-FO-DEPRESS	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION
150	1.29E-12	5.33E-04	%SF-P41A_L_T-GEN	
		1.00E-04	C63-CCFSOFTWARE_S	Common cause failure of software, for spurious
		1.50E-04	E50-SQV-CC_ALL	CCF of all components in group 'E50-SQV-CC'
		1.61E-01	XXX-XHE-FO-DEPRESS	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION

Table 13.7-2

Results - Internal Flooding At-Power Cutset Report

Cutsets with Descriptions Report Flooding At-Power Core Damage Frequency = 1.62E-09 Top 200 Cutsets				
#	**Cutset Prob**	**Event Prob**	**Event**	**Description**
151	1.29E-12	5.33E-04	%SF-P41B_L_T-GEN	
		1.50E-04	B21-SQV-CC_ALL	CCF of all components in group 'B21-SQV-CC'
		1.00E+00	B32-NONCONDENSE	Non condensable gasses form in ICS sufficiently to require venting
		1.00E-04	C63-CCFSOFTWARE	Common cause failure of software
		1.61E-01	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION
152	1.29E-12	5.33E-04	%SF-P41B_L_T-GEN	
		1.50E-04	B21-SQV-CC_ALL	CCF of all components in group 'B21-SQV-CC'
		1.00E+00	B32-NONCONDENSE	Non condensable gasses form in ICS sufficiently to require venting
		1.00E-04	C63-CCFSOFTWARE	Common cause failure of software
		1.61E-01	XXX-XHE-FO-DEPRESS	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION
153	1.29E-12	5.33E-04	%SF-P41B_L_T-GEN	
		1.50E-04	B21-SQV-CC_ALL	CCF of all components in group 'B21-SQV-CC'
		1.00E-04	C63-CCFSOFTWARE_S	Common cause failure of software, for spurious
		1.61E-01	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION
154	1.29E-12	5.33E-04	%SF-P41B_L_T-GEN	
		1.50E-04	B21-SQV-CC_ALL	CCF of all components in group 'B21-SQV-CC'
		1.00E-04	C63-CCFSOFTWARE_S	Common cause failure of software, for spurious
		1.61E-01	XXX-XHE-FO-DEPRESS	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION
155	1.29E-12	5.33E-04	%SF-P41B_L_T-GEN	
		1.00E+00	B32-NONCONDENSE	Non condensable gasses form in ICS sufficiently to require venting
		1.00E-04	C63-CCFSOFTWARE	Common cause failure of software
		1.50E-04	E50-SQV-CC_ALL	CCF of all components in group 'E50-SQV-CC'
		1.61E-01	XXX-XHE-FO-DEPRESS	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION

Table 13.7-2

Results - Internal Flooding At-Power Cutset Report

Cutsets with Descriptions Report Flooding At-Power Core Damage Frequency = 1.62E-09 Top 200 Cutsets				
#	**Cutset Prob**	**Event Prob**	**Event**	**Description**
156	1.29E-12	5.33E-04	%SF-P41B_L_T-GEN	
		1.00E-04	C63-CCFSOFTWARE_S	Common cause failure of software, for spurious
		1.50E-04	E50-SQV-CC_ALL	CCF of all components in group 'E50-SQV-CC'
		1.61E-01	XXX-XHE-FO-DEPRESS	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION
157	1.13E-12	2.34E-04	%TB+4650-P41A_L_T-GEN	
		1.00E-04	C63-CCFSOFTWARE_S	Common cause failure of software, for spurious
		3.00E-04	E50-UV_OC_ALL	CCF of all components in group 'E50-UV_OC'
		1.61E-01	XXX-XHE-FO-DEPRESS	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION
158	1.13E-12	2.34E-04	%TB+4650-P41B_L_T-GEN	
		1.00E-04	C63-CCFSOFTWARE_S	Common cause failure of software, for spurious
		3.00E-04	E50-UV_OC_ALL	CCF of all components in group 'E50-UV_OC'
		1.61E-01	XXX-XHE-FO-DEPRESS	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION
159	1.13E-12	4.68E-04	%SF-Y41_S_T-GEN	
		1.50E-04	B21-SQV-CC_ALL	CCF of all components in group 'B21-SQV-CC'
		1.00E+00	B32-NONCONDENSE	Non condensable gasses form in ICS sufficiently to require venting
		1.00E-04	C63-CCFSOFTWARE	Common cause failure of software
		1.61E-01	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION
160	1.13E-12	4.68E-04	%SF-Y41_S_T-GEN	
		1.50E-04	B21-SQV-CC_ALL	CCF of all components in group 'B21-SQV-CC'
		1.00E+00	B32-NONCONDENSE	Non condensable gasses form in ICS sufficiently to require venting
		1.00E-04	C63-CCFSOFTWARE	Common cause failure of software
		1.61E-01	XXX-XHE-FO-DEPRESS	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION
161	1.13E-12	4.68E-04	%SF-Y41_S_T-GEN	

Table 13.7-2

Results - Internal Flooding At-Power Cutset Report

Cutsets with Descriptions Report Flooding At-Power Core Damage Frequency = 1.62E-09 Top 200 Cutsets				
#	**Cutset Prob**	**Event Prob**	**Event**	**Description**
		1.50E-04	B21-SQV-CC_ALL	CCF of all components in group 'B21-SQV-CC'
		1.00E-04	C63-CCFSOFTWARE_S	Common cause failure of software, for spurious
		1.61E-01	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION
162	1.13E-12	4.68E-04	%SF-Y41_S_T-GEN	
		1.50E-04	B21-SQV-CC_ALL	CCF of all components in group 'B21-SQV-CC'
		1.00E-04	C63-CCFSOFTWARE_S	Common cause failure of software, for spurious
		1.61E-01	XXX-XHE-FO-DEPRESS	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION
163	1.13E-12	4.68E-04	%SF-Y41_S_T-GEN	
		1.00E+00	B32-NONCONDENSE	Non condensable gasses form in ICS sufficiently to require venting
		1.00E-04	C63-CCFSOFTWARE	Common cause failure of software
		1.50E-04	E50-SQV-CC_ALL	CCF of all components in group 'E50-SQV-CC'
		1.61E-01	XXX-XHE-FO-DEPRESS	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION
164	1.13E-12	4.68E-04	%SF-Y41_S_T-GEN	
		1.00E-04	C63-CCFSOFTWARE_S	Common cause failure of software, for spurious
		1.50E-04	E50-SQV-CC_ALL	CCF of all components in group 'E50-SQV-CC'
		1.61E-01	XXX-XHE-FO-DEPRESS	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION
165	1.09E-12	2.26E-04	%TB-1400-U43_L_T-GEN	
		1.00E-04	C63-CCFSOFTWARE_S	Common cause failure of software, for spurious
		3.00E-04	E50-UV_OC_ALL	CCF of all components in group 'E50-UV_OC'
		1.61E-01	XXX-XHE-FO-DEPRESS	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION
166	1.07E-12	4.42E-03	%SF-P41A_S_T-GEN	
		1.00E+00	B32-NONCONDENSE	Non condensable gasses form in ICS sufficiently to require venting
		1.00E-04	C63-CCFSOFTWARE	Common cause failure of software

Table 13.7-2

Results - Internal Flooding At-Power Cutset Report

Cutsets with Descriptions Report Flooding At-Power Core Damage Frequency = 1.62E-09 Top 200 Cutsets				
#	**Cutset Prob**	**Event Prob**	**Event**	**Description**
		1.50E-05	E50-SQV-CF-4OPEN	CCF OF 4 OR MORE SQUIB VALVES TO OPEN
		1.61E-01	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION
167	1.07E-12	4.42E-03	%SF-P41A_S_T-GEN	
		1.00E+00	B32-NONCONDENSE	Non condensable gasses form in ICS sufficiently to require venting
		1.00E-04	C63-CCFSOFTWARE	Common cause failure of software
		1.50E-05	E50-SQV-CF-4OPEN	CCF OF 4 OR MORE SQUIB VALVES TO OPEN
		1.61E-01	XXX-XHE-FO-DEPRESS	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION
168	1.07E-12	4.42E-03	%SF-P41B_S_T-GEN	
		1.00E+00	B32-NONCONDENSE	Non condensable gasses form in ICS sufficiently to require venting
		1.00E-04	C63-CCFSOFTWARE	Common cause failure of software
		1.50E-05	E50-SQV-CF-4OPEN	CCF OF 4 OR MORE SQUIB VALVES TO OPEN
		1.61E-01	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION
169	1.07E-12	4.42E-03	%SF-P41B_S_T-GEN	
		1.00E+00	B32-NONCONDENSE	Non condensable gasses form in ICS sufficiently to require venting
		1.00E-04	C63-CCFSOFTWARE	Common cause failure of software
		1.50E-05	E50-SQV-CF-4OPEN	CCF OF 4 OR MORE SQUIB VALVES TO OPEN
		1.61E-01	XXX-XHE-FO-DEPRESS	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION
170	1.06E-12	4.39E-04	%TB+12000-N21_L_T-GEN	
		1.50E-04	B21-SQV-CC_ALL	CCF of all components in group 'B21-SQV-CC'
		1.00E-04	C63-CCFSOFTWARE_S	Common cause failure of software, for spurious
		1.61E-01	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION
171	1.06E-12	4.39E-04	%TB+12000-N21_L_T-GEN	
		1.50E-04	B21-SQV-CC_ALL	CCF of all components in group 'B21-SQV-CC'

Table 13.7-2

Results - Internal Flooding At-Power Cutset Report

Cutsets with Descriptions Report Flooding At-Power Core Damage Frequency = 1.62E-09 Top 200 Cutsets				
#	**Cutset Prob**	**Event Prob**	**Event**	**Description**
		1.00E-04	C63-CCFSOFTWARE_S	Common cause failure of software, for spurious
		1.61E-01	XXX-XHE-FO-DEPRESS	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION
172	1.06E-12	4.39E-04	%TB+12000-N21_L_T-GEN	
		1.00E-04	C63-CCFSOFTWARE_S	Common cause failure of software, for spurious
		1.50E-04	E50-SQV-CC_ALL	CCF of all components in group 'E50-SQV-CC'
		1.61E-01	XXX-XHE-FO-DEPRESS	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION
173	1.05E-12	5.28E-03	%RBCRD-6400-C12_S_T-GEN	
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
		7.99E-04	C41-UV_-CC-F004A	CHECK VALVE F004A FAILS TO OPEN
174	1.05E-12	5.28E-03	%RBCRD-6400-C12_S_T-GEN	
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
		7.99E-04	C41-UV_-CC-F004B	CHECK VALVE F004B FAILS TO OPEN
175	1.05E-12	5.28E-03	%RBCRD-6400-C12_S_T-GEN	
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
		7.99E-04	C41-UV_-CC-F005A	CHECK VALVE F005A FAILS TO OPEN
176	1.05E-12	5.28E-03	%RBCRD-6400-C12_S_T-GEN	
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
		7.99E-04	C41-UV_-CC-F005B	CHECK VALVE F005B FAILS TO OPEN
177	1.04E-12	4.30E-04	%SF-P10_S_T-GEN	
		1.50E-04	B21-SQV-CC_ALL	CCF of all components in group 'B21-SQV-CC'

Table 13.7-2

Results - Internal Flooding At-Power Cutset Report

Cutsets with Descriptions Report Flooding At-Power Core Damage Frequency = 1.62E-09 Top 200 Cutsets				
#	**Cutset Prob**	**Event Prob**	**Event**	**Description**
		1.00E+00	B32-NONCONDENSE	Non condensable gasses form in ICS sufficiently to require venting
		1.00E-04	C63-CCFSOFTWARE	Common cause failure of software
		1.61E-01	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION
178	1.04E-12	4.30E-04	%SF-P10_S_T-GEN	
		1.50E-04	B21-SQV-CC_ALL	CCF of all components in group 'B21-SQV-CC'
		1.00E+00	B32-NONCONDENSE	Non condensable gasses form in ICS sufficiently to require venting
		1.00E-04	C63-CCFSOFTWARE	Common cause failure of software
		1.61E-01	XXX-XHE-FO-DEPRESS	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION
179	1.04E-12	4.30E-04	%SF-P10_S_T-GEN	
		1.50E-04	B21-SQV-CC_ALL	CCF of all components in group 'B21-SQV-CC'
		1.00E-04	C63-CCFSOFTWARE_S	Common cause failure of software, for spurious
		1.61E-01	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION
180	1.04E-12	4.30E-04	%SF-P10_S_T-GEN	
		1.50E-04	B21-SQV-CC_ALL	CCF of all components in group 'B21-SQV-CC'
		1.00E-04	C63-CCFSOFTWARE_S	Common cause failure of software, for spurious
		1.61E-01	XXX-XHE-FO-DEPRESS	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION
181	1.04E-12	4.30E-04	%SF-P10_S_T-GEN	
		1.00E+00	B32-NONCONDENSE	Non condensable gasses form in ICS sufficiently to require venting
		1.00E-04	C63-CCFSOFTWARE	Common cause failure of software
		1.50E-04	E50-SQV-CC_ALL	CCF of all components in group 'E50-SQV-CC'
		1.61E-01	XXX-XHE-FO-DEPRESS	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION
182	1.04E-12	4.30E-04	%SF-P10_S_T-GEN	
		1.00E-04	C63-CCFSOFTWARE_S	Common cause failure of software, for spurious

Table 13.7-2

Results - Internal Flooding At-Power Cutset Report

Cutsets with Descriptions Report Flooding At-Power Core Damage Frequency = 1.62E-09 Top 200 Cutsets				
#	**Cutset Prob**	**Event Prob**	**Event**	**Description**
		1.50E-04	E50-SQV-CC_ALL	CCF of all components in group 'E50-SQV-CC'
		1.61E-01	XXX-XHE-FO-DEPRESS	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION
183	1.04E-12	2.14E-04	%RB+17500-C41_L_T-GEN	
		1.00E-04	C63-CCFSOFTWARE_S	Common cause failure of software, for spurious
		3.00E-04	E50-UV_OC_ALL	CCF of all components in group 'E50-UV_OC'
		1.61E-01	XXX-XHE-FO-DEPRESS	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION
184	9.82E-13	5.28E-03	%RBCRD-6400-C12_S_T-GEN	
		1.86E-06	C71-LDD-CF-2OF4G	CCF LOAD DRIVER (2 or more of 4 GROUPS)
		1.00E-04	C72-CCFSOFTWARE	COMMON CAUSE FAILURE OF DPS PROCESSORS
185	9.36E-13	9.36E-05	%SF-Y41_L_T-GEN	
		1.00E-04	C63-CCFSOFTWARE	Common cause failure of software
		1.00E-04	C72-CCFSOFTWARE	COMMON CAUSE FAILURE OF DPS PROCESSORS
186	9.26E-13	1.91E-04	%TB+4650-U43_L_T-GEN	
		1.00E-04	C63-CCFSOFTWARE_S	Common cause failure of software, for spurious
		3.00E-04	E50-UV_OC_ALL	CCF of all components in group 'E50-UV_OC'
		1.61E-01	XXX-XHE-FO-DEPRESS	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION
187	9.26E-13	3.86E-04	%RBCRD-6400-C12_L_T-GEN	
		2.40E-05	C71-OLU-FC-R_ALL	CCF of all components in group 'C71-OLU-FC-R'
		1.00E-04	C72-CCFSOFTWARE	COMMON CAUSE FAILURE OF DPS PROCESSORS
188	8.97E-13	5.28E-03	%RBCRD-6400-C12_S_T-GEN	
		1.70E-06	C12-SOV-CF-V139	CCF TO OPEN (VENT) 0F SCRAM PILOT SOLENOID VALVES SOV-139

Table 13.7-2

Results - Internal Flooding At-Power Cutset Report

Cutsets with Descriptions Report Flooding At-Power Core Damage Frequency = 1.62E-09 Top 200 Cutsets				
#	**Cutset Prob**	**Event Prob**	**Event**	**Description**
		1.00E-04	C72-CCFSOFTWARE	COMMON CAUSE FAILURE OF DPS PROCESSORS
189	8.83E-13	4.42E-03	%SF-P41A_S_T-GEN	
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
		7.99E-04	C41-UV_-CC-F004A	CHECK VALVE F004A FAILS TO OPEN
190	8.83E-13	4.42E-03	%SF-P41A_S_T-GEN	
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
		7.99E-04	C41-UV_-CC-F004B	CHECK VALVE F004B FAILS TO OPEN
191	8.83E-13	4.42E-03	%SF-P41A_S_T-GEN	
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
		7.99E-04	C41-UV_-CC-F005A	CHECK VALVE F005A FAILS TO OPEN
192	8.83E-13	4.42E-03	%SF-P41A_S_T-GEN	
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
		7.99E-04	C41-UV_-CC-F005B	CHECK VALVE F005B FAILS TO OPEN
193	8.83E-13	4.42E-03	%SF-P41B_S_T-GEN	
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
		7.99E-04	C41-UV_-CC-F004A	CHECK VALVE F004A FAILS TO OPEN
194	8.83E-13	4.42E-03	%SF-P41B_S_T-GEN	
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
		7.99E-04	C41-UV_-CC-F004B	CHECK VALVE F004B FAILS TO OPEN
195	8.83E-13	4.42E-03	%SF-P41B_S_T-GEN	
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
		7.99E-04	C41-UV_-CC-F005A	CHECK VALVE F005A FAILS TO OPEN
196	8.83E-13	4.42E-03	%SF-P41B_S_T-GEN	

Table 13.7-2

Results - Internal Flooding At-Power Cutset Report

Cutsets with Descriptions Report Flooding At-Power Core Damage Frequency = 1.62E-09 Top 200 Cutsets				
#	**Cutset Prob**	**Event Prob**	**Event**	**Description**
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
		7.99E-04	C41-UV_-CC-F005B	CHECK VALVE F005B FAILS TO OPEN
197	8.80E-13	5.28E-03	%RBCRD-6400-C12_S_T-GEN	
		1.67E-06	C71-SLU-FC-R_1_2_3	CCF of three components: C71-SLU-FC-RPSDIV1 & C71-SLU-FC-RPSDIV2 & C71-SLU-FC-RP
		1.00E-04	C72-CCFSOFTWARE	COMMON CAUSE FAILURE OF DPS PROCESSORS
198	8.80E-13	5.28E-03	%RBCRD-6400-C12_S_T-GEN	
		1.67E-06	C71-SLU-FC-R_1_2_4	CCF of three components: C71-SLU-FC-RPSDIV1 & C71-SLU-FC-RPSDIV2 & C71-SLU-FC-RP
		1.00E-04	C72-CCFSOFTWARE	COMMON CAUSE FAILURE OF DPS PROCESSORS
199	8.80E-13	5.28E-03	%RBCRD-6400-C12_S_T-GEN	
		1.67E-06	C71-SLU-FC-R_1_3_4	CCF of three components: C71-SLU-FC-RPSDIV1 & C71-SLU-FC-RPSDIV3 & C71-SLU-FC-RP
		1.00E-04	C72-CCFSOFTWARE	COMMON CAUSE FAILURE OF DPS PROCESSORS
200	8.80E-13	5.28E-03	%RBCRD-6400-C12_S_T-GEN	
		1.67E-06	C71-SLU-FC-R_2_3_4	CCF of three components: C71-SLU-FC-RPSDIV2 & C71-SLU-FC-RPSDIV3 & C71-SLU-FC-RP
		1.00E-04	C72-CCFSOFTWARE	COMMON CAUSE FAILURE OF DPS PROCESSORS

Table 13.7-3

Results - Internal Flooding Shutdown Cutset Report

Cutsets with Descriptions Report Flooding Shutdown Core Damage Frequency = 5.24E-09 Top 200 Cutsets				
#	**Cutset Prob**	**Event Prob**	**Event**	**Description**
1	1.20E-10	3.54E-07	%CONTAINMENT-E50A_L_SD_M6U_G31	
		3.21E-02	C12-XHE-FO-LEVEL2	Operator fails to back-up CRD actuation
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
2	1.20E-10	3.54E-07	%CONTAINMENT-E50D_L_SD_M6U_G31	
		3.21E-02	C12-XHE-FO-LEVEL2	Operator fails to back-up CRD actuation
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
3	1.01E-10	1.79E-05	%RBCRD-6400-C12_S_SD_M6U_G31	
		5.35E-04	E50-STR-PG_ALL	CCF of all components in group 'E50-STR-PG'
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC

Table 13.7-3

Results - Internal Flooding Shutdown Cutset Report

Cutsets with Descriptions Report Flooding Shutdown Core Damage Frequency = 5.24E-09 Top 200 Cutsets				
4	8.48E-11	1.50E-05	%SF-P41A_S_SD_M6U_G31	
		5.35E-04	E50-STR-PG_ALL	CCF of all components in group 'E50-STR-PG'
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
5	8.48E-11	1.50E-05	%SF-P41B_S_SD_M6U_G31	
		5.35E-04	E50-STR-PG_ALL	CCF of all components in group 'E50-STR-PG'
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
6	5.80E-11	1.79E-05	%RBCRD-6400-C12_S_SD_M6U_G31	
		1.75E-02	E50-UV_-OC-F003A	CHECK VALVE F003A FAILS TO REMAIN OPEN OR PLUG
		1.75E-02	E50-UV_-OC-F003E	CHECK VALVE F003E FAILS TO REMAIN OPEN OR PLUG
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
7	5.80E-11	1.79E-05	%RBCRD-6400-C12_S_SD_M6U_G31	
		1.75E-02	E50-UV_-OC-F003D	CHECK VALVE F003D FAILS TO REMAIN OPEN OR PLUG
		1.75E-02	E50-UV_-OC-F003H	CHECK VALVE F003H FAILS TO REMAIN OPEN OR PLUG
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC

Table 13.7-3

Results - Internal Flooding Shutdown Cutset Report

Cutsets with Descriptions Report Flooding Shutdown Core Damage Frequency = 5.24E-09 Top 200 Cutsets				
8	5.69E-11	1.79E-05	%RBCRD-6400-C12_S_SD_M6U_G31	
		3.00E-04	E50-UV_OC_ALL	CCF of all components in group 'E50-UV_OC'
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
9	5.68E-11	1.79E-05	%RBCRD-6400-C12_S_SD_M6U_G31	
		3.00E-04	E50-SQV-CC-EQU_ALL	CCF of all components in group 'E50-SQV-CC-EQU'
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
10	5.05E-11	8.95E-06	%TBA-1400-P41A_S_SD_M6U_G31	
		5.35E-04	E50-STR-PG_ALL	CCF of all components in group 'E50-STR-PG'
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
11	4.85E-11	1.50E-05	%SF-P41A_S_SD_M6U_G31	
		1.75E-02	E50-UV_-OC-F003A	CHECK VALVE F003A FAILS TO REMAIN OPEN OR PLUG
		1.75E-02	E50-UV_-OC-F003E	CHECK VALVE F003E FAILS TO REMAIN OPEN OR PLUG
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC

Table 13.7-3

Results - Internal Flooding Shutdown Cutset Report

Cutsets with Descriptions Report Flooding Shutdown Core Damage Frequency = 5.24E-09 Top 200 Cutsets				
12	4.85E-11	1.50E-05	%SF-P41A_S_SD_M6U_G31	
		1.75E-02	E50-UV_-OC-F003D	CHECK VALVE F003D FAILS TO REMAIN OPEN OR PLUG
		1.75E-02	E50-UV_-OC-F003H	CHECK VALVE F003H FAILS TO REMAIN OPEN OR PLUG
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
13	4.85E-11	1.50E-05	%SF-P41B_S_SD_M6U_G31	
		1.75E-02	E50-UV_-OC-F003A	CHECK VALVE F003A FAILS TO REMAIN OPEN OR PLUG
		1.75E-02	E50-UV_-OC-F003E	CHECK VALVE F003E FAILS TO REMAIN OPEN OR PLUG
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
14	4.85E-11	1.50E-05	%SF-P41B_S_SD_M6U_G31	
		1.75E-02	E50-UV_-OC-F003D	CHECK VALVE F003D FAILS TO REMAIN OPEN OR PLUG
		1.75E-02	E50-UV_-OC-F003H	CHECK VALVE F003H FAILS TO REMAIN OPEN OR PLUG
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
15	4.76E-11	1.50E-05	%SF-P41A_S_SD_M6U_G31	
		3.00E-04	E50-UV_OC_ALL	CCF of all components in group 'E50-UV_OC'
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC

Table 13.7-3

Results - Internal Flooding Shutdown Cutset Report

Cutsets with Descriptions Report Flooding Shutdown Core Damage Frequency = 5.24E-09 Top 200 Cutsets				
16	4.76E-11	1.50E-05	%SF-P41B_S_SD_M6U_G31	
		3.00E-04	E50-UV_OC_ALL	CCF of all components in group 'E50-UV_OC'
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
17	4.75E-11	1.50E-05	%SF-P41A_S_SD_M6U_G31	
		3.00E-04	E50-SQV-CC-EQU_ALL	CCF of all components in group 'E50-SQV-CC-EQU'
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
18	4.75E-11	1.50E-05	%SF-P41B_S_SD_M6U_G31	
		3.00E-04	E50-SQV-CC-EQU_ALL	CCF of all components in group 'E50-SQV-CC-EQU'
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
19	4.52E-11	3.54E-07	%CONTAINMENT- E50A_L_SD_M6U_G31	
		1.21E-02	C12-BV_-RE-F021A	MISPOSITION OF VALVE F021A
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC

Table 13.7-3

Results - Internal Flooding Shutdown Cutset Report

Cutsets with Descriptions Report Flooding Shutdown Core Damage Frequency = 5.24E-09 Top 200 Cutsets				
20	4.52E-11	3.54E-07	%CONTAINMENT-E50A_L_SD_M6U_G31	
		1.21E-02	C12-BV_-RE-F021B	MISPOSITION OF VALVE F021B
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
21	4.52E-11	3.54E-07	%CONTAINMENT-E50A_L_SD_M6U_G31	
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		1.21E-02	P21-BV_-RE-F049A	MISPOSITION OF RCCW INLET TO CRD HEAT EXCHANGER
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
22	4.52E-11	3.54E-07	%CONTAINMENT-E50A_L_SD_M6U_G31	
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		1.21E-02	P21-BV_-RE-F049B	MISPOSITION OF RCCW INLET TO CRD HEAT EXCHANGER
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
23	4.52E-11	3.54E-07	%CONTAINMENT-E50A_L_SD_M6U_G31	
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		1.21E-02	P21-BV_-RE-F050A	MISPOSITION OF RCCW OUTLET FROM CRD HEAT EXCHANGER
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC

Table 13.7-3

Results - Internal Flooding Shutdown Cutset Report

Cutsets with Descriptions Report Flooding Shutdown Core Damage Frequency = 5.24E-09 Top 200 Cutsets				
24	4.52E-11	3.54E-07	%CONTAINMENT- E50A_L_SD_M6U_G31	
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		1.21E-02	P21-BV_-RE-F050B	MISPOSITION OF RCCW OUTLET FROM CRD HEAT EXCHANGER
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
25	4.52E-11	3.54E-07	%CONTAINMENT- E50D_L_SD_M6U_G31	
		1.21E-02	C12-BV_-RE-F021A	MISPOSITION OF VALVE F021A
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
26	4.52E-11	3.54E-07	%CONTAINMENT- E50D_L_SD_M6U_G31	
		1.21E-02	C12-BV_-RE-F021B	MISPOSITION OF VALVE F021B
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC

Table 13.7-3

Results - Internal Flooding Shutdown Cutset Report

Cutsets with Descriptions Report Flooding Shutdown Core Damage Frequency = 5.24E-09 Top 200 Cutsets				
27	4.52E-11	3.54E-07	%CONTAINMENT- E50D_L_SD_M6U_G31	
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		1.21E-02	P21-BV_-RE-F049A	MISPOSITION OF RCCW INLET TO CRD HEAT EXCHANGER
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
28	4.52E-11	3.54E-07	%CONTAINMENT- E50D_L_SD_M6U_G31	
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		1.21E-02	P21-BV_-RE-F049B	MISPOSITION OF RCCW INLET TO CRD HEAT EXCHANGER
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
29	4.52E-11	3.54E-07	%CONTAINMENT- E50D_L_SD_M6U_G31	
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		1.21E-02	P21-BV_-RE-F050A	MISPOSITION OF RCCW OUTLET FROM CRD HEAT EXCHANGER
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
30	4.52E-11	3.54E-07	%CONTAINMENT- E50D_L_SD_M6U_G31	
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		1.21E-02	P21-BV_-RE-F050B	MISPOSITION OF RCCW OUTLET FROM CRD HEAT EXCHANGER
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC

Table 13.7-3

Results - Internal Flooding Shutdown Cutset Report

Cutsets with Descriptions Report Flooding Shutdown Core Damage Frequency = 5.24E-09 Top 200 Cutsets				
31	3.98E-11	3.54E-07	%CONTAINMENT-E50A_L_SD_M6U_G31	
		3.21E-02	C12-XHE-FO-LEVEL2	Operator fails to back-up CRD actuation
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
		1.61E-02	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION
32	3.98E-11	3.54E-07	%CONTAINMENT-E50D_L_SD_M6U_G31	
		3.21E-02	C12-XHE-FO-LEVEL2	Operator fails to back-up CRD actuation
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
		1.61E-02	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION
33	3.37E-11	1.79E-05	%RBCRD-6400-C12_S_SD_M6U_G31	
		5.35E-04	E50-STR-PG_ALL	CCF of all components in group 'E50-STR-PG'
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
		1.61E-02	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION
34	2.99E-11	5.30E-06	%RBH-11500-C12_S_SD_M6U_G31	
		5.35E-04	E50-STR-PG_ALL	CCF of all components in group 'E50-STR-PG'
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC

Table 13.7-3

Results - Internal Flooding Shutdown Cutset Report

Cutsets with Descriptions Report Flooding Shutdown Core Damage Frequency = 5.24E-09 Top 200 Cutsets				
35	2.89E-11	8.95E-06	%TBA-1400-P41A_S_SD_M6U_G31	
		1.75E-02	E50-UV_-OC-F003A	CHECK VALVE F003A FAILS TO REMAIN OPEN OR PLUG
		1.75E-02	E50-UV_-OC-F003E	CHECK VALVE F003E FAILS TO REMAIN OPEN OR PLUG
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
36	2.89E-11	8.95E-06	%TBA-1400-P41A_S_SD_M6U_G31	
		1.75E-02	E50-UV_-OC-F003D	CHECK VALVE F003D FAILS TO REMAIN OPEN OR PLUG
		1.75E-02	E50-UV_-OC-F003H	CHECK VALVE F003H FAILS TO REMAIN OPEN OR PLUG
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
37	2.84E-11	1.79E-05	%RBCRD-6400-C12_S_SD_M6U_G31	
		1.50E-04	E50-SQV-CC_ALL	CCF of all components in group 'E50-SQV-CC'
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
38	2.84E-11	8.95E-06	%TBA-1400-P41A_S_SD_M6U_G31	
		3.00E-04	E50-UV_OC_ALL	CCF of all components in group 'E50-UV_OC'
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC

Table 13.7-3

Results - Internal Flooding Shutdown Cutset Report

Cutsets with Descriptions Report Flooding Shutdown Core Damage Frequency = 5.24E-09 Top 200 Cutsets				
39	2.83E-11	8.95E-06	%TBA-1400-P41A_S_SD_M6U_G31	
		3.00E-04	E50-SQV-CC-EQU_ALL	CCF of all components in group 'E50-SQV-CC-EQU'
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
40	2.82E-11	1.50E-05	%SF-P41A_S_SD_M6U_G31	
		5.35E-04	E50-STR-PG_ALL	CCF of all components in group 'E50-STR-PG'
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
		1.61E-02	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION
41	2.82E-11	1.50E-05	%SF-P41B_S_SD_M6U_G31	
		5.35E-04	E50-STR-PG_ALL	CCF of all components in group 'E50-STR-PG'
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
		1.61E-02	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION
42	2.38E-11	4.21E-06	%RBH-11500-G31A_S_SD_M6U_G31	
		5.35E-04	E50-STR-PG_ALL	CCF of all components in group 'E50-STR-PG'
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC

Table 13.7-3

Results - Internal Flooding Shutdown Cutset Report

Cutsets with Descriptions Report Flooding Shutdown Core Damage Frequency = 5.24E-09 Top 200 Cutsets				
43	2.38E-11	1.50E-05	%SF-P41A_S_SD_M6U_G31	
		1.50E-04	E50-SQV-CC_ALL	CCF of all components in group 'E50-SQV-CC'
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
44	2.38E-11	1.50E-05	%SF-P41B_S_SD_M6U_G31	
		1.50E-04	E50-SQV-CC_ALL	CCF of all components in group 'E50-SQV-CC'
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
45	1.93E-11	1.79E-05	%RBCRD-6400-C12_S_SD_M6U_G31	
		1.75E-02	E50-UV_-OC-F003A	CHECK VALVE F003A FAILS TO REMAIN OPEN OR PLUG
		1.75E-02	E50-UV_-OC-F003E	CHECK VALVE F003E FAILS TO REMAIN OPEN OR PLUG
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
		1.61E-02	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION
46	1.93E-11	1.79E-05	%RBCRD-6400-C12_S_SD_M6U_G31	
		1.75E-02	E50-UV_-OC-F003D	CHECK VALVE F003D FAILS TO REMAIN OPEN OR PLUG
		1.75E-02	E50-UV_-OC-F003H	CHECK VALVE F003H FAILS TO REMAIN OPEN OR PLUG
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
		1.61E-02	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION

Table 13.7-3

Results - Internal Flooding Shutdown Cutset Report

Cutsets with Descriptions Report Flooding Shutdown Core Damage Frequency = 5.24E-09 Top 200 Cutsets				
47	1.89E-11	1.79E-05	%RBCRD-6400-C12_S_SD_M6U_G31	
		3.00E-04	E50-UV_OC_ALL	CCF of all components in group 'E50-UV_OC'
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
		1.61E-02	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION
48	1.89E-11	1.79E-05	%RBCRD-6400-C12_S_SD_M6U_G31	
		3.00E-04	E50-SQV-CC-EQU_ALL	CCF of all components in group 'E50-SQV-CC-EQU'
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
		1.61E-02	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION
49	1.71E-11	5.30E-06	%RBH-11500-C12_S_SD_M6U_G31	
		1.75E-02	E50-UV_-OC-F003A	CHECK VALVE F003A FAILS TO REMAIN OPEN OR PLUG
		1.75E-02	E50-UV_-OC-F003E	CHECK VALVE F003E FAILS TO REMAIN OPEN OR PLUG
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
50	1.71E-11	5.30E-06	%RBH-11500-C12_S_SD_M6U_G31	
		1.75E-02	E50-UV_-OC-F003D	CHECK VALVE F003D FAILS TO REMAIN OPEN OR PLUG
		1.75E-02	E50-UV_-OC-F003H	CHECK VALVE F003H FAILS TO REMAIN OPEN OR PLUG

Table 13.7-3

Results - Internal Flooding Shutdown Cutset Report

Cutsets with Descriptions Report Flooding Shutdown Core Damage Frequency = 5.24E-09 Top 200 Cutsets				
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
51	1.68E-11	8.95E-06	%TBA-1400-P41A_S_SD_M6U_G31	
		5.35E-04	E50-STR-PG_ALL	CCF of all components in group 'E50-STR-PG'
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
		1.61E-02	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION
52	1.68E-11	5.30E-06	%RBH-11500-C12_S_SD_M6U_G31	
		3.00E-04	E50-UV_OC_ALL	CCF of all components in group 'E50-UV_OC'
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
53	1.68E-11	5.30E-06	%RBH-11500-C12_S_SD_M6U_G31	
		3.00E-04	E50-SQV-CC-EQU_ALL	CCF of all components in group 'E50-SQV-CC-EQU'
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
54	1.61E-11	1.50E-05	%SF-P41A_S_SD_M6U_G31	
		1.75E-02	E50-UV_-OC-F003A	CHECK VALVE F003A FAILS TO REMAIN OPEN OR PLUG
		1.75E-02	E50-UV_-OC-F003E	CHECK VALVE F003E FAILS TO REMAIN OPEN OR PLUG
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC

Table 13.7-3

Results - Internal Flooding Shutdown Cutset Report

Cutsets with Descriptions Report Flooding Shutdown Core Damage Frequency = 5.24E-09 Top 200 Cutsets				
		1.61E-02	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION
55	1.61E-11	1.50E-05	%SF-P41A_S_SD_M6U_G31	
		1.75E-02	E50-UV_-OC-F003D	CHECK VALVE F003D FAILS TO REMAIN OPEN OR PLUG
		1.75E-02	E50-UV_-OC-F003H	CHECK VALVE F003H FAILS TO REMAIN OPEN OR PLUG
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
		1.61E-02	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION
56	1.61E-11	1.50E-05	%SF-P41B_S_SD_M6U_G31	
		1.75E-02	E50-UV_-OC-F003A	CHECK VALVE F003A FAILS TO REMAIN OPEN OR PLUG
		1.75E-02	E50-UV_-OC-F003E	CHECK VALVE F003E FAILS TO REMAIN OPEN OR PLUG
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
		1.61E-02	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION
57	1.61E-11	1.50E-05	%SF-P41B_S_SD_M6U_G31	
		1.75E-02	E50-UV_-OC-F003D	CHECK VALVE F003D FAILS TO REMAIN OPEN OR PLUG
		1.75E-02	E50-UV_-OC-F003H	CHECK VALVE F003H FAILS TO REMAIN OPEN OR PLUG
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
		1.61E-02	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION

Table 13.7-3

Results - Internal Flooding Shutdown Cutset Report

Cutsets with Descriptions Report Flooding Shutdown Core Damage Frequency = 5.24E-09 Top 200 Cutsets				
58	1.58E-11	1.50E-05	%SF-P41A_S_SD_M6U_G31	
		3.00E-04	E50-UV_OC_ALL	CCF of all components in group 'E50-UV_OC'
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
		1.61E-02	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION
59	1.58E-11	1.50E-05	%SF-P41B_S_SD_M6U_G31	
		3.00E-04	E50-UV_OC_ALL	CCF of all components in group 'E50-UV_OC'
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
		1.61E-02	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION
60	1.58E-11	1.50E-05	%SF-P41A_S_SD_M6U_G31	
		3.00E-04	E50-SQV-CC-EQU_ALL	CCF of all components in group 'E50-SQV-CC-EQU'
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
		1.61E-02	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION
61	1.58E-11	1.50E-05	%SF-P41B_S_SD_M6U_G31	
		3.00E-04	E50-SQV-CC-EQU_ALL	CCF of all components in group 'E50-SQV-CC-EQU'
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
		1.61E-02	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION

Table 13.7-3

Results - Internal Flooding Shutdown Cutset Report

Cutsets with Descriptions Report Flooding Shutdown Core Damage Frequency = 5.24E-09 Top 200 Cutsets				
62	1.50E-11	3.54E-07	%CONTAINMENT- E50A_L_SD_M6U_G31	
		1.21E-02	C12-BV_-RE-F021A	MISPOSITION OF VALVE F021A
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
		1.61E-02	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION
63	1.50E-11	3.54E-07	%CONTAINMENT- E50A_L_SD_M6U_G31	
		1.21E-02	C12-BV_-RE-F021B	MISPOSITION OF VALVE F021B
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
		1.61E-02	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION
64	1.50E-11	3.54E-07	%CONTAINMENT- E50A_L_SD_M6U_G31	
		1.21E-02	P21-BV_-RE-F049A	MISPOSITION OF RCCW INLET TO CRD HEAT EXCHANGER
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
		1.61E-02	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION
65	1.50E-11	3.54E-07	%CONTAINMENT- E50A_L_SD_M6U_G31	
		1.21E-02	P21-BV_-RE-F049B	MISPOSITION OF RCCW INLET TO CRD HEAT EXCHANGER
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC

Table 13.7-3

Results - Internal Flooding Shutdown Cutset Report

Cutsets with Descriptions Report Flooding Shutdown Core Damage Frequency = 5.24E-09 Top 200 Cutsets				
		1.61E-02	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION
66	1.50E-11	3.54E-07	%CONTAINMENT-E50A_L_SD_M6U_G31	
		1.21E-02	P21-BV_-RE-F050A	MISPOSITION OF RCCW OUTLET FROM CRD HEAT EXCHANGER
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
		1.61E-02	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION
67	1.50E-11	3.54E-07	%CONTAINMENT-E50A_L_SD_M6U_G31	
		1.21E-02	P21-BV_-RE-F050B	MISPOSITION OF RCCW OUTLET FROM CRD HEAT EXCHANGER
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
		1.61E-02	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION
68	1.50E-11	3.54E-07	%CONTAINMENT-E50D_L_SD_M6U_G31	
		1.21E-02	C12-BV_-RE-F021A	MISPOSITION OF VALVE F021A
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
		1.61E-02	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION

Table 13.7-3

Results - Internal Flooding Shutdown Cutset Report

Cutsets with Descriptions Report Flooding Shutdown Core Damage Frequency = 5.24E-09 Top 200 Cutsets				
69	1.50E-11	3.54E-07	%CONTAINMENT- E50D_L_SD_M6U_G31	
		1.21E-02	C12-BV_-RE-F021B	MISPOSITION OF VALVE F021B
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
		1.61E-02	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION
70	1.50E-11	3.54E-07	%CONTAINMENT- E50D_L_SD_M6U_G31	
		1.21E-02	P21-BV_-RE-F049A	MISPOSITION OF RCCW INLET TO CRD HEAT EXCHANGER
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
		1.61E-02	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION
71	1.50E-11	3.54E-07	%CONTAINMENT- E50D_L_SD_M6U_G31	
		1.21E-02	P21-BV_-RE-F049B	MISPOSITION OF RCCW INLET TO CRD HEAT EXCHANGER
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
		1.61E-02	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION
72	1.50E-11	3.54E-07	%CONTAINMENT- E50D_L_SD_M6U_G31	
		1.21E-02	P21-BV_-RE-F050A	MISPOSITION OF RCCW OUTLET FROM CRD HEAT EXCHANGER
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC

Table 13.7-3

Results - Internal Flooding Shutdown Cutset Report

Cutsets with Descriptions Report Flooding Shutdown Core Damage Frequency = 5.24E-09 Top 200 Cutsets				
		1.61E-02	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION
73	1.50E-11	3.54E-07	%CONTAINMENT-E50D_L_SD_M6U_G31	
		1.21E-02	P21-BV_-RE-F050B	MISPOSITION OF RCCW OUTLET FROM CRD HEAT EXCHANGER
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
		1.61E-02	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION
74	1.49E-11	3.54E-07	%CONTAINMENT-E50A_L_SD_M6U_G31	
		4.00E-03	C12-MOV-CC-F020A	MOTOR OPER. VALVE F020A FAILS TO OPEN
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
75	1.49E-11	3.54E-07	%CONTAINMENT-E50A_L_SD_M6U_G31	
		4.00E-03	C12-MOV-CC-F020B	MOTOR OPER. VALVE F020B FAILS TO OPEN
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
76	1.49E-11	3.54E-07	%CONTAINMENT-E50D_L_SD_M6U_G31	
		4.00E-03	C12-MOV-CC-F020A	MOTOR OPER. VALVE F020A FAILS TO OPEN
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334

Table 13.7-3

Results - Internal Flooding Shutdown Cutset Report

Cutsets with Descriptions Report Flooding Shutdown Core Damage Frequency = 5.24E-09 Top 200 Cutsets				
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
77	1.49E-11	3.54E-07	%CONTAINMENT-E50D_L_SD_M6U_G31	
		4.00E-03	C12-MOV-CC-F020B	MOTOR OPER. VALVE F020B FAILS TO OPEN
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
78	1.42E-11	8.95E-06	%TBA-1400-P41A_S_SD_M6U_G31	
		1.50E-04	E50-SQV-CC_ALL	CCF of all components in group 'E50-SQV-CC'
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
79	1.38E-11	3.54E-07	%CONTAINMENT-E50A_L_SD_M6U_G31	
		3.69E-03	C12-MP_-FS-C001B	MOTOR-DRIVEN PUMP C001B FAILS TO START
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
80	1.38E-11	3.54E-07	%CONTAINMENT-E50D_L_SD_M6U_G31	
		3.69E-03	C12-MP_-FS-C001B	MOTOR-DRIVEN PUMP C001B FAILS TO START
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC

Table 13.7-3

Results - Internal Flooding Shutdown Cutset Report

Cutsets with Descriptions Report Flooding Shutdown Core Damage Frequency = 5.24E-09 Top 200 Cutsets				
81	1.36E-11	4.21E-06	%RBH-11500-G31A_S_SD_M6U_G31	
		1.75E-02	E50-UV_-OC-F003A	CHECK VALVE F003A FAILS TO REMAIN OPEN OR PLUG
		1.75E-02	E50-UV_-OC-F003E	CHECK VALVE F003E FAILS TO REMAIN OPEN OR PLUG
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
82	1.36E-11	4.21E-06	%RBH-11500-G31A_S_SD_M6U_G31	
		1.75E-02	E50-UV_-OC-F003D	CHECK VALVE F003D FAILS TO REMAIN OPEN OR PLUG
		1.75E-02	E50-UV_-OC-F003H	CHECK VALVE F003H FAILS TO REMAIN OPEN OR PLUG
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
83	1.34E-11	4.21E-06	%RBH-11500-G31A_S_SD_M6U_G31	
		3.00E-04	E50-UV_OC_ALL	CCF of all components in group 'E50-UV_OC'
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
84	1.33E-11	4.21E-06	%RBH-11500-G31A_S_SD_M6U_G31	
		3.00E-04	E50-SQV-CC-EQU_ALL	CCF of all components in group 'E50-SQV-CC-EQU'
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC

Table 13.7-3

Results - Internal Flooding Shutdown Cutset Report

Cutsets with Descriptions Report Flooding Shutdown Core Damage Frequency = 5.24E-09 Top 200 Cutsets				
85	1.12E-11	3.54E-07	%CONTAINMENT-E50A_L_SD_M6U_G31	
		3.00E-03	C12-SYS-TM-TRAINB	TRAIN B IN MAINTENANCE
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
86	1.12E-11	3.54E-07	%CONTAINMENT-E50D_L_SD_M6U_G31	
		3.00E-03	C12-SYS-TM-TRAINB	TRAIN B IN MAINTENANCE
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
87	1.02E-11	1.81E-06	%SF-P41A_L_SD_M6U_G31	
		5.35E-04	E50-STR-PG_ALL	CCF of all components in group 'E50-STR-PG'
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
88	1.02E-11	1.81E-06	%SF-P41B_L_SD_M6U_G31	
		5.35E-04	E50-STR-PG_ALL	CCF of all components in group 'E50-STR-PG'
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC

Table 13.7-3

Results - Internal Flooding Shutdown Cutset Report

Cutsets with Descriptions Report Flooding Shutdown Core Damage Frequency = 5.24E-09 Top 200 Cutsets				
89	1.01E-11	1.79E-06	%TBA-1400-P41A_L_SD_M6U_G31	
		5.35E-04	E50-STR-PG_ALL	CCF of all components in group 'E50-STR-PG'
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
90	9.95E-12	5.30E-06	%RBH-11500-C12_S_SD_M6U_G31	
		5.35E-04	E50-STR-PG_ALL	CCF of all components in group 'E50-STR-PG'
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
		1.61E-02	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION
91	9.94E-12	1.79E-05	%RBCRD-6400-C12_S_SD_M6U_G31	
		3.00E-03	E50-SQV-CC-F002A	SQUIB VALVE F002A FAILS TO OPERATE
		1.75E-02	E50-UV_-OC-F003E	CHECK VALVE F003E FAILS TO REMAIN OPEN OR PLUG
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
92	9.94E-12	1.79E-05	%RBCRD-6400-C12_S_SD_M6U_G31	
		3.00E-03	E50-SQV-CC-F002D	SQUIB VALVE F002D FAILS TO OPERATE
		1.75E-02	E50-UV_-OC-F003H	CHECK VALVE F003H FAILS TO REMAIN OPEN OR PLUG
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334

Table 13.7-3

Results - Internal Flooding Shutdown Cutset Report

Cutsets with Descriptions Report Flooding Shutdown Core Damage Frequency = 5.24E-09 Top 200 Cutsets				
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
93	9.94E-12	1.79E-05	%RBCRD-6400-C12_S_SD_M6U_G31	
		3.00E-03	E50-SQV-CC-F002E	SQUIB VALVE F002E FAILS TO OPERATE
		1.75E-02	E50-UV_-OC-F003A	CHECK VALVE F003A FAILS TO REMAIN OPEN OR PLUG
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
94	9.94E-12	1.79E-05	%RBCRD-6400-C12_S_SD_M6U_G31	
		3.00E-03	E50-SQV-CC-F002H	SQUIB VALVE F002H FAILS TO OPERATE
		1.75E-02	E50-UV_-OC-F003D	CHECK VALVE F003D FAILS TO REMAIN OPEN OR PLUG
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
95	9.62E-12	8.95E-06	%TBA-1400-P41A_S_SD_M6U_G31	
		1.75E-02	E50-UV_-OC-F003A	CHECK VALVE F003A FAILS TO REMAIN OPEN OR PLUG
		1.75E-02	E50-UV_-OC-F003E	CHECK VALVE F003E FAILS TO REMAIN OPEN OR PLUG
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
		1.61E-02	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION

Table 13.7-3

Results - Internal Flooding Shutdown Cutset Report

Cutsets with Descriptions Report Flooding Shutdown Core Damage Frequency = 5.24E-09 Top 200 Cutsets				
96	9.62E-12	8.95E-06	%TBA-1400-P41A_S_SD_M6U_G31	
		1.75E-02	E50-UV_-OC-F003D	CHECK VALVE F003D FAILS TO REMAIN OPEN OR PLUG
		1.75E-02	E50-UV_-OC-F003H	CHECK VALVE F003H FAILS TO REMAIN OPEN OR PLUG
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
		1.61E-02	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION
97	9.44E-12	1.79E-05	%RBCRD-6400-C12_S_SD_M6U_G31	
		1.50E-04	E50-SQV-CC_ALL	CCF of all components in group 'E50-SQV-CC'
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
		1.61E-02	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION
98	9.44E-12	8.95E-06	%TBA-1400-P41A_S_SD_M6U_G31	
		3.00E-04	E50-UV_OC_ALL	CCF of all components in group 'E50-UV_OC'
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
		1.61E-02	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION

Table 13.7-3

Results - Internal Flooding Shutdown Cutset Report

Cutsets with Descriptions Report Flooding Shutdown Core Damage Frequency = 5.24E-09 Top 200 Cutsets				
99	9.42E-12	8.95E-06	%TBA-1400-P41A_S_SD_M6U_G31	
		3.00E-04	E50-SQV-CC-EQU_ALL	CCF of all components in group 'E50-SQV-CC-EQU'
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
		1.61E-02	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION
100	8.98E-12	1.59E-06	%SF-Y41_S_SD_M6U_G31	
		5.35E-04	E50-STR-PG_ALL	CCF of all components in group 'E50-STR-PG'
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
101	8.96E-12	3.54E-07	%CONTAINMENT-E50A_L_SD_M6U_G31	
		2.40E-03	C12-MP_-FS-C001BOIL	MOTOR-DRIVEN AUX. OIL PUMP FOR C001B FAILS TO START
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
102	8.96E-12	3.54E-07	%CONTAINMENT-E50D_L_SD_M6U_G31	
		2.40E-03	C12-MP_-FS-C001BOIL	MOTOR-DRIVEN AUX. OIL PUMP FOR C001B FAILS TO START
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC

Table 13.7-3

Results - Internal Flooding Shutdown Cutset Report

Cutsets with Descriptions Report Flooding Shutdown Core Damage Frequency = 5.24E-09 Top 200 Cutsets				
103	8.74E-12	3.54E-07	%CONTAINMENT-E50A_L_SD_M6U_G31	
		4.84E-02	C12-BV_-RE-F013A	MISPOSITION OF VALVE F013A
		4.84E-02	C12-BV_-RE-F013B	MISPOSITION OF VALVE F013B
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
104	8.74E-12	3.54E-07	%CONTAINMENT-E50A_L_SD_M6U_G31	
		4.84E-02	C12-BV_-RE-F013A	MISPOSITION OF VALVE F013A
		4.84E-02	C12-BV_-RE-F015B	MISPOSITION OF VALVE F015B
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
105	8.74E-12	3.54E-07	%CONTAINMENT-E50A_L_SD_M6U_G31	
		4.84E-02	C12-BV_-RE-F013B	MISPOSITION OF VALVE F013B
		4.84E-02	C12-BV_-RE-F015A	MISPOSITION OF VALVE F015A
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
106	8.74E-12	3.54E-07	%CONTAINMENT-E50A_L_SD_M6U_G31	
		4.84E-02	C12-BV_-RE-F015A	MISPOSITION OF VALVE F015A
		4.84E-02	C12-BV_-RE-F015B	MISPOSITION OF VALVE F015B

Table 13.7-3

Results - Internal Flooding Shutdown Cutset Report

Cutsets with Descriptions Report Flooding Shutdown Core Damage Frequency = 5.24E-09 Top 200 Cutsets				
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
107	8.74E-12	3.54E-07	%CONTAINMENT-E50A_L_SD_M6U_G31	
		4.84E-02	C12-BV_-RE-F064	MISPOSITION OF VALVE F064
		4.84E-02	C12-BV_-RE-F065	MISPOSITION OF LOCKED OPEN VALVE F065
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
108	8.74E-12	3.54E-07	%CONTAINMENT-E50D_L_SD_M6U_G31	
		4.84E-02	C12-BV_-RE-F013A	MISPOSITION OF VALVE F013A
		4.84E-02	C12-BV_-RE-F013B	MISPOSITION OF VALVE F013B
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
109	8.74E-12	3.54E-07	%CONTAINMENT-E50D_L_SD_M6U_G31	
		4.84E-02	C12-BV_-RE-F013A	MISPOSITION OF VALVE F013A
		4.84E-02	C12-BV_-RE-F015B	MISPOSITION OF VALVE F015B
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC

Table 13.7-3

Results - Internal Flooding Shutdown Cutset Report

Cutsets with Descriptions Report Flooding Shutdown Core Damage Frequency = 5.24E-09 Top 200 Cutsets				
110	8.74E-12	3.54E-07	%CONTAINMENT-E50D_L_SD_M6U_G31	
		4.84E-02	C12-BV_-RE-F013B	MISPOSITION OF VALVE F013B
		4.84E-02	C12-BV_-RE-F015A	MISPOSITION OF VALVE F015A
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
111	8.74E-12	3.54E-07	%CONTAINMENT-E50D_L_SD_M6U_G31	
		4.84E-02	C12-BV_-RE-F015A	MISPOSITION OF VALVE F015A
		4.84E-02	C12-BV_-RE-F015B	MISPOSITION OF VALVE F015B
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
112	8.74E-12	3.54E-07	%CONTAINMENT-E50D_L_SD_M6U_G31	
		4.84E-02	C12-BV_-RE-F064	MISPOSITION OF VALVE F064
		4.84E-02	C12-BV_-RE-F065	MISPOSITION OF LOCKED OPEN VALVE F065
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC

Table 13.7-3

Results - Internal Flooding Shutdown Cutset Report

Cutsets with Descriptions Report Flooding Shutdown Core Damage Frequency = 5.24E-09 Top 200 Cutsets				
113	8.39E-12	5.30E-06	%RBH-11500-C12_S_SD_M6U_G31	
		1.50E-04	E50-SQV-CC_ALL	CCF of all components in group 'E50-SQV-CC'
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
114	8.32E-12	1.50E-05	%SF-P41A_S_SD_M6U_G31	
		3.00E-03	E50-SQV-CC-F002A	SQUIB VALVE F002A FAILS TO OPERATE
		1.75E-02	E50-UV_-OC-F003E	CHECK VALVE F003E FAILS TO REMAIN OPEN OR PLUG
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
115	8.32E-12	1.50E-05	%SF-P41A_S_SD_M6U_G31	
		3.00E-03	E50-SQV-CC-F002D	SQUIB VALVE F002D FAILS TO OPERATE
		1.75E-02	E50-UV_-OC-F003H	CHECK VALVE F003H FAILS TO REMAIN OPEN OR PLUG
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
116	8.32E-12	1.50E-05	%SF-P41A_S_SD_M6U_G31	
		3.00E-03	E50-SQV-CC-F002E	SQUIB VALVE F002E FAILS TO OPERATE
		1.75E-02	E50-UV_-OC-F003A	CHECK VALVE F003A FAILS TO REMAIN OPEN OR PLUG
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC

Table 13.7-3

Results - Internal Flooding Shutdown Cutset Report

Cutsets with Descriptions Report Flooding Shutdown Core Damage Frequency = 5.24E-09 Top 200 Cutsets				
117	8.32E-12	1.50E-05	%SF-P41A_S_SD_M6U_G31	
		3.00E-03	E50-SQV-CC-F002H	SQUIB VALVE F002H FAILS TO OPERATE
		1.75E-02	E50-UV_-OC-F003D	CHECK VALVE F003D FAILS TO REMAIN OPEN OR PLUG
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
118	8.32E-12	1.50E-05	%SF-P41B_S_SD_M6U_G31	
		3.00E-03	E50-SQV-CC-F002A	SQUIB VALVE F002A FAILS TO OPERATE
		1.75E-02	E50-UV_-OC-F003E	CHECK VALVE F003E FAILS TO REMAIN OPEN OR PLUG
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
119	8.32E-12	1.50E-05	%SF-P41B_S_SD_M6U_G31	
		3.00E-03	E50-SQV-CC-F002D	SQUIB VALVE F002D FAILS TO OPERATE
		1.75E-02	E50-UV_-OC-F003H	CHECK VALVE F003H FAILS TO REMAIN OPEN OR PLUG
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
120	8.32E-12	1.50E-05	%SF-P41B_S_SD_M6U_G31	
		3.00E-03	E50-SQV-CC-F002E	SQUIB VALVE F002E FAILS TO OPERATE
		1.75E-02	E50-UV_-OC-F003A	CHECK VALVE F003A FAILS TO REMAIN OPEN OR PLUG
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC

Table 13.7-3

Results - Internal Flooding Shutdown Cutset Report

Cutsets with Descriptions Report Flooding Shutdown Core Damage Frequency = 5.24E-09 Top 200 Cutsets				
121	8.32E-12	1.50E-05	%SF-P41B_S_SD_M6U_G31	
		3.00E-03	E50-SQV-CC-F002H	SQUIB VALVE F002H FAILS TO OPERATE
		1.75E-02	E50-UV_-OC-F003D	CHECK VALVE F003D FAILS TO REMAIN OPEN OR PLUG
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
122	8.25E-12	1.46E-06	%SF-P10_S_SD_M6U_G31	
		5.35E-04	E50-STR-PG_ALL	CCF of all components in group 'E50-STR-PG'
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
123	7.91E-12	4.21E-06	%RBH-11500-G31A_S_SD_M6U_G31	
		5.35E-04	E50-STR-PG_ALL	CCF of all components in group 'E50-STR-PG'
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
		1.61E-02	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION
124	7.91E-12	1.50E-05	%SF-P41A_S_SD_M6U_G31	
		1.50E-04	E50-SQV-CC_ALL	CCF of all components in group 'E50-SQV-CC'
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
		1.61E-02	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION

Table 13.7-3

Results - Internal Flooding Shutdown Cutset Report

Cutsets with Descriptions Report Flooding Shutdown Core Damage Frequency = 5.24E-09 Top 200 Cutsets				
125	7.91E-12	1.50E-05	%SF-P41B_S_SD_M6U_G31	
		1.50E-04	E50-SQV-CC_ALL	CCF of all components in group 'E50-SQV-CC'
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
		1.61E-02	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION
126	7.48E-12	2.00E-06	%FB-11500-G21_L_SD_M6U_G31	
		3.21E-02	C12-XHE-FO-LEVEL2	Operator fails to back-up CRD actuation
		5.35E-04	E50-STR-PG_ALL	CCF of all components in group 'E50-STR-PG'
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
127	7.40E-12	1.31E-06	%RBCRD-6400-C12_L_SD_M6U_G31	
		5.35E-04	E50-STR-PG_ALL	CCF of all components in group 'E50-STR-PG'
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
128	7.15E-12	1.27E-06	%RBA-11500-G31A_L_SD_M6U_G31	
		5.35E-04	E50-STR-PG_ALL	CCF of all components in group 'E50-STR-PG'
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC

Table 13.7-3

Results - Internal Flooding Shutdown Cutset Report

Cutsets with Descriptions Report Flooding Shutdown Core Damage Frequency = 5.24E-09 Top 200 Cutsets				
129	6.67E-12	4.21E-06	%RBH-11500-G31A_S_SD_M6U_G31	
		1.50E-04	E50-SQV-CC_ALL	CCF of all components in group 'E50-SQV-CC'
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
130	5.86E-12	3.23E-05	%FPE-U43_S_SD_M6U_G31	
		3.21E-02	C12-XHE-FO-LEVEL2	Operator fails to back-up CRD actuation
		5.35E-04	E50-STR-PG_ALL	CCF of all components in group 'E50-STR-PG'
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
131	5.86E-12	1.81E-06	%SF-P41A_L_SD_M6U_G31	
		1.75E-02	E50-UV_-OC-F003A	CHECK VALVE F003A FAILS TO REMAIN OPEN OR PLUG
		1.75E-02	E50-UV_-OC-F003E	CHECK VALVE F003E FAILS TO REMAIN OPEN OR PLUG
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
132	5.86E-12	1.81E-06	%SF-P41A_L_SD_M6U_G31	
		1.75E-02	E50-UV_-OC-F003D	CHECK VALVE F003D FAILS TO REMAIN OPEN OR PLUG
		1.75E-02	E50-UV_-OC-F003H	CHECK VALVE F003H FAILS TO REMAIN OPEN OR PLUG
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC

Table 13.7-3

Results - Internal Flooding Shutdown Cutset Report

Cutsets with Descriptions Report Flooding Shutdown Core Damage Frequency = 5.24E-09 Top 200 Cutsets				
133	5.86E-12	1.81E-06	%SF-P41B_L_SD_M6U_G31	
		1.75E-02	E50-UV_-OC-F003A	CHECK VALVE F003A FAILS TO REMAIN OPEN OR PLUG
		1.75E-02	E50-UV_-OC-F003E	CHECK VALVE F003E FAILS TO REMAIN OPEN OR PLUG
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
134	5.86E-12	1.81E-06	%SF-P41B_L_SD_M6U_G31	
		1.75E-02	E50-UV_-OC-F003D	CHECK VALVE F003D FAILS TO REMAIN OPEN OR PLUG
		1.75E-02	E50-UV_-OC-F003H	CHECK VALVE F003H FAILS TO REMAIN OPEN OR PLUG
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
135	5.78E-12	1.79E-06	%TBA-1400-P41A_L_SD_M6U_G31	
		1.75E-02	E50-UV_-OC-F003A	CHECK VALVE F003A FAILS TO REMAIN OPEN OR PLUG
		1.75E-02	E50-UV_-OC-F003E	CHECK VALVE F003E FAILS TO REMAIN OPEN OR PLUG
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
136	5.78E-12	1.79E-06	%TBA-1400-P41A_L_SD_M6U_G31	
		1.75E-02	E50-UV_-OC-F003D	CHECK VALVE F003D FAILS TO REMAIN OPEN OR PLUG
		1.75E-02	E50-UV_-OC-F003H	CHECK VALVE F003H FAILS TO REMAIN OPEN OR PLUG
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334

Table 13.7-3

Results - Internal Flooding Shutdown Cutset Report

Cutsets with Descriptions Report Flooding Shutdown Core Damage Frequency = 5.24E-09 Top 200 Cutsets				
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
137	5.75E-12	1.81E-06	%SF-P41A_L_SD_M6U_G31	
		3.00E-04	E50-UV_OC_ALL	CCF of all components in group 'E50-UV_OC'
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
138	5.75E-12	1.81E-06	%SF-P41B_L_SD_M6U_G31	
		3.00E-04	E50-UV_OC_ALL	CCF of all components in group 'E50-UV_OC'
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
139	5.74E-12	1.81E-06	%SF-P41A_L_SD_M6U_G31	
		3.00E-04	E50-SQV-CC-EQU_ALL	CCF of all components in group 'E50-SQV-CC-EQU'
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
140	5.74E-12	1.81E-06	%SF-P41B_L_SD_M6U_G31	
		3.00E-04	E50-SQV-CC-EQU_ALL	CCF of all components in group 'E50-SQV-CC-EQU'
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC

Table 13.7-3

Results - Internal Flooding Shutdown Cutset Report

Cutsets with Descriptions Report Flooding Shutdown Core Damage Frequency = 5.24E-09 Top 200 Cutsets				
141	5.70E-12	5.30E-06	%RBH-11500-C12_S_SD_M6U_G31	
		1.75E-02	E50-UV_-OC-F003A	CHECK VALVE F003A FAILS TO REMAIN OPEN OR PLUG
		1.75E-02	E50-UV_-OC-F003E	CHECK VALVE F003E FAILS TO REMAIN OPEN OR PLUG
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
		1.61E-02	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION
142	5.70E-12	5.30E-06	%RBH-11500-C12_S_SD_M6U_G31	
		1.75E-02	E50-UV_-OC-F003D	CHECK VALVE F003D FAILS TO REMAIN OPEN OR PLUG
		1.75E-02	E50-UV_-OC-F003H	CHECK VALVE F003H FAILS TO REMAIN OPEN OR PLUG
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
		1.61E-02	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION
143	5.69E-12	1.79E-05	%RBCRD-6400-C12_S_SD_M6U_G31	
		3.00E-05	E50-UV_OC-EQU_ALL	CCF of all components in group 'E50-UV_OC-EQU'
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC

Table 13.7-3

Results - Internal Flooding Shutdown Cutset Report

Cutsets with Descriptions Report Flooding Shutdown Core Damage Frequency = 5.24E-09 Top 200 Cutsets				
144	5.68E-12	1.79E-06	%TBA-1400-P41A_L_SD_M6U_G31	
		3.00E-04	E50-UV_OC_ALL	CCF of all components in group 'E50-UV_OC'
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
145	5.67E-12	1.79E-06	%TBA-1400-P41A_L_SD_M6U_G31	
		3.00E-04	E50-SQV-CC-EQU_ALL	CCF of all components in group 'E50-SQV-CC-EQU'
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
146	5.59E-12	5.30E-06	%RBH-11500-C12_S_SD_M6U_G31	
		3.00E-04	E50-UV_OC_ALL	CCF of all components in group 'E50-UV_OC'
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
		1.61E-02	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION
147	5.58E-12	5.30E-06	%RBH-11500-C12_S_SD_M6U_G31	
		3.00E-04	E50-SQV-CC-EQU_ALL	CCF of all components in group 'E50-SQV-CC-EQU'
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
		1.61E-02	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION

Table 13.7-3

Results - Internal Flooding Shutdown Cutset Report

Cutsets with Descriptions Report Flooding Shutdown Core Damage Frequency = 5.24E-09 Top 200 Cutsets				
148	5.14E-12	1.59E-06	%SF-Y41_S_SD_M6U_G31	
		1.75E-02	E50-UV_-OC-F003A	CHECK VALVE F003A FAILS TO REMAIN OPEN OR PLUG
		1.75E-02	E50-UV_-OC-F003E	CHECK VALVE F003E FAILS TO REMAIN OPEN OR PLUG
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
149	5.14E-12	1.59E-06	%SF-Y41_S_SD_M6U_G31	
		1.75E-02	E50-UV_-OC-F003D	CHECK VALVE F003D FAILS TO REMAIN OPEN OR PLUG
		1.75E-02	E50-UV_-OC-F003H	CHECK VALVE F003H FAILS TO REMAIN OPEN OR PLUG
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
150	5.04E-12	1.59E-06	%SF-Y41_S_SD_M6U_G31	
		3.00E-04	E50-UV_OC_ALL	CCF of all components in group 'E50-UV_OC'
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
151	5.04E-12	1.59E-06	%SF-Y41_S_SD_M6U_G31	
		3.00E-04	E50-SQV-CC-EQU_ALL	CCF of all components in group 'E50-SQV-CC-EQU'
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC

Table 13.7-3

Results - Internal Flooding Shutdown Cutset Report

Cutsets with Descriptions Report Flooding Shutdown Core Damage Frequency = 5.24E-09 Top 200 Cutsets				
152	4.97E-12	3.54E-07	%CONTAINMENT-E50A_L_SD_M6U_G31	
		4.00E-03	C12-MOV-CC-F020A	MOTOR OPER. VALVE F020A FAILS TO OPEN
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
		1.61E-02	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION
153	4.97E-12	3.54E-07	%CONTAINMENT-E50A_L_SD_M6U_G31	
		4.00E-03	C12-MOV-CC-F020B	MOTOR OPER. VALVE F020B FAILS TO OPEN
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
		1.61E-02	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION
154	4.97E-12	3.54E-07	%CONTAINMENT-E50D_L_SD_M6U_G31	
		4.00E-03	C12-MOV-CC-F020A	MOTOR OPER. VALVE F020A FAILS TO OPEN
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
		1.61E-02	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION
155	4.97E-12	3.54E-07	%CONTAINMENT-E50D_L_SD_M6U_G31	
		4.00E-03	C12-MOV-CC-F020B	MOTOR OPER. VALVE F020B FAILS TO OPEN
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC

Table 13.7-3

Results - Internal Flooding Shutdown Cutset Report

Cutsets with Descriptions Report Flooding Shutdown Core Damage Frequency = 5.24E-09 Top 200 Cutsets				
		1.61E-02	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION
156	4.96E-12	8.95E-06	%TBA-1400-P41A_S_SD_M6U_G31	
		3.00E-03	E50-SQV-CC-F002A	SQUIB VALVE F002A FAILS TO OPERATE
		1.75E-02	E50-UV_-OC-F003E	CHECK VALVE F003E FAILS TO REMAIN OPEN OR PLUG
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
157	4.96E-12	8.95E-06	%TBA-1400-P41A_S_SD_M6U_G31	
		3.00E-03	E50-SQV-CC-F002D	SQUIB VALVE F002D FAILS TO OPERATE
		1.75E-02	E50-UV_-OC-F003H	CHECK VALVE F003H FAILS TO REMAIN OPEN OR PLUG
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
158	4.96E-12	8.95E-06	%TBA-1400-P41A_S_SD_M6U_G31	
		3.00E-03	E50-SQV-CC-F002E	SQUIB VALVE F002E FAILS TO OPERATE
		1.75E-02	E50-UV_-OC-F003A	CHECK VALVE F003A FAILS TO REMAIN OPEN OR PLUG
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC

Table 13.7-3

Results - Internal Flooding Shutdown Cutset Report

Cutsets with Descriptions Report Flooding Shutdown Core Damage Frequency = 5.24E-09 Top 200 Cutsets				
159	4.96E-12	8.95E-06	%TBA-1400-P41A_S_SD_M6U_G31	
		3.00E-03	E50-SQV-CC-F002H	SQUIB VALVE F002H FAILS TO OPERATE
		1.75E-02	E50-UV_-OC-F003D	CHECK VALVE F003D FAILS TO REMAIN OPEN OR PLUG
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
160	4.76E-12	1.50E-05	%SF-P41A_S_SD_M6U_G31	
		3.00E-05	E50-UV_OC-EQU_ALL	CCF of all components in group 'E50-UV_OC-EQU'
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
161	4.76E-12	1.50E-05	%SF-P41B_S_SD_M6U_G31	
		3.00E-05	E50-UV_OC-EQU_ALL	CCF of all components in group 'E50-UV_OC-EQU'
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
162	4.72E-12	1.46E-06	%SF-P10_S_SD_M6U_G31	
		1.75E-02	E50-UV_-OC-F003A	CHECK VALVE F003A FAILS TO REMAIN OPEN OR PLUG
		1.75E-02	E50-UV_-OC-F003E	CHECK VALVE F003E FAILS TO REMAIN OPEN OR PLUG
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC

Table 13.7-3

Results - Internal Flooding Shutdown Cutset Report

Cutsets with Descriptions Report Flooding Shutdown Core Damage Frequency = 5.24E-09 Top 200 Cutsets				
163	4.72E-12	1.46E-06	%SF-P10_S_SD_M6U_G31	
		1.75E-02	E50-UV_-OC-F003D	CHECK VALVE F003D FAILS TO REMAIN OPEN OR PLUG
		1.75E-02	E50-UV_-OC-F003H	CHECK VALVE F003H FAILS TO REMAIN OPEN OR PLUG
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
164	4.71E-12	8.95E-06	%TBA-1400-P41A_S_SD_M6U_G31	
		1.50E-04	E50-SQV-CC_ALL	CCF of all components in group 'E50-SQV-CC'
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
		1.61E-02	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION
165	4.64E-12	1.46E-06	%SF-P10_S_SD_M6U_G31	
		3.00E-04	E50-UV_OC_ALL	CCF of all components in group 'E50-UV_OC'
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
166	4.63E-12	1.46E-06	%SF-P10_S_SD_M6U_G31	
		3.00E-04	E50-SQV-CC-EQU_ALL	CCF of all components in group 'E50-SQV-CC-EQU'
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC

Table 13.7-3

Results - Internal Flooding Shutdown Cutset Report

Cutsets with Descriptions Report Flooding Shutdown Core Damage Frequency = 5.24E-09 Top 200 Cutsets				
167	4.58E-12	3.54E-07	%CONTAINMENT-E50A_L_SD_M6U_G31	
		3.69E-03	C12-MP_-FS-C001B	MOTOR-DRIVEN PUMP C001B FAILS TO START
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
		1.61E-02	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION
168	4.58E-12	3.54E-07	%CONTAINMENT-E50D_L_SD_M6U_G31	
		3.69E-03	C12-MP_-FS-C001B	MOTOR-DRIVEN PUMP C001B FAILS TO START
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
		1.61E-02	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION
169	4.53E-12	4.21E-06	%RBH-11500-G31A_S_SD_M6U_G31	
		1.75E-02	E50-UV_-OC-F003A	CHECK VALVE F003A FAILS TO REMAIN OPEN OR PLUG
		1.75E-02	E50-UV_-OC-F003E	CHECK VALVE F003E FAILS TO REMAIN OPEN OR PLUG
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
		1.61E-02	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION
170	4.53E-12	4.21E-06	%RBH-11500-G31A_S_SD_M6U_G31	
		1.75E-02	E50-UV_-OC-F003D	CHECK VALVE F003D FAILS TO REMAIN OPEN OR PLUG
		1.75E-02	E50-UV_-OC-F003H	CHECK VALVE F003H FAILS TO REMAIN OPEN OR PLUG

Table 13.7-3

Results - Internal Flooding Shutdown Cutset Report

Cutsets with Descriptions Report Flooding Shutdown Core Damage Frequency = 5.24E-09 Top 200 Cutsets				
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
		1.61E-02	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION
171	4.51E-12	1.79E-05	%RBCRD-6400-C12_S_SD_M6U_G31	
		2.38E-05	E50-SQV-CC_1_5	CCF of two components: E50-SQV-CC-F002A & E50-SQV-CC-F002E
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
172	4.51E-12	1.79E-05	%RBCRD-6400-C12_S_SD_M6U_G31	
		2.38E-05	E50-SQV-CC_4_8	CCF of two components: E50-SQV-CC-F002D & E50-SQV-CC-F002H
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
173	4.44E-12	4.21E-06	%RBH-11500-G31A_S_SD_M6U_G31	
		3.00E-04	E50-UV_OC_ALL	CCF of all components in group 'E50-UV_OC'
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
		1.61E-02	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION

Table 13.7-3

Results - Internal Flooding Shutdown Cutset Report

Cutsets with Descriptions Report Flooding Shutdown Core Damage Frequency = 5.24E-09 Top 200 Cutsets				
174	4.44E-12	4.21E-06	%RBH-11500-G31A_S_SD_M6U_G31	
		3.00E-04	E50-SQV-CC-EQU_ALL	CCF of all components in group 'E50-SQV-CC-EQU'
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
		1.61E-02	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION
175	4.28E-12	2.00E-06	%FB-11500-G21_L_SD_M6U_G31	
		3.21E-02	C12-XHE-FO-LEVEL2	Operator fails to back-up CRD actuation
		1.75E-02	E50-UV_-OC-F003A	CHECK VALVE F003A FAILS TO REMAIN OPEN OR PLUG
		1.75E-02	E50-UV_-OC-F003E	CHECK VALVE F003E FAILS TO REMAIN OPEN OR PLUG
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
176	4.28E-12	2.00E-06	%FB-11500-G21_L_SD_M6U_G31	
		3.21E-02	C12-XHE-FO-LEVEL2	Operator fails to back-up CRD actuation
		1.75E-02	E50-UV_-OC-F003D	CHECK VALVE F003D FAILS TO REMAIN OPEN OR PLUG
		1.75E-02	E50-UV_-OC-F003H	CHECK VALVE F003H FAILS TO REMAIN OPEN OR PLUG
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
177	4.24E-12	1.31E-06	%RBCRD-6400-C12_L_SD_M6U_G31	
		1.75E-02	E50-UV_-OC-F003A	CHECK VALVE F003A FAILS TO REMAIN OPEN OR PLUG
		1.75E-02	E50-UV_-OC-F003E	CHECK VALVE F003E FAILS TO REMAIN OPEN OR PLUG
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC

Table 13.7-3

Results - Internal Flooding Shutdown Cutset Report

Cutsets with Descriptions Report Flooding Shutdown Core Damage Frequency = 5.24E-09 Top 200 Cutsets				
178	4.24E-12	1.31E-06	%RBCRD-6400-C12_L_SD_M6U_G31	
		1.75E-02	E50-UV_-OC-F003D	CHECK VALVE F003D FAILS TO REMAIN OPEN OR PLUG
		1.75E-02	E50-UV_-OC-F003H	CHECK VALVE F003H FAILS TO REMAIN OPEN OR PLUG
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
179	4.20E-12	2.00E-06	%FB-11500-G21_L_SD_M6U_G31	
		3.21E-02	C12-XHE-FO-LEVEL2	Operator fails to back-up CRD actuation
		3.00E-04	E50-UV_OC_ALL	CCF of all components in group 'E50-UV_OC'
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
180	4.20E-12	2.00E-06	%FB-11500-G21_L_SD_M6U_G31	
		3.21E-02	C12-XHE-FO-LEVEL2	Operator fails to back-up CRD actuation
		3.00E-04	E50-SQV-CC-EQU_ALL	CCF of all components in group 'E50-SQV-CC-EQU'
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
181	4.16E-12	1.31E-06	%RBCRD-6400-C12_L_SD_M6U_G31	
		3.00E-04	E50-UV_OC_ALL	CCF of all components in group 'E50-UV_OC'
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC

Table 13.7-3

Results - Internal Flooding Shutdown Cutset Report

Cutsets with Descriptions Report Flooding Shutdown Core Damage Frequency = 5.24E-09 Top 200 Cutsets				
182	4.15E-12	1.31E-06	%RBCRD-6400-C12_L_SD_M6U_G31	
		3.00E-04	E50-SQV-CC-EQU_ALL	CCF of all components in group 'E50-SQV-CC-EQU'
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
183	4.13E-12	7.31E-07	%RBCRD-6400-P30_S_SD_M6U_G31	
		5.35E-04	E50-STR-PG_ALL	CCF of all components in group 'E50-STR-PG'
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
184	4.09E-12	1.27E-06	%RBA-11500-G31A_L_SD_M6U_G31	
		1.75E-02	E50-UV_-OC-F003A	CHECK VALVE F003A FAILS TO REMAIN OPEN OR PLUG
		1.75E-02	E50-UV_-OC-F003E	CHECK VALVE F003E FAILS TO REMAIN OPEN OR PLUG
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
185	4.09E-12	1.27E-06	%RBA-11500-G31A_L_SD_M6U_G31	
		1.75E-02	E50-UV_-OC-F003D	CHECK VALVE F003D FAILS TO REMAIN OPEN OR PLUG
		1.75E-02	E50-UV_-OC-F003H	CHECK VALVE F003H FAILS TO REMAIN OPEN OR PLUG
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC

Table 13.7-3

Results - Internal Flooding Shutdown Cutset Report

Cutsets with Descriptions Report Flooding Shutdown Core Damage Frequency = 5.24E-09 Top 200 Cutsets				
186	4.01E-12	1.27E-06	%RBA-11500-G31A_L_SD_M6U_G31	
		3.00E-04	E50-UV_OC_ALL	CCF of all components in group 'E50-UV_OC'
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
187	4.01E-12	1.27E-06	%RBA-11500-G31A_L_SD_M6U_G31	
		3.00E-04	E50-SQV-CC-EQU_ALL	CCF of all components in group 'E50-SQV-CC-EQU'
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
188	3.77E-12	1.50E-05	%SF-P41A_S_SD_M6U_G31	
		2.38E-05	E50-SQV-CC_1_5	CCF of two components: E50-SQV-CC-F002A & E50-SQV-CC-F002E
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
189	3.77E-12	1.50E-05	%SF-P41A_S_SD_M6U_G31	
		2.38E-05	E50-SQV-CC_4_8	CCF of two components: E50-SQV-CC-F002D & E50-SQV-CC-F002H
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
190	3.77E-12	1.50E-05	%SF-P41B_S_SD_M6U_G31	
		2.38E-05	E50-SQV-CC_1_5	CCF of two components: E50-SQV-CC-F002A & E50-SQV-CC-F002E
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334

Table 13.7-3

Results - Internal Flooding Shutdown Cutset Report

Cutsets with Descriptions Report Flooding Shutdown Core Damage Frequency = 5.24E-09 Top 200 Cutsets				
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
191	3.77E-12	1.50E-05	%SF-P41B_S_SD_M6U_G31	
		2.38E-05	E50-SQV-CC_4_8	CCF of two components: E50-SQV-CC-F002D & E50-SQV-CC-F002H
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
192	3.73E-12	3.54E-07	%CONTAINMENT-E50A_L_SD_M6U_G31	
		1.00E-03	C62-UNDEVSPUR5	Undeveloped spurious hardware failure
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
193	3.73E-12	3.54E-07	%CONTAINMENT-E50A_L_SD_M6U_G31	
		1.00E-03	C62-UNDEVSPUR7	Undeveloped spurious hardware failure
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
194	3.73E-12	3.54E-07	%CONTAINMENT-E50A_L_SD_M6U_G31	
		1.00E-03	C63-UNDEVSPUR126	Undeveloped spurious hardware failure
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC

Table 13.7-3

Results - Internal Flooding Shutdown Cutset Report

Cutsets with Descriptions Report Flooding Shutdown Core Damage Frequency = 5.24E-09 Top 200 Cutsets				
195	3.73E-12	3.54E-07	%CONTAINMENT-E50A_L_SD_M6U_G31	
		1.00E-03	C63-UNDEVSPUR127	Undeveloped spurious hardware failure
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
196	3.73E-12	3.54E-07	%CONTAINMENT-E50D_L_SD_M6U_G31	
		1.00E-03	C62-UNDEVSPUR5	Undeveloped spurious hardware failure
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
197	3.73E-12	3.54E-07	%CONTAINMENT-E50D_L_SD_M6U_G31	
		1.00E-03	C62-UNDEVSPUR7	Undeveloped spurious hardware failure
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
198	3.73E-12	3.54E-07	%CONTAINMENT-E50D_L_SD_M6U_G31	
		1.00E-03	C63-UNDEVSPUR126	Undeveloped spurious hardware failure
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC

Table 13.7-3

Results - Internal Flooding Shutdown Cutset Report

Cutsets with Descriptions Report Flooding Shutdown Core Damage Frequency = 5.24E-09 Top 200 Cutsets				
199	3.73E-12	3.54E-07	%CONTAINMENT- E50D_L_SD_M6U_G31	
		1.00E-03	C63-UNDEVSPUR127	Undeveloped spurious hardware failure
		4.84E-02	G21-BV_-RE-F334	MISPOSITION OF VALVE F334
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
200	3.72E-12	3.54E-07	%CONTAINMENT- E50A_L_SD_M6U_G31	
		3.00E-03	C12-SYS-TM-TRAINB	TRAIN B IN MAINTENANCE
		2.18E-01	R-M6-G31	FAILURE TO RECOVER RWCU/SDC
		1.61E-02	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION

Table 13.7-4

Results - Internal Flooding At-Power Importance Measure Report

F-V and RAW Importance Measures Report (F-V = Fussell-Vesely Importance Measure; RAW = Risk Achievement Worth Importance Measure) Flooding At-Power Core Damage Frequency = 1.62E-09				
Event Name	**Probability**	**Fus Ves**	**RAW**	**Description**
B21-PS_COND	9.66E-02	1.06E-03	1.01	CONDITIONAL PROBABILITY OF TOPLSLOCA|TOPIORV
B21-SQV-CC_1_5	2.38E-05	2.53E-05	2.06	CCF of two components: B21-SQV-CC-F004A & B21-SQV-CC-F004E
B21-SQV-CC_1_6	2.38E-05	2.53E-05	2.06	CCF of two components: B21-SQV-CC-F004A & B21-SQV-CC-F004F
B21-SQV-CC_1_7	2.38E-05	2.53E-05	2.06	CCF of two components: B21-SQV-CC-F004A & B21-SQV-CC-F004G
B21-SQV-CC_1_8	2.38E-05	2.53E-05	2.06	CCF of two components: B21-SQV-CC-F004A & B21-SQV-CC-F004H
B21-SQV-CC_2_5	2.38E-05	2.53E-05	2.06	CCF of two components: B21-SQV-CC-F004B & B21-SQV-CC-F004E
B21-SQV-CC_2_6	2.38E-05	2.53E-05	2.06	CCF of two components: B21-SQV-CC-F004B & B21-SQV-CC-F004F
B21-SQV-CC_2_7	2.38E-05	2.53E-05	2.06	CCF of two components: B21-SQV-CC-F004B & B21-SQV-CC-F004G
B21-SQV-CC_2_8	2.38E-05	2.53E-05	2.06	CCF of two components: B21-SQV-CC-F004B & B21-SQV-CC-F004H
B21-SQV-CC_3_5	2.38E-05	2.53E-05	2.06	CCF of two components: B21-SQV-CC-F004C & B21-SQV-CC-F004E
B21-SQV-CC_3_6	2.38E-05	2.53E-05	2.06	CCF of two components: B21-SQV-CC-F004C & B21-SQV-CC-F004F
B21-SQV-CC_3_7	2.38E-05	2.53E-05	2.06	CCF of two components: B21-SQV-CC-F004C & B21-SQV-CC-F004G
B21-SQV-CC_3_8	2.38E-05	2.53E-05	2.06	CCF of two components: B21-SQV-CC-F004C & B21-SQV-CC-F004H
B21-SQV-CC_4_5	2.38E-05	2.53E-05	2.06	CCF of two components: B21-SQV-CC-F004D & B21-SQV-CC-F004E
B21-SQV-CC_4_6	2.38E-05	2.53E-05	2.06	CCF of two components: B21-SQV-CC-F004D & B21-SQV-CC-F004F
B21-SQV-CC_4_7	2.38E-05	2.53E-05	2.06	CCF of two components: B21-SQV-CC-F004D & B21-SQV-CC-F004G
B21-SQV-CC_4_8	2.38E-05	2.53E-05	2.06	CCF of two components: B21-SQV-CC-F004D & B21-SQV-CC-F004H
B21-SQV-CC_5_6	2.38E-05	2.53E-05	2.06	CCF of two components: B21-SQV-CC-F004E & B21-SQV-CC-F004F

Table 13.7-4

Results - Internal Flooding At-Power Importance Measure Report

F-V and RAW Importance Measures Report (F-V = Fussell-Vesely Importance Measure; RAW = Risk Achievement Worth Importance Measure) Flooding At-Power Core Damage Frequency = 1.62E-09				
Event Name	**Probability**	**Fus Ves**	**RAW**	**Description**
B21-SQV-CC_5_7	2.38E-05	2.53E-05	2.06	CCF of two components: B21-SQV-CC-F004E & B21-SQV-CC-F004G
B21-SQV-CC_5_8	2.38E-05	2.53E-05	2.06	CCF of two components: B21-SQV-CC-F004E & B21-SQV-CC-F004H
B21-SQV-CC_6_7	2.38E-05	2.53E-05	2.06	CCF of two components: B21-SQV-CC-F004F & B21-SQV-CC-F004G
B21-SQV-CC_6_8	2.38E-05	2.53E-05	2.06	CCF of two components: B21-SQV-CC-F004F & B21-SQV-CC-F004H
B21-SQV-CC_7_8	2.38E-05	2.53E-05	2.06	CCF of two components: B21-SQV-CC-F004G & B21-SQV-CC-F004H
B21-SQV-CC_ALL	1.50E-04	1.46E-01	971.31	CCF of all components in group 'B21-SQV-CC'
B21-SQV-CC-F004A	3.00E-03	2.58E-03	1.86	EXPLOSIVE VALVE DPV F004A FAILS TO OPERATE
B21-SQV-CC-F004B	3.00E-03	2.58E-03	1.86	EXPLOSIVE VALVE DPV B FAILS TO OPERATE
B21-SQV-CC-F004C	3.00E-03	2.58E-03	1.86	EXPLOSIVE VALVE DPV C FAILS TO OPERATE
B21-SQV-CC-F004D	3.00E-03	2.58E-03	1.86	EXPLOSIVE VALVE DPV D FAILS TO OPERATE
B21-SQV-CC-F004E	3.00E-03	4.03E-03	2.34	EXPLOSIVE VALVE DPV E FAILS TO OPERATE
B21-SQV-CC-F004F	3.00E-03	4.03E-03	2.34	EXPLOSIVE VALVE DPV F FAILS TO OPERATE
B21-SQV-CC-F004G	3.00E-03	4.03E-03	2.34	EXPLOSIVE VALVE DPV G FAILS TO OPERATE
B21-SQV-CC-F004H	3.00E-03	4.03E-03	2.34	EXPLOSIVE VALVE DPV H FAILS TO OPERATE
B21-SRV-CC_ALL	5.85E-04	1.53E-04	1.26	CCF of all components in group 'B21-SRV-CC'
B21-SRV-CC-F006A	7.00E-03	1.78E-04	1.03	SRV F006A FAILS TO OPEN ON DEMAND
B21-SRV-CC-F006B	7.00E-03	1.78E-04	1.03	SRV F006B FAILS TO OPEN ON DEMAND
B21-SRV-CC-F006C	7.00E-03	8.92E-05	1.01	SRV F006C FAILS TO OPEN ON DEMAND
B21-SRV-CC-F006D	7.00E-03	8.92E-05	1.01	SRV F006D FAILS TO OPEN ON DEMAND
B21-SRV-CC-F006E	7.00E-03	1.78E-04	1.03	SRV F006E FAILS TO OPEN ON DEMAND

Table 13.7-4

Results - Internal Flooding At-Power Importance Measure Report

F-V and RAW Importance Measures Report (F-V = Fussell-Vesely Importance Measure; RAW = Risk Achievement Worth Importance Measure) Flooding At-Power Core Damage Frequency = 1.62E-09				
Event Name	**Probability**	**Fus Ves**	**RAW**	**Description**
B21-SRV-CC-F006F	7.00E-03	1.78E-04	1.03	SRV F006F FAILS TO OPEN ON DEMAND
B21-SRV-CC-F006G	7.00E-03	8.92E-05	1.01	SRV F006G FAILS TO OPEN ON DEMAND
B21-SRV-CC-F006H	7.00E-03	8.92E-05	1.01	SRV F006H FAILS TO OPEN ON DEMAND
B21-SRV-CC-F006J	7.00E-03	1.78E-04	1.03	SRV F006J FAILS TO OPEN ON DEMAND
B21-SRV-CC-F006K	7.00E-03	8.92E-05	1.01	SRV F006K FAILS TO OPEN ON DEMAND
B21-SRV-OO-ANYSRV1	6.00E-03	1.55E-02	3.57	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
B21-SRV-OO-ANYSRV10	6.00E-03	1.55E-02	3.57	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
B21-SRV-OO-ANYSRV11	6.00E-03	1.55E-02	3.57	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
B21-SRV-OO-ANYSRV12	6.00E-03	1.55E-02	3.57	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
B21-SRV-OO-ANYSRV13	6.00E-03	1.55E-02	3.57	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
B21-SRV-OO-ANYSRV14	6.00E-03	1.55E-02	3.57	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
B21-SRV-OO-ANYSRV15	6.00E-03	1.55E-02	3.57	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
B21-SRV-OO-ANYSRV16	6.00E-03	1.55E-02	3.57	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
B21-SRV-OO-ANYSRV17	6.00E-03	1.55E-02	3.57	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
B21-SRV-OO-ANYSRV18	6.00E-03	1.55E-02	3.57	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
B21-SRV-OO-ANYSRV2	6.00E-03	1.55E-02	3.57	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
B21-SRV-OO-ANYSRV3	6.00E-03	1.55E-02	3.57	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
B21-SRV-OO-ANYSRV4	6.00E-03	1.55E-02	3.57	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
B21-SRV-OO-ANYSRV5	6.00E-03	1.55E-02	3.57	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
B21-SRV-OO-ANYSRV6	6.00E-03	1.55E-02	3.57	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE

Table 13.7-4

Results - Internal Flooding At-Power Importance Measure Report

F-V and RAW Importance Measures Report (F-V = Fussell-Vesely Importance Measure; RAW = Risk Achievement Worth Importance Measure) Flooding At-Power Core Damage Frequency = 1.62E-09				
Event Name	**Probability**	**Fus Ves**	**RAW**	**Description**
B21-SRV-OO-ANYSRV7	6.00E-03	1.55E-02	3.57	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
B21-SRV-OO-ANYSRV8	6.00E-03	1.55E-02	3.57	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
B21-SRV-OO-ANYSRV9	6.00E-03	1.55E-02	3.57	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
B21-SRV-OO-F006A	6.00E-03	1.91E-03	1.32	SAFETY/RELIEF VALVE F006A FAILS TO RE-CLOSE
B21-SRV-OO-F006B	6.00E-03	1.91E-03	1.32	SAFETY/RELIEF VALVE F006B FAILS TO RE-CLOSE
B21-SRV-OO-F006C	6.00E-03	1.91E-03	1.32	SAFETY/RELIEF VALVE F006C FAILS TO RE-CLOSE
B21-SRV-OO-F006D	6.00E-03	1.91E-03	1.32	SAFETY/RELIEF VALVE F006D FAILS TO RE-CLOSE
B21-SRV-OO-F006E	6.00E-03	1.91E-03	1.32	SAFETY/RELIEF VALVE F006E FAILS TO RE-CLOSE
B21-SRV-OO-F006F	6.00E-03	1.91E-03	1.32	SAFETY/RELIEF VALVE F006F FAILS TO RE-CLOSE
B21-SRV-OO-F006G	6.00E-03	1.91E-03	1.32	SAFETY/RELIEF VALVE F006G FAILS TO RE-CLOSE
B21-SRV-OO-F006H	6.00E-03	1.91E-03	1.32	SAFETY/RELIEF VALVE F006H FAILS TO RE-CLOSE
B21-SRV-OO-F006J	6.00E-03	1.91E-03	1.32	SAFETY/RELIEF VALVE F006J FAILS TO RE-CLOSE
B21-SRV-OO-F006K	6.00E-03	1.91E-03	1.32	SAFETY/RELIEF VALVE F006K FAILS TO RE-CLOSE
B21-UV_-CC-F102A	1.00E-04	3.97E-05	1.4	CHECK VALVE F102A IN FEEDWATER LINE A FAILS TO OPEN
B21-UV_-CC-F103A	1.00E-04	3.97E-05	1.4	CHECK VALVE F103A IN FEEDWATER LINE A FAILS TO OPEN
B21-XHE-FO-6OPEN	1.61E-03	5.63E-04	1.35	OPERATOR FAILS TO OPEN 6/10 SRVs
B32-HX_-PG_1_2	3.43E-07	2.80E-04	817.62	CCF of two components: B32-HX_-PG-HX001A & B32-HX_-PG-HX001B
B32-HX_-PG_1_3	3.43E-07	2.80E-04	817.62	CCF of two components: B32-HX_-PG-HX001A & B32-HX_-PG-HX001C
B32-HX_-PG_1_4	3.43E-07	2.80E-04	817.62	CCF of two components: B32-HX_-PG-HX001A & B32-HX_-PG-HX001D
B32-HX_-PG_1_6	3.43E-07	2.80E-04	817.62	CCF of two components: B32-HX_-PG-HX001A & B32-HX_-PG-HX002B

Table 13.7-4

Results - Internal Flooding At-Power Importance Measure Report

F-V and RAW Importance Measures Report

(F-V = Fussell-Vesely Importance Measure; RAW = Risk Achievement Worth Importance Measure)

Flooding At-Power

Core Damage Frequency = 1.62E-09

Event Name	Probability	Fus Ves	RAW	Description
B32-HX_-PG_1_7	3.43E-07	2.80E-04	817.62	CCF of two components: B32-HX_-PG-HX001A & B32-HX_-PG-HX002C
B32-HX_-PG_1_8	3.43E-07	2.80E-04	817.62	CCF of two components: B32-HX_-PG-HX001A & B32-HX_-PG-HX002D
B32-HX_-PG_2_3	3.43E-07	2.80E-04	817.62	CCF of two components: B32-HX_-PG-HX001B & B32-HX_-PG-HX001C
B32-HX_-PG_2_4	3.43E-07	2.80E-04	817.62	CCF of two components: B32-HX_-PG-HX001B & B32-HX_-PG-HX001D
B32-HX_-PG_2_5	3.43E-07	2.80E-04	817.62	CCF of two components: B32-HX_-PG-HX001B & B32-HX_-PG-HX002A
B32-HX_-PG_2_7	3.43E-07	2.80E-04	817.62	CCF of two components: B32-HX_-PG-HX001B & B32-HX_-PG-HX002C
B32-HX_-PG_2_8	3.43E-07	2.80E-04	817.62	CCF of two components: B32-HX_-PG-HX001B & B32-HX_-PG-HX002D
B32-HX_-PG_3_4	3.43E-07	2.80E-04	817.62	CCF of two components: B32-HX_-PG-HX001C & B32-HX_-PG-HX001D
B32-HX_-PG_3_5	3.43E-07	2.80E-04	817.62	CCF of two components: B32-HX_-PG-HX001C & B32-HX_-PG-HX002A
B32-HX_-PG_3_6	3.43E-07	2.80E-04	817.62	CCF of two components: B32-HX_-PG-HX001C & B32-HX_-PG-HX002B
B32-HX_-PG_3_8	3.43E-07	2.80E-04	817.62	CCF of two components: B32-HX_-PG-HX001C & B32-HX_-PG-HX002D
B32-HX_-PG_4_5	3.43E-07	2.80E-04	817.62	CCF of two components: B32-HX_-PG-HX001D & B32-HX_-PG-HX002A
B32-HX_-PG_4_6	3.43E-07	2.80E-04	817.62	CCF of two components: B32-HX_-PG-HX001D & B32-HX_-PG-HX002B
B32-HX_-PG_4_7	3.43E-07	2.80E-04	817.62	CCF of two components: B32-HX_-PG-HX001D & B32-HX_-PG-HX002C
B32-HX_-PG_5_6	3.43E-07	2.80E-04	817.62	CCF of two components: B32-HX_-PG-HX002A & B32-HX_-PG-HX002B
B32-HX_-PG_5_7	3.43E-07	2.80E-04	817.62	CCF of two components: B32-HX_-PG-HX002A & B32-HX_-PG-HX002C
B32-HX_-PG_5_8	3.43E-07	2.80E-04	817.62	CCF of two components: B32-HX_-PG-HX002A & B32-HX_-PG-HX002D
B32-HX_-PG_6_7	3.43E-07	2.80E-04	817.62	CCF of two components: B32-HX_-PG-HX002B & B32-HX_-PG-HX002C
B32-HX_-PG_6_8	3.43E-07	2.80E-04	817.62	CCF of two components: B32-HX_-PG-HX002B & B32-HX_-PG-HX002D
B32-HX_-PG_7_8	3.43E-07	2.80E-04	817.62	CCF of two components: B32-HX_-PG-HX002C & B32-HX_-PG-HX002D

Table 13.7-4

Results - Internal Flooding At-Power Importance Measure Report

F-V and RAW Importance Measures Report (F-V = Fussell-Vesely Importance Measure; RAW = Risk Achievement Worth Importance Measure) Flooding At-Power Core Damage Frequency = 1.62E-09				
Event Name	**Probability**	**Fus Ves**	**RAW**	**Description**
B32-NMO-CC_1_2	1.11E-05	2.79E-05	3.49	CCF of two components: B32-NMO-CC-F104A & B32-NMO-CC-F104B
B32-NMO-CC-F104A	1.00E-04	2.73E-04	3.73	F104A Fails to Open
B32-NMO-CC-F104B	1.00E-04	2.73E-04	3.73	F104B fails to open
B32-NONCONDENSE	1.00E+00	1.24E-01	1	Non condensable gasses form in ICS sufficiently to require venting
B32-NPO-CC_ALL	1.11E-07	7.36E-05	660.06	CCF of all components in group 'B32-NPO-CC'
B32-NPO-CC-F104C	1.00E-04	2.87E-04	3.86	F104C fails to open
B32-NPO-CC-F104D	1.00E-04	2.87E-04	3.86	F104D Fails to Open
BOPCWS-SYS-FAILS	1.00E-03	2.55E-04	1.25	BALANCE OF PLANT CHILLED WATER SYSTEM FAILS
C12-AOV-CF-SCRV126	6.90E-09	6.24E-04	9.04E+04	CCF TO OPEN OF AIR OPERATED SCRAM VALVE AOV-126
C12-BV_-RE-F003A	1.21E-02	3.94E-05	1	MISPOSITION OF VALVE FOO3A
C12-BV_-RE-F003B	1.21E-02	3.94E-05	1	MISPOSITION OF VALVE F003B
C12-BV_-RE-F013A	4.84E-02	6.34E-04	1.01	MISPOSITION OF VALVE F013A
C12-BV_-RE-F013B	4.84E-02	6.34E-04	1.01	MISPOSITION OF VALVE F013B
C12-BV_-RE-F015A	4.84E-02	6.34E-04	1.01	MISPOSITION OF VALVE F015A
C12-BV_-RE-F015B	4.84E-02	6.34E-04	1.01	MISPOSITION OF VALVE F015B
C12-BV_-RE-F021A	1.21E-02	1.23E-03	1.1	MISPOSITION OF VALVE F021A
C12-BV_-RE-F021B	1.21E-02	1.23E-03	1.1	MISPOSITION OF VALVE F021B
C12-BV_-RE-F064	4.84E-02	2.91E-04	1.01	MISPOSITION OF VALVE F064
C12-BV_-RE-F065	4.84E-02	9.66E-03	1.19	MISPOSITION OF LOCKED OPEN VALVE F065
C12-MOV-CC-F020A	4.00E-03	3.60E-04	1.09	MOTOR OPER. VALVE F020A FAILS TO OPEN

Table 13.7-4

Results - Internal Flooding At-Power Importance Measure Report

F-V and RAW Importance Measures Report (F-V = Fussell-Vesely Importance Measure; RAW = Risk Achievement Worth Importance Measure) Flooding At-Power Core Damage Frequency = 1.62E-09				
Event Name	**Probability**	**Fus Ves**	**RAW**	**Description**
C12-MOV-CC-F020B	4.00E-03	3.60E-04	1.09	MOTOR OPER. VALVE F020B FAILS TO OPEN
C12-MP_-FS-C001B	3.69E-03	2.27E-04	1.06	MOTOR-DRIVEN PUMP C001B FAILS TO START
C12-MP_-FS-C001BOIL	2.40E-03	1.48E-04	1.06	MOTOR-DRIVEN AUX. OIL PUMP FOR C001B FAILS TO START
C12-ROD-CF-SCRAM	2.50E-07	4.26E-01	1.70E+06	CCF OF CONTROL RODS TO INSERT
C12-SOV-CF-V139	1.70E-06	9.58E-04	564.23	CCF TO OPEN (VENT) 0F SCRAM PILOT SOLENOID VALVES SOV-139
C12-SOV-FE-ARI_ALL	5.00E-05	1.40E-04	3.78	CCF of all components in group 'C12-SOV-FE-ARI'
C12-SYS-TM-TRAINB	3.00E-03	1.85E-04	1.06	TRAIN B IN MAINTENANCE
C41-ACV-OC-F002A	2.40E-05	1.45E-04	7.04	AIR OPERATED VALVE F002A FAILS TO REMAIN OPEN
C41-ACV-OC-F002B	2.40E-05	1.45E-04	7.04	AIR OPERATED VALVE F002B FAILS TO REMAIN OPEN
C41-ACV-OC-F002C	2.40E-05	1.45E-04	7.04	AIR OPERATED VALVE F002C FAILS TO REMAIN OPEN
C41-ACV-OC-F002D	2.40E-05	1.45E-04	7.04	AIR OPERATED VALVE FAILS TO REMAIN OPEN
C41-SQV-CC_1_2_3	5.56E-06	8.21E-06	2.47	CCF of three components: C41-SQV-CC-F003A & C41-SQV-CC-F003B & C41-SQV-CC-F003C
C41-SQV-CC_1_2_4	5.56E-06	8.21E-06	2.47	CCF of three components: C41-SQV-CC-F003A & C41-SQV-CC-F003B & C41-SQV-CC-F003D
C41-SQV-CC_1_3	5.56E-05	3.73E-04	7.7	CCF of two components: C41-SQV-CC-F003A & C41-SQV-CC-F003C
C41-SQV-CC_1_3_4	5.56E-06	8.21E-06	2.47	CCF of three components: C41-SQV-CC-F003A & C41-SQV-CC-F003C & C41-SQV-CC-F003D
C41-SQV-CC_2_3_4	5.56E-06	8.21E-06	2.47	CCF of three components: C41-SQV-CC-F003B & C41-SQV-CC-F003C & C41-SQV-CC-F003D
C41-SQV-CC_2_4	5.56E-05	3.73E-04	7.7	CCF of two components: C41-SQV-CC-F003B & C41-SQV-CC-F003D
C41-SQV-CC_ALL	1.50E-04	1.21E-03	9.08	CCF of all components in group 'C41-SQV-CC'

Table 13.7-4

Results - Internal Flooding At-Power Importance Measure Report

F-V and RAW Importance Measures Report (F-V = Fussell-Vesely Importance Measure; RAW = Risk Achievement Worth Importance Measure) Flooding At-Power Core Damage Frequency = 1.62E-09				
Event Name	**Probability**	**Fus Ves**	**RAW**	**Description**
C41-SQV-CC-F003A	3.00E-03	2.07E-05	1.01	EXPLOSIVE VALVE F003A FAILS TO OPERATE
C41-SQV-CC-F003B	3.00E-03	2.07E-05	1.01	EXPLOSIVE VALVE F003B FAILS TO OPERATE
C41-SQV-CC-F003C	3.00E-03	2.07E-05	1.01	EXPLOSIVE VALVE F003C FAILS TO OPERATE
C41-SQV-CC-F003D	3.00E-03	2.07E-05	1.01	EXPLOSIVE VALVE F003D FAILS TO OPERATE
C41-UV_-CC_ALL	1.37E-05	6.65E-05	5.84	CCF of all components in group 'C41-UV_-CC'
C41-UV_-CC-F004A	7.99E-04	6.97E-03	9.72	CHECK VALVE F004A FAILS TO OPEN
C41-UV_-CC-F004B	7.99E-04	6.97E-03	9.72	CHECK VALVE F004B FAILS TO OPEN
C41-UV_-CC-F005A	7.99E-04	6.97E-03	9.72	CHECK VALVE F005A FAILS TO OPEN
C41-UV_-CC-F005B	7.99E-04	6.97E-03	9.72	CHECK VALVE F005B FAILS TO OPEN
C62-CCFSOFTWARE	1.00E-04	7.09E-05	1.71	Common cause failure of software
C63-CCFSOFTWARE	1.00E-04	2.25E-01	2.25E+03	Common cause failure of software
C63-CCFSOFTWARE_S	1.00E-04	2.04E-01	2.04E+03	Common cause failure of software, for spurious
C63-UNDEVSPUR58	1.00E-03	1.16E-02	12.54	Undeveloped spurious hardware failure
C63-UNDEVSPUR59	1.00E-03	1.16E-02	12.54	Undeveloped spurious hardware failure
C63-UNDEVSPUR60	1.00E-03	1.16E-02	12.54	Undeveloped spurious hardware failure
C63-UNDEVSPUR61	1.00E-03	1.16E-02	12.54	Undeveloped spurious hardware failure
C63-UNDEVSPUR62	1.00E-03	1.16E-02	12.54	Undeveloped spurious hardware failure
C63-UNDEVSPUR63	1.00E-03	1.16E-02	12.54	Undeveloped spurious hardware failure
C63-UNDEVSPUR64	1.00E-03	1.16E-02	12.54	Undeveloped spurious hardware failure
C63-UNDEVSPUR65	1.00E-03	1.16E-02	12.54	Undeveloped spurious hardware failure

Table 13.7-4

Results - Internal Flooding At-Power Importance Measure Report

F-V and RAW Importance Measures Report (F-V = Fussell-Vesely Importance Measure; RAW = Risk Achievement Worth Importance Measure) Flooding At-Power Core Damage Frequency = 1.62E-09				
Event Name	**Probability**	**Fus Ves**	**RAW**	**Description**
C63-UNDEVSPUR66	1.00E-03	1.16E-02	12.54	Undeveloped spurious hardware failure
C63-UNDEVSPUR67	1.00E-03	1.16E-02	12.54	Undeveloped spurious hardware failure
C63-UNDEVSPUR68	1.00E-03	1.16E-02	12.54	Undeveloped spurious hardware failure
C63-UNDEVSPUR69	1.00E-03	1.16E-02	12.54	Undeveloped spurious hardware failure
C63-UNDEVSPUR70	1.00E-03	1.16E-02	12.54	Undeveloped spurious hardware failure
C63-UNDEVSPUR71	1.00E-03	1.16E-02	12.54	Undeveloped spurious hardware failure
C63-UNDEVSPUR72	1.00E-03	1.16E-02	12.54	Undeveloped spurious hardware failure
C63-UNDEVSPUR73	1.00E-03	1.16E-02	12.54	Undeveloped spurious hardware failure
C71-DTM-FC-R_ALL	3.00E-05	1.95E-04	7.51	CCF of all components in group 'C71-DTM-FC-R'
C71-LDD-CF-2OF4G	1.86E-06	1.05E-03	564.27	CCF LOAD DRIVER (2 or more of 4 GROUPS)
C71-OLU-FC-R_5_6_7	1.27E-07	5.35E-05	422.36	CCF of three components: C71-OLU-FC-RPSDIV1 & C71-OLU-FC-RPSDIV2 & C71-OLU-FC-RP
C71-OLU-FC-R_5_6_8	1.27E-07	5.35E-05	422.36	CCF of three components: C71-OLU-FC-RPSDIV1 & C71-OLU-FC-RPSDIV2 & C71-OLU-FC-RP
C71-OLU-FC-R_5_7_8	1.27E-07	5.35E-05	422.36	CCF of three components: C71-OLU-FC-RPSDIV1 & C71-OLU-FC-RPSDIV3 & C71-OLU-FC-RP
C71-OLU-FC-R_6_7_8	1.27E-07	5.35E-05	422.36	CCF of three components: C71-OLU-FC-RPSDIV2 & C71-OLU-FC-RPSDIV3 & C71-OLU-FC-RP
C71-OLU-FC-R_ALL	2.40E-05	1.41E-02	588.39	CCF of all components in group 'C71-OLU-FC-R'
C71-SLU-FC-N_ALL	4.50E-05	3.02E-04	7.71	CCF of all components in group 'C71-SLU-FC-N'
C71-SLU-FC-R_1_2_3	1.67E-06	9.39E-04	564.21	CCF of three components: C71-SLU-FC-RPSDIV1 & C71-SLU-FC-RPSDIV2 & C71-SLU-FC-RP

Table 13.7-4

Results - Internal Flooding At-Power Importance Measure Report

F-V and RAW Importance Measures Report (F-V = Fussell-Vesely Importance Measure; RAW = Risk Achievement Worth Importance Measure) Flooding At-Power Core Damage Frequency = 1.62E-09				
Event Name	**Probability**	**Fus Ves**	**RAW**	**Description**
C71-SLU-FC-R_1_2_4	1.67E-06	9.39E-04	564.21	CCF of three components: C71-SLU-FC-RPSDIV1 & C71-SLU-FC-RPSDIV2 & C71-SLU-FC-RP
C71-SLU-FC-R_1_3_4	1.67E-06	9.39E-04	564.21	CCF of three components: C71-SLU-FC-RPSDIV1 & C71-SLU-FC-RPSDIV3 & C71-SLU-FC-RP
C71-SLU-FC-R_2_3_4	1.67E-06	9.39E-04	564.21	CCF of three components: C71-SLU-FC-RPSDIV2 & C71-SLU-FC-RPSDIV3 & C71-SLU-FC-RP
C71-SLU-FC-R_ALL	4.50E-05	2.66E-02	591.67	CCF of all components in group 'C71-SLU-FC-R'
C71-SLU-FC-S_ALL	4.50E-05	3.02E-04	7.71	CCF of all components in group 'C71-SLU-FC-S'
C72-ATM-FC-L1_ALL	5.00E-06	1.25E-03	251.1	CCF of all components in group 'C72-ATM-FC-L1'
C72-CCFSOFTWARE	1.00E-04	1.14E-01	1.14E+03	COMMON CAUSE FAILURE OF DPS PROCESSORS
C72-LDD-CF-LOADS	1.86E-06	1.29E-03	693.73	COMMON CAUSE FAILURE OF DPS LOAD DRIVERS
C72-LDD-FC-FWRB1	1.80E-04	1.47E-03	9.15	LOAD DRIVER FAILS TO ENERGIZE FWRB CIRCUIT
C72-LDD-FC-FWRB2	1.80E-04	1.47E-03	9.15	LOAD DRIVER FAILS TO ENERGIZE FWRB CIRCUIT
C72-LDD-FC-S1F004A	1.80E-04	7.09E-05	1.39	F004A FIRST SERIES LOAD DRIVER FAILS ACTUATE
C72-LDD-FC-S1F004B	1.80E-04	7.09E-05	1.39	F004B FIRST SERIES LOAD DRIVER FAILS ACTUATE
C72-LDD-FC-S1F004C	1.80E-04	7.09E-05	1.39	F004C FIRST SERIES LOAD DRIVER FAILS ACTUATE
C72-LDD-FC-S1F004D	1.80E-04	7.09E-05	1.39	F004D FIRST SERIES LOAD DRIVER FAILS ACTUATE
C72-LDD-FC-S2F004A	1.80E-04	7.09E-05	1.39	F004A SECOND SERIES LOAD DRIVER FAILS TO ACTUATE
C72-LDD-FC-S2F004B	1.80E-04	7.09E-05	1.39	F004B SECOND SERIES LOAD DRIVER FAILS TO ACTUATE
C72-LDD-FC-S2F004C	1.80E-04	7.09E-05	1.39	F004C SECOND SERIES LOAD DRIVER FAILS TO ACTUATE
C72-LDD-FC-S2F004D	1.80E-04	7.09E-05	1.39	F004D SECOND SERIES LOAD DRIVER FAILS TO ACTUATE

Table 13.7-4

Results - Internal Flooding At-Power Importance Measure Report

F-V and RAW Importance Measures Report (F-V = Fussell-Vesely Importance Measure; RAW = Risk Achievement Worth Importance Measure) Flooding At-Power Core Damage Frequency = 1.62E-09				
Event Name	**Probability**	**Fus Ves**	**RAW**	**Description**
C72-LDD-FC-S3F004A	1.80E-04	7.09E-05	1.39	F004A THIRD SERIES LOAD DRIVER FAILS TO ACTUATE
C72-LDD-FC-S3F004B	1.80E-04	7.09E-05	1.39	F004B THIRD SERIES LOAD DRIVER FAILS TO ACTUATE
C72-LDD-FC-S3F004C	1.80E-04	7.09E-05	1.39	F004C THIRD SERIES LOAD DRIVER FAILS TO ACTUATE
C72-LDD-FC-S3F004D	1.80E-04	7.09E-05	1.39	F004D THIRD SERIES LOAD DRIVER FAILS TO ACTUATE
C72-LOG-FC-D_1_2	3.33E-06	3.48E-03	1.04E+03	CCF of two components: C72-LOG-FC-D1DPS & C72-LOG-FC-D2DPS
C72-LOG-FC-D_1_2_3	6.67E-06	7.29E-03	1.09E+03	CCF of three components: C72-LOG-FC-D1DPS & C72-LOG-FC-D2DPS & C72-LOG-FC-D3DPS
C72-LOG-FC-D_1_3	3.33E-06	3.48E-03	1.04E+03	CCF of two components: C72-LOG-FC-D1DPS & C72-LOG-FC-D3DPS
C72-LOG-FC-D_2_3	3.33E-06	3.48E-03	1.04E+03	CCF of two components: C72-LOG-FC-D2DPS & C72-LOG-FC-D3DPS
C74-ATM-FC-PR_ALL	5.00E-06	7.39E-06	2.46	CCF of all components in group 'C74-ATM-FC-PR'
C74-CCFATSOFTWARE	1.00E-04	7.79E-04	8.78	COMMON CAUSE FAILURE OF ATWS/SLC LOGIC PROCESSORS
C74-LOG-FC-AT-_ALL	6.00E-06	8.90E-06	2.47	CCF of all components in group 'C74-LOG-FC-AT-'
E50-SQV-CC_ALL	1.50E-04	8.23E-02	549.53	CCF of all components in group 'E50-SQV-CC'
E50-SQV-CF-4OPEN	1.50E-05	3.86E-03	258.52	CCF OF 4 OR MORE SQUIB VALVES TO OPEN
E50-UV_OC_ALL	3.00E-04	1.67E-01	556.98	CCF of all components in group 'E50-UV_OC'
G21-BV_-RE-F308	4.84E-02	3.89E-03	1.08	MISPOSITION OF VALVE F308
G21-BV_-RE-F334	4.84E-02	7.39E-02	2.45	MISPOSITION OF VALVE F334
G21-MOV-CC-F011A	2.40E-02	2.98E-04	1.01	MOTOR OPER. VALVE F011A FAILS TO OPEN
G21-MOV-CC-F013A	2.40E-02	2.98E-04	1.01	MOTOR OPER. VALVE F013A FAILS TO OPEN
G21-MOV-CC-F014A	2.40E-02	2.98E-04	1.01	MOTOR OPER. VALVE F014A FAILS TO OPEN
G21-MOV-OO-F003A	4.00E-03	4.86E-05	1.01	MOTOR OPERATED VALVE F003A FAILS TO CLOSE

Table 13.7-4

Results - Internal Flooding At-Power Importance Measure Report

F-V and RAW Importance Measures Report (F-V = Fussell-Vesely Importance Measure; RAW = Risk Achievement Worth Importance Measure) Flooding At-Power Core Damage Frequency = 1.62E-09				
Event Name	**Probability**	**Fus Ves**	**RAW**	**Description**
G21-MOV-OO-F008A	4.00E-03	4.86E-05	1.01	MOTOR OPER. VALVE F008A FAILS TO CLOSE
G21-XHE-FO-LPCI	1.61E-03	1.64E-05	1.01	OPERATOR FAILS TO ALIGN AND ACTUATE FAPCS IN LPCI MODE
N21-ACV-CC-F0016	2.00E-03	9.16E-04	1.46	AIR OPERATED VALVE F0016 FAILS TO OPEN
N21-XHE-FO-FWRERUN	1.76E-01	4.08E-02	1.19	OPERATOR FAILS TO RESTART FDW AFTER RUNBACK - ATWS
P21-BV_-RE-F049A	1.21E-02	1.23E-03	1.1	MISPOSITION OF RCCW INLET TO CRD HEAT EXCHANGER
P21-BV_-RE-F049B	1.21E-02	1.23E-03	1.1	MISPOSITION OF RCCW INLET TO CRD HEAT EXCHANGER
P21-BV_-RE-F050A	1.21E-02	1.23E-03	1.1	MISPOSITION OF RCCW OUTLET FROM CRD HEAT EXCHANGER
P21-BV_-RE-F050B	1.21E-02	1.23E-03	1.1	MISPOSITION OF RCCW OUTLET FROM CRD HEAT EXCHANGER
P41-FAN-FS-0001B	6.00E-04	9.72E-06	1.02	MECHANICAL DRAFT COOLING TOWER FAN 1B FAILS TO START
P41-FAN-FS-0002B	6.00E-04	9.72E-06	1.02	MECHANICAL DRAFT COOLING TOWER FAN 2B FAILS TO START
P41-MOV-CC-PMPF004A	4.00E-03	4.49E-04	1.11	MOTOR OPERATED VALVE MV-F004A FAILS TO OPEN
P41-MOV-CC-PMPF004B	4.00E-03	4.49E-04	1.11	MOTOR OPERATED VALVE F004B FAILS TO OPEN
P41-MPW-FR-C001A	6.00E-04	9.72E-06	1.02	MOTOR DRIVEN PUMP C001A FAILS TO RUN
P41-MPW-FR-C001B	6.00E-04	9.72E-06	1.02	MOTOR DRIVEN PUMP C001B FAILS TO RUN,
P41-MPW-FR-C002A	6.00E-04	9.72E-06	1.02	MOTOR DRIVEN PUMP C002A FAILS TO RUN
P41-MPW-FR-C002B	6.00E-04	9.72E-06	1.02	MOTOR-DRIVEN PUMP C002B FAILS TO RUN
P41-MPW-FS-C002A	2.00E-03	1.18E-04	1.06	MOTOR-DRIVEN PUMP C002A FAILS TO START
P41-MPW-FS-C002B	2.00E-03	1.18E-04	1.06	MOTOR-DRIVEN PUMP C002B FAILS TO START
P41-NSC-TM-C002A	1.50E-03	4.79E-05	1.03	PUMP C002A IN MAINTENANCE
P41-NSC-TM-C002B	1.50E-03	4.79E-05	1.03	PUMP C002B IN MAINTENANCE

Table 13.7-4

Results - Internal Flooding At-Power Importance Measure Report

F-V and RAW Importance Measures Report

(F-V = Fussell-Vesely Importance Measure; RAW = Risk Achievement Worth Importance Measure)

Flooding At-Power

Core Damage Frequency = 1.62E-09

Event Name	Probability	Fus Ves	RAW	Description
P41-SYS-FC-HVACPSW-A	1.00E-03	3.22E-05	1.03	PSW-A ROOM COOLING FAILURE
P41-SYS-FC-HVACPSW-B	1.00E-03	3.22E-05	1.03	PSW-B ROOM COOLING FAILURE
P41-TRN-RE-PUMP2A	8.07E-03	1.00E-03	1.12	FAILURE TO RESTORE PSW PUMP 2A
P41-TRN-RE-PUMP2B	8.07E-03	1.00E-03	1.12	FAILURE TO RESTORE PSW PUMP 2B
R10-LOSP-EPRI	3.00E-03	2.14E-03	1.71	CONSEQENTIAL LOSS OF PREFERRED OFFSITE POWER DUE TO A TRANSIENT
R13-INV-FC-CCFNSR_1_3_5	2.11E-07	1.85E-04	879.06	CCF of three components: R13-INV-FC-R13A1 & R13-INV-FC-R13B1 & R13-INV-FC-R13C
R13-INV-FC-CCFNSR_ALL	1.14E-05	1.25E-02	1.10E+03	CCF of all components in group 'R13-INV-FC-CCFNSR'
R13-INV-FC-CCFSR_ALL	1.14E-05	7.39E-05	7.48	CCF of all components in group 'R13-INV-FC-CCFSR'
R16-BDC-TM-R16A3	5.00E-04	7.60E-05	1.15	DC BUS R16-A3 IN MAINTENANCE
R16-BT_-LP-CCFNSR_ALL	4.07E-07	3.90E-04	957.55	CCF of all components in group 'R16-BT_-LP-CCFNSR'
R16-BT_-TM-R16BTA3	5.00E-04	7.60E-05	1.15	BATTERY R16-BTA3 IN TEST AND MAINTENANCE
T10-UV_-CC-VBISVS_1_2_3	5.23E-07	1.11E-04	212.8	CCF of three components: T10-UV_-CC-ISV1 & T10-UV_-CC-ISV2 & T10-UV_-CC-ISV3
T10-VB_-CC_1_2_3	4.19E-07	8.92E-05	213.16	CCF of three components: T10-VB_-CC-VB1 & T10-VB_-CC-VB2 & T10-VB_-CC-VB3
T15-FLT-PP_ALL	5.68E-07	3.29E-04	579.36	CCF of all components in group 'T15-FLT-PP'
U43-BV_-CC-F346	4.00E-04	2.62E-04	1.65	MANUAL VALVE FAILS TO OPEN
U43-BV_-CC-FU439	4.00E-04	2.62E-04	1.65	MANUAL VALVE FAILS TO OPEN
U43-UV_-CC-F347	4.00E-04	2.62E-04	1.65	CHECK VALVE F347 FAILS TO OPEN
U43-UV_-CC-FU438	4.00E-04	2.62E-04	1.65	CHECK VALVE FAILS TO OPEN

Table 13.7-4

Results - Internal Flooding At-Power Importance Measure Report

F-V and RAW Importance Measures Report (F-V = Fussell-Vesely Importance Measure; RAW = Risk Achievement Worth Importance Measure) Flooding At-Power Core Damage Frequency = 1.62E-09				
Event Name	**Probability**	**Fus Ves**	**RAW**	**Description**
U43-XHE-FO-LPCI	1.61E-03	1.31E-03	1.81	OPERATOR FAILS TO ACTUATE U43 IN LPCI MODE
U43-XHE-FO-MAKEUP	1.61E-02	4.65E-05	1	OPERATOR FAILS TO ACTUATE U43 IN MAKE UP MODE
U43-XHE-FO-PMPTRK	2.66E-02	4.65E-05	1	OPERATOR FAIL TO SUPPLY WATER FROM PUMP TRUCKS
XHOS72H	1.00E+00	5.73E-04	1	HOUSE EVENT: 72 HOURS (VALUE =1)
XXX-XHE-FO-DEPRESS	1.61E-01	2.63E-01	2.37	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION
XXX-XHE-FO-ICPCCS	1.61E-03	1.76E-04	1.11	Operator fails to recognize the need to makeup ICS/PCCS Pool level.
XXX-XHE-FO-LPMAKEUP	1.61E-01	7.02E-02	1.37	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION

Table 13.7-5

Results - Internal Flooding Shutdown Importance Measure Report

F-V and RAW Importance Measures Report

(F-V = Fussell-Vesely Importance Measure; RAW = Risk Achievement Worth Importance Measure)

Flooding Shutdown

Core Damage Frequency = 5.24E-09

Event Name	Probability	Fus Ves	RAW	Description
B21-SQV-CC_ALL	1.50E-04	2.08E-03	14.87	CCF of all components in group 'B21-SQV-CC'
B21-SQV-CC-F004A	3.00E-03	2.84E-04	1.09	EXPLOSIVE VALVE DPV F004A FAILS TO OPERATE
B21-SQV-CC-F004B	3.00E-03	2.84E-04	1.09	EXPLOSIVE VALVE DPV B FAILS TO OPERATE
B21-SQV-CC-F004C	3.00E-03	2.84E-04	1.09	EXPLOSIVE VALVE DPV C FAILS TO OPERATE
B21-SQV-CC-F004D	3.00E-03	2.84E-04	1.09	EXPLOSIVE VALVE DPV D FAILS TO OPERATE
B21-SQV-CC-F004E	3.00E-03	2.65E-04	1.09	EXPLOSIVE VALVE DPV E FAILS TO OPERATE
B21-SQV-CC-F004F	3.00E-03	2.65E-04	1.09	EXPLOSIVE VALVE DPV F FAILS TO OPERATE
B21-SQV-CC-F004G	3.00E-03	2.65E-04	1.09	EXPLOSIVE VALVE DPV G FAILS TO OPERATE
B21-SQV-CC-F004H	3.00E-03	2.65E-04	1.09	EXPLOSIVE VALVE DPV H FAILS TO OPERATE
B21-UV_-CC-F102A	1.00E-04	1.03E-03	11.32	CHECK VALVE F102A IN FEEDWATER LINE A FAILS TO OPEN
B21-UV_-CC-F102B	1.00E-04	2.16E-04	3.16	CHECK VALVE #1 IN FEEDWATER LINE B FAILS TO REOPEN
B21-UV_-CC-F103A	1.00E-04	1.03E-03	11.32	CHECK VALVE F103A IN FEEDWATER LINE A FAILS TO OPEN
B21-UV_-CC-F103B	1.00E-04	2.16E-04	3.16	CHECK VALVE #2 IN FEEDWATER LINE B FAILS TO REOPEN
B32-NONCONDENSE	1.00E+00	1.89E-03	1	Non condensable gasses form in ICS sufficiently to require venting
BOPCWS-SYS-FAILS	1.00E-03	9.42E-05	1.09	BALANCE OF PLANT CHILLED WATER SYSTEM FAILS
C12-BV_-RE-F003A	1.21E-02	3.36E-03	1.27	MISPOSITION OF VALVE FOO3A
C12-BV_-RE-F003B	1.21E-02	3.36E-03	1.27	MISPOSITION OF VALVE F003B
C12-BV_-RE-F013A	4.84E-02	1.49E-02	1.29	MISPOSITION OF VALVE F013A
C12-BV_-RE-F013B	4.84E-02	1.49E-02	1.29	MISPOSITION OF VALVE F013B

Table 13.7-5

Results - Internal Flooding Shutdown Importance Measure Report

F-V and RAW Importance Measures Report

(F-V = Fussell-Vesely Importance Measure; RAW = Risk Achievement Worth Importance Measure)

Flooding Shutdown

Core Damage Frequency = 5.24E-09

Event Name	Probability	Fus Ves	RAW	Description
C12-BV_-RE-F015A	4.84E-02	1.49E-02	1.29	MISPOSITION OF VALVE F015A
C12-BV_-RE-F015B	4.84E-02	1.49E-02	1.29	MISPOSITION OF VALVE F015B
C12-BV_-RE-F021A	1.21E-02	3.64E-02	3.97	MISPOSITION OF VALVE F021A
C12-BV_-RE-F021B	1.21E-02	3.64E-02	3.97	MISPOSITION OF VALVE F021B
C12-BV_-RE-F064	4.84E-02	6.85E-03	1.13	MISPOSITION OF VALVE F064
C12-BV_-RE-F065	4.84E-02	8.85E-03	1.17	MISPOSITION OF LOCKED OPEN VALVE F065
C12-HX_-LK-COO1AHX	2.40E-05	4.56E-05	2.9	CRD HX LEAKS OR RUPTURES
C12-HX_-LK-COO1BHX	2.40E-05	4.56E-05	2.9	HEAT EXCHANGER (LEAK OR RUPTURE)
C12-HX_-PG-C001AHX	2.40E-05	4.56E-05	2.9	CRD HEAT EXCHANGER (PLUGGED)
C12-HX_-PG-C001BHX	2.40E-05	4.56E-05	2.9	CRD HEAT EXCHANGER (PLUGGED)
C12-MOV-CC-F014A	4.00E-03	9.91E-04	1.25	MOTOR OPER. VALVE F014A FAILS TO OPEN
C12-MOV-CC-F014B	4.00E-03	9.91E-04	1.25	MOTOR OPER. VALVE F014B FAILS TO OPEN
C12-MOV-CC-F020A	4.00E-03	1.15E-02	3.87	MOTOR OPER. VALVE F020A FAILS TO OPEN
C12-MOV-CC-F020B	4.00E-03	1.15E-02	3.87	MOTOR OPER. VALVE F020B FAILS TO OPEN
C12-MP_-FR-C001A	2.88E-04	6.79E-04	3.36	MOTOR-DRIVEN PUMP C001A FAILS TO RUN, GIVEN START
C12-MP_-FR-C001B	2.88E-04	6.79E-04	3.36	MOTOR-DRIVEN PUMP C001B FAILS TO RUN, GIVEN START
C12-MP_-FS-C001A	2.00E-03	8.56E-06	1	MOTOR-DRIVEN PUMP C001A FAILS TO START
C12-MP_-FS-C001AOIL	2.40E-03	1.03E-05	1	MOTOR-DRIVEN AUX. OIL PUMP FOR C001A FAILS TO RESTART
C12-MP_-FS-C001B	3.69E-03	1.06E-02	3.86	MOTOR-DRIVEN PUMP C001B FAILS TO START
C12-MP_-FS-C001BOIL	2.40E-03	6.72E-03	3.79	MOTOR-DRIVEN AUX. OIL PUMP FOR C001B FAILS TO START
C12-OR_-PG-D007A	1.44E-05	2.74E-05	2.9	ORIFICE D007A FAILS TO REMAIN OPEN (PLUG)

Table 13.7-5

Results - Internal Flooding Shutdown Importance Measure Report

F-V and RAW Importance Measures Report

(F-V = Fussell-Vesely Importance Measure; RAW = Risk Achievement Worth Importance Measure)

Flooding Shutdown

Core Damage Frequency = 5.24E-09

Event Name	Probability	Fus Ves	RAW	Description
C12-OR_-PG-D007B	1.44E-05	2.74E-05	2.9	ORIFICE D007B FAILS TO REMAIN OPEN (PLUG)
C12-SYS-TM-TRAINB	3.00E-03	8.51E-03	3.83	TRAIN B IN MAINTENANCE
C12-UV_-CC-F022	1.00E-04	2.16E-04	3.16	CHECK VALVE F022 FAILS TO OPEN
C12-XHE-FO-LEVEL2	3.21E-02	9.85E-02	3.97	Operator fails to back-up CRD actuation
C62-CCFSOFTWARE	1.00E-04	6.56E-04	7.55	Common cause failure of software
C62-CCFSOFTWARE_S	1.00E-04	6.46E-04	7.45	Common cause failure of software, for spurious
C62-UNDEVSPUR5	1.00E-03	2.64E-03	3.63	Undeveloped spurious hardware failure
C62-UNDEVSPUR7	1.00E-03	2.64E-03	3.63	Undeveloped spurious hardware failure
C62-UNDEVSPUR89	1.00E-03	1.02E-04	1.1	Undeveloped spurious hardware failure
C62-UNDEVSPUR91	1.00E-03	1.02E-04	1.1	Undeveloped spurious hardware failure
C62-UNDEVSPUR93	1.00E-03	4.32E-06	1	Undeveloped spurious hardware failure
C62-UNDEVSPUR95	1.00E-03	4.32E-06	1	Undeveloped spurious hardware failure
C62-UNDEVSPUR97	1.00E-03	1.74E-04	1.17	Undeveloped spurious hardware failure
C62-UNDEVSPUR99	1.00E-03	1.74E-04	1.17	Undeveloped spurious hardware failure
C63-CCFSOFTWARE	1.00E-04	2.24E-03	23.34	Common cause failure of software
C63-CCFSOFTWARE_S	1.00E-04	1.41E-03	15.08	Common cause failure of software, for spurious
C63-UNDEVSPUR126	1.00E-03	2.64E-03	3.63	Undeveloped spurious hardware failure
C63-UNDEVSPUR127	1.00E-03	2.64E-03	3.63	Undeveloped spurious hardware failure
C63-UNDEVSPUR58	1.00E-03	3.20E-03	4.19	Undeveloped spurious hardware failure
C63-UNDEVSPUR59	1.00E-03	3.20E-03	4.19	Undeveloped spurious hardware failure
C63-UNDEVSPUR62	1.00E-03	3.20E-03	4.19	Undeveloped spurious hardware failure

Table 13.7-5

Results - Internal Flooding Shutdown Importance Measure Report

F-V and RAW Importance Measures Report

(F-V = Fussell-Vesely Importance Measure; RAW = Risk Achievement Worth Importance Measure)

Flooding Shutdown

Core Damage Frequency = 5.24E-09

Event Name	Probability	Fus Ves	RAW	Description
C63-UNDEVSPUR63	1.00E-03	3.20E-03	4.19	Undeveloped spurious hardware failure
C63-UNDEVSPUR66	1.00E-03	3.20E-03	4.19	Undeveloped spurious hardware failure
C63-UNDEVSPUR67	1.00E-03	3.20E-03	4.19	Undeveloped spurious hardware failure
C63-UNDEVSPUR70	1.00E-03	3.20E-03	4.19	Undeveloped spurious hardware failure
C63-UNDEVSPUR71	1.00E-03	3.20E-03	4.19	Undeveloped spurious hardware failure
E50-POL-RP-POOLA	3.00E-07	4.98E-05	166.84	GDCS POOL A LEAKS CATASTROPHICALLY
E50-POL-RP-POOLD	3.00E-07	4.98E-05	166.84	GDCS POOL D LEAKS CATASTROPHICALLY
E50-SQV-CC_1_2	2.38E-05	7.86E-05	4.3	CCF of two components: E50-SQV-CC-F002A & E50-SQV-CC-F002B
E50-SQV-CC_1_2_5	7.94E-07	1.62E-04	204.33	CCF of three components: E50-SQV-CC-F002A & E50-SQV-CC-F002B & E50-SQV-CC-F002E
E50-SQV-CC_1_3	2.38E-05	7.86E-05	4.3	CCF of two components: E50-SQV-CC-F002A & E50-SQV-CC-F002C
E50-SQV-CC_1_3_5	7.94E-07	1.62E-04	204.33	CCF of three components: E50-SQV-CC-F002A & E50-SQV-CC-F002C & E50-SQV-CC-F002E
E50-SQV-CC_1_4	2.38E-05	1.57E-04	7.6	CCF of two components: E50-SQV-CC-F002A & E50-SQV-CC-F002D
E50-SQV-CC_1_4_5	7.94E-07	1.62E-04	204.33	CCF of three components: E50-SQV-CC-F002A & E50-SQV-CC-F002D & E50-SQV-CC-F002E
E50-SQV-CC_1_4_8	7.94E-07	1.62E-04	204.33	CCF of three components: E50-SQV-CC-F002A & E50-SQV-CC-F002D & E50-SQV-CC-F002H
E50-SQV-CC_1_5	2.38E-05	6.50E-03	273.99	CCF of two components: E50-SQV-CC-F002A & E50-SQV-CC-F002E
E50-SQV-CC_1_5_6	7.94E-07	1.62E-04	204.33	CCF of three components: E50-SQV-CC-F002A & E50-SQV-CC-F002E & E50-SQV-CC-F002F
E50-SQV-CC_1_5_7	7.94E-07	1.62E-04	204.33	CCF of three components: E50-SQV-CC-F002A & E50-SQV-CC-F002E & E50-SQV-CC-F002G

Table 13.7-5

Results - Internal Flooding Shutdown Importance Measure Report

F-V and RAW Importance Measures Report (F-V = Fussell-Vesely Importance Measure; RAW = Risk Achievement Worth Importance Measure) Flooding Shutdown Core Damage Frequency = 5.24E-09				
Event Name	**Probability**	**Fus Ves**	**RAW**	**Description**
E50-SQV-CC_1_5_8	7.94E-07	1.62E-04	204.33	CCF of three components: E50-SQV-CC-F002A & E50-SQV-CC-F002E & E50-SQV-CC-F002H
E50-SQV-CC_1_6	2.38E-05	7.86E-05	4.3	CCF of two components: E50-SQV-CC-F002A & E50-SQV-CC-F002F
E50-SQV-CC_1_7	2.38E-05	7.86E-05	4.3	CCF of two components: E50-SQV-CC-F002A & E50-SQV-CC-F002G
E50-SQV-CC_1_8	2.38E-05	1.57E-04	7.6	CCF of two components: E50-SQV-CC-F002A & E50-SQV-CC-F002H
E50-SQV-CC_2_4	2.38E-05	7.86E-05	4.3	CCF of two components: E50-SQV-CC-F002B & E50-SQV-CC-F002D
E50-SQV-CC_2_4_8	7.94E-07	1.62E-04	204.33	CCF of three components: E50-SQV-CC-F002B & E50-SQV-CC-F002D & E50-SQV-CC-F002H
E50-SQV-CC_2_5	2.38E-05	7.86E-05	4.3	CCF of two components: E50-SQV-CC-F002B & E50-SQV-CC-F002E
E50-SQV-CC_2_8	2.38E-05	7.86E-05	4.3	CCF of two components: E50-SQV-CC-F002B & E50-SQV-CC-F002H
E50-SQV-CC_3_4	2.38E-05	7.86E-05	4.3	CCF of two components: E50-SQV-CC-F002C & E50-SQV-CC-F002D
E50-SQV-CC_3_4_8	7.94E-07	1.62E-04	204.33	CCF of three components: E50-SQV-CC-F002C & E50-SQV-CC-F002D & E50-SQV-CC-F002H
E50-SQV-CC_3_5	2.38E-05	7.86E-05	4.3	CCF of two components: E50-SQV-CC-F002C & E50-SQV-CC-F002E
E50-SQV-CC_3_8	2.38E-05	7.86E-05	4.3	CCF of two components: E50-SQV-CC-F002C & E50-SQV-CC-F002H
E50-SQV-CC_4_5	2.38E-05	1.57E-04	7.6	CCF of two components: E50-SQV-CC-F002D & E50-SQV-CC-F002E
E50-SQV-CC_4_5_8	7.94E-07	1.62E-04	204.33	CCF of three components: E50-SQV-CC-F002D & E50-SQV-CC-F002E & E50-SQV-CC-F002H
E50-SQV-CC_4_6	2.38E-05	7.86E-05	4.3	CCF of two components: E50-SQV-CC-F002D & E50-SQV-CC-F002F
E50-SQV-CC_4_6_8	7.94E-07	1.62E-04	204.33	CCF of three components: E50-SQV-CC-F002D & E50-SQV-CC-F002F & E50-SQV-CC-F002H
E50-SQV-CC_4_7	2.38E-05	7.86E-05	4.3	CCF of two components: E50-SQV-CC-F002D & E50-SQV-CC-F002G

Table 13.7-5

Results - Internal Flooding Shutdown Importance Measure Report

F-V and RAW Importance Measures Report (F-V = Fussell-Vesely Importance Measure; RAW = Risk Achievement Worth Importance Measure) Flooding Shutdown Core Damage Frequency = 5.24E-09				
Event Name	**Probability**	**Fus Ves**	**RAW**	**Description**
E50-SQV-CC_4_7_8	7.94E-07	1.62E-04	204.33	CCF of three components: E50-SQV-CC-F002D & E50-SQV-CC-F002G & E50-SQV-CC-F002H
E50-SQV-CC_4_8	2.38E-05	6.50E-03	273.99	CCF of two components: E50-SQV-CC-F002D & E50-SQV-CC-F002H
E50-SQV-CC_5_6	2.38E-05	7.86E-05	4.3	CCF of two components: E50-SQV-CC-F002E & E50-SQV-CC-F002F
E50-SQV-CC_5_7	2.38E-05	7.86E-05	4.3	CCF of two components: E50-SQV-CC-F002E & E50-SQV-CC-F002G
E50-SQV-CC_5_8	2.38E-05	1.57E-04	7.6	CCF of two components: E50-SQV-CC-F002E & E50-SQV-CC-F002H
E50-SQV-CC_6_8	2.38E-05	7.86E-05	4.3	CCF of two components: E50-SQV-CC-F002F & E50-SQV-CC-F002H
E50-SQV-CC_7_8	2.38E-05	7.86E-05	4.3	CCF of two components: E50-SQV-CC-F002G & E50-SQV-CC-F002H
E50-SQV-CC_ALL	1.50E-04	4.45E-02	297.86	CCF of all components in group 'E50-SQV-CC'
E50-SQV-CC-EQU_1_2_3	1.11E-05	2.02E-05	2.81	CCF of three components: E50-SQV-CC-F006A & E50-SQV-CC-F006B & E50-SQV-CC-F006C
E50-SQV-CC-EQU_1_2_4	1.11E-05	2.02E-05	2.81	CCF of three components: E50-SQV-CC-F006A & E50-SQV-CC-F006B & E50-SQV-CC-F006D
E50-SQV-CC-EQU_1_3_4	1.11E-05	2.02E-05	2.81	CCF of three components: E50-SQV-CC-F006A & E50-SQV-CC-F006C & E50-SQV-CC-F006D
E50-SQV-CC-EQU_2_3_4	1.11E-05	2.02E-05	2.81	CCF of three components: E50-SQV-CC-F006B & E50-SQV-CC-F006C & E50-SQV-CC-F006D
E50-SQV-CC-EQU_ALL	3.00E-04	9.08E-02	303.57	CCF of all components in group 'E50-SQV-CC-EQU'
E50-SQV-CC-F002A	3.00E-03	1.77E-02	6.88	SQUIB VALVE F002A FAILS TO OPERATE
E50-SQV-CC-F002D	3.00E-03	1.73E-02	6.76	SQUIB VALVE F002D FAILS TO OPERATE
E50-SQV-CC-F002E	3.00E-03	1.73E-02	6.76	SQUIB VALVE F002E FAILS TO OPERATE
E50-SQV-CC-F002H	3.00E-03	1.77E-02	6.88	SQUIB VALVE F002H FAILS TO OPERATE

Table 13.7-5

Results - Internal Flooding Shutdown Importance Measure Report

F-V and RAW Importance Measures Report (F-V = Fussell-Vesely Importance Measure; RAW = Risk Achievement Worth Importance Measure) Flooding Shutdown Core Damage Frequency = 5.24E-09				
Event Name	**Probability**	**Fus Ves**	**RAW**	**Description**
E50-SQV-CC-F006A	6.00E-03	2.02E-05	1	SQUIB VALVE F006A FAILS TO OPERATE IN EXTREME CONDITIONS
E50-SQV-CC-F006B	6.00E-03	6.76E-04	1.11	SQUIB VALVE F006B FAILS TO OPERATE IN EXTREME CONDITIONS
E50-SQV-CC-F006C	6.00E-03	2.02E-05	1	SQUIB VALVE F006C FAILS TO OPERATE IN EXTREME CONDITIONS
E50-SQV-CC-F006D	6.00E-03	2.02E-05	1	SQUIB VALVE F006D FAILS TO OPERATE IN EXTREME CONDITIONS
E50-SQV-CO-F009A	9.60E-06	2.46E-03	257.35	SQUIB DELUGE VALVE F009A SPUR. OPENING [#7]
E50-SQV-CO-F009D	9.60E-06	2.46E-03	257.35	SQUIB DELUGE VALVE F009D SPUR. OPENING [#7]
E50-SQV-CO-F009E	9.60E-06	2.46E-03	257.35	SQUIB DELUGE VALVE F009E SPUR. OPENING [#7]
E50-SQV-CO-F009H	9.60E-06	2.46E-03	257.35	SQUIB DELUGE VALVE F009H SPUR. OPENING [#7]
E50-SQV-CO-F009J	9.60E-06	2.46E-03	257.35	SQUIB DELUGE VALVE F009J SPUR. OPENING [#7]
E50-SQV-CO-F009M	9.60E-06	2.46E-03	257.35	SQUIB DELUGE VALVE F009M SPUR. OPENING [#7]
E50-STR-PG_1_2	1.98E-04	6.53E-06	1.03	CCF of two components: E50-STR-PG-D002A & E50-STR-PG-D002B
E50-STR-PG_1_2_3	1.98E-05	4.72E-05	3.38	CCF of three components: E50-STR-PG-D002A & E50-STR-PG-D002B & E50-STR-PG-D002C
E50-STR-PG_1_2_4	1.98E-05	4.72E-05	3.38	CCF of three components: E50-STR-PG-D002A & E50-STR-PG-D002B & E50-STR-PG-D002D
E50-STR-PG_1_3_4	1.98E-05	4.72E-05	3.38	CCF of three components: E50-STR-PG-D002A & E50-STR-PG-D002C & E50-STR-PG-D002D
E50-STR-PG_2_3	1.98E-04	6.53E-06	1.03	CCF of two components: E50-STR-PG-D002B & E50-STR-PG-D002C
E50-STR-PG_2_3_4	1.98E-05	4.72E-05	3.38	CCF of three components: E50-STR-PG-D002B & E50-STR-PG-D002C & E50-STR-PG-D002D
E50-STR-PG_2_4	1.98E-04	6.53E-06	1.03	CCF of two components: E50-STR-PG-D002B & E50-STR-PG-D002D
E50-STR-PG_ALL	5.35E-04	1.63E-01	306.32	CCF of all components in group 'E50-STR-PG'

Table 13.7-5

Results - Internal Flooding Shutdown Importance Measure Report

F-V and RAW Importance Measures Report (F-V = Fussell-Vesely Importance Measure; RAW = Risk Achievement Worth Importance Measure) Flooding Shutdown Core Damage Frequency = 5.24E-09				
Event Name	**Probability**	**Fus Ves**	**RAW**	**Description**
E50-STR-PG-D002A	1.07E-02	4.72E-05	1	STRAINER/FILTER D002A PLUGS DURING OPERATION
E50-STR-PG-D002B	1.07E-02	1.31E-03	1.12	STRAINER D002B PLUGGED
E50-STR-PG-D002C	1.07E-02	4.72E-05	1	STRAINER D002C PLUGGED
E50-STR-PG-D002D	1.07E-02	4.72E-05	1	STRAINER D002D PLUGGED
E50-UV_OC_1_2_3	7.05E-06	1.42E-05	3.01	CCF of three components: E50-UV_-OC-F003A & E50-UV_-OC-F003B & E50-UV_-OC-F003C
E50-UV_OC_1_2_4	7.05E-06	2.83E-05	5.01	CCF of three components: E50-UV_-OC-F003A & E50-UV_-OC-F003B & E50-UV_-OC-F003D
E50-UV_OC_1_2_5	7.05E-06	1.75E-03	249.26	CCF of three components: E50-UV_-OC-F003A & E50-UV_-OC-F003B & E50-UV_-OC-F003E
E50-UV_OC_1_2_6	7.05E-06	1.42E-05	3.01	CCF of three components: E50-UV_-OC-F003A & E50-UV_-OC-F003B & E50-UV_-OC-F003F
E50-UV_OC_1_2_7	7.05E-06	1.42E-05	3.01	CCF of three components: E50-UV_-OC-F003A & E50-UV_-OC-F003B & E50-UV_-OC-F003G
E50-UV_OC_1_2_8	7.05E-06	2.83E-05	5.01	CCF of three components: E50-UV_-OC-F003A & E50-UV_-OC-F003B & E50-UV_-OC-F003H
E50-UV_OC_1_3_4	7.05E-06	2.83E-05	5.01	CCF of three components: E50-UV_-OC-F003A & E50-UV_-OC-F003C & E50-UV_-OC-F003D
E50-UV_OC_1_3_5	7.05E-06	1.75E-03	249.26	CCF of three components: E50-UV_-OC-F003A & E50-UV_-OC-F003C & E50-UV_-OC-F003E
E50-UV_OC_1_3_6	7.05E-06	1.42E-05	3.01	CCF of three components: E50-UV_-OC-F003A & E50-UV_-OC-F003C & E50-UV_-OC-F003F
E50-UV_OC_1_3_7	7.05E-06	1.42E-05	3.01	CCF of three components: E50-UV_-OC-F003A & E50-UV_-OC-F003C & E50-UV_-OC-F003G

Table 13.7-5

Results - Internal Flooding Shutdown Importance Measure Report

F-V and RAW Importance Measures Report (F-V = Fussell-Vesely Importance Measure; RAW = Risk Achievement Worth Importance Measure) Flooding Shutdown Core Damage Frequency = 5.24E-09				
Event Name	**Probability**	**Fus Ves**	**RAW**	**Description**
E50-UV_OC_1_3_8	7.05E-06	2.83E-05	5.01	CCF of three components: E50-UV_-OC-F003A & E50-UV_-OC-F003C & E50-UV_-OC-F003H
E50-UV_OC_1_4_5	7.05E-06	1.75E-03	249.26	CCF of three components: E50-UV_-OC-F003A & E50-UV_-OC-F003D & E50-UV_-OC-F003E
E50-UV_OC_1_4_6	7.05E-06	2.83E-05	5.01	CCF of three components: E50-UV_-OC-F003A & E50-UV_-OC-F003D & E50-UV_-OC-F003F
E50-UV_OC_1_4_7	7.05E-06	2.83E-05	5.01	CCF of three components: E50-UV_-OC-F003A & E50-UV_-OC-F003D & E50-UV_-OC-F003G
E50-UV_OC_1_4_8	7.05E-06	1.75E-03	249.26	CCF of three components: E50-UV_-OC-F003A & E50-UV_-OC-F003D & E50-UV_-OC-F003H
E50-UV_OC_1_5	2.67E-06	6.26E-04	235.2	CCF of two components: E50-UV_-OC-F003A & E50-UV_-OC-F003E
E50-UV_OC_1_5_6	7.05E-06	1.75E-03	249.26	CCF of three components: E50-UV_-OC-F003A & E50-UV_-OC-F003E & E50-UV_-OC-F003F
E50-UV_OC_1_5_7	7.05E-06	1.75E-03	249.26	CCF of three components: E50-UV_-OC-F003A & E50-UV_-OC-F003E & E50-UV_-OC-F003G
E50-UV_OC_1_5_8	7.05E-06	1.75E-03	249.26	CCF of three components: E50-UV_-OC-F003A & E50-UV_-OC-F003E & E50-UV_-OC-F003H
E50-UV_OC_1_6_7	7.05E-06	1.42E-05	3.01	CCF of three components: E50-UV_-OC-F003A & E50-UV_-OC-F003F & E50-UV_-OC-F003G
E50-UV_OC_1_6_8	7.05E-06	2.83E-05	5.01	CCF of three components: E50-UV_-OC-F003A & E50-UV_-OC-F003F & E50-UV_-OC-F003H
E50-UV_OC_1_7_8	7.05E-06	2.83E-05	5.01	CCF of three components: E50-UV_-OC-F003A & E50-UV_-OC-F003G & E50-UV_-OC-F003H

Table 13.7-5

Results - Internal Flooding Shutdown Importance Measure Report

F-V and RAW Importance Measures Report (F-V = Fussell-Vesely Importance Measure; RAW = Risk Achievement Worth Importance Measure) Flooding Shutdown Core Damage Frequency = 5.24E-09				
Event Name	**Probability**	**Fus Ves**	**RAW**	**Description**
E50-UV_OC_2_3_4	7.05E-06	1.42E-05	3.01	CCF of three components: E50-UV_-OC-F003B & E50-UV_-OC-F003C & E50-UV_-OC-F003D
E50-UV_OC_2_3_5	7.05E-06	1.42E-05	3.01	CCF of three components: E50-UV_-OC-F003B & E50-UV_-OC-F003C & E50-UV_-OC-F003E
E50-UV_OC_2_3_8	7.05E-06	1.42E-05	3.01	CCF of three components: E50-UV_-OC-F003B & E50-UV_-OC-F003C & E50-UV_-OC-F003H
E50-UV_OC_2_4_5	7.05E-06	2.83E-05	5.01	CCF of three components: E50-UV_-OC-F003B & E50-UV_-OC-F003D & E50-UV_-OC-F003E
E50-UV_OC_2_4_6	7.05E-06	1.42E-05	3.01	CCF of three components: E50-UV_-OC-F003B & E50-UV_-OC-F003D & E50-UV_-OC-F003F
E50-UV_OC_2_4_7	7.05E-06	1.42E-05	3.01	CCF of three components: E50-UV_-OC-F003B & E50-UV_-OC-F003D & E50-UV_-OC-F003G
E50-UV_OC_2_4_8	7.05E-06	1.75E-03	249.26	CCF of three components: E50-UV_-OC-F003B & E50-UV_-OC-F003D & E50-UV_-OC-F003H
E50-UV_OC_2_5_6	7.05E-06	1.42E-05	3.01	CCF of three components: E50-UV_-OC-F003B & E50-UV_-OC-F003E & E50-UV_-OC-F003F
E50-UV_OC_2_5_7	7.05E-06	1.42E-05	3.01	CCF of three components: E50-UV_-OC-F003B & E50-UV_-OC-F003E & E50-UV_-OC-F003G
E50-UV_OC_2_5_8	7.05E-06	2.83E-05	5.01	CCF of three components: E50-UV_-OC-F003B & E50-UV_-OC-F003E & E50-UV_-OC-F003H
E50-UV_OC_2_6_8	7.05E-06	1.42E-05	3.01	CCF of three components: E50-UV_-OC-F003B & E50-UV_-OC-F003F & E50-UV_-OC-F003H
E50-UV_OC_2_7_8	7.05E-06	1.42E-05	3.01	CCF of three components: E50-UV_-OC-F003B & E50-UV_-OC-F003G & E50-UV_-OC-F003H

Table 13.7-5

Results - Internal Flooding Shutdown Importance Measure Report

F-V and RAW Importance Measures Report (F-V = Fussell-Vesely Importance Measure; RAW = Risk Achievement Worth Importance Measure) Flooding Shutdown Core Damage Frequency = 5.24E-09				
Event Name	**Probability**	**Fus Ves**	**RAW**	**Description**
E50-UV_OC_3_4_5	7.05E-06	2.83E-05	5.01	CCF of three components: E50-UV_-OC-F003C & E50-UV_-OC-F003D & E50-UV_-OC-F003E
E50-UV_OC_3_4_6	7.05E-06	1.42E-05	3.01	CCF of three components: E50-UV_-OC-F003C & E50-UV_-OC-F003D & E50-UV_-OC-F003F
E50-UV_OC_3_4_7	7.05E-06	1.42E-05	3.01	CCF of three components: E50-UV_-OC-F003C & E50-UV_-OC-F003D & E50-UV_-OC-F003G
E50-UV_OC_3_4_8	7.05E-06	1.75E-03	249.26	CCF of three components: E50-UV_-OC-F003C & E50-UV_-OC-F003D & E50-UV_-OC-F003H
E50-UV_OC_3_5_6	7.05E-06	1.42E-05	3.01	CCF of three components: E50-UV_-OC-F003C & E50-UV_-OC-F003E & E50-UV_-OC-F003F
E50-UV_OC_3_5_7	7.05E-06	1.42E-05	3.01	CCF of three components: E50-UV_-OC-F003C & E50-UV_-OC-F003E & E50-UV_-OC-F003G
E50-UV_OC_3_5_8	7.05E-06	2.83E-05	5.01	CCF of three components: E50-UV_-OC-F003C & E50-UV_-OC-F003E & E50-UV_-OC-F003H
E50-UV_OC_3_6_8	7.05E-06	1.42E-05	3.01	CCF of three components: E50-UV_-OC-F003C & E50-UV_-OC-F003F & E50-UV_-OC-F003H
E50-UV_OC_3_7_8	7.05E-06	1.42E-05	3.01	CCF of three components: E50-UV_-OC-F003C & E50-UV_-OC-F003G & E50-UV_-OC-F003H
E50-UV_OC_4_5_6	7.05E-06	2.83E-05	5.01	CCF of three components: E50-UV_-OC-F003D & E50-UV_-OC-F003E & E50-UV_-OC-F003F
E50-UV_OC_4_5_7	7.05E-06	2.83E-05	5.01	CCF of three components: E50-UV_-OC-F003D & E50-UV_-OC-F003E & E50-UV_-OC-F003G
E50-UV_OC_4_5_8	7.05E-06	1.75E-03	249.26	CCF of three components: E50-UV_-OC-F003D & E50-UV_-OC-F003E & E50-UV_-OC-F003H

Table 13.7-5

Results - Internal Flooding Shutdown Importance Measure Report

F-V and RAW Importance Measures Report

(F-V = Fussell-Vesely Importance Measure; RAW = Risk Achievement Worth Importance Measure)

Flooding Shutdown

Core Damage Frequency = 5.24E-09

Event Name	Probability	Fus Ves	RAW	Description
E50-UV_OC_4_6_7	7.05E-06	1.42E-05	3.01	CCF of three components: E50-UV_-OC-F003D & E50-UV_-OC-F003F & E50-UV_-OC-F003G
E50-UV_OC_4_6_8	7.05E-06	1.75E-03	249.26	CCF of three components: E50-UV_-OC-F003D & E50-UV_-OC-F003F & E50-UV_-OC-F003H
E50-UV_OC_4_7_8	7.05E-06	1.75E-03	249.26	CCF of three components: E50-UV_-OC-F003D & E50-UV_-OC-F003G & E50-UV_-OC-F003H
E50-UV_OC_4_8	2.67E-06	6.26E-04	235.2	CCF of two components: E50-UV_-OC-F003D & E50-UV_-OC-F003H
E50-UV_OC_5_6_7	7.05E-06	1.42E-05	3.01	CCF of three components: E50-UV_-OC-F003E & E50-UV_-OC-F003F & E50-UV_-OC-F003G
E50-UV_OC_5_6_8	7.05E-06	2.83E-05	5.01	CCF of three components: E50-UV_-OC-F003E & E50-UV_-OC-F003F & E50-UV_-OC-F003H
E50-UV_OC_5_7_8	7.05E-06	2.83E-05	5.01	CCF of three components: E50-UV_-OC-F003E & E50-UV_-OC-F003G & E50-UV_-OC-F003H
E50-UV_OC_6_7_8	7.05E-06	1.42E-05	3.01	CCF of three components: E50-UV_-OC-F003F & E50-UV_-OC-F003G & E50-UV_-OC-F003H
E50-UV_OC_ALL	3.00E-04	9.10E-02	303.58	CCF of all components in group 'E50-UV_OC'
E50-UV_OC-EQU_ALL	3.00E-05	8.33E-03	278.13	CCF of all components in group 'E50-UV_OC-EQU'
E50-UV_-OC-F003A	1.75E-02	1.11E-01	7.21	CHECK VALVE F003A FAILS TO REMAIN OPEN OR PLUG
E50-UV_-OC-F003D	1.75E-02	1.08E-01	7.08	CHECK VALVE F003D FAILS TO REMAIN OPEN OR PLUG
E50-UV_-OC-F003E	1.75E-02	1.08E-01	7.08	CHECK VALVE F003E FAILS TO REMAIN OPEN OR PLUG
E50-UV_-OC-F003H	1.75E-02	1.11E-01	7.21	CHECK VALVE F003H FAILS TO REMAIN OPEN OR PLUG
E50-UV_-OC-F007B	1.75E-03	1.50E-04	1.09	CHECK VALVE F007B FAILS TO REMAIN OPEN OR PLUG
G21-BV_-RE-F334	4.84E-02	6.92E-01	14.6	MISPOSITION OF VALVE F334

Table 13.7-5

Results - Internal Flooding Shutdown Importance Measure Report

F-V and RAW Importance Measures Report

(F-V = Fussell-Vesely Importance Measure; RAW = Risk Achievement Worth Importance Measure)

Flooding Shutdown

Core Damage Frequency = 5.24E-09

Event Name	Probability	Fus Ves	RAW	Description
G21-MOV-CC_ALL	8.68E-04	2.77E-04	1.32	CCF of all components in group 'G21-MOV-CC'
G21-MOV-CC-F011A	2.40E-02	8.40E-04	1.03	MOTOR OPER. VALVE F011A FAILS TO OPEN
G21-MOV-CC-F011B	2.40E-02	5.18E-04	1.02	MOTOR OPER. VALVE F011B FAILS TO OPEN
G21-MOV-CC-F013A	2.40E-02	8.40E-04	1.03	MOTOR OPER. VALVE F013A FAILS TO OPEN
G21-MOV-CC-F013B	2.40E-02	5.18E-04	1.02	MOTOR OPER. VALVE F013B FAILS TO OPEN
G21-MOV-CC-F014A	2.40E-02	8.40E-04	1.03	MOTOR OPER. VALVE F014A FAILS TO OPEN
G21-MOV-CC-F014B	2.40E-02	5.18E-04	1.02	MOTOR OPER. VALVE F014B FAILS TO OPEN
G21-MOV-CC-F046B	4.00E-03	6.74E-06	1	MOTOR OPERATED VALVE P21-F046B FAILS TO OPEN
G21-MOV-CC-F047B	4.00E-03	6.74E-06	1	MOTOR OPERATED VALVE P21-F047B FAILS TO OPEN
G21-MOV-OO-F003A	4.00E-03	2.56E-05	1.01	MOTOR OPERATED VALVE F003A FAILS TO CLOSE
G21-MOV-OO-F008A	4.00E-03	2.56E-05	1.01	MOTOR OPER. VALVE F008A FAILS TO CLOSE
G21-NMO_3_4	1.11E-05	7.54E-05	7.76	CCF of two components: G21-NMO-CC-F332A & G21-NMO-CC-F332B
G21-NMO_ALL	3.00E-05	2.41E-04	9	CCF of all components in group 'G21-NMO'
G21-NST-TM-TRAINB	9.00E-03	5.20E-05	1.01	TRAIN B IN MAINTENANCE
G21-STR-PG-SPPLUG	2.40E-04	3.09E-05	1.13	FILTER/STRAINER IN SP PLUG
G21-UV_-333_1_2	1.79E-05	1.34E-04	8.46	CCF of two components: G21-UV_-CC-F333A & G21-UV_-CC-F333B
G21-XHE-FO-LPCI	1.61E-03	6.37E-04	1.39	OPERATOR FAILS TO ALIGN AND ACTUATE FAPCS IN LPCI MODE
G31-UV_-OO_1_2	3.01E-05	5.72E-05	2.9	CCF of two components: G31-UV_-OO-F023A & G31-UV_-OO-F024A
MS-TOP2	5.00E-02	1.47E-03	1.03	TWO DPVs FAIL TO OPEN
NICWSA-SYS-FAILS	1.00E-03	3.97E-04	1.4	NUCLEAR ISLAND CHILLED WATER SUBSYSTEM TRAIN A FAILS
NICWSB-SYS-FAILS	1.00E-03	3.57E-04	1.36	NUCLEAR ISLAND CHILLED WATER SUBSYSTEM TRAIN B FAILS

Table 13.7-5

Results - Internal Flooding Shutdown Importance Measure Report

F-V and RAW Importance Measures Report

(F-V = Fussell-Vesely Importance Measure; RAW = Risk Achievement Worth Importance Measure)

Flooding Shutdown

Core Damage Frequency = 5.24E-09

Event Name	Probability	Fus Ves	RAW	Description
P21-ACV-CC-F0023_1_2	1.93E-04	3.05E-05	1.16	CCF of two components: P21-ACV-CC-F0023A & P21-ACV-CC-F0023B
P21-ACV-CC-F0023A	2.00E-03	5.23E-04	1.26	AIR OPERATED VALVE F0023A FAILS TO OPEN
P21-ACV-CC-F0023B	2.00E-03	5.23E-04	1.26	AIR OPERATED VALVE F0023B FAILS TO OPEN
P21-ACV-OO-F0004	2.00E-03	5.37E-04	1.27	AIR OPERATED VALVE F0004 FAILS TO CLOSE
P21-ACV-OO-F0007	2.00E-03	5.37E-04	1.27	AIR OPERATED VALVE F0007 FAILS TO CLOSE
P21-ACV-OO-F0016_1_2	1.93E-04	1.34E-03	7.93	CCF of two components: P21-ACV-OO-F016A & P21-ACV-OO-F016B
P21-ACV-OO-F0020	2.00E-03	5.37E-04	1.27	AIR OPERATED VALVE F0020 FAILS TO CLOSE
P21-ACV-OO-F0027	2.00E-03	5.37E-04	1.27	AIR OPERATED VALVE F0027 FAILS TO CLOSE
P21-ACV-OO-F0061	2.00E-03	5.37E-04	1.27	AIR OPERATED VALVE F0061 FAILS TO CLOSE
P21-ACV-OO-F016A	2.00E-03	6.33E-04	1.32	AIR OPERATED VALVE F016A FAILS TO CLOSE
P21-ACV-OO-F016B	2.00E-03	5.31E-04	1.26	AIR OPERATED VALVE F016B FAILS TO CLOSE
P21-ACV-OO-F023A	2.00E-03	8.56E-06	1	AIR OPERATED VALVE FAILS TO CLOSE
P21-ACV-OO-F023B	2.00E-03	8.56E-06	1	AIR OPERATED VALVE FAILS TO CLOSE
P21-ACV-OO-XTIE_ALL	1.21E-04	1.77E-05	1.15	CCF of all components in group 'P21-ACV-OO-XTIE'
P21-AHU-FR_1_2	1.26E-05	5.88E-05	5.65	CCF of two components: P21-AHU-FR-RCCWA & P21-AHU-FR-RCCWB
P21-AHU-FR-RCCWA	2.40E-04	5.98E-05	1.25	AIR HANDLING UNIT RCCWS ROOM A FAILS TO RUN
P21-AHU-FR-RCCWB	2.40E-04	5.74E-05	1.24	AIR HANDLING UNIT RCCWS ROOM TRAIN B FAILS TO RUN
P21-AHU-FS_1_2	6.67E-04	1.50E-04	1.22	CCF of two components: P21-AHU-FS-RCCWA & P21-AHU-FS-RCCWB
P21-AHU-FS-RCCWA	6.00E-03	2.16E-03	1.36	AIR HANDLING UNIT RCCWS ROOM A FAILS TO START
P21-AHU-FS-RCCWB	6.00E-03	1.80E-03	1.3	AIR HANDLING UNIT RCCWS ROOM B FAILS TO START
P21-BV_-RE-F049A	1.21E-02	3.64E-02	3.97	MISPOSITION OF RCCW INLET TO CRD HEAT EXCHANGER

Table 13.7-5

Results - Internal Flooding Shutdown Importance Measure Report

F-V and RAW Importance Measures Report

(F-V = Fussell-Vesely Importance Measure; RAW = Risk Achievement Worth Importance Measure)

Flooding Shutdown

Core Damage Frequency = 5.24E-09

Event Name	Probability	Fus Ves	RAW	Description
P21-BV_-RE-F049B	1.21E-02	3.64E-02	3.97	MISPOSITION OF RCCW INLET TO CRD HEAT EXCHANGER
P21-BV_-RE-F050A	1.21E-02	3.64E-02	3.97	MISPOSITION OF RCCW OUTLET FROM CRD HEAT EXCHANGER
P21-BV_-RE-F050B	1.21E-02	3.64E-02	3.97	MISPOSITION OF RCCW OUTLET FROM CRD HEAT EXCHANGER
P21-MOV-CC_ALL	1.48E-04	2.15E-05	1.15	CCF of all components in group 'P21-MOV-CC'
P21-MOV-CC-F0010A3	4.00E-03	8.37E-05	1.02	MOTOR OPERATED VALVE F0010A3 FAILS TO OPEN
P21-MOV-CC-F0010B1	4.00E-03	2.28E-05	1.01	MOTOR OPERATED VALVE F0010B1 FAILS TO OPEN
P21-MOV-CC-F0010B2	4.00E-03	2.28E-05	1.01	MOTOR OPERATED VALVE F0010B2 FAILS TO OPEN
P21-MOV-CC-F0010B3	4.00E-03	2.28E-05	1.01	MOTOR OPERATED VALVE F0010B3 FAILS TO OPEN
P21-MOV-CC-F034A	4.00E-03	2.28E-05	1.01	MOV P21-F034A FROM RCCWS TO RWCU/SDC HX-A FAILS TO OPEN
P21-MOV-CC-F034B	4.00E-03	2.28E-05	1.01	MOV P21-F034B FROM RCCWS TO RWCU/SDC HX-B FAILS TO OPEN
P21-MP_-FS_ALL	1.87E-04	2.95E-05	1.16	CCF of all components in group 'P21-MP_-FS'
P21-MPC-FR-C001A	6.00E-04	5.27E-05	1.09	MOTOR DRIVEN PUMP C001A FAILS TO RUN
P21-MPC-FR-C001B	6.00E-04	5.27E-05	1.09	MOTOR DRIVEN PUMP C001B FAILS TO RUN
P21-MPC-FS-C001A	2.00E-03	8.56E-06	1	MOTOR DRIVEN PUMP C001A FAILS TO START
P21-MPC-FS-C001B	2.00E-03	8.56E-06	1	MOTOR-DRIVEN PUMP C001B FAILS TO START
P21-MPC-FS-C002A	2.00E-03	8.56E-06	1	MOTOR-DRIVEN PUMP C002A FAILS TO START
P21-MPC-FS-C002B	2.00E-03	8.56E-06	1	MOTOR-DRIVEN PUMP C002B FAILS TO START
P21-MPC-FS-C003A	2.00E-03	8.56E-06	1	MOTOR-DRIVEN PUMP C0003A FAILS TO START
P21-MPC-FS-C003B	2.00E-03	8.56E-06	1	MOTOR-DRIVEN PUMP C003B FAILS TO START
P21-NSC-TM-B001A	1.50E-03	6.44E-06	1	HEAT EXCHANGER B001A UNAVAILABLE DUE TO MAINTENANCE
P21-NSC-TM-B001B	1.50E-03	6.44E-06	1	HEAT EXCHANGER B001B UNAVAILABLE DUE TO MAINTENANCE

Table 13.7-5

Results - Internal Flooding Shutdown Importance Measure Report

F-V and RAW Importance Measures Report

(F-V = Fussell-Vesely Importance Measure; RAW = Risk Achievement Worth Importance Measure)

Flooding Shutdown

Core Damage Frequency = 5.24E-09

Event Name	Probability	Fus Ves	RAW	Description
P21-NSC-TM-B002A	1.50E-03	6.44E-06	1	HEAT EXCHANGER B002A UNAVAILABLE DUE TO MAINTENANCE
P21-NSC-TM-B002B	1.50E-03	6.44E-06	1	HEAT EXCHANGER B002B UNAVAILABLE DUE TO MAINTENANCE
P21-NSC-TM-B003A	1.50E-03	2.26E-05	1.01	HEAT EXCHANGER B003A UNAVAILABLE DUE TO MAINTENANCE
P21-NSC-TM-B003B	1.50E-03	6.44E-06	1	HEAT EXCHANGER B003B UNAVAILABLE DUE TO MAINTENANCE
P21-NSC-TM-C001A	1.50E-03	6.44E-06	1	PUMP C001A IN MAINTENANCE
P21-NSC-TM-C001B	1.50E-03	6.44E-06	1	PUMP C001B IN MAINTENANCE
P21-NSC-TM-C002A	1.50E-03	6.44E-06	1	PUMP C002A IN MAINTENANCE
P21-NSC-TM-C002B	1.50E-03	6.44E-06	1	PUMP C002B IN MAINTENANCE
P21-NSC-TM-C003A	1.50E-03	6.44E-06	1	PUMP C003A IN MAINTENANCE
P21-NSC-TM-C003B	1.50E-03	6.44E-06	1	PUMP C003B IN MAINTENANCE
P21-NSC-TM-TRAINAHX	7.50E-05	1.52E-04	3.03	RCCW HXS IN TEST OR MAINTENANCE TRAIN A
P21-NSC-TM-TRAINAPUMP	7.50E-05	1.52E-04	3.03	RCCW PUMPS IN TEST OR MAINTENANCE TRAIN A
P21-NSC-TM-TRAINBHX	7.50E-05	1.52E-04	3.03	RCCW HXS IN TEST OR MAINTENANCE TRAIN B
P21-NSC-TM-TRAINBPUMP	7.50E-05	1.52E-04	3.03	RCCW PUMPS IN TEST OR MAINTENANCE TRAIN B
P21-TRN-RE-HX1A	8.07E-03	4.60E-05	1.01	FAILURE TO RESTORE RCCW TRAIN 1A HX
P21-TRN-RE-HX1B	8.07E-03	4.60E-05	1.01	FAILURE TO RESTORE RCCW TRAIN 1B HX
P21-TRN-RE-HX2A	8.07E-03	4.90E-05	1.01	FAILURE TO RESTORE RCCW TRAIN 2A HX
P21-TRN-RE-HX2B	8.07E-03	4.90E-05	1.01	FAILURE TO RESTORE RCCW TRAIN 2B HX
P21-TRN-RE-HX3A	8.07E-03	1.90E-04	1.02	FAILURE TO RESTORE RCCW TRAIN 3A HX

Table 13.7-5

Results - Internal Flooding Shutdown Importance Measure Report

F-V and RAW Importance Measures Report

(F-V = Fussell-Vesely Importance Measure; RAW = Risk Achievement Worth Importance Measure)

Flooding Shutdown

Core Damage Frequency = 5.24E-09

Event Name	Probability	Fus Ves	RAW	Description
P21-TRN-RE-HX3B	8.07E-03	4.90E-05	1.01	FAILURE TO RESTORE RCCW TRAIN 3B HX
P21-TRN-RE-PUMP1A	8.07E-03	4.60E-05	1.01	FAILURE TO RESTORE RCCW TRAIN 1A PUMP
P21-TRN-RE-PUMP1B	8.07E-03	4.60E-05	1.01	FAILURE TO RESTORE RCCW TRAIN 1B PUMP
P21-TRN-RE-PUMP2A	8.07E-03	6.43E-05	1.01	FAILURE TO RESTORE RCCW TRAIN 2A PUMP
P21-TRN-RE-PUMP2B	8.07E-03	6.43E-05	1.01	FAILURE TO RESTORE RCCW TRAIN 2B PUMP
P21-TRN-RE-PUMP3A	8.07E-03	4.90E-05	1.01	FAILURE TO RESTORE RCCW TRAIN 3A PUMP
P21-TRN-RE-PUMP3B	8.07E-03	4.90E-05	1.01	FAILURE TO RESTORE RCCW TRAIN 3B PUMP
P22-NSC-TM-HXS	7.50E-05	5.17E-06	1.07	MULTIPLE TCCW HXS OUT FOR TESTING/ MAINTENANCE
P22-NSC-TM-PUMPS	7.50E-05	5.17E-06	1.07	MULTIPLE TCCW PUMPS OUT FOR TESTING/ MAINTENANCE
P41-ACV-CC_ALL	1.21E-04	1.77E-05	1.15	CCF of all components in group 'P41-ACV-CC'
P41-ACV-CC-F004A	2.00E-03	8.56E-06	1	AIR OPERATED VALVE F004A FAILS TO OPEN
P41-ACV-CC-F004B	2.00E-03	8.56E-06	1	AIR OPERATED VALVE F004B FAILS TO OPEN
P41-ACV-CC-F006A	2.00E-03	3.22E-05	1.02	AIR OPERATED VALVE F006A FAILS TO OPEN
P41-ACV-CC-F006B	2.00E-03	8.56E-06	1	AIR OPERATED VALVE F006B FAILS TO OPEN
P41-ACV-CC-F009A	2.00E-03	8.56E-06	1	AIR OPERATED VALVE F009A FAILS TO OPEN
P41-ACV-CC-F009B	2.00E-03	8.56E-06	1	AIR OPERATED VALVE F009B FAILS TO OPEN
P41-FAN-FR_1_2	4.44E-06	9.58E-06	3.14	CCF of two components: P41-FAN-FR-0001A & P41-FAN-FR-0001B
P41-FAN-FR_1_4	4.44E-06	9.58E-06	3.14	CCF of two components: P41-FAN-FR-0001A & P41-FAN-FR-0002B
P41-FAN-FR_2_3	4.44E-06	9.58E-06	3.14	CCF of two components: P41-FAN-FR-0001B & P41-FAN-FR-0002A
P41-FAN-FR_3_4	4.44E-06	9.58E-06	3.14	CCF of two components: P41-FAN-FR-0002A & P41-FAN-FR-0002B
P41-FAN-FR_ALL	1.20E-05	5.58E-05	5.64	CCF of all components in group 'P41-FAN-FR'

Table 13.7-5

Results - Internal Flooding Shutdown Importance Measure Report

F-V and RAW Importance Measures Report (F-V = Fussell-Vesely Importance Measure; RAW = Risk Achievement Worth Importance Measure) Flooding Shutdown Core Damage Frequency = 5.24E-09				
Event Name	**Probability**	**Fus Ves**	**RAW**	**Description**
P41-FAN-FR-0001A	2.40E-04	2.33E-06	1.01	MECHANICAL DRAFT COOLING TOWER FAN 1A FAILS TO RUN
P41-FAN-FR-0002A	2.40E-04	2.33E-06	1.01	MECHANICAL DRAFT COOLING TOWER FAN 2A FAILS TO RUN
P41-MOV-CC-PMPF004A	4.00E-03	2.50E-04	1.06	MOTOR OPERATED VALVE MV-F004A FAILS TO OPEN
P41-MOV-CC-PMPF004B	4.00E-03	1.99E-05	1	MOTOR OPERATED VALVE F004B FAILS TO OPEN
P41-MPW-FR_ALL	3.20E-06	6.91E-06	3.15	CCF of all components in group 'P41-MPW-FR'
P41-MPW-FR-C001A	6.00E-04	2.09E-05	1.03	MOTOR DRIVEN PUMP C001A FAILS TO RUN
P41-MPW-FR-C002A	6.00E-04	2.09E-05	1.03	MOTOR DRIVEN PUMP C002A FAILS TO RUN
P41-MPW-FS-C002A	2.00E-03	1.02E-04	1.05	MOTOR-DRIVEN PUMP C002A FAILS TO START
P41-NSC-TM-C002A	1.50E-03	7.02E-05	1.05	PUMP C002A IN MAINTENANCE
P41-STR-PG_ALL	5.68E-06	2.16E-05	4.78	CCF of all components in group 'P41-STR-PG'
P41-STR-PG-D01A	2.40E-04	2.33E-06	1.01	STRAINER P41-D001A PLUGGED
P41-STR-PG-D02A	2.40E-04	2.33E-06	1.01	STRAINER P41-D002A PLUGGED
P41-SYS-FC-HVACPSW-A	1.00E-03	8.25E-05	1.08	PSW-A ROOM COOLING FAILURE
P41-SYS-FC-HVACPSW-B	1.00E-03	4.29E-05	1.04	PSW-B ROOM COOLING FAILURE
P41-TRN-RE-PUMP2A	8.07E-03	5.56E-04	1.07	FAILURE TO RESTORE PSW PUMP 2A
P41-TRN-RE-PUMP2B	8.07E-03	6.39E-05	1.01	FAILURE TO RESTORE PSW PUMP 2B
R10-LOSP-EPRI	3.00E-03	4.23E-03	2.4	CONSEQENTIAL LOSS OF PREFERRED OFFSITE POWER DUE TO A TRANSIENT
R10-SYS-FF-500KV	1.00E-03	1.12E-04	1.11	500KV SWITCHYARD FAILS DURING OPERATION

Table 13.7-5

Results - Internal Flooding Shutdown Importance Measure Report

F-V and RAW Importance Measures Report

(F-V = Fussell-Vesely Importance Measure; RAW = Risk Achievement Worth Importance Measure)

Flooding Shutdown

Core Damage Frequency = 5.24E-09

Event Name	Probability	Fus Ves	RAW	Description
R10-XFH-TM-UATA	1.00E-04	2.50E-06	1.02	TRANSFORMER (HIGH VOLTAGE) UAT A IN MAINTENANCE
R10-XFH-TM-UATB	1.00E-04	2.50E-06	1.02	TRANSFORMER (HIGH VOLTAGE) UAT B IN MAINTENANCE
R11-BAC-LP-100A3	4.80E-06	6.87E-06	2.42	6.9 KV AC PIP-A LOADS BUS 1000A3 FAILS DURING OPERATION
R11-BAC-LP-100B3	4.80E-06	1.82E-05	4.77	6.9 KV AC PIP-A LOADS BUS 1000B3 FAILS DURING OPERATION
R11-BAC-TM-100A3	4.80E-06	6.87E-06	2.42	6.9 KV AC PIP-A LOADS BUS 1000A3 IN MAINTENANCE
R11-BAC-TM-100B3	4.80E-06	1.82E-05	4.77	6.9 KV AC PIP-A LOADS BUS 1000B3 IN MAINTENANCE
R11-MCB-CC-A3UATAY	4.00E-03	2.85E-05	1.01	MEDIUM VOLTAGE CIRCUIT BREAKER FOR UAT A Y-WINDING FAILS TO OPEN
R11-MCB-CC-B3UATBY	4.00E-03	3.14E-05	1.01	MEDIUM VOLTAGE CIRCUIT BREAKER FOR UAT B Y-WINDING FAILS TO OPEN
R11-MCB-OO-A3DGA	2.40E-03	1.03E-05	1	MEDIUM VOLTAGE CIRCUIT BREAKER FOR DG-A FAILS TO CLOSE
R11-MCB-OO-B3DGA	2.40E-03	1.03E-05	1	MEDIUM VOLTAGE CIRCUIT BREAKER FOR DG-B FAILS TO CLOSE
R12-BAC-LP-R12A31	4.80E-06	6.87E-06	2.42	480 VAC ISOLATION POWER CENTER R12-A31 FAILS DURING OPERATION
R12-BAC-LP-R12B31	4.80E-06	6.87E-06	2.42	480 VAC ISOLATION POWER CENTER R12-B31 FAILS DURING OPERATION
R12-BAC-TM-R12A31	4.80E-06	6.87E-06	2.42	480 VAC ISOLATION POWER CENTER R12-A31 IN MAINTENANCE
R12-BAC-TM-R12B31	4.80E-06	6.87E-06	2.42	480 VAC ISOLATION POWER CENTER R12-B31 IN MAINTENANCE
R13-BAC-LP-R13A1	4.80E-06	6.87E-06	2.42	NSR BUS R13-A1 FAILS DURING OPERATION
R13-BAC-LP-R13B1	4.80E-06	6.87E-06	2.42	BUS R13-B1 FAILS DURING OPERATION
R13-BAC-LP-R13RBA	4.80E-06	6.87E-06	2.42	NSR R13 REACTOR BLDG LOAD GROUP A FAILS DURING OPERATION
R13-BAC-LP-R13RBB	4.80E-06	6.87E-06	2.42	NSR R13 REACTOR BLDG LOAD GROUP B FAILS DURING OPERATION
R13-INV-FC-CCFSR_ALL	1.14E-05	1.45E-05	2.27	CCF of all components in group 'R13-INV-FC-CCFSR'
R13-LCB-CO-FR13RBA	1.20E-05	2.28E-05	2.9	CIRCUIT BREAKER OPENS SPURIOUSLY

Table 13.7-5

Results - Internal Flooding Shutdown Importance Measure Report

F-V and RAW Importance Measures Report (F-V = Fussell-Vesely Importance Measure; RAW = Risk Achievement Worth Importance Measure) Flooding Shutdown Core Damage Frequency = 5.24E-09				
Event Name	**Probability**	**Fus Ves**	**RAW**	**Description**
R13-LCB-CO-FR13RBB	1.20E-05	2.28E-05	2.9	CIRCUIT BREAKER OPENS SPURIOUSLY
R13-LCB-CO-R13RBA	1.20E-05	2.28E-05	2.9	CIRCUIT BREAKER OPENS SPURIOUSLY
R13-LCB-CO-R13RBB	1.20E-05	2.28E-05	2.9	CIRCUIT BREAKER OPENS SPURIOUSLY
R13-LCB-CO-TOR13A1	1.20E-05	2.28E-05	2.9	CIRCUIT BREAKER TO R13-A1 OPENS SPURIOUSLY
R13-LCB-CO-TOR13B1	1.20E-05	2.28E-05	2.9	CIRCUIT BREAKER TO R13-B1 OPENS SPURIOUSLY
R13-MTS-CO-R13A1	2.40E-05	4.56E-05	2.9	NSR R13-A1 MANUAL TRANSFER SWITCH SPURIOUSLY OPENS
R13-MTS-CO-R13B1	2.40E-05	4.56E-05	2.9	NSR R13-B1 MANUAL TRANSFER SWITCH SPURIOUSLY OPENS
R13-SXS-CO-R13A1	2.40E-05	4.56E-05	2.9	NSR R13-A1 STATIC SWITCH SPURIOUSLY OPENS
R13-SXS-CO-R13B1	2.40E-05	4.56E-05	2.9	NSR R13-B1 STATIC SWITCH SPURIOUSLY OPENS
R13-XFL-LP-R13RBA	1.92E-05	3.65E-05	2.9	TRANSFORMER FAILS DURING OPERATION
R13-XFL-LP-R13RBB	1.92E-05	3.65E-05	2.9	TRANSFORMER FAILS DURING OPERATION
R16-BDC-TM-R16A3	5.00E-04	1.65E-04	1.33	DC BUS R16-A3 IN MAINTENANCE
R16-BDC-TM-R16B3	5.00E-04	1.03E-04	1.21	DC BUS R16-B3 IN MAINTENANCE
R16-BT_-LP-R16BTA3	4.80E-05	2.16E-06	1.04	BATTERY R16-BTA3 FAILS TO PROVIDE OUTPUT
R16-BT_-LP-R16BTB3	4.80E-05	2.16E-06	1.04	BATTERY R16-BTB3 FAILS TO PROVIDE OUTPUT
R16-BT_-TM-R16BTA3	5.00E-04	1.65E-04	1.33	BATTERY R16-BTA3 IN TEST AND MAINTENANCE
R16-BT_-TM-R16BTB3	5.00E-04	1.03E-04	1.21	BATTERY R16-BTB3 IN TEST AND MAINTENANCE
R21-AHU-FS-3A	6.00E-03	3.43E-05	1.01	AIR HANDLING UNIT FAILS TO START
R21-AHU-FS-3B	6.00E-03	3.43E-05	1.01	AIR HANDLING UNIT FAILS TO START
R21-DG_-FR-CCF_1_2	4.54E-03	6.33E-05	1.01	CCF of two components: R21-DG_-FR-DGA & R21-DG_-FR-DGB
R21-DG_-FR-DGA	5.76E-02	4.40E-04	1.01	DIESEL GENERATOR "A" FAILS TO RUN GIVEN START

Table 13.7-5

Results - Internal Flooding Shutdown Importance Measure Report

F-V and RAW Importance Measures Report

(F-V = Fussell-Vesely Importance Measure; RAW = Risk Achievement Worth Importance Measure)

Flooding Shutdown

Core Damage Frequency = 5.24E-09

Event Name	Probability	Fus Ves	RAW	Description
R21-DG_-FR-DGB	5.76E-02	4.40E-04	1.01	DIESEL GENERATOR "B" FAILS TO RUN GIVEN START
R21-DG_-FS-DGA	1.40E-02	7.98E-05	1.01	DG-A FAILS TO START AND LOAD
R21-DG_-FS-DGB	1.40E-02	7.98E-05	1.01	DG-B FAILS TO START AND LOAD
R21-DG_-TM-DGA	4.60E-02	3.26E-04	1.01	STANDBY DIESEL GENERATOR "A" IN MAINTENANCE
R21-DG_-TM-DGB	4.60E-02	3.26E-04	1.01	STANDBY DIESEL GENERATOR "B" IN MAINTENANCE
R21-FLT-PG-DGA	3.60E-03	2.06E-05	1.01	FILTER PLUGGED
R21-FLT-PG-DGB	3.60E-03	2.06E-05	1.01	FILTER PLUGGED
R21-MOD-CC-1A	3.00E-03	1.72E-05	1.01	MOTOR-OPERATED DAMPER FAILS TO OPEN
R21-MOD-CC-1B	3.00E-03	1.72E-05	1.01	MOTOR-OPERATED DAMPER FAILS TO OPEN
R21-MOD-CC-2A	3.00E-03	1.72E-05	1.01	MOTOR-OPERATED DAMPER FAILS TO OPEN
R21-MOD-CC-2B	3.00E-03	1.72E-05	1.01	MOTOR-OPERATED DAMPER FAILS TO OPEN
R21-MOD-CC-3A	3.00E-03	1.72E-05	1.01	MOTOR-OPERATED DAMPER FAILS TO OPEN
R21-MOD-CC-3B	3.00E-03	1.72E-05	1.01	MOTOR-OPERATED DAMPER FAILS TO OPEN
R21-MOD-CC-4A	3.00E-03	1.72E-05	1.01	MOTOR-OPERATED DAMPER FAILS TO OPEN
R21-MOD-CC-4B	3.00E-03	1.72E-05	1.01	MOTOR-OPERATED DAMPER FAILS TO OPEN
R21-MOD-CC-5A	3.00E-03	1.72E-05	1.01	MOTOR-OPERATED DAMPER FAILS TO OPEN
R21-MOD-CC-5B	3.00E-03	1.72E-05	1.01	MOTOR-OPERATED DAMPER FAILS TO OPEN
R21-MOD-CC-6A	3.00E-03	1.72E-05	1.01	MOTOR-OPERATED DAMPER FAILS TO OPEN
R21-MOD-CC-6B	3.00E-03	1.72E-05	1.01	MOTOR-OPERATED DAMPER FAILS TO OPEN
R-M5-G31	2.29E-01	3.38E-02	1.11	RWCU/SDC RECOVERY
R-M6-G31	2.18E-01	9.66E-01	4.47	FAILURE TO RECOVER RWCU/SDC

Table 13.7-5

Results - Internal Flooding Shutdown Importance Measure Report

F-V and RAW Importance Measures Report

(F-V = Fussell-Vesely Importance Measure; RAW = Risk Achievement Worth Importance Measure)

Flooding Shutdown

Core Damage Frequency = 5.24E-09

Event Name	Probability	Fus Ves	RAW	Description
U43-BV_-CC-F346	4.00E-04	1.35E-03	4.38	MANUAL VALVE FAILS TO OPEN
U43-BV_-CC-FU439	4.00E-04	1.35E-03	4.38	MANUAL VALVE FAILS TO OPEN
U43-EDP-FR_1_2	1.36E-03	3.99E-06	1	CCF of two components: U43-EDP-FR-P1A & U43-EDP-FR-P2A
U43-EDP-FS_1_2	2.22E-03	1.10E-05	1	CCF of two components: U43-EDP-FS-P1A & U43-EDP-FS-P2A
U43-UV_-CC_ALL	3.38E-05	8.04E-05	3.37	CCF of all components in group 'U43-UV_-CC'
U43-UV_-CC-F347	4.00E-04	1.35E-03	4.38	CHECK VALVE F347 FAILS TO OPEN
U43-UV_-CC-FU438	4.00E-04	1.35E-03	4.38	CHECK VALVE FAILS TO OPEN
U43-XHE-FO-LPCI	1.61E-03	5.92E-03	4.67	OPERATOR FAILS TO ACTUATE U43 IN LPCI MODE
XXX-XHE-FO-LPMAKEUP	1.61E-02	2.25E-01	14.76	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION

13.8 INSIGHTS

The ESBWR probabilistic shutdown flooding analysis highlights the following key insights regarding the flooding mitigation capability of the ESBWR:

(1) The ESBWR, due to its basic layout and safety design features, is inherently capable of mitigating potential flooding. Safety system redundancy and physical separation providing protection from flooding by large water sources, along with alternate safe shutdown features in buildings separated from flooding of safety systems provide the ESBWR with significant flooding mitigation capability.

(2) Due to the inherent ESBWR flooding mitigation capability, only a small number of flooding specific design features are key in the mitigation of significant flood sources, for example:

- Using watertight doors in the accesses to tunnels and galleries from the Control and Reactor Buildings.
- Not locating flood sources with a significant volume of water in the electrical equipment rooms located in the Reactor Building.
- Locating an automatic CWS pump trip and valve closure on high water level in the condenser pit.

(3) The internal flooding at power credits feedwater pump trip on loss of control power. This feature enables several of the top cutsets to be removed.

(4) The model conservatively assumes that both trains of Standby Liquid Control System (SLCS) trains are required for success because of uncertainties associated with the SLCS flow model. The result of this conservatism is that flooding in the reactor building at +17500 elevation or failure of a SLCS pipe and failure of rods to insert results in core damage. Some of the top cutsets would be eliminated if one train of SLCS were sufficient to prevent core damage.

13.9 CONCLUSIONS

The main conclusion that can be drawn from the ESBWR probabilistic flooding analysis is that the risk from internal flooding is acceptably low. The at-power CDF from internal flood sources is 1.62E-09/year. The LRF for at-power from internal flooding sources is 2.07E-10/year. The flood risk analysis shows that the ESBWR internal flooding risk is less than the internal events L1 and L2 analyses. The shutdown CDF from internal flooding sources is 5.24E-09/year which is slightly lower than the shutdown risk from the L1 internal at-power model.

The risk analyses for flooding at-power and shutdown represent stand-alone CDF and risk-based insights. This data is not additive to CDF and insights gained from other risk analyses.

The ESBWR is inherently safe with respect to internal flood events and no operator actions are required to mitigate postulated floods. Although timely operator action can reduce damage to equipment and flood events, these actions are not yet developed and their benefit is not included. It has been shown that the plant can be safely shut down at low risk to plant personnel and the general public.

13.10 REFERENCES

13-1 NUREG/CR-6928. "Industry-Average Performance for Components and Initiating Events at U.S. Commercial Nuclear Power Plants", February 2007.

13-2 NUREG/CR-4639, "Nuclear Computerized Library for Assessing Reactor Reliability (NUCLARR)", Revision 1, May 1990.

13 -3 NSAC-60, The Nuclear Safety Analysis Center and Duke Power Company, Oconee PRA; "A Probabilistic Risk Assessment of Oconee Unit 3," June 1984.

13-4 General Electric Nuclear Energy, "ESBWR Design Control Document Tier 2, Chapter 3, Design of Structures, Components, Equipment, and Systems", 26A6642AJ, Rev. 3

13-5 GE-Hitachi Nuclear Energy Americas, LLC, "ESBWR Plant Flood Zone Definition Drawings and Other PRA Supporting Information", NEDE-33386, Class II (GEH Proprietary), Revision 0, September 2007.