

22 ESBWR PRA Changes

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22 ESBWR PRA CHANGES

22.1 INTRODUCTION

Section 22 provides a process to document and evaluate changes to PRA parameters that occur after the PRA modeling details are frozen and incorporated into NEDO-33201. New information from technical reviews, operating experience, or other feedback mechanisms is evaluated for its effect on PRA parameters. Subsections correspond to the main report, for example, changes to the flooding PRA would be found in subsection 22.13.

22.2 CHANGES TO FLOODING PRA MODEL

A review of the dominant flooding risk contributors shows that conservatisms in the current model skew the results significantly. The contribution from bypass and filtered release sequences are conservatively high, and this misrepresents the conditional containment failure probability from flooding events. The bypass (BYP) release category contributes about 42% of total CDF and about 70% of LRF. The filtered release (FR) release category contributes about 16% of total CDF and 26% of LRF.

**Table 22.13-1
At-Power Flooding Results**

Release Category	Frequency	% Total	% nTSL
TSL	2.799E-09	40.507%	-
FR	1.082E-09	15.654%	26.312%
OPW2	1.297E-10	1.876%	3.154%
OPW1	6.708E-13	0.010%	0.016%
OPVB	2.008E-12	0.029%	0.049%
BYP	2.894E-09	41.884%	70.403%
CCIW	1.436E-12	0.021%	0.035%
CCID	7.567E-13	0.011%	0.018%
EVE	-	-	-
BOC	5.276E-13	0.008%	0.013%
CDF	6.910E-09	100.000%	100.000%
nTSL	4.111E-09	CCFP	0.595

“TSL” = Allowable containment leakage

“nTSL” = Large release frequency

The F-V importance of flooding sequences contributing to LRF also clearly demonstrates the skewed results as shown below: T-IORV065 (~65%) and T-GEN004A (~26%).

Table 22.13-2
Fussell-Vesely Importance of At-Power Flooding
Sequences

L1AP Sequence Flag	F-V
FL_T-GEN004A	2.62E-01
FL_T-GEN015	2.52E-02
FL_T-GEN017	1.14E-04
FL_T-GEN019	4.87E-04
FL_T-GEN021	1.19E-06
FL_T-GEN022	1.49E-05
FL_T-GEN026	4.78E-03
FL_T-GEN027	6.37E-05
FL_T-GEN030	1.05E-04
FL_T-GEN034	4.24E-04
FL_T-GEN035	3.91E-06
FL_T-GEN067	4.35E-06
FL_T-GEN068	1.02E-04
FL_T-GEN069	1.11E-02
FL_T-IORV011	1.12E-03
FL_T-IORV022	1.65E-04
FL_T-IORV063	2.82E-03
FL_T-IORV064	2.61E-05
FL_T-IORV065	6.47E-01

Two dominant conservatisms embedded in the flooding model have been identified:

1. Cutsets associated with flooding initiators %FL_TBC-B21A/B-S & %FL_TBC-B21A/B-L contribute to release category BYP and sequence T-IORV065. These cutsets assume that a break in the B21 Main Steam lines results in all function failures of the entire B21 system, including either failure or inadvertent actuations of the SRVs and DPVs. However, the DPVs and SRVs are inside the containment and their control signals do not pass through the flooding area of concern. Therefore, the depressurization function should not be failed by these flooding scenarios.
2. Cutsets associated with flooding initiators with fire protection system U43 pipe breaks (e.g., %FL_TB1-U43-L) contribute to release category FR and sequence T-GEN004A. There are a number of sequences modeled with U43 pipe breaks. The flooding model adopted a bounding assumption that the a break in the U43 piping would not be isolated and then, over a long period of time, would result in the total failure of the system. It is reasonable to account for the ability of plant personnel to diagnose a piping or tank rupture and then isolate the break so the entire fire protection system is not failed.

The removal of the conservatism associated with the B21 system failure is straightforward. The postulated flooding in the flooding area TBC (Turbine Building General Area) does not result in the failure of any DPVs or SRVs. The postulated flooding scenarios do not impact the depressurization functions.

The removal of the conservatism associated with the U43 system failure requires additional considerations. Since the fire protection function itself of U43 is not credited in the internal event models, the impact to the internal event models is due to the modeled IC/PCCS pool makeup function from U43.

With the conservative approach used in the flooding analysis, the system / train with the postulated break is assumed to be failed. Therefore, the postulated U43 pipe break (or spurious actuation of the FPS) was assumed to result in the failure of all U43 functions. However, this approach does not consider the following factors, which reduce the flooding risks and remove the conservatisms that skew the CCFP value:

- (1) There are multiple firewater storage tanks. DCD Subsection 9.5.1.4 states that there are a minimum of two sources: (i) at least one “primary” source to the suctions of primary fire pumps and corresponding jockey fire pump and (ii) at least one “secondary” source to suctions of secondary fire pumps and corresponding jockey fire pump. The postulated U43 break may result in a total depletion of one tank, but may not deplete all tanks since the tank water level or switching to other sources prompts the operator to investigate whether there is an actual demand (accompanied by a highly noticeable fire), a leak, or a spurious actuation. It is reasonable to assume that the operator would isolate the break instead of switching to other firewater storage tanks then depleting all the firewater.
- (2) DCD Table 9.5-2 lists the FPS Component Design Characteristics. The combined total primary firewater is 3900 m³ (1,030,000 gallons). The minimum secondary storage firewater is 2082 m³ (550,000 gallons). The largest firewater demand is 967 m³/hr (4256 gpm) for Turbine Building (TB), including hose stream. Assuming the most limiting U43 break in the TB, the time to deplete all firewater storage would be about 6.2 hours. This makes the failure to isolate the U43 break an unlikely event.
- (3) As shown in DCD Figure 9.5-1, the firewater to the TB, Electrical Building, and Service Building is connected from the yard piping while the TB connections to the Nuclear island (NI) are normally isolated. Per DCD Subsection 9.5.1.4, the primary, Seismic Category I, firewater storage tanks and Seismic Category I diesel-driven pump and fire protection piping provide post-accident makeup water to the IC/PCCS pools and Spent Fuel Pool using FAPCS piping. FPS components located outside the Reactor Building supporting FAPCS makeup do not fulfill a fire protection function. Fire hydrants, stand pipes, or other large lines will not be attached to the dedicated portion of the FPS designed to provide long term makeup to pools in the Reactor Building. Also as shown, the dedicated connections to IC/PCCS pools branch off the main headers to the NI before the isolation valves.

Therefore, the isolation of the postulated U43 breaks should have no impact on the dedicated connections to IC/PCCS pools.

With the above considerations, it is reasonable to assume that, for a postulated flooding scenario caused by an FPS (U43) pipe break or spurious actuation, operators should be able to isolate the FPS break or spurious actuation and the failure to isolate is unlikely with sufficient response time before the firewater storage tanks are depleted even with the most limiting firewater demands. To validate this assumption, the following steps are taken:

1. Assume a new operator action, unique to the internal events at-power flooding model, to isolate U43 pipe breaks or spurious actuations. This event is named U43-XHE-FO-ISOLATE, OPERATOR FAILS TO ISOLATE FPS BREAKS. The probability of similar operator actions, such as U43-XHE-FO-2ND, OPERATOR FAILS TO ALIGN FPS CROSSTIE, is 1.61 E-2. However, for simplicity, and to account for uncertainties, a probability of 1.61E-1 is assumed in this analysis.
2. Since the loss of firewater storage tank inventory does not impact the service water system functions (i.e., component cooling), the event tree that is used to show flood damage states can be simplified as the following figure. Note the spurious actuation is treated similarly as a pipe break.

FPS_BREAK	TYPE	BREAK ISOLATED	NO_CD	Class
FPS PIPE BREAK or spurious actuation	TYPE OF BREAKS	Isolate the FPS break before the depletion of firewater inventory	Core Damage Prevented	
	SPRAY		YES	OK
			NO	FDS1
	FLOOD	YES	YES	OK
			NO	FDS2
		NO	YES	OK
			NO	FDS3

Figure 22.13-1 Flooding Damage States

3. The flooding model includes spraying effects and major flooding initiators separately, and the flooding sequences are plugged into the Level 2 internal events PRA model file, (a single top fault tree) for quantifications. The above Step 2 flood damage states result in the following changes to the flooding model files:
 - (a) For FPS spray flooding scenarios (Class FDS1), U43 system function for IC/PCCS pool makeup is not affected. Therefore, the modified flag files without U43 IC/PCCS pool makeup failures are used for the subject sequences in the updated quantification file.
 - (b) For FPS major flood scenarios with successful isolation of the postulated break (Class FDS2), U43 system function for IC/PCCS pool makeup is not affected. Therefore, the modified flag files without U43 IC/PCCS pool makeup failures are used for the subject sequences in the updated quantification file.
 - (c) For FPS major flood scenarios with the failure to isolate the postulated break (Class FDS3), U43 system function for IC/PCCS pool makeup is affected. New sequences are added for this flooding model sensitivity study. The original flag files with U43 IC/PCC pool makeup failures are used for the new sequences in the updated quantification file. The new sequences are named as “FL_*-U43-L-FI” (note “*” in the sequence name represents the flood zone). Twenty new sequences are created as follows in the modified fault tree “FL-AP-R4_1-Modified.caf”:

**Table 22.13-3
Additional Sequences for Failure to Isolate**

FL_CBSW-U43-L-FI	AND	%FL_CBSW-U43-L	U43-XHE-FO-ISOLATE	L2-ONETOP
FL_CTA-U43-L-FI	AND	%FL_CTA-U43-L	U43-XHE-FO-ISOLATE	L2-ONETOP
FL_CTB-U43-L-FI	AND	%FL_CTB-U43-L	U43-XHE-FO-ISOLATE	L2-ONETOP
FL_EB-U43-L-FI	AND	%FL_EB-U43-L	U43-XHE-FO-ISOLATE	L2-ONETOP
FL_EB1-U43-L-FI	AND	%FL_EB1-U43-L	U43-XHE-FO-ISOLATE	L2-ONETOP
FL_FB-3-U43-L-FI	AND	%FL_FB-3-U43-L	U43-XHE-FO-ISOLATE	L2-ONETOP
FL_FB-P-U43-L-FI	AND	%FL_FB-P-U43-L	U43-XHE-FO-ISOLATE	L2-ONETOP
FL_FB-SW-U43-L-FI	AND	%FL_FB-SW-U43-L	U43-XHE-FO-ISOLATE	L2-ONETOP
FL_FW1-U43-L-FI	AND	%FL_FW1-U43-L	U43-XHE-FO-ISOLATE	L2-ONETOP
FL_FW2-U43-L-FI	AND	%FL_FW2-U43-L	U43-XHE-FO-ISOLATE	L2-ONETOP
FL_PH-U43-L-FI	AND	%FL_PH-U43-L	U43-XHE-FO-ISOLATE	L2-ONETOP
FL_RB-3A-U43-L-FI	AND	%FL_RB-3A-U43-L	U43-XHE-FO-ISOLATE	L2-ONETOP
FL_RB-3B-U43-L-FI	AND	%FL_RB-3B-U43-L	U43-XHE-FO-ISOLATE	L2-ONETOP
FL_RB2-U43-L-FI	AND	%FL_RB2-U43-L	U43-XHE-FO-ISOLATE	L2-ONETOP
FL_RW-U43-L-FI	AND	%FL_RW-U43-L	U43-XHE-FO-ISOLATE	L2-ONETOP
FL_TB-1-U43-L-FI	AND	%FL_TB-1-U43-L	U43-XHE-FO-ISOLATE	L2-ONETOP
FL_TB-U43-L-FI	AND	%FL_TB-U43-L	U43-XHE-FO-ISOLATE	L2-ONETOP
FL_TB1-U43-L-FI	AND	%FL_TB1-U43-L	U43-XHE-FO-ISOLATE	L2-ONETOP
FL_TB2-U43-L-FI	AND	%FL_TB2-U43-L	U43-XHE-FO-ISOLATE	L2-ONETOP
FL_TBSW-U43-L-FI	AND	%FL_TBSW-U43-L	U43-XHE-FO-ISOLATE	L2-ONETOP

The following summary is obtained by updating the CDF value and BE importance report for the flooding model results.

Table 22.13-4
Revised At-Power Flooding Results

	Frequency	% total	% nTSL
TSL	2.824E-09	85.478%	-
FR	2.098E-10	6.350%	43.729%
OPW2	1.983E-11	0.600%	4.134%
OPW1	6.345E-13	0.019%	0.132%
OPVB	1.810E-12	0.055%	0.377%
BYP	2.464E-10	7.458%	51.356%
CCIW	5.922E-13	0.018%	0.123%
CCID	2.754E-13	0.008%	0.057%
EVE			
BOC	4.357E-13	0.013%	0.091%
CDF	3.304E-09	100.000%	100.000%
nTSL	4.798E-10	CCFP	0.145

These results show a CDF of 3.30E-9/yr, a LRF of 4.80E-10/yr and a CCFP of 0.145. These updated results demonstrate that no new vulnerabilities are identified from the updated flooding model. In addition, the operator action that is included in the flooding model sensitivity study does not have significant impact on the CDF or LRF values, but has some impact on the CCFP, which is discussed as follows.

Using the same merged cutset files, the probability of the operator action U43-XHE-FO-ISOLATE is changed to demonstrate its significance in the following two cases:

- Case A: Set to 0 (i.e., operator always isolate the break; Or, the non-isolated break would not result in loss of all firewater inventory).
- Case B: Set to 1.0 (i.e., operator always fail to isolate the break).

Case A results are listed as follows:

Table 22.13-5
Sensitivity Case A

	Frequency	% total	% nTSL
TSL	2.822E-09	88.920%	-
FR	8.892E-11	2.802%	25.285%
OPW2	1.508E-11	0.475%	4.289%
OPW1	6.327E-13	0.020%	0.180%
OPVB	1.778E-12	0.056%	0.506%
BYP	2.440E-10	7.687%	69.382%
CCIW	5.643E-13	0.018%	0.160%
CCID	2.613E-13	0.008%	0.074%
EVE			
BOC	4.343E-13	0.014%	0.124%
CDF	3.174E-09	100.000%	100.000%
nTSL	3.517E-10	CCFP	0.111

Case B results are listed as follows:

Table 22.13-6
Sensitivity Case B

	Frequency	% total	% nTSL
TSL	2.833E-09	71.105%	-
FR	8.430E-10	21.160%	73.230%
OPW2	4.457E-11	1.119%	3.872%
OPW1	6.566E-13	0.016%	0.057%
OPVB	1.984E-12	0.050%	0.172%
BYP	2.594E-10	6.512%	22.537%
CCIW	7.342E-13	0.018%	0.064%
CCID	3.488E-13	0.009%	0.030%
EVE			
BOC	4.366E-13	0.011%	0.038%
CDF	3.984E-09	100.000%	100.000%
nTSL	1.151E-09	CCFP	0.289

A comparison of the above results are listed in the following table:

Table 22.13-7
Sensitivity Results Comparisons

	CDF (/yr)	% Change from Baseline	LRF (/yr)	% Change from Baseline	CCFP	% Change from Baseline
Baseline	3.30E-09	N/A	4.80E-10	N/A	0.145	N/A
U43-XHE-FO-ISOLATE set to 0	3.17E-09	-3.9%	3.52E-10	-26.7%	0.111	-23.4%
U43-XHE-FO-ISOLATE set to 1	3.98E-09	20.6%	1.15E-09	139.6%	0.289	99.3%

It should be noted that even the Case B CCFP value of 0.289 is lower than the original result since the added operator action only affects the new sequences associated with U43 breaks. The removal of the conservatism associated with the B21 breaks is straightforward. It has reduced the CCFP value from 0.595 to about 0.3. The changes to the U43 sequences reduce the CCFP to 0.145 even when new scenarios are included.

The shutdown flooding CDF / LRF value is low (5.21 E-9/year) and the dominant risk contributors are different than those identified in the at-power flooding model. Therefore, the model changes described in this task are not applied to the shutdown model.

The following summary is obtained by updating the CDF value and Basic Event importance report for the updated focus / RTNSS flooding model results.

Table 22.13-8
Revised Results for Focus PRA

	Frequency	% total	% nTSL
TSL	1.624E-06	1.729%	-
FR	-	-	-
OPW2	4.020E-05	42.811%	43.565%
OPW1	2.539E-10	0.000%	0.000%
OPVB	3.809E-11	0.000%	0.000%
BYP	5.205E-05	55.429%	56.404%
CCIW	1.665E-08	0.018%	0.018%
CCID	1.168E-08	0.012%	0.013%
EVE	-	-	-
BOC	2.696E-12	0.000%	0.000%
CDF	9.391E-05	100.000%	100.000%
nTSL	9.229E-05	CCFP	0.983

Summary of the Focus PRA with RTNSS sensitivity study results:

**Table 22.13-9
Revised Results for Focus PRA with RTNSS Components**

	Frequency	% total	% nTSL
TSL	7.317E-08	23.002%	-
FR	-	-	-
OPW2	2.345E-07	73.714%	95.735%
OPW1	1.091E-11	0.003%	0.004%
OPVB	2.635E-11	0.008%	0.011%
BYP	1.036E-08	3.258%	4.231%
CCIW	2.708E-11	0.009%	0.011%
CCID	1.620E-11	0.005%	0.007%
EVE	-	-	-
BOC	3.709E-12	0.001%	0.002%
CDF	3.181E-07	100.000%	100.000%
nTSL	2.449E-07	CCFP	0.770

The Revision 4 of NEDO-33201 Section 10 calculated offsite radiological consequences with the contribution from the external events and shutdown models. The results meet NRC goals and the contribution from the at-power flooding model would be reduced. Therefore, the current results are acceptable.

Specifically, Subsection 13.6.1, At-Power Flooding Scenarios, need to be updated to include the discussion on the newly added operator action to isolate the FPS piping breaks. Currently it states, “No operator actions have been included in the internal events PRA for the purpose of isolating or mitigating the consequences of at-power flooding scenarios.” This statement needs to be modified to address the above changes; or Section 22.13 should capture the changes if determined to be more appropriate.

NEDO-33201 Subsection 17.3.2, External Events – Flood, is evaluated to consider the results and insights from this sensitivity study. The following tables apply:

- Table 17.1-1 Results
- Table 17.1-3 ESBWR Risk-Significant Operator Actions
- Table 17.7-11 Flood CDF At-Power Operator Actions – RAW
- Table 17.7-12 Flood CDF At-Power Operator Actions – FV
- Table 17.7-13 Flood LRF At-Power Operator Actions - RAW
- Table 17.7-14 Flood LRF At-Power Operator Actions – FV

The risk importance of the new operator action used in the sensitivity study for the at-power flooding model is negligible. Using the threshold of 1E-7 /yr for change in LRF with respect to its RAW value, this event does not qualify as a key operator action. The delta LRF for operator action U43-XHE-FO-ISOLATE is calculated as:

$$\begin{aligned} \text{Delta LRF} &= (\text{RAW} - 1) * \text{Updated Baseline LRF} \\ \text{Delta LRF} &= (2.42 - 1) * 4.80\text{E-}10 = 6.82\text{E-}10 \text{ /yr} \ll 1\text{E-}7 \text{ /yr} \end{aligned}$$

Therefore, the revised flooding results from this sensitivity study have a negligible effect on the Section 17 tables listed above and provide no additional insights on risk significance.

NEDO-33411 Tables 1 and 4 contain at-power flooding model results. However, the results from this sensitivity study add no new risk significant basic events.

Table 22.13-10
Cutset Report Internal Flooding Sensitivity Study
CDF = 3.30 E-9/year

#	Cutset Probability	Event Probability	Event	Description
1	2.60E-10	1.04E-03	%FL_TB-G31-S	
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
2	1.80E-10	7.19E-04	%FL_TB-1-N21-L	
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
3	1.48E-10	5.92E-04	%FL_TB-N21-L	
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
4	1.46E-10	5.82E-04	%FL_TB-P41A-L	
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
5	1.46E-10	5.82E-04	%FL_TB-P41B-L	
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
6	6.65E-11	2.66E-04	%FL_TB-1-P41A-L	
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
7	6.65E-11	2.66E-04	%FL_TB-1-P41B-L	
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
8	6.63E-11	2.65E-04	%FL_RB-3A-G31A-L	
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
9	4.85E-11	1.94E-04	%FL_TB-1-U43-L	
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
10	4.77E-11	1.91E-04	%FL_TB-U43-L	
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
11	4.63E-11	1.85E-04	%FL_RB-3B-G31A-L	
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
12	4.42E-11	4.42E-03	%FL_SF-P41A-S	
		1.00E-04	C63-CCFSOFTWARE	Common cause failure of software

Table 22.13-10
Cutset Report Internal Flooding Sensitivity Study
CDF = 3.30 E-9/year

#	Cutset Probability	Event Probability	Event	Description
		1.00E-04	C72-CCFSOFTWARE	COMMON CAUSE FAILURE OF DPS PROCESSORS
13	4.42E-11	4.42E-03	%FL_SF-P41B-S	
		1.00E-04	C63-CCFSOFTWARE	Common cause failure of software
		1.00E-04	C72-CCFSOFTWARE	COMMON CAUSE FAILURE OF DPS PROCESSORS
14	3.35E-11	1.34E-04	%FL_RB-3-G31A-L	
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
15	2.91E-11	6.02E-05	%FL_TB1-U43-L	
		3.00E-03	B32-SQV-CC-F104A	F104A FAILS TO OPEN
		1.00E-03	B32-UV_-OO-F105A	CHECK VALVE FAILS TO CLOSE
		1.61E-01	U43-XHE-FO-ISOLATE	OPERATOR FAILS TO ISOLATE FPS BREAKS
16	2.91E-11	6.02E-05	%FL_TB1-U43-L	
		3.00E-03	B32-SQV-CC-F104B	F104B FAILS TO OPEN
		1.00E-03	B32-UV_-OO-F105B	CHECK VALVE FAILS TO CLOSE
		1.61E-01	U43-XHE-FO-ISOLATE	OPERATOR FAILS TO ISOLATE FPS BREAKS
17	2.26E-11	9.03E-05	%FL_TB-1-N25-L	
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
18	2.15E-11	8.60E-05	%FL_TB-1-P30-L	
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
19	1.96E-11	4.30E-05	%FL_RB3-P10-L	
		4.55E-07	R13-XFL-LP-CCFNSR2 ALL	CCF of all components in group 'R13-XFL-LP-CCFNSR2'
20	1.91E-11	7.63E-05	%FL_RB-2B-G31A-L	
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
21	1.86E-11	7.43E-05	%FL_TBC-G31-L	
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
22	1.64E-11	3.27E-03	%FL_EB-U43-S	

Table 22.13-10
Cutset Report Internal Flooding Sensitivity Study
CDF = 3.30 E-9/year

#	Cutset Probability	Event Probability	Event	Description
		1.00E-04	C71-CCFSOFTWARE	RPS COMMON CAUSE SOFTWARE FAILURE
		1.00E-01	C71-XHE-FO-SCRAM	OPERATOR FAILS TO PERFORM MANUAL SCRAM
		5.00E-04	R16-BDC-TM-R16C	DC BUS R16-C IN MAINTENANCE
23	1.64E-11	3.27E-03	%FL_EB-U43-S	
		1.00E-04	C71-CCFSOFTWARE	RPS COMMON CAUSE SOFTWARE FAILURE
		1.00E-01	C71-XHE-FO-SCRAM	OPERATOR FAILS TO PERFORM MANUAL SCRAM
		5.00E-04	R16-BT_-TM-R16BTC	BATTERY R16-BTC IN TEST AND MAINTENANCE
24	1.57E-11	3.27E-03	%FL_EB-U43-S	
		1.00E-04	C71-CCFSOFTWARE	RPS COMMON CAUSE SOFTWARE FAILURE
		1.00E-01	C71-XHE-FO-SCRAM	OPERATOR FAILS TO PERFORM MANUAL SCRAM
		4.80E-04	R13-INV-FC-R13C	INVERTER TO R13-C FAILS
25	1.33E-11	4.42E-03	%FL_SF-P41A-S	
		3.00E-05	C63-DTM-FC-ESFLG_ALL	CCF of all components in group 'C63-DTM-FC-ESFLG'
		1.00E-04	C72-CCFSOFTWARE	COMMON CAUSE FAILURE OF DPS PROCESSORS
26	1.33E-11	4.42E-03	%FL_SF-P41B-S	
		3.00E-05	C63-DTM-FC-ESFLG_ALL	CCF of all components in group 'C63-DTM-FC-ESFLG'
		1.00E-04	C72-CCFSOFTWARE	COMMON CAUSE FAILURE OF DPS PROCESSORS
27	1.07E-11	4.30E-05	%FL_RB3-P10-L	
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
28	1.07E-11	4.30E-05	%FL_TB-P10-L	
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
29	1.07E-11	4.42E-03	%FL_SF-P41A-S	
		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 22.13-10
Cutset Report Internal Flooding Sensitivity Study
CDF = 3.30 E-9/year

#	Cutset Probability	Event Probability	Event	Description
		1.61E-01	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION
30	1.07E-11	4.42E-03	%FL_SF-P41A-S	
		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
31	1.07E-11	4.42E-03	%FL_SF-P41A-S	
		1.50E-04	B21-SQV-CC_ALL	CCF of all components in group 'B21-SQV-CC'
		1.00E-04	C63-CCFSOFTWARE_S	ESF SPURIOUS COMMON CAUSE SOFTWARE FAILURE
		1.61E-01	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION
32	1.07E-11	4.42E-03	%FL_SF-P41A-S	
		1.50E-04	B21-SQV-CC_ALL	CCF of all components in group 'B21-SQV-CC'
		1.00E-04	C63-CCFSOFTWARE_S	ESF SPURIOUS COMMON CAUSE SOFTWARE FAILURE
		1.61E-01	XXX-XHE-FO-DEPRESS	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION
33	1.07E-11	4.42E-03	%FL_SF-P41A-S	
		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-INJ_ALL	CCF of all components in group 'E50-SQV-CC-INJ'
		1.61E-01	XXX-XHE-FO-DEPRESS	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION
34	1.07E-11	4.42E-03	%FL_SF-P41A-S	
		1.00E-04	C63-CCFSOFTWARE_S	ESF SPURIOUS COMMON CAUSE SOFTWARE FAILURE
		1.50E-04	E50-SQV-CC-INJ_ALL	CCF of all components in group 'E50-SQV-CC-INJ'
		1.61E-01	XXX-XHE-FO-DEPRESS	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION
35	1.07E-11	4.42E-03	%FL_SF-P41B-S	
		1.50E-04	B21-SQV-CC_ALL	CCF of all components in group 'B21-SQV-CC'

Table 22.13-10
Cutset Report Internal Flooding Sensitivity Study
CDF = 3.30 E-9/year

#	Cutset Probability	Event Probability	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
36	1.07E-11	4.42E-03	%FL_SF-P41B-S	
		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
37	1.07E-11	4.42E-03	%FL_SF-P41B-S	
		1.50E-04	B21-SQV-CC_ALL	CCF of all components in group 'B21-SQV-CC'
		1.00E-04	C63-CCFSOFTWARE_S	ESF SPURIOUS COMMON CAUSE SOFTWARE FAILURE
		1.61E-01	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION
38	1.07E-11	4.42E-03	%FL_SF-P41B-S	
		1.50E-04	B21-SQV-CC_ALL	CCF of all components in group 'B21-SQV-CC'
		1.00E-04	C63-CCFSOFTWARE_S	ESF SPURIOUS COMMON CAUSE SOFTWARE FAILURE
		1.61E-01	XXX-XHE-FO-DEPRESS	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION
39	1.07E-11	4.42E-03	%FL_SF-P41B-S	
		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-INJ_ALL	CCF of all components in group 'E50-SQV-CC-INJ'
		1.61E-01	XXX-XHE-FO-DEPRESS	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION
40	1.07E-11	4.42E-03	%FL_SF-P41B-S	
		1.00E-04	C63-CCFSOFTWARE_S	ESF SPURIOUS COMMON CAUSE SOFTWARE FAILURE
		1.50E-04	E50-SQV-CC-INJ_ALL	CCF of all components in group 'E50-SQV-CC-INJ'
		1.61E-01	XXX-XHE-FO-DEPRESS	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION

Table 22.13-10
Cutset Report Internal Flooding Sensitivity Study
CDF = 3.30 E-9/year

#	Cutset Probability	Event Probability	Event	Description
41	9.23E-12	1.91E-04	%FL_TB-U43-L	
		1.00E-04	B32-NPO-CC-F105A	F105A Fails to Open
		3.00E-03	B32-SQV-CC-F104A	F104A FAILS TO OPEN
		1.61E-01	U43-XHE-FO-ISOLATE	OPERATOR FAILS TO ISOLATE FPS BREAKS
42	9.23E-12	1.91E-04	%FL_TB-U43-L	
		1.00E-04	B32-NPO-CC-F105B	F105B fails to open
		3.00E-03	B32-SQV-CC-F104B	F104B FAILS TO OPEN
		1.61E-01	U43-XHE-FO-ISOLATE	OPERATOR FAILS TO ISOLATE FPS BREAKS
43	8.00E-12	4.30E-05	%FL_RB3-P10-L	
		1.00E-01	C71-XHE-FO-SCRAM	OPERATOR FAILS TO PERFORM MANUAL SCRAM
		1.86E-06	C72-LDD-FC-LOADS	COMMON CAUSE FAILURE OF DPS LOAD DRIVERS
44	7.96E-12	4.42E-03	%FL_SF-P41A-S	
		1.80E-05	C63-LOG-FC-ESFLG_ALL	CCF of all components in group 'C63-LOG-FC-ESFLG'
		1.00E-04	C72-CCFSOFTWARE	COMMON CAUSE FAILURE OF DPS PROCESSORS
45	7.96E-12	4.42E-03	%FL_SF-P41B-S	
		1.80E-05	C63-LOG-FC-ESFLG_ALL	CCF of all components in group 'C63-LOG-FC-ESFLG'
		1.00E-04	C72-CCFSOFTWARE	COMMON CAUSE FAILURE OF DPS PROCESSORS
46	7.36E-12	3.27E-03	%FL_EB-U43-S	
		4.50E-05	C71-SLU-FC-R_ALL	CCF of all components in group 'C71-SLU-FC-R'
		1.00E-01	C71-XHE-FO-SCRAM	OPERATOR FAILS TO PERFORM MANUAL SCRAM
		5.00E-04	R16-BDC-TM-R16C	DC BUS R16-C IN MAINTENANCE
47	7.36E-12	3.27E-03	%FL_EB-U43-S	
		4.50E-05	C71-SLU-FC-R_ALL	CCF of all components in group 'C71-SLU-FC-R'
		1.00E-01	C71-XHE-FO-SCRAM	OPERATOR FAILS TO PERFORM MANUAL SCRAM
		5.00E-04	R16-BT_-TM-R16BTC	BATTERY R16-BTC IN TEST AND MAINTENANCE

Table 22.13-10
Cutset Report Internal Flooding Sensitivity Study
CDF = 3.30 E-9/year

#	Cutset Probability	Event Probability	Event	Description
48	7.06E-12	3.27E-03	%FL_EB-U43-S	
		4.50E-05	C71-SLU-FC-R_ALL	CCF of all components in group 'C71-SLU-FC-R'
		1.00E-01	C71-XHE-FO-SCRAM	OPERATOR FAILS TO PERFORM MANUAL SCRAM
		4.80E-04	R13-INV-FC-R13C	INVERTER TO R13-C FAILS
49	6.63E-12	4.42E-03	%FL_SF-P41A-S	
		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
50	6.63E-12	4.42E-03	%FL_SF-P41A-S	
		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
51	6.63E-12	4.42E-03	%FL_SF-P41A-S	
		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
52	6.63E-12	4.42E-03	%FL_SF-P41A-S	
		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
53	6.63E-12	4.42E-03	%FL_SF-P41A-S	
		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
54	6.63E-12	4.42E-03	%FL_SF-P41A-S	
		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
55	6.63E-12	4.42E-03	%FL_SF-P41A-S	
		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

Table 22.13-10
Cutset Report Internal Flooding Sensitivity Study
CDF = 3.30 E-9/year

#	Cutset Probability	Event Probability	Event	Description
56	6.63E-12	4.42E-03	%FL_SF-P41A-S	
		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
57	6.63E-12	4.42E-03	%FL_SF-P41A-S	
		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
58	6.63E-12	4.42E-03	%FL_SF-P41A-S	
		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
59	6.63E-12	4.42E-03	%FL_SF-P41A-S	
		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
60	6.63E-12	4.42E-03	%FL_SF-P41A-S	
		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
61	6.63E-12	4.42E-03	%FL_SF-P41A-S	
		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
62	6.63E-12	4.42E-03	%FL_SF-P41A-S	
		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
63	6.63E-12	4.42E-03	%FL_SF-P41A-S	
		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
64	6.63E-12	4.42E-03	%FL_SF-P41A-S	

Table 22.13-10
Cutset Report Internal Flooding Sensitivity Study
CDF = 3.30 E-9/year

#	Cutset Probability	Event Probability	Event	Description
		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
65	6.63E-12	4.42E-03	%FL_SF-P41A-S	
		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
66	6.63E-12	4.42E-03	%FL_SF-P41A-S	
		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
67	6.63E-12	4.42E-03	%FL_SF-P41B-S	
		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
68	6.63E-12	4.42E-03	%FL_SF-P41B-S	
		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
69	6.63E-12	4.42E-03	%FL_SF-P41B-S	
		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
70	6.63E-12	4.42E-03	%FL_SF-P41B-S	
		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
71	6.63E-12	4.42E-03	%FL_SF-P41B-S	
		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
72	6.63E-12	4.42E-03	%FL_SF-P41B-S	
		6.00E-03	B21-SRV-OO-ANYSRV14	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE

Table 22.13-10
Cutset Report Internal Flooding Sensitivity Study
CDF = 3.30 E-9/year

#	Cutset Probability	Event Probability	Event	Description
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
73	6.63E-12	4.42E-03	%FL_SF-P41B-S	
		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
74	6.63E-12	4.42E-03	%FL_SF-P41B-S	
		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
75	6.63E-12	4.42E-03	%FL_SF-P41B-S	
		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
76	6.63E-12	4.42E-03	%FL_SF-P41B-S	
		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
77	6.63E-12	4.42E-03	%FL_SF-P41B-S	
		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
78	6.63E-12	4.42E-03	%FL_SF-P41B-S	
		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
79	6.63E-12	4.42E-03	%FL_SF-P41B-S	
		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
80	6.63E-12	4.42E-03	%FL_SF-P41B-S	
		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

Table 22.13-10
Cutset Report Internal Flooding Sensitivity Study
CDF = 3.30 E-9/year

#	Cutset Probability	Event Probability	Event	Description
81	6.63E-12	4.42E-03	%FL_SF-P41B-S	
		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
82	6.63E-12	4.42E-03	%FL_SF-P41B-S	
		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
83	6.63E-12	4.42E-03	%FL_SF-P41B-S	
		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
84	6.63E-12	4.42E-03	%FL_SF-P41B-S	
		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
85	5.93E-12	5.93E-04	%FL_TB2-N11-L	
		1.00E-04	C63-CCFSOFTWARE	Common cause failure of software
		1.00E-04	C72-CCFSOFTWARE	COMMON CAUSE FAILURE OF DPS PROCESSORS
86	5.93E-12	2.37E-05	%FL_TB-1-P10-L	
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
87	5.92E-12	5.92E-04	%FL_TB-N21-L	
		1.00E-04	C63-CCFSOFTWARE	Common cause failure of software
		1.00E-04	C72-CCFSOFTWARE	COMMON CAUSE FAILURE OF DPS PROCESSORS
88	5.82E-12	5.82E-04	%FL_TB-P41A-L	
		1.00E-04	C63-CCFSOFTWARE	Common cause failure of software
		1.00E-04	C72-CCFSOFTWARE	COMMON CAUSE FAILURE OF DPS PROCESSORS
89	5.82E-12	5.82E-04	%FL_TB-P41B-L	
		1.00E-04	C63-CCFSOFTWARE	Common cause failure of software

Table 22.13-10
Cutset Report Internal Flooding Sensitivity Study
CDF = 3.30 E-9/year

#	Cutset Probability	Event Probability	Event	Description
		1.00E-04	C72-CCFSOFTWARE	COMMON CAUSE FAILURE OF DPS PROCESSORS
90	5.33E-12	5.33E-04	%FL_SF-P41A-L	
		1.00E-04	C63-CCFSOFTWARE	Common cause failure of software
		1.00E-04	C72-CCFSOFTWARE	COMMON CAUSE FAILURE OF DPS PROCESSORS
91	5.33E-12	5.33E-04	%FL_SF-P41B-L	
		1.00E-04	C63-CCFSOFTWARE	Common cause failure of software
		1.00E-04	C72-CCFSOFTWARE	COMMON CAUSE FAILURE OF DPS PROCESSORS
92	5.03E-12	4.42E-03	%FL_SF-P41A-S	
		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'
93	5.03E-12	4.42E-03	%FL_SF-P41B-S	
		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'
94	4.91E-12	3.27E-03	%FL_EB-U43-S	
		3.00E-05	C71-DTM-FC-R_ALL	CCF of all components in group 'C71-DTM-FC-R'
		1.00E-01	C71-XHE-FO-SCRAM	OPERATOR FAILS TO PERFORM MANUAL SCRAM
		5.00E-04	R16-BDC-TM-R16C	DC BUS R16-C IN MAINTENANCE
95	4.91E-12	3.27E-03	%FL_EB-U43-S	
		3.00E-05	C71-DTM-FC-R_ALL	CCF of all components in group 'C71-DTM-FC-R'
		1.00E-01	C71-XHE-FO-SCRAM	OPERATOR FAILS TO PERFORM MANUAL SCRAM
		5.00E-04	R16-BT_-TM-R16BTC	BATTERY R16-BTC IN TEST AND MAINTENANCE
96	4.71E-12	3.27E-03	%FL_EB-U43-S	
		3.00E-05	C71-DTM-FC-R_ALL	CCF of all components in group 'C71-DTM-FC-R'
		1.00E-01	C71-XHE-FO-SCRAM	OPERATOR FAILS TO PERFORM MANUAL SCRAM
		4.80E-04	R13-INV-FC-R13C	INVERTER TO R13-C FAILS

Table 22.13-10
Cutset Report Internal Flooding Sensitivity Study
CDF = 3.30 E-9/year

#	Cutset Probability	Event Probability	Event	Description
97	4.68E-12	4.68E-04	%FL_SF-Y41-S	
		1.00E-04	C63-CCFSOFTWARE	Common cause failure of software
		1.00E-04	C72-CCFSOFTWARE	COMMON CAUSE FAILURE OF DPS PROCESSORS
98	4.42E-12	4.42E-03	%FL_SF-P41A-S	
		1.00E-04	C63-CCFSOFTWARE	Common cause failure of software
		1.00E-05	C72-LOG-FC-D_1_2	CCF of two components: C72-LOG-FC-D1DPS & C72-LOG-FC-D2DPS
99	4.42E-12	4.42E-03	%FL_SF-P41A-S	
		1.00E-04	C63-CCFSOFTWARE	Common cause failure of software
		1.00E-05	C72-LOG-FC-D_1_3	CCF of two components: C72-LOG-FC-D1DPS & C72-LOG-FC-D3DPS
100	4.42E-12	4.42E-03	%FL_SF-P41A-S	
		1.00E-04	C63-CCFSOFTWARE	Common cause failure of software
		1.00E-05	C72-LOG-FC-D_2_3	CCF of two components: C72-LOG-FC-D2DPS & C72-LOG-FC-D3DPS
101	4.42E-12	4.42E-03	%FL_SF-P41B-S	
		1.00E-04	C63-CCFSOFTWARE	Common cause failure of software
		1.00E-05	C72-LOG-FC-D_1_2	CCF of two components: C72-LOG-FC-D1DPS & C72-LOG-FC-D2DPS
102	4.42E-12	4.42E-03	%FL_SF-P41B-S	
		1.00E-04	C63-CCFSOFTWARE	Common cause failure of software
		1.00E-05	C72-LOG-FC-D_1_3	CCF of two components: C72-LOG-FC-D1DPS & C72-LOG-FC-D3DPS
103	4.42E-12	4.42E-03	%FL_SF-P41B-S	
		1.00E-04	C63-CCFSOFTWARE	Common cause failure of software
		1.00E-05	C72-LOG-FC-D_2_3	CCF of two components: C72-LOG-FC-D2DPS & C72-LOG-FC-D3DPS
104	4.32E-12	1.79E-03	%FL_TBC-B21B-S	
		1.50E-04	B21-SQV-CC_ALL	CCF of all components in group 'B21-SQV-CC'
		1.00E-04	C63-CCFSOFTWARE_S	ESF SPURIOUS COMMON CAUSE SOFTWARE FAILURE
		1.61E-01	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION

Table 22.13-10
Cutset Report Internal Flooding Sensitivity Study
CDF = 3.30 E-9/year

#	Cutset Probability	Event Probability	Event	Description
105	4.32E-12	1.79E-03	%FL_TBC-B21B-S	
		1.50E-04	B21-SQV-CC_ALL	CCF of all components in group 'B21-SQV-CC'
		1.00E-04	C63-CCFSOFTWARE_S	ESF SPURIOUS COMMON CAUSE SOFTWARE FAILURE
		1.61E-01	XXX-XHE-FO-DEPRESS	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION
106	4.32E-12	1.79E-03	%FL_TBC-B21B-S	
		1.00E-04	C63-CCFSOFTWARE_S	ESF SPURIOUS COMMON CAUSE SOFTWARE FAILURE
		1.50E-04	E50-SQV-CC-INJ_ALL	CCF of all components in group 'E50-SQV-CC-INJ'
		1.61E-01	XXX-XHE-FO-DEPRESS	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION
107	4.30E-12	4.30E-04	%FL_SF-P10-S	
		1.00E-04	C63-CCFSOFTWARE	Common cause failure of software
		1.00E-04	C72-CCFSOFTWARE	COMMON CAUSE FAILURE OF DPS PROCESSORS
108	3.96E-12	8.20E-05	%FL_TB2-U43-L	
		1.00E-04	B32-NPO-CC-F105A	F105A Fails to Open
		3.00E-03	B32-SQV-CC-F104A	F104A FAILS TO OPEN
		1.61E-01	U43-XHE-FO-ISOLATE	OPERATOR FAILS TO ISOLATE FPS BREAKS
109	3.96E-12	8.20E-05	%FL_TB2-U43-L	
		1.00E-04	B32-NPO-CC-F105B	F105B fails to open
		3.00E-03	B32-SQV-CC-F104B	F104B FAILS TO OPEN
		1.61E-01	U43-XHE-FO-ISOLATE	OPERATOR FAILS TO ISOLATE FPS BREAKS
110	3.27E-12	3.27E-03	%FL_EB-U43-S	
		1.00E-04	C71-CCFSOFTWARE	RPS COMMON CAUSE SOFTWARE FAILURE
		1.00E-01	C71-XHE-FO-SCRAM	OPERATOR FAILS TO PERFORM MANUAL SCRAM
		1.00E-04	C72-CCFSOFTWARE	COMMON CAUSE FAILURE OF DPS PROCESSORS
111	3.23E-12	6.02E-05	%FL_TB1-U43-L	
		3.33E-04	B32-SQV-CC-XCONN_1_2	CCF of two components: B32-SQV-CC-F104A & B32-SQV-CC-F104B

Table 22.13-10
Cutset Report Internal Flooding Sensitivity Study
CDF = 3.30 E-9/year

#	Cutset Probability	Event Probability	Event	Description
		1.00E-03	B32-UV_-OO-F105A	CHECK VALVE FAILS TO CLOSE
		1.61E-01	U43-XHE-FO-ISOLATE	OPERATOR FAILS TO ISOLATE FPS BREAKS
112	3.23E-12	6.02E-05	%FL_TB1-U43-L	
		3.33E-04	B32-SQV-CC-XCONN_1_2	CCF of two components: B32-SQV-CC-F104A & B32-SQV-CC-F104B
		1.00E-03	B32-UV_-OO-F105B	CHECK VALVE FAILS TO CLOSE
		1.61E-01	U43-XHE-FO-ISOLATE	OPERATOR FAILS TO ISOLATE FPS BREAKS
113	2.94E-12	3.27E-03	%FL_EB-U43-S	
		1.80E-05	C71-OLU-FC-R_ALL	CCF of all components in group 'C71-OLU-FC-R'
		1.00E-01	C71-XHE-FO-SCRAM	OPERATOR FAILS TO PERFORM MANUAL SCRAM
		5.00E-04	R16-BDC-TM-R16C	DC BUS R16-C IN MAINTENANCE
114	2.94E-12	3.27E-03	%FL_EB-U43-S	
		1.80E-05	C71-OLU-FC-R_ALL	CCF of all components in group 'C71-OLU-FC-R'
		1.00E-01	C71-XHE-FO-SCRAM	OPERATOR FAILS TO PERFORM MANUAL SCRAM
		5.00E-04	R16-BT_-TM-R16BTC	BATTERY R16-BTC IN TEST AND MAINTENANCE
115	2.91E-12	6.02E-05	%FL_TB1-U43-L	
		1.00E-04	B32-NPO-CC-F105A	F105A Fails to Open
		3.00E-03	B32-SQV-CC-F104A	F104A FAILS TO OPEN
		1.61E-01	U43-XHE-FO-ISOLATE	OPERATOR FAILS TO ISOLATE FPS BREAKS
116	2.91E-12	6.02E-05	%FL_TB1-U43-L	
		1.00E-04	B32-NPO-CC-F105B	F105B fails to open
		3.00E-03	B32-SQV-CC-F104B	F104B FAILS TO OPEN
		1.61E-01	U43-XHE-FO-ISOLATE	OPERATOR FAILS TO ISOLATE FPS BREAKS
117	2.82E-12	3.27E-03	%FL_EB-U43-S	
		1.80E-05	C71-OLU-FC-R_ALL	CCF of all components in group 'C71-OLU-FC-R'
		1.00E-01	C71-XHE-FO-SCRAM	OPERATOR FAILS TO PERFORM MANUAL SCRAM

Table 22.13-10
Cutset Report Internal Flooding Sensitivity Study
CDF = 3.30 E-9/year

#	Cutset Probability	Event Probability	Event	Description
		4.80E-04	R13-INV-FC-R13C	INVERTER TO R13-C FAILS
118	2.51E-12	1.04E-03	%FL_TBC-G31-S	
		1.50E-04	B21-SQV-CC_ALL	CCF of all components in group 'B21-SQV-CC'
		1.00E-04	C63-CCFSOFTWARE_S	ESF SPURIOUS COMMON CAUSE SOFTWARE FAILURE
		1.61E-01	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION
119	2.51E-12	1.04E-03	%FL_TBC-G31-S	
		1.50E-04	B21-SQV-CC_ALL	CCF of all components in group 'B21-SQV-CC'
		1.00E-04	C63-CCFSOFTWARE_S	ESF SPURIOUS COMMON CAUSE SOFTWARE FAILURE
		1.61E-01	XXX-XHE-FO-DEPRESS	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION
120	2.51E-12	1.04E-03	%FL_TBC-G31-S	
		1.00E-04	C63-CCFSOFTWARE_S	ESF SPURIOUS COMMON CAUSE SOFTWARE FAILURE
		1.50E-04	E50-SQV-CC-INJ_ALL	CCF of all components in group 'E50-SQV-CC-INJ'
		1.61E-01	XXX-XHE-FO-DEPRESS	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION
121	2.13E-12	4.42E-03	%FL_SF-P41A-S	
		1.00E-04	B32-NPO-CC-F105A	F105A Fails to Open
		3.00E-03	B32-SQV-CC-F104A	F104A FAILS TO OPEN
		1.61E-03	XXX-XHE-FO-ICPCCS	Operator fails to recognize the need to makeup ICS/PCCS Pool level.
122	2.13E-12	4.42E-03	%FL_SF-P41A-S	
		1.00E-04	B32-NPO-CC-F105B	F105B fails to open
		3.00E-03	B32-SQV-CC-F104B	F104B FAILS TO OPEN
		1.61E-03	XXX-XHE-FO-ICPCCS	Operator fails to recognize the need to makeup ICS/PCCS Pool level.
123	2.13E-12	4.42E-03	%FL_SF-P41B-S	
		1.00E-04	B32-NPO-CC-F105A	F105A Fails to Open
		3.00E-03	B32-SQV-CC-F104A	F104A FAILS TO OPEN
		1.61E-03	XXX-XHE-FO-ICPCCS	Operator fails to recognize the need to makeup ICS/PCCS Pool level.

Table 22.13-10
Cutset Report Internal Flooding Sensitivity Study
CDF = 3.30 E-9/year

#	Cutset Probability	Event Probability	Event	Description
124	2.13E-12	4.42E-03	%FL_SF-P41B-S	
		1.00E-04	B32-NPO-CC-F105B	F105B fails to open
		3.00E-03	B32-SQV-CC-F104B	F104B FAILS TO OPEN
		1.61E-03	XXX-XHE-FO-ICPCCS	Operator fails to recognize the need to makeup ICS/PCCS Pool level.
125	2.12E-12	7.06E-03	%FL_FW1-U43-S	
		3.00E-03	B32-SQV-CC-F104A	F104A FAILS TO OPEN
		1.00E-03	B32-UV_-OO-F105A	CHECK VALVE FAILS TO CLOSE
		1.00E-04	C62-CCFSOFTWARE	N-DCIS COMMON CAUSE SOFTWARE FAILURE
126	2.12E-12	7.06E-03	%FL_FW1-U43-S	
		3.00E-03	B32-SQV-CC-F104A	F104A FAILS TO OPEN
		1.00E-03	B32-UV_-OO-F105A	CHECK VALVE FAILS TO CLOSE
		1.00E-04	C62-CCFSOFTWARE_S	N-DCIS SPURIOUS COMMON CAUSE SOFTWARE FAILURE
127	2.12E-12	7.06E-03	%FL_FW1-U43-S	
		3.00E-03	B32-SQV-CC-F104B	F104B FAILS TO OPEN
		1.00E-03	B32-UV_-OO-F105B	CHECK VALVE FAILS TO CLOSE
		1.00E-04	C62-CCFSOFTWARE	N-DCIS COMMON CAUSE SOFTWARE FAILURE
128	2.12E-12	7.06E-03	%FL_FW1-U43-S	
		3.00E-03	B32-SQV-CC-F104B	F104B FAILS TO OPEN
		1.00E-03	B32-UV_-OO-F105B	CHECK VALVE FAILS TO CLOSE
		1.00E-04	C62-CCFSOFTWARE_S	N-DCIS SPURIOUS COMMON CAUSE SOFTWARE FAILURE
129	1.92E-12	4.42E-03	%FL_SF-P41A-S	
		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
		1.80E-05	C63-LOG-FC-ESFLG_ALL	CCF of all components in group 'C63-LOG-FC-ESFLG'
		1.61E-01	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION

Table 22.13-10
Cutset Report Internal Flooding Sensitivity Study
CDF = 3.30 E-9/year

#	Cutset Probability	Event Probability	Event	Description
130	1.92E-12	4.42E-03	%FL_SF-P41A-S	
		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
		1.80E-05	C63-LOG-FC-ESFLG_ALL	CCF of all components in group 'C63-LOG-FC-ESFLG'
		1.61E-01	XXX-XHE-FO-DEPRESS	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION
131	1.92E-12	4.42E-03	%FL_SF-P41A-S	
		1.00E+00	B32-NONCONDENSE	Non condensable gasses form in ICS sufficiently to require venting
		1.80E-05	C63-LOG-FC-ESFLG_ALL	CCF of all components in group 'C63-LOG-FC-ESFLG'
		1.50E-04	E50-SQV-CC-INJ_ALL	CCF of all components in group 'E50-SQV-CC-INJ'
		1.61E-01	XXX-XHE-FO-DEPRESS	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION
132	1.92E-12	4.42E-03	%FL_SF-P41B-S	
		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
		1.80E-05	C63-LOG-FC-ESFLG_ALL	CCF of all components in group 'C63-LOG-FC-ESFLG'
		1.61E-01	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION
133	1.92E-12	4.42E-03	%FL_SF-P41B-S	
		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
		1.80E-05	C63-LOG-FC-ESFLG_ALL	CCF of all components in group 'C63-LOG-FC-ESFLG'
		1.61E-01	XXX-XHE-FO-DEPRESS	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION
134	1.92E-12	4.42E-03	%FL_SF-P41B-S	
		1.00E+00	B32-NONCONDENSE	Non condensable gasses form in ICS sufficiently to require venting
		1.80E-05	C63-LOG-FC-ESFLG_ALL	CCF of all components in group 'C63-LOG-FC-ESFLG'
		1.50E-04	E50-SQV-CC-INJ_ALL	CCF of all components in group 'E50-SQV-CC-INJ'
		1.61E-01	XXX-XHE-FO-DEPRESS	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION

Table 22.13-10
Cutset Report Internal Flooding Sensitivity Study
CDF = 3.30 E-9/year

#	Cutset Probability	Event Probability	Event	Description
135	1.91E-12	1.91E-04	%FL_TB-U43-L	
		1.00E-04	C63-CCFSOFTWARE	Common cause failure of software
		1.00E-04	C72-CCFSOFTWARE	COMMON CAUSE FAILURE OF DPS PROCESSORS
136	1.78E-12	5.93E-04	%FL_TB2-N11-L	
		3.00E-05	C63-DTM-FC-ESFLG_ALL	CCF of all components in group 'C63-DTM-FC-ESFLG'
		1.00E-04	C72-CCFSOFTWARE	COMMON CAUSE FAILURE OF DPS PROCESSORS
137	1.78E-12	5.92E-04	%FL_TB-N21-L	
		3.00E-05	C63-DTM-FC-ESFLG_ALL	CCF of all components in group 'C63-DTM-FC-ESFLG'
		1.00E-04	C72-CCFSOFTWARE	COMMON CAUSE FAILURE OF DPS PROCESSORS
138	1.75E-12	5.82E-04	%FL_TB-P41A-L	
		3.00E-05	C63-DTM-FC-ESFLG_ALL	CCF of all components in group 'C63-DTM-FC-ESFLG'
		1.00E-04	C72-CCFSOFTWARE	COMMON CAUSE FAILURE OF DPS PROCESSORS
139	1.75E-12	5.82E-04	%FL_TB-P41B-L	
		3.00E-05	C63-DTM-FC-ESFLG_ALL	CCF of all components in group 'C63-DTM-FC-ESFLG'
		1.00E-04	C72-CCFSOFTWARE	COMMON CAUSE FAILURE OF DPS PROCESSORS
140	1.68E-12	1.68E-04	%FL_TB1-N21-L	
		1.00E-04	C63-CCFSOFTWARE	Common cause failure of software
		1.00E-04	C72-CCFSOFTWARE	COMMON CAUSE FAILURE OF DPS PROCESSORS
141	1.63E-12	3.27E-04	%FL_EB-U43-L	
		1.00E-04	C71-CCFSOFTWARE	RPS COMMON CAUSE SOFTWARE FAILURE
		1.00E-01	C71-XHE-FO-SCRAM	OPERATOR FAILS TO PERFORM MANUAL SCRAM
		5.00E-04	R16-BDC-TM-R16C	DC BUS R16-C IN MAINTENANCE
142	1.63E-12	3.27E-04	%FL_EB-U43-L	
		1.00E-04	C71-CCFSOFTWARE	RPS COMMON CAUSE SOFTWARE FAILURE
		1.00E-01	C71-XHE-FO-SCRAM	OPERATOR FAILS TO PERFORM MANUAL SCRAM

Table 22.13-10
Cutset Report Internal Flooding Sensitivity Study
CDF = 3.30 E-9/year

#	Cutset Probability	Event Probability	Event	Description
		5.00E-04	R16-BT_-TM-R16BTC	BATTERY R16-BTC IN TEST AND MAINTENANCE
143	1.63E-12	1.91E-04	%FL_TB-U43-L	
		3.00E-03	B32-SQV-CC-F104A	F104A FAILS TO OPEN
		1.00E-03	B32-UV_-OO-F105A	CHECK VALVE FAILS TO CLOSE
		1.77E-02	P51-XHE-P21-BU	OPERATOR ACTION TO CONNECT ALTERNATE COOLING GIVEN RCCW FAILED
		1.61E-01	U43-XHE-FO-ISOLATE	OPERATOR FAILS TO ISOLATE FPS BREAKS
144	1.63E-12	1.91E-04	%FL_TB-U43-L	
		3.00E-03	B32-SQV-CC-F104B	F104B FAILS TO OPEN
		1.00E-03	B32-UV_-OO-F105B	CHECK VALVE FAILS TO CLOSE
		1.77E-02	P51-XHE-P21-BU	OPERATOR ACTION TO CONNECT ALTERNATE COOLING GIVEN RCCW FAILED
		1.61E-01	U43-XHE-FO-ISOLATE	OPERATOR FAILS TO ISOLATE FPS BREAKS
145	1.60E-12	5.33E-04	%FL_SF-P41A-L	
		3.00E-05	C63-DTM-FC-ESFLG_ALL	CCF of all components in group 'C63-DTM-FC-ESFLG'
		1.00E-04	C72-CCFSOFTWARE	COMMON CAUSE FAILURE OF DPS PROCESSORS
146	1.60E-12	5.33E-04	%FL_SF-P41B-L	
		3.00E-05	C63-DTM-FC-ESFLG_ALL	CCF of all components in group 'C63-DTM-FC-ESFLG'
		1.00E-04	C72-CCFSOFTWARE	COMMON CAUSE FAILURE OF DPS PROCESSORS
147	1.59E-12	4.42E-03	%FL_SF-P41A-S	
		3.60E-06	C63-LT_-NO-ESFRX_ALL	CCF of all components in group 'C63-LT_-NO-ESFRX'
		1.00E-04	C72-CCFSOFTWARE	COMMON CAUSE FAILURE OF DPS PROCESSORS
148	1.59E-12	4.42E-03	%FL_SF-P41B-S	
		3.60E-06	C63-LT_-NO-ESFRX_ALL	CCF of all components in group 'C63-LT_-NO-ESFRX'
		1.00E-04	C72-CCFSOFTWARE	COMMON CAUSE FAILURE OF DPS PROCESSORS
149	1.57E-12	3.27E-03	%FL_EB-U43-S	
		1.00E-04	C71-CCFSOFTWARE	RPS COMMON CAUSE SOFTWARE FAILURE

Table 22.13-10
Cutset Report Internal Flooding Sensitivity Study
CDF = 3.30 E-9/year

#	Cutset Probability	Event Probability	Event	Description
		1.00E-01	C71-XHE-FO-SCRAM	OPERATOR FAILS TO PERFORM MANUAL SCRAM
		4.80E-05	R16-BT_-LP-R16BTC	BATTERY R16-BTC FAILS TO PROVIDE OUTPUT
150	1.57E-12	3.27E-04	%FL_EB-U43-L	
		1.00E-04	C71-CCFSOFTWARE	RPS COMMON CAUSE SOFTWARE FAILURE
		1.00E-01	C71-XHE-FO-SCRAM	OPERATOR FAILS TO PERFORM MANUAL SCRAM
		4.80E-04	R13-INV-FC-R13C	INVERTER TO R13-C FAILS
151	1.51E-12	4.42E-03	%FL_SF-P41A-S	
		3.00E-05	C63-DTM-FC-ESFLG_ALL	CCF of all components in group 'C63-DTM-FC-ESFLG'
		1.14E-05	R13-INV-FC-CCFNSR_ALL	CCF of all components in group 'R13-INV-FC-CCFNSR'
152	1.51E-12	4.42E-03	%FL_SF-P41B-S	
		3.00E-05	C63-DTM-FC-ESFLG_ALL	CCF of all components in group 'C63-DTM-FC-ESFLG'
		1.14E-05	R13-INV-FC-CCFNSR_ALL	CCF of all components in group 'R13-INV-FC-CCFNSR'
153	1.47E-12	3.27E-03	%FL_EB-U43-S	
		4.50E-05	C71-SLU-FC-R_ALL	CCF of all components in group 'C71-SLU-FC-R'
		1.00E-01	C71-XHE-FO-SCRAM	OPERATOR FAILS TO PERFORM MANUAL SCRAM
		1.00E-04	C72-CCFSOFTWARE	COMMON CAUSE FAILURE OF DPS PROCESSORS
154	1.45E-12	6.01E-04	%FL_RB-2A-C12-L	
		1.50E-04	B21-SQV-CC_ALL	CCF of all components in group 'B21-SQV-CC'
		1.00E-04	C63-CCFSOFTWARE_S	ESF SPURIOUS COMMON CAUSE SOFTWARE FAILURE
		1.61E-01	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION
155	1.45E-12	6.01E-04	%FL_RB-2A-C12-L	
		1.50E-04	B21-SQV-CC_ALL	CCF of all components in group 'B21-SQV-CC'
		1.00E-04	C63-CCFSOFTWARE_S	ESF SPURIOUS COMMON CAUSE SOFTWARE FAILURE
		1.61E-01	XXX-XHE-FO-DEPRESS	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION
156	1.45E-12	6.01E-04	%FL_RB-2A-C12-L	

Table 22.13-10
Cutset Report Internal Flooding Sensitivity Study
CDF = 3.30 E-9/year

#	Cutset Probability	Event Probability	Event	Description
		1.00E-04	C63-CCFSOFTWARE_S	ESF SPURIOUS COMMON CAUSE SOFTWARE FAILURE
		1.50E-04	E50-SQV-CC-INJ_ALL	CCF of all components in group 'E50-SQV-CC-INJ'
		1.61E-01	XXX-XHE-FO-DEPRESS	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION
157	1.43E-12	5.93E-04	%FL_TB2-N11-L	
		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
158	1.43E-12	5.93E-04	%FL_TB2-N11-L	
		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
159	1.43E-12	5.93E-04	%FL_TB2-N11-L	
		1.50E-04	B21-SQV-CC_ALL	CCF of all components in group 'B21-SQV-CC'
		1.00E-04	C63-CCFSOFTWARE_S	ESF SPURIOUS COMMON CAUSE SOFTWARE FAILURE
		1.61E-01	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION
160	1.43E-12	5.93E-04	%FL_TB2-N11-L	
		1.50E-04	B21-SQV-CC_ALL	CCF of all components in group 'B21-SQV-CC'
		1.00E-04	C63-CCFSOFTWARE_S	ESF SPURIOUS COMMON CAUSE SOFTWARE FAILURE
		1.61E-01	XXX-XHE-FO-DEPRESS	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION
161	1.43E-12	5.93E-04	%FL_TB2-N11-L	
		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-INJ_ALL	CCF of all components in group 'E50-SQV-CC-INJ'

Table 22.13-10
Cutset Report Internal Flooding Sensitivity Study
CDF = 3.30 E-9/year

#	Cutset Probability	Event Probability	Event	Description
		1.61E-01	XXX-XHE-FO-DEPRESS	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION
162	1.43E-12	5.93E-04	%FL_TB2-N11-L	
		1.00E-04	C63-CCFSOFTWARE_S	ESF SPURIOUS COMMON CAUSE SOFTWARE FAILURE
		1.50E-04	E50-SQV-CC-INJ_ALL	CCF of all components in group 'E50-SQV-CC-INJ'
		1.61E-01	XXX-XHE-FO-DEPRESS	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION
163	1.43E-12	5.92E-04	%FL_TB-N21-L	
		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
164	1.43E-12	5.92E-04	%FL_TB-N21-L	
		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
165	1.43E-12	5.92E-04	%FL_TB-N21-L	
		1.50E-04	B21-SQV-CC_ALL	CCF of all components in group 'B21-SQV-CC'
		1.00E-04	C63-CCFSOFTWARE_S	ESF SPURIOUS COMMON CAUSE SOFTWARE FAILURE
		1.61E-01	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION
166	1.43E-12	5.92E-04	%FL_TB-N21-L	
		1.50E-04	B21-SQV-CC_ALL	CCF of all components in group 'B21-SQV-CC'
		1.00E-04	C63-CCFSOFTWARE_S	ESF SPURIOUS COMMON CAUSE SOFTWARE FAILURE
		1.61E-01	XXX-XHE-FO-DEPRESS	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION
167	1.43E-12	5.92E-04	%FL_TB-N21-L	
		1.00E+00	B32-NONCONDENSE	Non condensable gasses form in ICS sufficiently to require venting

Table 22.13-10
Cutset Report Internal Flooding Sensitivity Study
CDF = 3.30 E-9/year

#	Cutset Probability	Event Probability	Event	Description
		1.00E-04	C63-CCFSOFTWARE	Common cause failure of software
		1.50E-04	E50-SQV-CC-INJ_ALL	CCF of all components in group 'E50-SQV-CC-INJ'
		1.61E-01	XXX-XHE-FO-DEPRESS	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION
168	1.43E-12	5.92E-04	%FL_TB-N21-L	
		1.00E-04	C63-CCFSOFTWARE_S	ESF SPURIOUS COMMON CAUSE SOFTWARE FAILURE
		1.50E-04	E50-SQV-CC-INJ_ALL	CCF of all components in group 'E50-SQV-CC-INJ'
		1.61E-01	XXX-XHE-FO-DEPRESS	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION
169	1.41E-12	7.06E-03	%FL_FW1-U43-S	
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
		8.00E-04	C41-UV_-CC-F004A	CHECK VALVE F004A FAILS TO OPEN
170	1.41E-12	7.06E-03	%FL_FW1-U43-S	
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
		8.00E-04	C41-UV_-CC-F004B	CHECK VALVE F004B FAILS TO OPEN
171	1.41E-12	7.06E-03	%FL_FW1-U43-S	
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
		8.00E-04	C41-UV_-CC-F005A	CHECK VALVE F005A FAILS TO OPEN
172	1.41E-12	7.06E-03	%FL_FW1-U43-S	
		2.50E-07	C12-ROD-CF-SCRAM	CCF OF CONTROL RODS TO INSERT
		8.00E-04	C41-UV_-CC-F005B	CHECK VALVE F005B FAILS TO OPEN
173	1.41E-12	7.06E-03	%FL_FW1-U43-S	
		3.00E-03	B32-SQV-CC-F104A	F104A FAILS TO OPEN
		1.00E-03	B32-UV_-OO-F105A	CHECK VALVE FAILS TO CLOSE
		6.67E-05	C62-DTM-FC-PIPMP_1_2	CCF of two components: C62-DTM-FC-PIPA & C62-DTM-FC-PIPB
174	1.41E-12	7.06E-03	%FL_FW1-U43-S	
		3.00E-03	B32-SQV-CC-F104B	F104B FAILS TO OPEN

Table 22.13-10
Cutset Report Internal Flooding Sensitivity Study
CDF = 3.30 E-9/year

#	Cutset Probability	Event Probability	Event	Description
		1.00E-03	B32-UV_-OO-F105B	CHECK VALVE FAILS TO CLOSE
		6.67E-05	C62-DTM-FC-PIPMP_1_2	CCF of two components: C62-DTM-FC-PIPA & C62-DTM-FC-PIPB
175	1.41E-12	5.82E-04	%FL_TB-P41A-L	
		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
176	1.41E-12	5.82E-04	%FL_TB-P41A-L	
		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
177	1.41E-12	5.82E-04	%FL_TB-P41A-L	
		1.50E-04	B21-SQV-CC_ALL	CCF of all components in group 'B21-SQV-CC'
		1.00E-04	C63-CCFSOFTWARE_S	ESF SPURIOUS COMMON CAUSE SOFTWARE FAILURE
		1.61E-01	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION
178	1.41E-12	5.82E-04	%FL_TB-P41A-L	
		1.50E-04	B21-SQV-CC_ALL	CCF of all components in group 'B21-SQV-CC'
		1.00E-04	C63-CCFSOFTWARE_S	ESF SPURIOUS COMMON CAUSE SOFTWARE FAILURE
		1.61E-01	XXX-XHE-FO-DEPRESS	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION
179	1.41E-12	5.82E-04	%FL_TB-P41A-L	
		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-INJ_ALL	CCF of all components in group 'E50-SQV-CC-INJ'
		1.61E-01	XXX-XHE-FO-DEPRESS	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION

Table 22.13-10
Cutset Report Internal Flooding Sensitivity Study
CDF = 3.30 E-9/year

#	Cutset Probability	Event Probability	Event	Description
180	1.41E-12	5.82E-04	%FL_TB-P41A-L	
		1.00E-04	C63-CCFSOFTWARE_S	ESF SPURIOUS COMMON CAUSE SOFTWARE FAILURE
		1.50E-04	E50-SQV-CC-INJ_ALL	CCF of all components in group 'E50-SQV-CC-INJ'
		1.61E-01	XXX-XHE-FO-DEPRESS	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION
181	1.41E-12	5.82E-04	%FL_TB-P41B-L	
		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
182	1.41E-12	5.82E-04	%FL_TB-P41B-L	
		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
183	1.41E-12	5.82E-04	%FL_TB-P41B-L	
		1.50E-04	B21-SQV-CC_ALL	CCF of all components in group 'B21-SQV-CC'
		1.00E-04	C63-CCFSOFTWARE_S	ESF SPURIOUS COMMON CAUSE SOFTWARE FAILURE
		1.61E-01	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION
184	1.41E-12	5.82E-04	%FL_TB-P41B-L	
		1.50E-04	B21-SQV-CC_ALL	CCF of all components in group 'B21-SQV-CC'
		1.00E-04	C63-CCFSOFTWARE_S	ESF SPURIOUS COMMON CAUSE SOFTWARE FAILURE
		1.61E-01	XXX-XHE-FO-DEPRESS	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION
185	1.41E-12	5.82E-04	%FL_TB-P41B-L	
		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 22.13-10
Cutset Report Internal Flooding Sensitivity Study
CDF = 3.30 E-9/year

#	Cutset Probability	Event Probability	Event	Description
		1.50E-04	E50-SQV-CC-INJ_ALL	CCF of all components in group 'E50-SQV-CC-INJ'
		1.61E-01	XXX-XHE-FO-DEPRESS	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION
186	1.41E-12	5.82E-04	%FL_TB-P41B-L	
		1.00E-04	C63-CCFSOFTWARE_S	ESF SPURIOUS COMMON CAUSE SOFTWARE FAILURE
		1.50E-04	E50-SQV-CC-INJ_ALL	CCF of all components in group 'E50-SQV-CC-INJ'
		1.61E-01	XXX-XHE-FO-DEPRESS	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION
187	1.40E-12	4.68E-04	%FL_SF-Y41-S	
		3.00E-05	C63-DTM-FC-ESFLG_ALL	CCF of all components in group 'C63-DTM-FC-ESFLG'
		1.00E-04	C72-CCFSOFTWARE	COMMON CAUSE FAILURE OF DPS PROCESSORS
188	1.33E-12	4.42E-03	%FL_SF-P41A-S	
		3.00E-05	C63-DTM-FC-ESFLG_ALL	CCF of all components in group 'C63-DTM-FC-ESFLG'
		1.00E-05	C72-LOG-FC-D_1_2	CCF of two components: C72-LOG-FC-D1DPS & C72-LOG-FC-D2DPS
189	1.33E-12	4.42E-03	%FL_SF-P41A-S	
		3.00E-05	C63-DTM-FC-ESFLG_ALL	CCF of all components in group 'C63-DTM-FC-ESFLG'
		1.00E-05	C72-LOG-FC-D_1_3	CCF of two components: C72-LOG-FC-D1DPS & C72-LOG-FC-D3DPS
190	1.33E-12	4.42E-03	%FL_SF-P41A-S	
		3.00E-05	C63-DTM-FC-ESFLG_ALL	CCF of all components in group 'C63-DTM-FC-ESFLG'
		1.00E-05	C72-LOG-FC-D_2_3	CCF of two components: C72-LOG-FC-D2DPS & C72-LOG-FC-D3DPS
191	1.33E-12	4.42E-03	%FL_SF-P41B-S	
		3.00E-05	C63-DTM-FC-ESFLG_ALL	CCF of all components in group 'C63-DTM-FC-ESFLG'
		1.00E-05	C72-LOG-FC-D_1_2	CCF of two components: C72-LOG-FC-D1DPS & C72-LOG-FC-D2DPS
192	1.33E-12	4.42E-03	%FL_SF-P41B-S	
		3.00E-05	C63-DTM-FC-ESFLG_ALL	CCF of all components in group 'C63-DTM-FC-ESFLG'
		1.00E-05	C72-LOG-FC-D_1_3	CCF of two components: C72-LOG-FC-D1DPS & C72-LOG-FC-D3DPS
193	1.33E-12	4.42E-03	%FL_SF-P41B-S	

Table 22.13-10
Cutset Report Internal Flooding Sensitivity Study
CDF = 3.30 E-9/year

#	Cutset Probability	Event Probability	Event	Description
		3.00E-05	C63-DTM-FC-ESFLG_ALL	CCF of all components in group 'C63-DTM-FC-ESFLG'
		1.00E-05	C72-LOG-FC-D_2_3	CCF of two components: C72-LOG-FC-D2DPS & C72-LOG-FC-D3DPS
194	1.29E-12	4.30E-04	%FL_SF-P10-S	
		3.00E-05	C63-DTM-FC-ESFLG_ALL	CCF of all components in group 'C63-DTM-FC-ESFLG'
		1.00E-04	C72-CCFSOFTWARE	COMMON CAUSE FAILURE OF DPS PROCESSORS
195	1.29E-12	5.33E-04	%FL_SF-P41A-L	
		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
196	1.29E-12	5.33E-04	%FL_SF-P41A-L	
		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
197	1.29E-12	5.33E-04	%FL_SF-P41A-L	
		1.50E-04	B21-SQV-CC_ALL	CCF of all components in group 'B21-SQV-CC'
		1.00E-04	C63-CCFSOFTWARE_S	ESF SPURIOUS COMMON CAUSE SOFTWARE FAILURE
		1.61E-01	XXX-XHE-FO-LPMAKEUP	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION
198	1.29E-12	5.33E-04	%FL_SF-P41A-L	
		1.50E-04	B21-SQV-CC_ALL	CCF of all components in group 'B21-SQV-CC'
		1.00E-04	C63-CCFSOFTWARE_S	ESF SPURIOUS COMMON CAUSE SOFTWARE FAILURE
		1.61E-01	XXX-XHE-FO-DEPRESS	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION
199	1.29E-12	5.33E-04	%FL_SF-P41A-L	
		1.00E+00	B32-NONCONDENSE	Non condensable gasses form in ICS sufficiently to require venting

Table 22.13-10
Cutset Report Internal Flooding Sensitivity Study
CDF = 3.30 E-9/year

#	Cutset Probability	Event Probability	Event	Description
		1.00E-04	C63-CCFSOFTWARE	Common cause failure of software
		1.50E-04	E50-SQV-CC-INJ_ALL	CCF of all components in group 'E50-SQV-CC-INJ'
		1.61E-01	XXX-XHE-FO-DEPRESS	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION
200	1.29E-12	5.33E-04	%FL_SF-P41A-L	
		1.00E-04	C63-CCFSOFTWARE_S	ESF SPURIOUS COMMON CAUSE SOFTWARE FAILURE
		1.50E-04	E50-SQV-CC-INJ_ALL	CCF of all components in group 'E50-SQV-CC-INJ'
		1.61E-01	XXX-XHE-FO-DEPRESS	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION

Table 22.13-11
Importance Measures Report Fussell-Vesely and Risk Achievement Worth
Internal Flooding Sensitivity Study
CDF = 3.30 E-9/year

Event Name	Probability	Fus Ves	RAW	Description
B21-ACV-OC-F111A	2.40E-05	3.76E-06	1.16	AIR-TESTABLE CHECK VALVE F111A FAILS TO REMAIN OPEN
B21-ACV-OC-F111B	2.40E-05	4.70E-06	1.19	AIR-TESTABLE CHECK VALVE F111B FAILS TO REMAIN OPEN
B21-SQV-CC_ALL	1.50E-04	1.18E-01	786.52	CCF of all components in group 'B21-SQV-CC'
B21-SRV-CC_ALL	5.85E-04	1.40E-04	1.24	CCF of all components in group 'B21-SRV-CC'
B21-SRV-OO-ANYSRV1	6.00E-03	6.86E-03	2.14	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
B21-SRV-OO-ANYSRV10	6.00E-03	6.86E-03	2.14	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
B21-SRV-OO-ANYSRV11	6.00E-03	6.86E-03	2.14	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
B21-SRV-OO-ANYSRV12	6.00E-03	6.86E-03	2.14	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
B21-SRV-OO-ANYSRV13	6.00E-03	6.86E-03	2.14	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
B21-SRV-OO-ANYSRV14	6.00E-03	6.86E-03	2.14	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
B21-SRV-OO-ANYSRV15	6.00E-03	6.86E-03	2.14	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
B21-SRV-OO-ANYSRV16	6.00E-03	6.86E-03	2.14	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
B21-SRV-OO-ANYSRV17	6.00E-03	6.86E-03	2.14	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
B21-SRV-OO-ANYSRV18	6.00E-03	6.86E-03	2.14	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
B21-SRV-OO-ANYSRV2	6.00E-03	6.86E-03	2.14	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
B21-SRV-OO-ANYSRV3	6.00E-03	6.86E-03	2.14	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
B21-SRV-OO-ANYSRV4	6.00E-03	6.86E-03	2.14	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
B21-SRV-OO-ANYSRV5	6.00E-03	6.86E-03	2.14	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
B21-SRV-OO-ANYSRV6	6.00E-03	6.86E-03	2.14	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
B21-SRV-OO-ANYSRV7	6.00E-03	6.86E-03	2.14	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
B21-SRV-OO-ANYSRV8	6.00E-03	6.86E-03	2.14	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE
B21-SRV-OO-ANYSRV9	6.00E-03	6.86E-03	2.14	SAFETY/RELIEF VALVE FAILS TO RE-CLOSE

Table 22.13-11
Importance Measures Report Fussell-Vesely and Risk Achievement Worth
Internal Flooding Sensitivity Study
CDF = 3.30 E-9/year

Event Name	Probability	Fus Ves	RAW	Description
B21-SRV-OO-F006A	6.00E-03	1.12E-03	1.18	SAFETY/RELIEF VALVE F006A FAILS TO RE-CLOSE
B21-SRV-OO-F006B	6.00E-03	1.12E-03	1.18	SAFETY/RELIEF VALVE F006B FAILS TO RE-CLOSE
B21-SRV-OO-F006C	6.00E-03	1.12E-03	1.18	SAFETY/RELIEF VALVE F006C FAILS TO RE-CLOSE
B21-SRV-OO-F006D	6.00E-03	1.12E-03	1.18	SAFETY/RELIEF VALVE F006D FAILS TO RE-CLOSE
B21-SRV-OO-F006E	6.00E-03	1.12E-03	1.18	SAFETY/RELIEF VALVE F006E FAILS TO RE-CLOSE
B21-SRV-OO-F006F	6.00E-03	1.12E-03	1.18	SAFETY/RELIEF VALVE F006F FAILS TO RE-CLOSE
B21-SRV-OO-F006G	6.00E-03	1.12E-03	1.18	SAFETY/RELIEF VALVE F006G FAILS TO RE-CLOSE
B21-SRV-OO-F006H	6.00E-03	1.12E-03	1.18	SAFETY/RELIEF VALVE F006H FAILS TO RE-CLOSE
B21-SRV-OO-F006J	6.00E-03	1.12E-03	1.18	SAFETY/RELIEF VALVE F006J FAILS TO RE-CLOSE
B21-SRV-OO-F006K	6.00E-03	1.12E-03	1.18	SAFETY/RELIEF VALVE F006K FAILS TO RE-CLOSE
B21-UV_-CC-F102_1_2	2.99E-06	1.96E-05	7.45	CCF of two components: B21-UV_-CC-F102A & B21-UV_-CC-F102B
B21-UV_-CC-F102A	1.00E-04	2.24E-05	1.22	CHECK VALVE F102A FAILS TO OPEN
B21-UV_-CC-F102B	1.00E-04	3.27E-05	1.32	CHECK VALVE F102B FAILS TO OPEN
B21-UV_-CC-F111_1_2	2.99E-06	1.96E-05	7.45	CCF of two components: B21-UV_-CC-F111A & B21-UV_-CC-F111B
B21-UV_-CC-F111A	1.00E-04	2.24E-05	1.22	CHECK VALVE F111A FAILS TO OPEN
B21-UV_-CC-F111B	1.00E-04	3.27E-05	1.32	CHECK VALVE F111B FAILS TO OPEN
B21-XHE-FO-6OPEN	1.61E-03	4.67E-04	1.29	OPERATOR FAILS TO OPEN 6/10 SRVs
B32-ACC-FO-A105A	2.40E-06	3.04E-05	13.6	Nitrogen or Air Accumulator Fails
B32-ACC-FO-A105B	2.40E-06	3.04E-05	13.6	Nitrogen or Air Accumulator Fails
B32-HOV-OC-F001A	2.40E-06	8.12E-05	34.22	ELECTRO-HYDRAULIC VALVE FAILS TO REMAIN OPEN
B32-HOV-OC-F001B	2.40E-06	8.12E-05	34.22	ELECTRO-HYDRAULIC VALVE FAILS TO REMAIN OPEN
B32-HOV-OC-F001C	2.40E-06	8.12E-05	34.22	ELECTRO-HYDRAULIC VALVE FAILS TO REMAIN OPEN

Table 22.13-11
Importance Measures Report Fussell-Vesely and Risk Achievement Worth
Internal Flooding Sensitivity Study
CDF = 3.30 E-9/year

Event Name	Probability	Fus Ves	RAW	Description
B32-HOV-OC-F001D	2.40E-06	8.12E-05	34.22	ELECTRO-HYDRAULIC VALVE FAILS TO REMAIN OPEN
B32-HOV-OC-F004A	2.40E-06	8.12E-05	34.22	ELECTRO-HYDRAULIC VALVE FAILS TO REMAIN OPEN
B32-HOV-OC-F004B	2.40E-06	8.12E-05	34.22	ELECTRO-HYDRAULIC VALVE FAILS TO REMAIN OPEN
B32-HOV-OC-F004C	2.40E-06	8.12E-05	34.22	ELECTRO-HYDRAULIC VALVE FAILS TO REMAIN OPEN
B32-HOV-OC-F004D	2.40E-06	8.12E-05	34.22	ELECTRO-HYDRAULIC VALVE FAILS TO REMAIN OPEN
B32-HX_-PG_1_2	9.02E-08	2.63E-05	286.64	CCF of two components: B32-HX_-PG-HX001A & B32-HX_-PG-HX001B
B32-HX_-PG_1_3	9.02E-08	2.63E-05	286.64	CCF of two components: B32-HX_-PG-HX001A & B32-HX_-PG-HX001C
B32-HX_-PG_1_4	9.02E-08	2.63E-05	286.64	CCF of two components: B32-HX_-PG-HX001A & B32-HX_-PG-HX001D
B32-HX_-PG_1_6	9.02E-08	2.63E-05	286.64	CCF of two components: B32-HX_-PG-HX001A & B32-HX_-PG-HX002B
B32-HX_-PG_1_7	9.02E-08	2.63E-05	286.64	CCF of two components: B32-HX_-PG-HX001A & B32-HX_-PG-HX002C
B32-HX_-PG_1_8	9.02E-08	2.63E-05	286.64	CCF of two components: B32-HX_-PG-HX001A & B32-HX_-PG-HX002D
B32-HX_-PG_2_3	9.02E-08	2.63E-05	286.64	CCF of two components: B32-HX_-PG-HX001B & B32-HX_-PG-HX001C
B32-HX_-PG_2_4	9.02E-08	2.63E-05	286.64	CCF of two components: B32-HX_-PG-HX001B & B32-HX_-PG-HX001D
B32-HX_-PG_2_5	9.02E-08	2.63E-05	286.64	CCF of two components: B32-HX_-PG-HX001B & B32-HX_-PG-HX002A
B32-HX_-PG_2_7	9.02E-08	2.63E-05	286.64	CCF of two components: B32-HX_-PG-HX001B & B32-HX_-PG-HX002C
B32-HX_-PG_2_8	9.02E-08	2.63E-05	286.64	CCF of two components: B32-HX_-PG-HX001B & B32-HX_-PG-HX002D
B32-HX_-PG_3_4	9.02E-08	2.63E-05	286.64	CCF of two components: B32-HX_-PG-HX001C & B32-HX_-PG-HX001D
B32-HX_-PG_3_5	9.02E-08	2.63E-05	286.64	CCF of two components: B32-HX_-PG-HX001C & B32-HX_-PG-HX002A
B32-HX_-PG_3_6	9.02E-08	2.63E-05	286.64	CCF of two components: B32-HX_-PG-HX001C & B32-HX_-PG-HX002B
B32-HX_-PG_3_8	9.02E-08	2.63E-05	286.64	CCF of two components: B32-HX_-PG-HX001C & B32-HX_-PG-HX002D
B32-HX_-PG_4_5	9.02E-08	2.63E-05	286.64	CCF of two components: B32-HX_-PG-HX001D & B32-HX_-PG-HX002A
B32-HX_-PG_4_6	9.02E-08	2.63E-05	286.64	CCF of two components: B32-HX_-PG-HX001D & B32-HX_-PG-HX002B

Table 22.13-11
Importance Measures Report Fussell-Vesely and Risk Achievement Worth
Internal Flooding Sensitivity Study
CDF = 3.30 E-9/year

Event Name	Probability	Fus Ves	RAW	Description
B32-HX_-PG_4_7	9.02E-08	2.63E-05	286.64	CCF of two components: B32-HX_-PG-HX001D & B32-HX_-PG-HX002C
B32-HX_-PG_5_6	9.02E-08	2.63E-05	286.64	CCF of two components: B32-HX_-PG-HX002A & B32-HX_-PG-HX002B
B32-HX_-PG_5_7	9.02E-08	2.63E-05	286.64	CCF of two components: B32-HX_-PG-HX002A & B32-HX_-PG-HX002C
B32-HX_-PG_5_8	9.02E-08	2.63E-05	286.64	CCF of two components: B32-HX_-PG-HX002A & B32-HX_-PG-HX002D
B32-HX_-PG_6_7	9.02E-08	2.63E-05	286.64	CCF of two components: B32-HX_-PG-HX002B & B32-HX_-PG-HX002C
B32-HX_-PG_6_8	9.02E-08	2.63E-05	286.64	CCF of two components: B32-HX_-PG-HX002B & B32-HX_-PG-HX002D
B32-HX_-PG_7_8	9.02E-08	2.63E-05	286.64	CCF of two components: B32-HX_-PG-HX002C & B32-HX_-PG-HX002D
B32-HX_-PG_ALL	5.68E-07	1.81E-04	318.02	CCF of all components in group 'B32-HX_-PG'
B32-HX_-PG-HX001A	2.40E-05	9.22E-04	39.25	Heat Exchanger HX001A Plugs
B32-HX_-PG-HX001B	2.40E-05	9.22E-04	39.25	Heat Exchanger HX001B Plugs
B32-HX_-PG-HX001C	2.40E-05	9.22E-04	39.25	Heat Exchanger HX001C Plugs
B32-HX_-PG-HX001D	2.40E-05	9.22E-04	39.25	Heat Exchanger HX001D Plugs
B32-HX_-PG-HX002A	2.40E-05	9.22E-04	39.25	Heat Exchanger HX002A Plugs
B32-HX_-PG-HX002B	2.40E-05	9.22E-04	39.25	Heat Exchanger HX002B Plugs
B32-HX_-PG-HX002C	2.40E-05	9.22E-04	39.25	Heat Exchanger HX002A Plugs
B32-HX_-PG-HX002D	2.40E-05	9.22E-04	39.25	Heat Exchanger HX002D Plugs
B32-NONCONDENSE	1.00E+00	1.28E-01	1	Non condensable gasses form in ICS sufficiently to require venting
B32-NPO-CC-F105A	1.00E-04	8.93E-03	90.19	F105A Fails to Open
B32-NPO-CC-F105B	1.00E-04	8.93E-03	90.19	F105B fails to open
B32-NPO-CC-XCONN_1_2	9.65E-06	1.59E-03	165.45	CCF of two components: B32-NPO-CC-F105A & B32-NPO-CC-F105B
B32-NPO-OC-F002A	2.40E-06	8.12E-05	34.22	F002A Spuriously closes
B32-NPO-OC-F002B	2.40E-06	8.12E-05	34.22	F002B Spuriously closes

Table 22.13-11
Importance Measures Report Fussell-Vesely and Risk Achievement Worth
Internal Flooding Sensitivity Study
CDF = 3.30 E-9/year

Event Name	Probability	Fus Ves	RAW	Description
B32-NPO-OC-F002C	2.40E-06	8.12E-05	34.22	F002C Spuriously closes
B32-NPO-OC-F002D	2.40E-06	8.12E-05	34.22	F002D Spuriously closes
B32-NPO-OC-F003A	2.40E-06	8.12E-05	34.22	F003A Spuriously closes
B32-NPO-OC-F003B	2.40E-06	8.12E-05	34.22	F003B Spuriously closes
B32-NPO-OC-F003C	2.40E-06	8.12E-05	34.22	F003C Spuriously closes
B32-NPO-OC-F003D	2.40E-06	8.12E-05	34.22	F003D Spuriously closes
B32-SOV-FD-F012A	1.00E-03	4.60E-05	1.04	F012A fails to open on demand
B32-SOV-FD-F012B	1.00E-03	4.60E-05	1.04	SOLENOID VALVE (FAILURE TO DE-ENERGIZE)
B32-SOV-FD-F012C	1.00E-03	4.60E-05	1.04	SOLENOID VALVE (FAILURE TO DE-ENERGIZE)
B32-SOV-FD-F012D	1.00E-03	4.60E-05	1.04	SOLENOID VALVE (FAILURE TO DE-ENERGIZE)
B32-SOV-FE-09/10_1_2	7.94E-06	4.65E-04	59.38	CCF of two components: B32-SOV-FE-F009A & B32-SOV-FE-F009B
B32-SOV-FE-09/10_1_2_3	2.65E-07	9.27E-06	35.28	CCF of three components: B32-SOV-FE-F009A & B32-SOV-FE-F009B & B32-SOV-FE-F009C
B32-SOV-FE-09/10_1_2_4	2.65E-07	9.27E-06	35.28	CCF of three components: B32-SOV-FE-F009A & B32-SOV-FE-F009B & B32-SOV-FE-F009D
B32-SOV-FE-09/10_1_2_5	2.65E-07	9.27E-06	35.28	CCF of three components: B32-SOV-FE-F009A & B32-SOV-FE-F009B & B32-SOV-FE-F010A
B32-SOV-FE-09/10_1_2_6	2.65E-07	9.27E-06	35.28	CCF of three components: B32-SOV-FE-F009A & B32-SOV-FE-F009B & B32-SOV-FE-F010B
B32-SOV-FE-09/10_1_2_7	2.65E-07	9.27E-06	35.28	CCF of three components: B32-SOV-FE-F009A & B32-SOV-FE-F009B & B32-SOV-FE-F010C

Table 22.13-11
Importance Measures Report Fussell-Vesely and Risk Achievement Worth
Internal Flooding Sensitivity Study
CDF = 3.30 E-9/year

Event Name	Probability	Fus Ves	RAW	Description
B32-SOV-FE-09/10_1_2_8	2.65E-07	9.27E-06	35.28	CCF of three components: B32-SOV-FE-F009A & B32-SOV-FE-F009B & B32-SOV-FE-F010D
B32-SOV-FE-09/10_1_3	7.94E-06	4.65E-04	59.38	CCF of two components: B32-SOV-FE-F009A & B32-SOV-FE-F009C
B32-SOV-FE-09/10_1_3_4	2.65E-07	9.27E-06	35.28	CCF of three components: B32-SOV-FE-F009A & B32-SOV-FE-F009C & B32-SOV-FE-F009D
B32-SOV-FE-09/10_1_3_5	2.65E-07	9.27E-06	35.28	CCF of three components: B32-SOV-FE-F009A & B32-SOV-FE-F009C & B32-SOV-FE-F010A
B32-SOV-FE-09/10_1_3_6	2.65E-07	9.27E-06	35.28	CCF of three components: B32-SOV-FE-F009A & B32-SOV-FE-F009C & B32-SOV-FE-F010B
B32-SOV-FE-09/10_1_3_7	2.65E-07	9.27E-06	35.28	CCF of three components: B32-SOV-FE-F009A & B32-SOV-FE-F009C & B32-SOV-FE-F010C
B32-SOV-FE-09/10_1_3_8	2.65E-07	9.27E-06	35.28	CCF of three components: B32-SOV-FE-F009A & B32-SOV-FE-F009C & B32-SOV-FE-F010D
B32-SOV-FE-09/10_1_4	7.94E-06	4.65E-04	59.38	CCF of two components: B32-SOV-FE-F009A & B32-SOV-FE-F009D
B32-SOV-FE-09/10_1_4_5	2.65E-07	9.27E-06	35.28	CCF of three components: B32-SOV-FE-F009A & B32-SOV-FE-F009D & B32-SOV-FE-F010A
B32-SOV-FE-09/10_1_4_6	2.65E-07	9.27E-06	35.28	CCF of three components: B32-SOV-FE-F009A & B32-SOV-FE-F009D & B32-SOV-FE-F010B
B32-SOV-FE-09/10_1_4_7	2.65E-07	9.27E-06	35.28	CCF of three components: B32-SOV-FE-F009A & B32-SOV-FE-F009D & B32-SOV-FE-F010C
B32-SOV-FE-09/10_1_4_8	2.65E-07	9.27E-06	35.28	CCF of three components: B32-SOV-FE-F009A & B32-SOV-FE-F009D & B32-SOV-FE-F010D

Table 22.13-11
Importance Measures Report Fussell-Vesely and Risk Achievement Worth
Internal Flooding Sensitivity Study
CDF = 3.30 E-9/year

Event Name	Probability	Fus Ves	RAW	Description
B32-SOV-FE-09/10_1_5	7.94E-06	3.14E-05	4.96	CCF of two components: B32-SOV-FE-F009A & B32-SOV-FE-F010A
B32-SOV-FE-09/10_1_5_6	2.65E-07	9.27E-06	35.28	CCF of three components: B32-SOV-FE-F009A & B32-SOV-FE-F010A & B32-SOV-FE-F010B
B32-SOV-FE-09/10_1_5_7	2.65E-07	9.27E-06	35.28	CCF of three components: B32-SOV-FE-F009A & B32-SOV-FE-F010A & B32-SOV-FE-F010C
B32-SOV-FE-09/10_1_5_8	2.65E-07	9.27E-06	35.28	CCF of three components: B32-SOV-FE-F009A & B32-SOV-FE-F010A & B32-SOV-FE-F010D
B32-SOV-FE-09/10_1_6	7.94E-06	4.65E-04	59.38	CCF of two components: B32-SOV-FE-F009A & B32-SOV-FE-F010B
B32-SOV-FE-09/10_1_6_7	2.65E-07	9.27E-06	35.28	CCF of three components: B32-SOV-FE-F009A & B32-SOV-FE-F010B & B32-SOV-FE-F010C
B32-SOV-FE-09/10_1_6_8	2.65E-07	9.27E-06	35.28	CCF of three components: B32-SOV-FE-F009A & B32-SOV-FE-F010B & B32-SOV-FE-F010D
B32-SOV-FE-09/10_1_7	7.94E-06	4.65E-04	59.38	CCF of two components: B32-SOV-FE-F009A & B32-SOV-FE-F010C
B32-SOV-FE-09/10_1_7_8	2.65E-07	9.27E-06	35.28	CCF of three components: B32-SOV-FE-F009A & B32-SOV-FE-F010C & B32-SOV-FE-F010D
B32-SOV-FE-09/10_1_8	7.94E-06	4.65E-04	59.38	CCF of two components: B32-SOV-FE-F009A & B32-SOV-FE-F010D
B32-SOV-FE-09/10_2_3	7.94E-06	4.65E-04	59.38	CCF of two components: B32-SOV-FE-F009B & B32-SOV-FE-F009C
B32-SOV-FE-09/10_2_3_4	2.65E-07	9.27E-06	35.28	CCF of three components: B32-SOV-FE-F009B & B32-SOV-FE-F009C & B32-SOV-FE-F009D
B32-SOV-FE-09/10_2_3_5	2.65E-07	9.27E-06	35.28	CCF of three components: B32-SOV-FE-F009B & B32-SOV-FE-F009C & B32-SOV-FE-F010A

Table 22.13-11
Importance Measures Report Fussell-Vesely and Risk Achievement Worth
Internal Flooding Sensitivity Study
CDF = 3.30 E-9/year

Event Name	Probability	Fus Ves	RAW	Description
B32-SOV-FE-09/10_2_3_6	2.65E-07	9.27E-06	35.28	CCF of three components: B32-SOV-FE-F009B & B32-SOV-FE-F009C & B32-SOV-FE-F010B
B32-SOV-FE-09/10_2_3_7	2.65E-07	9.27E-06	35.28	CCF of three components: B32-SOV-FE-F009B & B32-SOV-FE-F009C & B32-SOV-FE-F010C
B32-SOV-FE-09/10_2_3_8	2.65E-07	9.27E-06	35.28	CCF of three components: B32-SOV-FE-F009B & B32-SOV-FE-F009C & B32-SOV-FE-F010D
B32-SOV-FE-09/10_2_4	7.94E-06	4.65E-04	59.38	CCF of two components: B32-SOV-FE-F009B & B32-SOV-FE-F009D
B32-SOV-FE-09/10_2_4_5	2.65E-07	9.27E-06	35.28	CCF of three components: B32-SOV-FE-F009B & B32-SOV-FE-F009D & B32-SOV-FE-F010A
B32-SOV-FE-09/10_2_4_6	2.65E-07	9.27E-06	35.28	CCF of three components: B32-SOV-FE-F009B & B32-SOV-FE-F009D & B32-SOV-FE-F010B
B32-SOV-FE-09/10_2_4_7	2.65E-07	9.27E-06	35.28	CCF of three components: B32-SOV-FE-F009B & B32-SOV-FE-F009D & B32-SOV-FE-F010C
B32-SOV-FE-09/10_2_4_8	2.65E-07	9.27E-06	35.28	CCF of three components: B32-SOV-FE-F009B & B32-SOV-FE-F009D & B32-SOV-FE-F010D
B32-SOV-FE-09/10_2_5	7.94E-06	4.65E-04	59.38	CCF of two components: B32-SOV-FE-F009B & B32-SOV-FE-F010A
B32-SOV-FE-09/10_2_5_6	2.65E-07	9.27E-06	35.28	CCF of three components: B32-SOV-FE-F009B & B32-SOV-FE-F010A & B32-SOV-FE-F010B
B32-SOV-FE-09/10_2_5_7	2.65E-07	9.27E-06	35.28	CCF of three components: B32-SOV-FE-F009B & B32-SOV-FE-F010A & B32-SOV-FE-F010C
B32-SOV-FE-09/10_2_5_8	2.65E-07	9.27E-06	35.28	CCF of three components: B32-SOV-FE-F009B & B32-SOV-FE-F010A & B32-SOV-FE-F010D

Table 22.13-11
Importance Measures Report Fussell-Vesely and Risk Achievement Worth
Internal Flooding Sensitivity Study
CDF = 3.30 E-9/year

Event Name	Probability	Fus Ves	RAW	Description
B32-SOV-FE-09/10_2_6	7.94E-06	3.14E-05	4.96	CCF of two components: B32-SOV-FE-F009B & B32-SOV-FE-F010B
B32-SOV-FE-09/10_2_6_7	2.65E-07	9.27E-06	35.28	CCF of three components: B32-SOV-FE-F009B & B32-SOV-FE-F010B & B32-SOV-FE-F010C
B32-SOV-FE-09/10_2_6_8	2.65E-07	9.27E-06	35.28	CCF of three components: B32-SOV-FE-F009B & B32-SOV-FE-F010B & B32-SOV-FE-F010D
B32-SOV-FE-09/10_2_7	7.94E-06	4.65E-04	59.38	CCF of two components: B32-SOV-FE-F009B & B32-SOV-FE-F010C
B32-SOV-FE-09/10_2_7_8	2.65E-07	9.27E-06	35.28	CCF of three components: B32-SOV-FE-F009B & B32-SOV-FE-F010C & B32-SOV-FE-F010D
B32-SOV-FE-09/10_2_8	7.94E-06	4.65E-04	59.38	CCF of two components: B32-SOV-FE-F009B & B32-SOV-FE-F010D
B32-SOV-FE-09/10_3_4	7.94E-06	4.65E-04	59.38	CCF of two components: B32-SOV-FE-F009C & B32-SOV-FE-F009D
B32-SOV-FE-09/10_3_4_5	2.65E-07	9.27E-06	35.28	CCF of three components: B32-SOV-FE-F009C & B32-SOV-FE-F009D & B32-SOV-FE-F010A
B32-SOV-FE-09/10_3_4_6	2.65E-07	9.27E-06	35.28	CCF of three components: B32-SOV-FE-F009C & B32-SOV-FE-F009D & B32-SOV-FE-F010B
B32-SOV-FE-09/10_3_4_7	2.65E-07	9.27E-06	35.28	CCF of three components: B32-SOV-FE-F009C & B32-SOV-FE-F009D & B32-SOV-FE-F010C
B32-SOV-FE-09/10_3_4_8	2.65E-07	9.27E-06	35.28	CCF of three components: B32-SOV-FE-F009C & B32-SOV-FE-F009D & B32-SOV-FE-F010D
B32-SOV-FE-09/10_3_5	7.94E-06	4.65E-04	59.38	CCF of two components: B32-SOV-FE-F009C & B32-SOV-FE-F010A
B32-SOV-FE-09/10_3_5_6	2.65E-07	9.27E-06	35.28	CCF of three components: B32-SOV-FE-F009C & B32-SOV-FE-F010A & B32-SOV-FE-F010B

Table 22.13-11
Importance Measures Report Fussell-Vesely and Risk Achievement Worth
Internal Flooding Sensitivity Study
CDF = 3.30 E-9/year

Event Name	Probability	Fus Ves	RAW	Description
B32-SOV-FE-09/10_3_5_7	2.65E-07	9.27E-06	35.28	CCF of three components: B32-SOV-FE-F009C & B32-SOV-FE-F010A & B32-SOV-FE-F010C
B32-SOV-FE-09/10_3_5_8	2.65E-07	9.27E-06	35.28	CCF of three components: B32-SOV-FE-F009C & B32-SOV-FE-F010A & B32-SOV-FE-F010D
B32-SOV-FE-09/10_3_6	7.94E-06	4.65E-04	59.38	CCF of two components: B32-SOV-FE-F009C & B32-SOV-FE-F010B
B32-SOV-FE-09/10_3_6_7	2.65E-07	9.27E-06	35.28	CCF of three components: B32-SOV-FE-F009C & B32-SOV-FE-F010B & B32-SOV-FE-F010C
B32-SOV-FE-09/10_3_6_8	2.65E-07	9.27E-06	35.28	CCF of three components: B32-SOV-FE-F009C & B32-SOV-FE-F010B & B32-SOV-FE-F010D
B32-SOV-FE-09/10_3_7	7.94E-06	3.14E-05	4.96	CCF of two components: B32-SOV-FE-F009C & B32-SOV-FE-F010C
B32-SOV-FE-09/10_3_7_8	2.65E-07	9.27E-06	35.28	CCF of three components: B32-SOV-FE-F009C & B32-SOV-FE-F010C & B32-SOV-FE-F010D
B32-SOV-FE-09/10_3_8	7.94E-06	4.65E-04	59.38	CCF of two components: B32-SOV-FE-F009C & B32-SOV-FE-F010D
B32-SOV-FE-09/10_4_5	7.94E-06	4.65E-04	59.38	CCF of two components: B32-SOV-FE-F009D & B32-SOV-FE-F010A
B32-SOV-FE-09/10_4_5_6	2.65E-07	9.27E-06	35.28	CCF of three components: B32-SOV-FE-F009D & B32-SOV-FE-F010A & B32-SOV-FE-F010B
B32-SOV-FE-09/10_4_5_7	2.65E-07	9.27E-06	35.28	CCF of three components: B32-SOV-FE-F009D & B32-SOV-FE-F010A & B32-SOV-FE-F010C
B32-SOV-FE-09/10_4_5_8	2.65E-07	9.27E-06	35.28	CCF of three components: B32-SOV-FE-F009D & B32-SOV-FE-F010A & B32-SOV-FE-F010D
B32-SOV-FE-09/10_4_6	7.94E-06	4.65E-04	59.38	CCF of two components: B32-SOV-FE-F009D & B32-SOV-FE-F010B

Table 22.13-11
Importance Measures Report Fussell-Vesely and Risk Achievement Worth
Internal Flooding Sensitivity Study
CDF = 3.30 E-9/year

Event Name	Probability	Fus Ves	RAW	Description
B32-SOV-FE-09/10_4_6_7	2.65E-07	9.27E-06	35.28	CCF of three components: B32-SOV-FE-F009D & B32-SOV-FE-F010B & B32-SOV-FE-F010C
B32-SOV-FE-09/10_4_6_8	2.65E-07	9.27E-06	35.28	CCF of three components: B32-SOV-FE-F009D & B32-SOV-FE-F010B & B32-SOV-FE-F010D
B32-SOV-FE-09/10_4_7	7.94E-06	4.65E-04	59.38	CCF of two components: B32-SOV-FE-F009D & B32-SOV-FE-F010C
B32-SOV-FE-09/10_4_7_8	2.65E-07	9.27E-06	35.28	CCF of three components: B32-SOV-FE-F009D & B32-SOV-FE-F010C & B32-SOV-FE-F010D
B32-SOV-FE-09/10_4_8	7.94E-06	3.14E-05	4.96	CCF of two components: B32-SOV-FE-F009D & B32-SOV-FE-F010D
B32-SOV-FE-09/10_5_6	7.94E-06	4.65E-04	59.38	CCF of two components: B32-SOV-FE-F010A & B32-SOV-FE-F010B
B32-SOV-FE-09/10_5_6_7	2.65E-07	9.27E-06	35.28	CCF of three components: B32-SOV-FE-F010A & B32-SOV-FE-F010B & B32-SOV-FE-F010C
B32-SOV-FE-09/10_5_6_8	2.65E-07	9.27E-06	35.28	CCF of three components: B32-SOV-FE-F010A & B32-SOV-FE-F010B & B32-SOV-FE-F010D
B32-SOV-FE-09/10_5_7	7.94E-06	4.65E-04	59.38	CCF of two components: B32-SOV-FE-F010A & B32-SOV-FE-F010C
B32-SOV-FE-09/10_5_7_8	2.65E-07	9.27E-06	35.28	CCF of three components: B32-SOV-FE-F010A & B32-SOV-FE-F010C & B32-SOV-FE-F010D
B32-SOV-FE-09/10_5_8	7.94E-06	4.65E-04	59.38	CCF of two components: B32-SOV-FE-F010A & B32-SOV-FE-F010D
B32-SOV-FE-09/10_6_7	7.94E-06	4.65E-04	59.38	CCF of two components: B32-SOV-FE-F010B & B32-SOV-FE-F010C
B32-SOV-FE-09/10_6_7_8	2.65E-07	9.27E-06	35.28	CCF of three components: B32-SOV-FE-F010B & B32-SOV-FE-F010C & B32-SOV-FE-F010D
B32-SOV-FE-09/10_6_8	7.94E-06	4.65E-04	59.38	CCF of two components: B32-SOV-FE-F010B & B32-SOV-FE-F010D
B32-SOV-FE-09/10_7_8	7.94E-06	4.65E-04	59.38	CCF of two components: B32-SOV-FE-F010C & B32-SOV-FE-F010D

Table 22.13-11
Importance Measures Report Fussell-Vesely and Risk Achievement Worth
Internal Flooding Sensitivity Study
CDF = 3.30 E-9/year

Event Name	Probability	Fus Ves	RAW	Description
B32-SOV-FE-09/10_ALL	5.00E-05	3.11E-03	63.02	CCF of all components in group 'B32-SOV-FE-09/10'
B32-SOV-FE-F009A	1.00E-03	7.71E-03	8.68	F009A fails to open on demand
B32-SOV-FE-F009B	1.00E-03	7.71E-03	8.68	SOLENOID VALVE (FAILURE TO ENERGIZE)
B32-SOV-FE-F009C	1.00E-03	7.71E-03	8.68	SOLENOID VALVE (FAILURE TO ENERGIZE)
B32-SOV-FE-F009D	1.00E-03	7.71E-03	8.68	SOLENOID VALVE (FAILURE TO ENERGIZE)
B32-SOV-FE-F010A	1.00E-03	7.71E-03	8.68	F010A fails to open on demand
B32-SOV-FE-F010B	1.00E-03	7.71E-03	8.68	SOLENOID VALVE (FAILURE TO ENERGIZE)
B32-SOV-FE-F010C	1.00E-03	7.71E-03	8.68	SOLENOID VALVE (FAILURE TO ENERGIZE)
B32-SOV-FE-F010D	1.00E-03	7.71E-03	8.68	SOLENOID VALVE (FAILURE TO ENERGIZE)
B32-SQV-CC-F104A	3.00E-03	2.59E-02	9.61	F104A FAILS TO OPEN
B32-SQV-CC-F104B	3.00E-03	2.59E-02	9.61	F104B FAILS TO OPEN
B32-SQV-CC-XCONN_1_2	3.33E-04	5.35E-03	17.01	CCF of two components: B32-SQV-CC-F104A & B32-SQV-CC-F104B
B32-TM-LOOPA-IND	3.84E-02	1.65E-02	1.41	ICS LOOP A IN TEST OR MAINTENANCE BY ITSELF
B32-TM-LOOPA-MULT	1.37E-03	2.42E-03	2.75	ICS LOOP A IN TEST OR MAINTENANCE, MULTIPLE LOOPS
B32-TM-LOOPB-IND	3.84E-02	1.65E-02	1.41	ICS LOOP B IN TEST OR MAINTENANCE BY ITSELF
B32-TM-LOOPB-MULT	1.37E-03	2.42E-03	2.75	ICS LOOP B IN TEST OR MAINTENANCE, MULTIPLE LOOPS
B32-TM-LOOPC-IND	3.84E-02	1.65E-02	1.41	ICS LOOP C IN TEST OR MAINTENANCE BY ITSELF
B32-TM-LOOPC-MULT	1.37E-03	2.42E-03	2.75	ICS LOOP C IN TEST OR MAINTENANCE, MULTIPLE LOOPS
B32-TM-LOOPD-IND	3.84E-02	1.65E-02	1.41	ICS LOOP D IN TEST OR MAINTENANCE BY ITSELF
B32-TM-LOOPD-MULT	1.37E-03	2.42E-03	2.75	ICS LOOP D IN TEST OR MAINTENANCE, MULTIPLE LOOPS
B32-UV_-OO-F105A	1.00E-03	1.81E-02	19	CHECK VALVE FAILS TO CLOSE
B32-UV_-OO-F105B	1.00E-03	1.81E-02	19	CHECK VALVE FAILS TO CLOSE

Table 22.13-11
Importance Measures Report Fussell-Vesely and Risk Achievement Worth
Internal Flooding Sensitivity Study
CDF = 3.30 E-9/year

Event Name	Probability	Fus Ves	RAW	Description
B32-UV_-OO-XCONN-ACC_1_2	2.67E-05	8.14E-04	31.36	CCF of two components: B32-UV_-OO-F105A & B32-UV_-OO-F105B
B32-UV_-RL-F105A	2.40E-05	3.78E-04	16.69	CHECK VALVE REVERSE LEAKAGE
B32-UV_-RL-F105B	2.40E-05	3.78E-04	16.69	CHECK VALVE REVERSE LEAKAGE
B32-XHE-FO-VENT	1.76E-01	8.05E-02	1.38	Operator fails to open vent
BOPCWS-SYS-FAILS	1.00E-03	1.50E-04	1.15	BALANCE OF PLANT CHILLED WATER SYSTEM FAILS
C11-LOG-FC-CHNLA	3.60E-04	7.61E-05	1.21	LOGIC UNIT FAILS TO FUNCTION
C11-LOG-FC-CHNLB	3.60E-04	7.61E-05	1.21	LOGIC UNIT FAILS TO FUNCTION
C12-ACV-CC-SCRV126	6.90E-09	1.61E-04	2.28E+04	CCF TO OPEN OF AIR OPERATED SCRAM VALVE AOV-126
C12-ACV-OO-F012	2.00E-03	1.15E-03	1.57	AIR OPERATED VALVE F012 FAILS TO CLOSE
C12-ACV-OO-F012-F030_1_2	1.93E-04	7.00E-05	1.36	CCF of two components: C12-ACV-OO-F012 & C12-ACV-OO-F030
C12-ACV-OO-F030	2.00E-03	1.15E-03	1.57	AIR OPERATED VALVE F030 FAILS TO CLOSE
C12-BV_-RE-F003B	1.21E-02	1.18E-03	1.1	MISPOSITION OF VALVE F003B
C12-BV_-RE-F013A	4.84E-02	2.81E-03	1.05	MISPOSITION OF VALVE F013A
C12-BV_-RE-F013B	4.84E-02	2.81E-03	1.05	MISPOSITION OF VALVE F013B
C12-BV_-RE-F015A	4.84E-02	2.81E-03	1.05	MISPOSITION OF VALVE F015A
C12-BV_-RE-F015B	4.84E-02	2.81E-03	1.05	MISPOSITION OF VALVE F015B
C12-BV_-RE-F018A	1.21E-02	1.25E-03	1.1	MISPOSITION OF VALVE F018A
C12-BV_-RE-F018B	1.21E-02	1.18E-03	1.1	MISPOSITION OF VALVE FO18B
C12-BV_-RE-F021A	1.21E-02	1.25E-03	1.1	MISPOSITION OF VALVE F021A
C12-BV_-RE-F021B	1.21E-02	1.18E-03	1.1	MISPOSITION OF VALVE F021B
C12-BV_-RE-F064	4.84E-02	1.54E-04	1	MISPOSITION OF OPEN VALVE F064
C12-HX_-LK-CRDA	2.40E-05	4.70E-06	1.19	CRD PUMP A OIL COOLER (LEAK OR RUPTURE)

Table 22.13-11
Importance Measures Report Fussell-Vesely and Risk Achievement Worth
Internal Flooding Sensitivity Study
CDF = 3.30 E-9/year

Event Name	Probability	Fus Ves	RAW	Description
C12-INV-FC-X_1_2	4.00E-05	7.46E-06	1.18	CCF of two components: C12-INV-FC-G1X205 & C12-INV-FC-G2X205
C12-INV-FC-X_1_2_3	7.99E-05	1.53E-05	1.19	CCF of three components: C12-INV-FC-G1X205 & C12-INV-FC-G2X205 & C12-INV-FC-G3X2
C12-INV-FC-X_1_3	4.00E-05	7.46E-06	1.18	CCF of two components: C12-INV-FC-G1X205 & C12-INV-FC-G3X205
C12-INV-FC-X_2_3	4.00E-05	7.46E-06	1.18	CCF of two components: C12-INV-FC-G2X205 & C12-INV-FC-G3X205
C12-MOV-CC-F014_1_2	2.11E-04	8.42E-05	1.39	CCF of two components: C12-MOV-CC-F014A & C12-MOV-CC-F014B
C12-MOV-CC-F014A	4.00E-03	1.43E-04	1.04	MOTOR OPER. VALVE F014A FAILS TO OPEN
C12-MOV-CC-F014B	4.00E-03	1.43E-04	1.04	MOTOR OPER. VALVE F014B FAILS TO OPEN
C12-MOV-CC-F020_1_2	2.11E-04	8.42E-05	1.39	CCF of two components: C12-MOV-CC-F020A & C12-MOV-CC-F020B
C12-MOV-CC-F020A	4.00E-03	3.68E-04	1.09	MOTOR OPER. VALVE F020A FAILS TO OPEN
C12-MOV-CC-F020B	4.00E-03	3.52E-04	1.09	MOTOR OPER. VALVE F020B FAILS TO OPEN
C12-MOV-CC-F023	4.00E-03	2.44E-03	1.6	MOTOR OPERATED VALVE F023 FAILS TO OPEN
C12-MOV-CC-F070_1_2	2.11E-04	1.59E-05	1.07	CCF of two components: C12-MOV-CC-F070A & C12-MOV-CC-F070B
C12-MOV-CO-F024	1.20E-05	1.81E-06	1.15	MOTOR OPERATED VALVE F024 FAILS TO REMAIN CLOSED
C12-MOV-CO-F062A	1.20E-05	1.81E-06	1.15	MOTOR OPERATED VALVE F062A FAILS TO REMAIN CLOSE
C12-MOV-CO-F062B	1.20E-05	1.81E-06	1.15	MOTOR OPERATED VALVE F062B FAILS TO REMAIN CLOSED
C12-MOV-OO-F024	4.00E-03	2.44E-03	1.6	MOTOR OPERATED VALVE F024 FAILS TO CLOSE
C12-MOV-OO-F062A	4.00E-03	2.44E-03	1.6	MOTOR OPERATED VALVE F062A FAILS TO CLOSE
C12-MOV-OO-F062B	4.00E-03	2.44E-03	1.6	MOTOR OPERATED VALVE F062B FAILS TO CLOSE
C12-MP_-FR-C001_1_2	3.96E-05	9.81E-06	1.24	CCF of two components: C12-MP_-FR-C001A & C12-MP_-FR-C001B
C12-MP_-FR-C001A	6.00E-04	3.37E-05	1.05	MOTOR-DRIVEN PUMP C001A FAILS TO RUN
C12-MP_-FR-C001AOIL	6.00E-04	3.37E-05	1.05	MOTOR-DRIVEN AUX. OIL PUMP FOR C001A FAILS TO RUN

Table 22.13-11
Importance Measures Report Fussell-Vesely and Risk Achievement Worth
Internal Flooding Sensitivity Study
CDF = 3.30 E-9/year

Event Name	Probability	Fus Ves	RAW	Description
C12-MP_-FR-C001B	6.00E-04	3.25E-05	1.05	MOTOR-DRIVEN PUMP C001B FAILS TO RUN
C12-MP_-FR-C001BOIL	6.00E-04	3.25E-05	1.05	MOTOR-DRIVEN AUX. OIL PUMP FOR C001B FAILS TO RUN
C12-MP_-FR-C001OIL_1_2	1.41E-05	2.15E-06	1.15	CCF of two components: C12-MP_-FR-C001AOIL & C12-MP_-FR-C001BOIL
C12-MP_-FS-C001B	2.00E-03	1.37E-04	1.07	MOTOR-DRIVEN PUMP C001B FAILS TO START
C12-MP_-FS-C001BOIL	2.00E-03	1.37E-04	1.07	MOTOR-DRIVEN AUX. OIL PUMP FOR C001B FAILS TO START
C12-ROD-CF-SCRAM	2.50E-07	5.53E-01	2.20E+06	CCF OF CONTROL RODS TO INSERT
C12-SOV-FD-SCRV139	1.70E-06	1.04E-02	6.14E+03	CCF TO OPEN (VENT) OF SCRAM PILOT SOLENOID VALVES SOV-139
C12-SYS-TM-TRAINB	3.00E-03	2.45E-04	1.08	TRAIN B IN MAINTENANCE
C12-UV_-CC-F022	1.00E-04	3.05E-05	1.3	CHECK VALVE F022 FAILS TO OPEN
C12-XHE-FO-LEVEL2	3.21E-02	1.24E-05	1	Operator fails to back-up CRD actuation
C41-ACV-OC-F002A	3.72E-04	1.52E-03	5.08	AIR OPERATED VALVE F002A FAILS TO REMAIN OPEN
C41-ACV-OC-F002B	3.72E-04	1.52E-03	5.08	AIR OPERATED VALVE F002B FAILS TO REMAIN OPEN
C41-ACV-OC-F002C	3.72E-04	1.52E-03	5.08	AIR OPERATED VALVE F002C FAILS TO REMAIN OPEN
C41-ACV-OC-F002D	3.72E-04	1.52E-03	5.08	AIR OPERATED VALVE F002D FAILS TO REMAIN OPEN
C41-BV_-OC-F001A	2.63E-04	1.07E-03	5.07	MAINTENANCE VALVE F001A PLUGS/TRANSFERS CLOSED
C41-BV_-OC-F001B	2.63E-04	1.07E-03	5.07	MAINTENANCE VALVE F001B PLUGS/TRANSFERS CLOSED
C41-BV_-OC-F006A	2.63E-04	1.07E-03	5.07	MAINTENANCE VALVE F006A PLUGS/TRANSFERS CLOSED
C41-BV_-OC-F006B	2.63E-04	1.07E-03	5.07	MAINTENANCE VALVE F006B PLUGS/TRANSFERS CLOSED
C41-SQV-CC_1_2_3	5.56E-06	1.77E-05	4.15	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	1.77E-05	4.15	CCF of three components: C41-SQV-CC-F003A & C41-SQV-CC-F003B & C41-SQV-CC-F003D

Table 22.13-11
Importance Measures Report Fussell-Vesely and Risk Achievement Worth
Internal Flooding Sensitivity Study
CDF = 3.30 E-9/year

Event Name	Probability	Fus Ves	RAW	Description
C41-SQV-CC_1_3	5.56E-05	2.23E-04	5	CCF of two components: C41-SQV-CC-F003A & C41-SQV-CC-F003C
C41-SQV-CC_1_3_4	5.56E-06	1.77E-05	4.15	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	1.77E-05	4.15	CCF of three components: C41-SQV-CC-F003B & C41-SQV-CC-F003C & C41-SQV-CC-F003D
C41-SQV-CC_2_4	5.56E-05	2.23E-04	5	CCF of two components: C41-SQV-CC-F003B & C41-SQV-CC-F003D
C41-SQV-CC_ALL	1.50E-04	6.10E-04	5.06	CCF of all components in group 'C41-SQV-CC'
C41-SQV-CC-F003A	3.00E-03	3.25E-05	1.01	SQUIB VALVE F003A FAILS TO OPERATE
C41-SQV-CC-F003B	3.00E-03	3.25E-05	1.01	SQUIB VALVE F003B FAILS TO OPERATE
C41-SQV-CC-F003C	3.00E-03	3.25E-05	1.01	SQUIB VALVE F003C FAILS TO OPERATE
C41-SQV-CC-F003D	3.00E-03	3.25E-05	1.01	SQUIB VALVE F003D FAILS TO OPERATE
C41-TNK-RP-A001A	2.40E-06	6.12E-06	3.53	ACCUMULATOR A001A FAILS CATASTROPHICALLY
C41-TNK-RP-A001B	2.40E-06	6.12E-06	3.53	ACCUMULATOR A001B FAILS CATASTROPHICALLY
C41-UV_-CC_1_2_3	2.26E-06	5.91E-06	3.53	CCF of three components: C41-UV_-CC-F004A & C41-UV_-CC-F004B & C41-UV_-CC-F005A
C41-UV_-CC_1_2_4	2.26E-06	5.91E-06	3.53	CCF of three components: C41-UV_-CC-F004A & C41-UV_-CC-F004B & C41-UV_-CC-F005B
C41-UV_-CC_1_3_4	2.26E-06	5.91E-06	3.53	CCF of three components: C41-UV_-CC-F004A & C41-UV_-CC-F005A & C41-UV_-CC-F005B
C41-UV_-CC_2_3_4	2.26E-06	5.91E-06	3.53	CCF of three components: C41-UV_-CC-F004B & C41-UV_-CC-F005A & C41-UV_-CC-F005B
C41-UV_-CC_ALL	1.37E-05	5.14E-05	4.69	CCF of all components in group 'C41-UV_-CC'

Table 22.13-11
Importance Measures Report Fussell-Vesely and Risk Achievement Worth
Internal Flooding Sensitivity Study
CDF = 3.30 E-9/year

Event Name	Probability	Fus Ves	RAW	Description
C41-UV_-CC-F004A	8.00E-04	3.27E-03	5.08	CHECK VALVE F004A FAILS TO OPEN
C41-UV_-CC-F004B	8.00E-04	3.27E-03	5.08	CHECK VALVE F004B FAILS TO OPEN
C41-UV_-CC-F005A	8.00E-04	3.27E-03	5.08	CHECK VALVE F005A FAILS TO OPEN
C41-UV_-CC-F005B	8.00E-04	3.27E-03	5.08	CHECK VALVE F005B FAILS TO OPEN
C51-CCFSOFTWARE	1.00E-04	4.37E-04	5.36	NMS COMMON CAUSE SOFTWARE FAILURE
C62-CCFSOFTWARE	1.00E-04	3.36E-03	34.59	N-DCIS COMMON CAUSE SOFTWARE FAILURE
C62-CCFSOFTWARE_S	1.00E-04	3.36E-03	34.59	N-DCIS SPURIOUS COMMON CAUSE SOFTWARE FAILURE
C62-DTM-FC-CFS	6.00E-04	7.45E-05	1.12	CFS MASTER DTM
C62-DTM-FC-PIPA	6.00E-04	3.27E-05	1.05	PIP A MASTER DTM
C62-DTM-FC-PIPB	6.00E-04	1.00E-05	1.02	PIP B MASTER DTM
C62-DTM-FC-PIPMP_1_2	6.67E-05	2.19E-03	33.84	CCF of two components: C62-DTM-FC-PIPA & C62-DTM-FC-PIPB
C62-LDD-FC-LOADS	1.86E-06	5.12E-05	28.17	COMMON CAUSE FAILURE OF REMAINING NDCIS LOAD DRIVERS
C62-LOG-FC-PIPMP_1_2	6.66E-06	1.01E-06	1.15	CCF of two components: C62-LOG-FC-PIPA1 & C62-LOG-FC-PIPA2
C62-LOG-FC-PIPMP_3_4	6.66E-06	1.01E-06	1.15	CCF of two components: C62-LOG-FC-PIPB1 & C62-LOG-FC-PIPB2
C62-LOG-FC-PIPMP_ALL	1.80E-05	5.71E-04	32.63	CCF of all components in group 'C62-LOG-FC-PIPMP'
C62-LT_-NO-DPSPX_ALL	3.60E-06	1.61E-06	1.43	CCF of all components in group 'C62-LT_-NO-DPSPX'
C62-LT_-NO-NDCRX_1_2_3	1.91E-08	1.61E-06	85.66	CCF of three components: C62-LT_-NO-RXLVLA & C62-LT_-NO-RXLVLB & C62-LT_-NO-RXLV
C62-LT_-NO-NDCRX_1_2_4	1.91E-08	1.61E-06	85.66	CCF of three components: C62-LT_-NO-RXLVLA & C62-LT_-NO-RXLVLB & C62-LT_-NO-RXLV
C62-LT_-NO-NDCRX_1_3_4	1.91E-08	1.61E-06	85.66	CCF of three components: C62-LT_-NO-RXLVLA & C62-LT_-NO-RXLVLC & C62-LT_-NO-RXLV

Table 22.13-11
Importance Measures Report Fussell-Vesely and Risk Achievement Worth
Internal Flooding Sensitivity Study
CDF = 3.30 E-9/year

Event Name	Probability	Fus Ves	RAW	Description
C62-LT_-NO-NDCRX_2_3_4	1.91E-08	1.61E-06	85.66	CCF of three components: C62-LT_-NO-RXLVLB & C62-LT_-NO-RXLVLC & C62-LT_-NO-RXLV
C62-LT_-NO-NDCRX_ALL	3.60E-06	9.43E-04	261.76	CCF of all components in group 'C62-LT_-NO-NDCRX'
C62-PSP-FO-DPSEP_1_5_6	4.00E-09	1.08E-06	269.79	CCF of three components: C62-PSP-FO-DPSAPSA & C72-PSP-FO-DPSCNTPSA & C72-PSP-FO-
C62-PSP-FO-DPSEP_2_5_6	4.00E-09	1.08E-06	269.79	CCF of three components: C62-PSP-FO-DPSAPSB & C72-PSP-FO-DPSCNTPSA & C72-PSP-FO-
C62-PSP-FO-DPSEP_3_5_6	4.00E-09	1.08E-06	269.79	CCF of three components: C62-PSP-FO-DPSBPSA & C72-PSP-FO-DPSCNTPSA & C72-PSP-FO-
C62-PSP-FO-DPSEP_4_5_6	4.00E-09	1.08E-06	269.79	CCF of three components: C62-PSP-FO-DPSBPSB & C72-PSP-FO-DPSCNTPSA & C72-PSP-FO-
C62-PSP-FO-DPSEP_5_6	8.00E-08	4.85E-05	602	CCF of two components: C72-PSP-FO-DPSCNTPSA & C72-PSP-FO-DPSCNTPSB
C62-PSP-FO-DPSEP_ALL	3.60E-07	2.50E-04	693.51	CCF of all components in group 'C62-PSP-FO-DPSEP'
C62-PSP-FO-PIPEP_ALL	3.60E-07	7.59E-06	21.53	CCF of all components in group 'C62-PSP-FO-PIPEP'
C62-PT_-NO-DPSRX_ALL	1.73E-06	1.61E-06	1.93	CCF of all components in group 'C62-PT_-NO-DPSRX'
C62-PT_-NO-PIPSA_ALL	1.73E-06	2.28E-06	2.3	CCF of all components in group 'C62-PT_-NO-PIPSA'
C62-TT_-NO-NDCRX_1_2_3	4.67E-08	4.50E-06	97.5	CCF of three components: C62-TT_-NO-TEMPA & C62-TT_-NO-TEMPB & C62-TT_-NO-TEMPC
C62-TT_-NO-NDCRX_1_2_4	4.67E-08	4.50E-06	97.5	CCF of three components: C62-TT_-NO-TEMPA & C62-TT_-NO-TEMPB & C62-TT_-NO-TEMPD

Table 22.13-11
Importance Measures Report Fussell-Vesely and Risk Achievement Worth
Internal Flooding Sensitivity Study
CDF = 3.30 E-9/year

Event Name	Probability	Fus Ves	RAW	Description
C62-TT_-NO-NDCRX_1_3_4	4.67E-08	4.50E-06	97.5	CCF of three components: C62-TT_-NO-TEMPA & C62-TT_-NO-TEMPC & C62-TT_-NO-TEMPD
C62-TT_-NO-NDCRX_2_3_4	4.67E-08	4.50E-06	97.5	CCF of three components: C62-TT_-NO-TEMPB & C62-TT_-NO-TEMPC & C62-TT_-NO-TEMPD
C62-TT_-NO-NDCRX_ALL	1.26E-06	3.04E-04	240.49	CCF of all components in group 'C62-TT_-NO-NDCRX'
C63-CCFSOFTWARE	1.00E-04	1.21E-01	1.21E+03	Common cause failure of software
C63-CCFSOFTWARE_S	1.00E-04	5.12E-02	512.09	ESF SPURIOUS COMMON CAUSE SOFTWARE FAILURE
C63-DTM-FC-ESFD1	6.00E-04	5.64E-06	1.01	ESF DIV 1 MASTER DTM
C63-DTM-FC-ESFD2	6.00E-04	5.64E-06	1.01	ESF DIV 2 MASTER DTM
C63-DTM-FC-ESFD3	6.00E-04	5.64E-06	1.01	ESF DIV 3 MASTER DTM
C63-DTM-FC-ESFD4	6.00E-04	5.64E-06	1.01	ESF DIV 4 MASTER DTM
C63-DTM-FC-ESFLG_1_2	1.11E-05	3.76E-06	1.33	CCF of two components: C63-DTM-FC-ESFD1 & C63-DTM-FC-ESFD2
C63-DTM-FC-ESFLG_1_2_3	1.11E-06	8.39E-04	752.35	CCF of three components: C63-DTM-FC-ESFD1 & C63-DTM-FC-ESFD2 & C63-DTM-FC-ESFD3
C63-DTM-FC-ESFLG_1_2_4	1.11E-06	8.39E-04	752.35	CCF of three components: C63-DTM-FC-ESFD1 & C63-DTM-FC-ESFD2 & C63-DTM-FC-ESFD4
C63-DTM-FC-ESFLG_1_3	1.11E-05	3.76E-06	1.33	CCF of two components: C63-DTM-FC-ESFD1 & C63-DTM-FC-ESFD3
C63-DTM-FC-ESFLG_1_3_4	1.11E-06	8.39E-04	752.35	CCF of three components: C63-DTM-FC-ESFD1 & C63-DTM-FC-ESFD3 & C63-DTM-FC-ESFD4
C63-DTM-FC-ESFLG_1_4	1.11E-05	3.76E-06	1.33	CCF of two components: C63-DTM-FC-ESFD1 & C63-DTM-FC-ESFD4
C63-DTM-FC-ESFLG_2_3	1.11E-05	3.76E-06	1.33	CCF of two components: C63-DTM-FC-ESFD2 & C63-DTM-FC-ESFD3

Table 22.13-11
Importance Measures Report Fussell-Vesely and Risk Achievement Worth
Internal Flooding Sensitivity Study
CDF = 3.30 E-9/year

Event Name	Probability	Fus Ves	RAW	Description
C63-DTM-FC-ESFLG_2_3_4	1.11E-06	8.39E-04	752.35	CCF of three components: C63-DTM-FC-ESFD2 & C63-DTM-FC-ESFD3 & C63-DTM-FC-ESFD4
C63-DTM-FC-ESFLG_2_4	1.11E-05	3.76E-06	1.33	CCF of two components: C63-DTM-FC-ESFD2 & C63-DTM-FC-ESFD4
C63-DTM-FC-ESFLG_3_4	1.11E-05	3.76E-06	1.33	CCF of two components: C63-DTM-FC-ESFD3 & C63-DTM-FC-ESFD4
C63-DTM-FC-ESFLG_ALL	3.00E-05	2.51E-02	835.5	CCF of all components in group 'C63-DTM-FC-ESFLG'
C63-LDD-FC-ESFLOADS	1.86E-06	1.99E-03	1.07E+03	CCF OF ALL ESF LOAD DRIVERS
C63-LDD-FC-S1B32F012A-A	1.09E-03	4.84E-05	1.04	LOAD DRIVER FAILS DURING OPERATION
C63-LDD-FC-S1B32F012B-B	1.09E-03	4.84E-05	1.04	LOAD DRIVER FAILS DURING OPERATION
C63-LDD-FC-S1B32F012C-C	1.09E-03	4.84E-05	1.04	LOAD DRIVER FAILS DURING OPERATION
C63-LDD-FC-S1B32F012D-D	1.09E-03	4.84E-05	1.04	LOAD DRIVER FAILS DURING OPERATION
C63-LDD-FC-S2B32F012A-A	1.09E-03	4.84E-05	1.04	LOAD DRIVER FAILS DURING OPERATION
C63-LDD-FC-S2B32F012B-B	1.09E-03	4.84E-05	1.04	LOAD DRIVER FAILS DURING OPERATION
C63-LDD-FC-S2B32F012C-C	1.09E-03	4.84E-05	1.04	LOAD DRIVER FAILS DURING OPERATION
C63-LDD-FC-S2B32F012D-D	1.09E-03	4.84E-05	1.04	LOAD DRIVER FAILS DURING OPERATION
C63-LOG-FC-ESFLG_ALL	1.80E-05	2.09E-02	1.16E+03	CCF of all components in group 'C63-LOG-FC-ESFLG'
C63-LT_-NO-ATWRX_ALL	3.60E-06	1.09E-05	3.94	CCF of all components in group 'C63-LT_-NO-ATWRX'
C63-LT_-NO-ESFPX_ALL	3.60E-06	4.70E-06	2.21	CCF of all components in group 'C63-LT_-NO-ESFPX'
C63-LT_-NO-ESFRX_1_2_3	1.91E-08	7.12E-06	371.38	CCF of three components: C63-LT_-NO-ESFRXLVLA & C63-LT_-NO-ESFRXLVLB & C63-LT_-N
C63-LT_-NO-ESFRX_1_2_4	1.91E-08	7.12E-06	371.38	CCF of three components: C63-LT_-NO-ESFRXLVLA & C63-LT_-NO-ESFRXLVLB & C63-LT_-N

Table 22.13-11
Importance Measures Report Fussell-Vesely and Risk Achievement Worth
Internal Flooding Sensitivity Study
CDF = 3.30 E-9/year

Event Name	Probability	Fus Ves	RAW	Description
C63-LT_-NO-ESFRX_1_3_4	1.91E-08	7.12E-06	371.38	CCF of three components: C63-LT_-NO-ESFRXLVLA & C63-LT_-NO-ESFRXLVLC & C63-LT_-N
C63-LT_-NO-ESFRX_2_3_4	1.91E-08	7.12E-06	371.38	CCF of three components: C63-LT_-NO-ESFRXLVLB & C63-LT_-NO-ESFRXLVLC & C63-LT_-N
C63-LT_-NO-ESFRX_ALL	3.60E-06	2.66E-03	737.43	CCF of all components in group 'C63-LT_-NO-ESFRX'
C63-LT_-NO-RPSRX_1_2_3	1.33E-07	2.47E-05	184.5	CCF of three components: C63-LT_-NO-RPSRXLVLA & C63-LT_-NO-RPSRXVLB & C63-LT_-N
C63-LT_-NO-RPSRX_1_2_4	1.33E-07	2.47E-05	184.5	CCF of three components: C63-LT_-NO-RPSRXLVLA & C63-LT_-NO-RPSRXVLB & C63-LT_-N
C63-LT_-NO-RPSRX_1_3_4	1.33E-07	2.47E-05	184.5	CCF of three components: C63-LT_-NO-RPSRXLVLA & C63-LT_-NO-RPSRXVLC & C63-LT_-N
C63-LT_-NO-RPSRX_2_3_4	1.33E-07	2.47E-05	184.5	CCF of three components: C63-LT_-NO-RPSRXVLB & C63-LT_-NO-RPSRXVLC & C63-LT_-N
C63-LT_-NO-RPSRX_ALL	3.60E-06	7.60E-04	211.83	CCF of all components in group 'C63-LT_-NO-RPSRX'
C63-PSP-FO-ESFEP_ALL	3.60E-07	4.65E-05	128.4	CCF of all components in group 'C63-PSP-FO-ESFEP'
C63-PT_-NO-ATWRX_ALL	1.73E-06	4.03E-06	3.26	CCF of all components in group 'C63-PT_-NO-ATWRX'
C63-PT_-NO-ESFRX_1_2_3	6.40E-08	2.42E-06	35.66	CCF of three components: C63-PT_-NO-ESFRXPRSA & C63-PT_-NO-ESFRXPRSB & C63-PT_-N
C63-PT_-NO-ESFRX_1_2_4	6.40E-08	2.42E-06	35.66	CCF of three components: C63-PT_-NO-ESFRXPRSA & C63-PT_-NO-ESFRXPRSB & C63-PT_-N
C63-PT_-NO-ESFRX_1_3_4	6.40E-08	2.42E-06	35.66	CCF of three components: C63-PT_-NO-ESFRXPRSA & C63-PT_-NO-ESFRXPRSC & C63-PT_-N

Table 22.13-11
Importance Measures Report Fussell-Vesely and Risk Achievement Worth
Internal Flooding Sensitivity Study
CDF = 3.30 E-9/year

Event Name	Probability	Fus Ves	RAW	Description
C63-PT_-NO-ESFRX_2_3_4	6.40E-08	2.42E-06	35.66	CCF of three components: C63-PT_-NO-ESFRXPRSB & C63-PT_-NO-ESFRXPRSC & C63-PT_-N
C63-PT_-NO-ESFRX_ALL	1.73E-06	9.41E-05	54.88	CCF of all components in group 'C63-PT_-NO-ESFRX'
C71-ACT-FC_ALL	5.76E-07	3.36E-07	1.52	CCF of all components in group 'C71-ACT-FC'
C71-ACT-FC-S_ALL	5.76E-07	3.36E-07	1.52	CCF of all components in group 'C71-ACT-FC-S'
C71-CCFSOFTWARE	1.00E-04	2.13E-02	213.74	RPS COMMON CAUSE SOFTWARE FAILURE
C71-DTM-FC-R_1_2	1.11E-05	2.02E-06	1.18	CCF of two components: C71-DTM-FC-RPSDIV1 & C71-DTM-FC-RPSDIV2
C71-DTM-FC-R_1_2_3	1.11E-06	2.31E-04	208.7	CCF of three components: C71-DTM-FC-RPSDIV1 & C71-DTM-FC-RPSDIV2 & C71-DTM-FC-RP
C71-DTM-FC-R_1_2_4	1.11E-06	2.31E-04	208.7	CCF of three components: C71-DTM-FC-RPSDIV1 & C71-DTM-FC-RPSDIV2 & C71-DTM-FC-RP
C71-DTM-FC-R_1_3	1.11E-05	2.02E-06	1.18	CCF of two components: C71-DTM-FC-RPSDIV1 & C71-DTM-FC-RPSDIV3
C71-DTM-FC-R_1_3_4	1.11E-06	2.31E-04	208.7	CCF of three components: C71-DTM-FC-RPSDIV1 & C71-DTM-FC-RPSDIV3 & C71-DTM-FC-RP
C71-DTM-FC-R_1_4	1.11E-05	2.02E-06	1.18	CCF of two components: C71-DTM-FC-RPSDIV1 & C71-DTM-FC-RPSDIV4
C71-DTM-FC-R_2_3	1.11E-05	2.02E-06	1.18	CCF of two components: C71-DTM-FC-RPSDIV2 & C71-DTM-FC-RPSDIV3
C71-DTM-FC-R_2_3_4	1.11E-06	2.31E-04	208.7	CCF of three components: C71-DTM-FC-RPSDIV2 & C71-DTM-FC-RPSDIV3 & C71-DTM-FC-RP
C71-DTM-FC-R_2_4	1.11E-05	2.02E-06	1.18	CCF of two components: C71-DTM-FC-RPSDIV2 & C71-DTM-FC-RPSDIV4
C71-DTM-FC-R_3_4	1.11E-05	2.02E-06	1.18	CCF of two components: C71-DTM-FC-RPSDIV3 & C71-DTM-FC-RPSDIV4
C71-DTM-FC-R_ALL	3.00E-05	6.37E-03	213.42	CCF of all components in group 'C71-DTM-FC-R'
C71-DTM-FC-RPSDIV1	6.00E-04	3.02E-06	1	DIGITAL TRIP MODULE FAILS TO FUNCTION

Table 22.13-11
Importance Measures Report Fussell-Vesely and Risk Achievement Worth
Internal Flooding Sensitivity Study
CDF = 3.30 E-9/year

Event Name	Probability	Fus Ves	RAW	Description
C71-DTM-FC-RPSDIV2	6.00E-04	3.02E-06	1	DIGITAL TRIP MODULE FAILS TO FUNCTION
C71-DTM-FC-RPSDIV3	6.00E-04	3.02E-06	1	DIGITAL TRIP MODULE FAILS TO FUNCTION
C71-DTM-FC-RPSDIV4	6.00E-04	3.02E-06	1	DIGITAL TRIP MODULE FAILS TO FUNCTION
C71-LDD-FC-2OF4G	1.86E-06	5.71E-06	4.03	CCF LOAD DRIVER (2 or more of 4 GROUPS)
C71-OLU-FC-R_5_6_7	9.52E-08	1.71E-05	179.94	CCF of three components: C71-OLU-FC-RPSDIV1 & C71-OLU-FC-RPSDIV2 & C71-OLU-FC-RP
C71-OLU-FC-R_5_6_8	9.52E-08	1.71E-05	179.94	CCF of three components: C71-OLU-FC-RPSDIV1 & C71-OLU-FC-RPSDIV2 & C71-OLU-FC-RP
C71-OLU-FC-R_5_7_8	9.52E-08	1.71E-05	179.94	CCF of three components: C71-OLU-FC-RPSDIV1 & C71-OLU-FC-RPSDIV3 & C71-OLU-FC-RP
C71-OLU-FC-R_6_7_8	9.52E-08	1.71E-05	179.94	CCF of three components: C71-OLU-FC-RPSDIV2 & C71-OLU-FC-RPSDIV3 & C71-OLU-FC-RP
C71-OLU-FC-R_ALL	1.80E-05	3.82E-03	213.27	CCF of all components in group 'C71-OLU-FC-R'
C71-SLU-FC-N_1_2_3	1.67E-06	3.90E-06	3.24	CCF of three components: C71-SLU-FC-NMSDIV1 & C71-SLU-FC-NMSDIV2 & C71-SLU-FC-NM
C71-SLU-FC-N_1_2_4	1.67E-06	3.90E-06	3.24	CCF of three components: C71-SLU-FC-NMSDIV1 & C71-SLU-FC-NMSDIV2 & C71-SLU-FC-NM
C71-SLU-FC-N_1_3_4	1.67E-06	3.90E-06	3.24	CCF of three components: C71-SLU-FC-NMSDIV1 & C71-SLU-FC-NMSDIV3 & C71-SLU-FC-NM
C71-SLU-FC-N_2_3_4	1.67E-06	3.90E-06	3.24	CCF of three components: C71-SLU-FC-NMSDIV2 & C71-SLU-FC-NMSDIV3 & C71-SLU-FC-NM
C71-SLU-FC-N_ALL	4.50E-05	1.93E-04	5.25	CCF of all components in group 'C71-SLU-FC-N'

Table 22.13-11
Importance Measures Report Fussell-Vesely and Risk Achievement Worth
Internal Flooding Sensitivity Study
CDF = 3.30 E-9/year

Event Name	Probability	Fus Ves	RAW	Description
C71-SLU-FC-R_1_2	1.67E-05	4.44E-06	1.26	CCF of two components: C71-SLU-FC-RPSDIV1 & C71-SLU-FC-RPSDIV2
C71-SLU-FC-R_1_2_3	1.67E-06	3.50E-04	210.58	CCF of three components: C71-SLU-FC-RPSDIV1 & C71-SLU-FC-RPSDIV2 & C71-SLU-FC-RP
C71-SLU-FC-R_1_2_4	1.67E-06	3.50E-04	210.58	CCF of three components: C71-SLU-FC-RPSDIV1 & C71-SLU-FC-RPSDIV2 & C71-SLU-FC-RP
C71-SLU-FC-R_1_3	1.67E-05	4.44E-06	1.26	CCF of two components: C71-SLU-FC-RPSDIV1 & C71-SLU-FC-RPSDIV3
C71-SLU-FC-R_1_3_4	1.67E-06	3.50E-04	210.58	CCF of three components: C71-SLU-FC-RPSDIV1 & C71-SLU-FC-RPSDIV3 & C71-SLU-FC-RP
C71-SLU-FC-R_1_4	1.67E-05	4.44E-06	1.26	CCF of two components: C71-SLU-FC-RPSDIV1 & C71-SLU-FC-RPSDIV4
C71-SLU-FC-R_2_3	1.67E-05	4.44E-06	1.26	CCF of two components: C71-SLU-FC-RPSDIV2 & C71-SLU-FC-RPSDIV3
C71-SLU-FC-R_2_3_4	1.67E-06	3.50E-04	210.58	CCF of three components: C71-SLU-FC-RPSDIV2 & C71-SLU-FC-RPSDIV3 & C71-SLU-FC-RP
C71-SLU-FC-R_2_4	1.67E-05	4.44E-06	1.26	CCF of two components: C71-SLU-FC-RPSDIV2 & C71-SLU-FC-RPSDIV4
C71-SLU-FC-R_3_4	1.67E-05	4.44E-06	1.26	CCF of two components: C71-SLU-FC-RPSDIV3 & C71-SLU-FC-RPSDIV4
C71-SLU-FC-R_ALL	4.50E-05	9.56E-03	213.48	CCF of all components in group 'C71-SLU-FC-R'
C71-SLU-FC-RPSDIV1	9.00E-04	6.65E-06	1.01	RPS DIV I TLU FAILS
C71-SLU-FC-RPSDIV2	9.00E-04	6.65E-06	1.01	RPS DIV II TLU FAILS
C71-SLU-FC-RPSDIV3	9.00E-04	6.65E-06	1.01	RPS DIV III TLU FAILS
C71-SLU-FC-RPSDIV4	9.00E-04	6.65E-06	1.01	RPS DIV IV TLU FAILS
C71-SLU-FC-S_1_2_3	1.67E-06	3.90E-06	3.24	CCF of three components: C71-SLU-FC-SRNDIV1 & C71-SLU-FC-SRNDIV2 & C71-SLU-FC-SR

Table 22.13-11
Importance Measures Report Fussell-Vesely and Risk Achievement Worth
Internal Flooding Sensitivity Study
CDF = 3.30 E-9/year

Event Name	Probability	Fus Ves	RAW	Description
C71-SLU-FC-S_1_2_4	1.67E-06	3.90E-06	3.24	CCF of three components: C71-SLU-FC-SRNDIV1 & C71-SLU-FC-SRNDIV2 & C71-SLU-FC-SR
C71-SLU-FC-S_1_3_4	1.67E-06	3.90E-06	3.24	CCF of three components: C71-SLU-FC-SRNDIV1 & C71-SLU-FC-SRNDIV3 & C71-SLU-FC-SR
C71-SLU-FC-S_2_3_4	1.67E-06	3.90E-06	3.24	CCF of three components: C71-SLU-FC-SRNDIV2 & C71-SLU-FC-SRNDIV3 & C71-SLU-FC-SR
C71-SLU-FC-S_ALL	4.50E-05	1.84E-04	5.07	CCF of all components in group 'C71-SLU-FC-S'
C71-XHE-FO-SCRAM	1.00E-01	4.70E-02	1.42	OPERATOR FAILS TO PERFORM MANUAL SCRAM
C72-CCFSOFTWARE	1.00E-04	8.13E-02	813.4	COMMON CAUSE FAILURE OF DPS PROCESSORS
C72-LDD-FC-FWRB1X	1.09E-03	9.14E-06	1.01	DPS OUTPUT SWITCH 1 TO FWC FAILS
C72-LDD-FC-FWRB1Y	1.09E-03	9.14E-06	1.01	FEEDWATER RUNBACK INPUT SWITCH 1 FAILS
C72-LDD-FC-FWRB2X	1.09E-03	9.14E-06	1.01	DPS OUTPUT SWITCH 2 TO FWC FAILS
C72-LDD-FC-FWRB2Y	1.09E-03	9.14E-06	1.01	FEEDWATER RUNBACK INPUT SWITCH 2 FAILS
C72-LDD-FC-FWRB3X	1.09E-03	9.14E-06	1.01	DPS OUTPUT SWITCH 3 TO FWC FAILS
C72-LDD-FC-FWRB3Y	1.09E-03	9.14E-06	1.01	FEEDWATER RUNBACK INPUT SWITCH 3 FAILS
C72-LDD-FC-LOADS	1.86E-06	3.84E-03	2.06E+03	COMMON CAUSE FAILURE OF DPS LOAD DRIVERS
C72-LDD-FC-S1AB32P1	1.09E-03	8.47E-06	1.01	VALVE F104A FIRST LOAD DRIVER FAILS TO ACTUATE
C72-LDD-FC-S1BB32P2	1.09E-03	8.47E-06	1.01	VALVE F104B FIRST LOAD DRIVER FAILS TO ACTUATE
C72-LDD-FC-S1XB32P1	1.09E-03	2.67E-05	1.02	VALVE F105A FIRST LOAD DRIVER FAILS TO ACTUATE
C72-LDD-FC-S1YB32P2	1.09E-03	2.67E-05	1.02	VALVE F105B FIRST LOAD DRIVER FAILS TO ACTUATE
C72-LDD-FC-S2AB32P1	1.09E-03	8.47E-06	1.01	VALVE F104A SECOND LOAD DRIVER FAILS TO ACTUATE
C72-LDD-FC-S2BB32P2	1.09E-03	8.47E-06	1.01	VALVE F104B SECOND LOAD DRIVER FAILS TO ACTUATE

Table 22.13-11
Importance Measures Report Fussell-Vesely and Risk Achievement Worth
Internal Flooding Sensitivity Study
CDF = 3.30 E-9/year

Event Name	Probability	Fus Ves	RAW	Description
C72-LDD-FC-S2XB32P1	1.09E-03	2.67E-05	1.02	VALVE F105A SECOND LOAD DRIVER FAILS TO ACTUATE
C72-LDD-FC-S2YB32P2	1.09E-03	2.67E-05	1.02	VALVE F105B SECOND LOAD DRIVER FAILS TO ACTUATE
C72-LDD-FC-S3AB32P1	1.09E-03	8.47E-06	1.01	VALVE F104A SECOND LOAD DRIVER FAILS TO ACTUATE
C72-LDD-FC-S3BB32P2	1.09E-03	8.47E-06	1.01	LOAD DRIVER FAILS DURING OPERATION
C72-LOG-FC-D_1_2	1.00E-05	7.96E-03	795.22	CCF of two components: C72-LOG-FC-D1DPS & C72-LOG-FC-D2DPS
C72-LOG-FC-D_1_2_3	2.00E-06	1.53E-03	763.63	CCF of three components: C72-LOG-FC-D1DPS & C72-LOG-FC-D2DPS & C72-LOG-FC-D3DPS
C72-LOG-FC-D_1_3	1.00E-05	7.96E-03	795.22	CCF of two components: C72-LOG-FC-D1DPS & C72-LOG-FC-D3DPS
C72-LOG-FC-D_2_3	1.00E-05	7.96E-03	795.22	CCF of two components: C72-LOG-FC-D2DPS & C72-LOG-FC-D3DPS
C72-LOG-FC-D1DPS	3.60E-04	1.69E-04	1.47	LOGIC UNIT FAILS TO FUNCTION
C72-LOG-FC-D2DPS	3.60E-04	1.69E-04	1.47	LOGIC UNIT FAILS TO FUNCTION
C72-LOG-FC-D3DPS	3.60E-04	1.69E-04	1.47	LOGIC UNIT FAILS TO FUNCTION
C74-ATM-FC-L2_ALL	5.00E-06	1.64E-05	4.25	CCF of all components in group 'C74-ATM-FC-L2'
C74-ATM-FC-PR_ALL	5.00E-06	1.64E-05	4.25	CCF of all components in group 'C74-ATM-FC-PR'
C74-LOG-FC-AT-_1_2_3	6.67E-07	4.03E-07	1.55	CCF of three components: C74-LOG-FC-ATWSD1 & C74-LOG-FC-ATWSD2 & C74-LOG-FC-ATWS
C74-LOG-FC-AT-_1_2_4	6.67E-07	4.03E-07	1.55	CCF of three components: C74-LOG-FC-ATWSD1 & C74-LOG-FC-ATWSD2 & C74-LOG-FC-ATWS
C74-LOG-FC-AT-_1_3_4	6.67E-07	4.03E-07	1.55	CCF of three components: C74-LOG-FC-ATWSD1 & C74-LOG-FC-ATWSD3 & C74-LOG-FC-ATWS
C74-LOG-FC-AT-_2_3_4	6.67E-07	4.03E-07	1.55	CCF of three components: C74-LOG-FC-ATWSD2 & C74-LOG-FC-ATWSD3 & C74-LOG-FC-ATWS

Table 22.13-11
Importance Measures Report Fussell-Vesely and Risk Achievement Worth
Internal Flooding Sensitivity Study
CDF = 3.30 E-9/year

Event Name	Probability	Fus Ves	RAW	Description
C74-LOG-FC-AT- _ALL	1.80E-05	6.98E-05	4.84	CCF of all components in group 'C74-LOG-FC-AT-'
CRD-HX _LK-CRDB	2.40E-05	4.70E-06	1.19	CRD PUMP B OIL COOLER (LEAK OR RUPTURE)
E50-SQV-CC-INJ _ALL	1.50E-04	6.20E-02	413.33	CCF of all components in group 'E50-SQV-CC-INJ'
E50-UV _CC-INJ _ALL	1.72E-05	6.50E-03	378.11	CCF of all components in group 'E50-UV _CC-INJ'
G21-BV _CC-F346	1.00E-04	1.77E-05	1.18	MANUAL VALVE FAILS TO OPEN
G21-HX _LK-B001A	2.40E-05	4.70E-06	1.19	HEAT EXCHANGER B001A FAILS WHILE OPERATING
G21-HX _LK-B001B	2.40E-05	4.70E-06	1.19	HEAT EXCHANGER B001B FAILS WHILE OPERATING
G21-MOV-CC-2_1_2	4.44E-04	2.00E-04	1.45	CCF of two components: G21-MOV-CC-F332A & G21-MOV-CC-F332B
G21-MOV-CC-F011A	4.00E-03	5.38E-06	1	MOTOR OPER. VALVE F011A FAILS TO OPEN
G21-MOV-CC-F011B	4.00E-03	5.38E-06	1	MOTOR OPER. VALVE F011B FAILS TO OPEN
G21-MOV-CC-F013A	4.00E-03	5.38E-06	1	MOTOR OPER. VALVE F013A FAILS TO OPEN
G21-MOV-CC-F013B	4.00E-03	5.38E-06	1	MOTOR OPER. VALVE F013B FAILS TO OPEN
G21-MOV-CC-F014A	4.00E-03	5.38E-06	1	MOTOR OPER. VALVE F014A FAILS TO OPEN
G21-MOV-CC-F014B	4.00E-03	5.38E-06	1	MOTOR OPER. VALVE F014B FAILS TO OPEN
G21-MOV-CC-F046B	4.00E-03	5.38E-06	1	MOTOR OPERATED VALVE P21-F046B FAILS TO OPEN
G21-MOV-CC-F047B	4.00E-03	5.38E-06	1	MOTOR OPERATED VALVE P21-F047B FAILS TO OPEN
G21-MOV-CC-F332A	4.00E-03	2.69E-06	1	MOTOR OPERATED VALVE FAILS TO OPEN
G21-MOV-CC-F332B	4.00E-03	2.69E-06	1	MOTOR OPERATED VALVE FAILS TO OPEN
G21-MOV-OO-F003A	4.00E-03	5.38E-06	1	MOTOR OPERATED VALVE F003A FAILS TO CLOSE
G21-MOV-OO-F008A	4.00E-03	5.38E-06	1	MOTOR OPER. VALVE F008A FAILS TO CLOSE
G21-MP _FR-PLP	6.00E-04	2.48E-04	1.41	MOTOR-DRIVEN LPI PUMP FAILS TO RUN
G21-MP _FS-C001A	2.00E-03	1.34E-06	1	PUMP C001A FAILS TO START

Table 22.13-11
Importance Measures Report Fussell-Vesely and Risk Achievement Worth
Internal Flooding Sensitivity Study
CDF = 3.30 E-9/year

Event Name	Probability	Fus Ves	RAW	Description
G21-MP_-FS-C001B	2.00E-03	1.34E-06	1	MOTOR-DRIVEN PUMP C001B FAILS TO START
G21-MP_-FS-PLP	2.00E-03	1.14E-03	1.56	MOTOR-DRIVEN LPI PUMP FAILS TO START
G21-NST-TM-TRAINB	9.00E-03	1.75E-05	1	TRAIN B IN MAINTENANCE
G21-UV_-CC-F347	1.00E-04	1.77E-05	1.18	CHECK VALVE F347 FAILS TO OPEN
G21-UV_-CC-FU438	1.00E-04	1.77E-05	1.18	LPI DISCHARGE CHECK VALVE FAILS TO OPEN
G21-UV_-OO-F331A	1.00E-03	4.44E-04	1.44	CHECK VALVE F331A FAILS TO CLOSE
G21-UV_-OO-F331B	1.00E-03	4.44E-04	1.44	CHECK VALVE F331B FAILS TO CLOSE
G21-XHE-FO-RSPC	1.61E-02	4.06E-05	1	OPERATOR FAILS TO RECOG. NEED FOR SPC
G31-ACV-OO-F002A	2.00E-03	1.26E-05	1.01	NOV F002A FAILS TO CLOSE
G31-ACV-OO-F003A	2.00E-03	1.26E-05	1.01	ACV F003A FAILS TO CLOSE
G31-ACV-OO-F007A	2.00E-03	1.26E-05	1.01	NOV F007A FAILS TO CLOSE
G31-ACV-OO-F008A	2.00E-03	1.26E-05	1.01	ACV F008A FAILS TO CLOSE
G31-HX_-LK-B002A	2.40E-05	4.70E-06	1.19	HEAT EXCHANGER 2A FOR RWCU/SDCS FAILS WHILE OPERATING
G31-HX_-LK-B002B	2.40E-05	4.70E-06	1.19	HEAT EXCHANGER B FOR RWCU/SDCS FAILS WHILE OPERATING
G31-MOV-CC-F013A	4.00E-03	1.75E-06	1	MOTOR OPERATED VALVE F013A SUPPLY TO RWCU PUMP C001A FAILS TO OPEN
G31-MOV-CC-F013B	4.00E-03	1.75E-06	1	MOTOR OPERATED VALVE F013B SUPPLY TO RWCU PUMP C001B FAILS TO OPEN
G31-MOV-CC-F022B	4.00E-03	1.75E-06	1	MOV F022B RWCU/SDC INJECTION TO FWA FAILS TO OPEN
G31-MOV-CC-F044B	4.00E-03	1.75E-06	1	MOV F044B SUCT FROM VESSEL BOTTOM TO RWCU FAILS TO OPEN
G31-NST-TM-B	9.00E-03	3.63E-06	1	RWCU/SDCS TRAIN B IN MAINTENANCE OR OUT OF SERVICE
G31-TRN-RE-TRAINB	8.07E-03	3.23E-06	1	RESTORATION ERRORS RWCU/SDC TRAIN B

Table 22.13-11
Importance Measures Report Fussell-Vesely and Risk Achievement Worth
Internal Flooding Sensitivity Study
CDF = 3.30 E-9/year

Event Name	Probability	Fus Ves	RAW	Description
G31-UV_-OO_1_2	5.26E-05	1.30E-05	1.24	CCF of two components: G31-UV_-OO-F023A & G31-UV_-OO-F024A
G31-XHE-FO-SDC	1.77E-02	2.18E-05	1	OPERATOR FAILS TO ACTUATE SDC MODE NO MSL LOCA OUSIDE CONTAINMENT NO SLCS
G31-XHE-FO-SDCATWS	1.76E-01	6.17E-05	1	OPERATOR FAILS TO ACTUATE SDC MODE ATWS
N21-ACV-CC-F0016	2.00E-03	3.53E-04	1.17	AIR OPERATED VALVE F0016 FAILS TO OPEN
N21-XHE-FO-CONDMU	1.63E-01	2.87E-03	1.01	FAILURE TO MANUALLY OPEN CONDENSER MAKEUP VALVES
N21-XHE-FO-FWRERUN	1.76E-01	1.48E-02	1.07	OPERATOR FAILS TO RESTART FDW AFTER RUNBACK - ATWS
NICWSA-SYS-FAILS	1.00E-03	3.90E-04	1.39	NUCLEAR ISLAND CHILLED WATER SUBSYSTEM TRAIN A FAILS
NICWSB-SYS-FAILS	1.00E-03	3.96E-04	1.39	NUCLEAR ISLAND CHILLED WATER SUBSYSTEM TRAIN B FAILS
P21-ACV-CC-F0023_1_2	1.93E-04	4.82E-05	1.25	CCF of two components: P21-ACV-CC-F0023A & P21-ACV-CC-F0023B
P21-ACV-CC-F0023A	2.00E-03	4.29E-05	1.02	AIR OPERATED VALVE F0023A FAILS TO OPEN
P21-ACV-CC-F0023B	2.00E-03	4.15E-05	1.02	AIR OPERATED VALVE F0023B FAILS TO OPEN
P21-ACV-OO-CCF23_1_2	2.22E-04	3.31E-05	1.15	CCF of two components: P21-ACV-OO-F023A & P21-ACV-OO-F023B
P21-ACV-OO-F0004	2.00E-03	6.79E-04	1.34	AIR OPERATED VALVE F0004 FAILS TO CLOSE
P21-ACV-OO-F0016_1_2	1.93E-04	2.20E-04	2.13	CCF of two components: P21-ACV-OO-F016A & P21-ACV-OO-F016B
P21-ACV-OO-F0027	2.00E-03	6.79E-04	1.34	AIR OPERATED VALVE F0027 FAILS TO CLOSE
P21-ACV-OO-F0061	2.00E-03	6.79E-04	1.34	AIR OPERATED VALVE F0061 FAILS TO CLOSE
P21-ACV-OO-F016A	2.00E-03	4.83E-05	1.02	AIR OPERATED VALVE F016A FAILS TO CLOSE
P21-ACV-OO-F016B	2.00E-03	4.70E-05	1.02	AIR OPERATED VALVE F016B FAILS TO CLOSE
P21-ACV-OO-F023A	2.00E-03	4.29E-05	1.02	AIR OPERATED VALVE FAILS TO CLOSE
P21-ACV-OO-F023B	2.00E-03	4.15E-05	1.02	AIR OPERATED VALVE FAILS TO CLOSE

Table 22.13-11
Importance Measures Report Fussell-Vesely and Risk Achievement Worth
Internal Flooding Sensitivity Study
CDF = 3.30 E-9/year

Event Name	Probability	Fus Ves	RAW	Description
P21-ACV-OO-XTIE_1_2_3	1.57E-04	3.42E-05	1.21	CCF of three components: P21-ACV-OO-F0004 & P21-ACV-OO-F0027 & P21-ACV-OO-F0061
P21-AHU-FR_1_2	1.26E-05	5.71E-06	1.44	CCF of two components: P21-AHU-FR-RCCWA & P21-AHU-FR-RCCWB
P21-AHU-FR-RCCWA	2.40E-04	8.04E-05	1.33	AIR HANDLING UNIT RCCWS ROOM A FAILS TO RUN
P21-AHU-FR-RCCWB	2.40E-04	8.04E-05	1.33	AIR HANDLING UNIT RCCWS ROOM TRAIN B FAILS TO RUN
P21-AHU-FS_1_2	6.67E-04	2.00E-04	1.3	CCF of two components: P21-AHU-FS-RCCWA & P21-AHU-FS-RCCWB
P21-AHU-FS-RCCWA	6.00E-03	2.16E-04	1.04	AIR HANDLING UNIT RCCWS ROOM A FAILS TO START
P21-AHU-FS-RCCWB	6.00E-03	2.11E-04	1.03	AIR HANDLING UNIT RCCWS ROOM B FAILS TO START
P21-HX_-LK-B001A	2.40E-05	4.70E-06	1.19	HEAT EXCHANGER B001A FAILS WHILE OPERATING
P21-HX_-LK-B001B	2.40E-05	4.70E-06	1.19	HEAT EXCHANGER B001B FAILS WHILE OPERATING
P21-HX_-LK-B002A	2.40E-05	4.70E-06	1.19	HEAT EXCHANGER FAILURE (LEAK OR RUPTURE)
P21-HX_-LK-B002B	2.40E-05	4.70E-06	1.19	HEAT EXCHANGER B002B FAILS WHILE OPERATING
P21-HX_-LK-B003A	2.40E-05	4.70E-06	1.19	HEAT EXCHANGER (LEAK OR RUPTURE)
P21-HX_-LK-B003B	2.40E-05	4.70E-06	1.19	HEAT EXCHANGER B003B FAILS WHILE OPERATING
P21-MOV-CC_ALL	1.48E-04	3.04E-05	1.2	CCF of all components in group 'P21-MOV-CC'
P21-MOV-CC-F0010A1	4.00E-03	1.24E-04	1.03	MOTOR OPERATED VALVE F0010A1 FAILS TO OPEN
P21-MOV-CC-F0010A2	4.00E-03	1.24E-04	1.03	MOTOR OPERATED VALVE F0010A2 FAILS TO OPEN
P21-MOV-CC-F0010A3	4.00E-03	1.24E-04	1.03	MOTOR OPERATED VALVE F0010A3 FAILS TO OPEN
P21-MOV-CC-F0010B1	4.00E-03	1.21E-04	1.03	MOTOR OPERATED VALVE F0010B1 FAILS TO OPEN
P21-MOV-CC-F0010B2	4.00E-03	1.21E-04	1.03	MOTOR OPERATED VALVE F0010B2 FAILS TO OPEN
P21-MOV-CC-F0010B3	4.00E-03	1.21E-04	1.03	MOTOR OPERATED VALVE F0010B3 FAILS TO OPEN
P21-MOV-CC-F034B	4.00E-03	1.75E-06	1	MOV P21-F034B FROM RCCWS TO RWCU/SDC HX-B FAILS TO OPEN

Table 22.13-11
Importance Measures Report Fussell-Vesely and Risk Achievement Worth
Internal Flooding Sensitivity Study
CDF = 3.30 E-9/year

Event Name	Probability	Fus Ves	RAW	Description
P21-MP_-FR_ALL	1.33E-05	6.38E-06	1.47	CCF of all components in group 'P21-MP_-FR'
P21-MP_-FS_ALL	1.56E-04	3.31E-05	1.21	CCF of all components in group 'P21-MP_-FS'
P21-MPC-FR-C001A	6.00E-04	2.25E-04	1.37	MOTOR DRIVEN PUMP C001A FAILS TO RUN
P21-MPC-FR-C001B	6.00E-04	2.25E-04	1.37	MOTOR DRIVEN PUMP C001B FAILS TO RUN
P21-MPC-FR-C002A	6.00E-04	6.12E-06	1.01	MOTOR-DRIVEN PUMP C002A FAILS TO RUN
P21-MPC-FR-C002B	6.00E-04	6.12E-06	1.01	MOTOR-DRIVEN PUMP C002B FAILS TO RUN
P21-MPC-FR-C003A	6.00E-04	6.12E-06	1.01	MOTOR-DRIVEN PUMP C0003A FAILS TO RUN
P21-MPC-FR-C003B	6.00E-04	6.12E-06	1.01	MOTOR-DRIVEN PUMP C003B FAILS TO RUN
P21-MPC-FS-C001A	2.00E-03	4.29E-05	1.02	MOTOR DRIVEN PUMP C001A FAILS TO START
P21-MPC-FS-C001B	2.00E-03	4.15E-05	1.02	MOTOR-DRIVEN PUMP C001B FAILS TO START
P21-MPC-FS-C002A	2.00E-03	4.29E-05	1.02	MOTOR-DRIVEN PUMP C002A FAILS TO START
P21-MPC-FS-C002B	2.00E-03	4.15E-05	1.02	MOTOR-DRIVEN PUMP C002B FAILS TO START
P21-MPC-FS-C003A	2.00E-03	4.29E-05	1.02	MOTOR-DRIVEN PUMP C0003A FAILS TO START
P21-MPC-FS-C003B	2.00E-03	4.15E-05	1.02	MOTOR-DRIVEN PUMP C003B FAILS TO START
P21-NSC-TM-B001A	1.50E-03	2.61E-05	1.02	HEAT EXCHANGER B001A UNAVAILABLE DUE TO MAINTENANCE
P21-NSC-TM-B001B	1.50E-03	2.50E-05	1.02	HEAT EXCHANGER B001B UNAVAILABLE DUE TO MAINTENANCE
P21-NSC-TM-B002A	1.50E-03	2.61E-05	1.02	HEAT EXCHANGER B002A UNAVAILABLE DUE TO MAINTENANCE
P21-NSC-TM-B002B	1.50E-03	2.50E-05	1.02	HEAT EXCHANGER B002B UNAVAILABLE DUE TO MAINTENANCE
P21-NSC-TM-B003A	1.50E-03	2.61E-05	1.02	HEAT EXCHANGER B003A UNAVAILABLE DUE TO MAINTENANCE
P21-NSC-TM-B003B	1.50E-03	2.50E-05	1.02	HEAT EXCHANGER B003B UNAVAILABLE DUE TO MAINTENANCE
P21-NSC-TM-C001A	1.50E-03	2.61E-05	1.02	PUMP C001A IN MAINTENANCE
P21-NSC-TM-C001B	1.50E-03	2.50E-05	1.02	PUMP C001B IN MAINTENANCE

Table 22.13-11
Importance Measures Report Fussell-Vesely and Risk Achievement Worth
Internal Flooding Sensitivity Study
CDF = 3.30 E-9/year

Event Name	Probability	Fus Ves	RAW	Description
P21-NSC-TM-C002A	1.50E-03	2.61E-05	1.02	PUMP C002A IN MAINTENANCE
P21-NSC-TM-C002B	1.50E-03	2.50E-05	1.02	PUMP C002B IN MAINTENANCE
P21-NSC-TM-C003A	1.50E-03	2.61E-05	1.02	PUMP C003A IN MAINTENANCE
P21-NSC-TM-C003B	1.50E-03	2.50E-05	1.02	PUMP C003B IN MAINTENANCE
P21-TRN-RE-HX1A	8.07E-03	2.93E-04	1.04	FAILURE TO RESTORE RCCW TRAIN 1A HX
P21-TRN-RE-HX1B	8.07E-03	2.88E-04	1.03	FAILURE TO RESTORE RCCW TRAIN 1B HX
P21-TRN-RE-HX2A	8.07E-03	2.93E-04	1.04	FAILURE TO RESTORE RCCW TRAIN 2A HX
P21-TRN-RE-HX2B	8.07E-03	2.88E-04	1.03	FAILURE TO RESTORE RCCW TRAIN 2B HX
P21-TRN-RE-HX3A	8.07E-03	2.93E-04	1.04	FAILURE TO RESTORE RCCW TRAIN 3A HX
P21-TRN-RE-HX3B	8.07E-03	2.88E-04	1.03	FAILURE TO RESTORE RCCW TRAIN 3B HX
P21-TRN-RE-PUMP1A	8.07E-03	2.93E-04	1.04	FAILURE TO RESTORE RCCW TRAIN 1A PUMP
P21-TRN-RE-PUMP1B	8.07E-03	2.88E-04	1.03	FAILURE TO RESTORE RCCW TRAIN 1B PUMP
P21-TRN-RE-PUMP2A	8.07E-03	2.93E-04	1.04	FAILURE TO RESTORE RCCW TRAIN 2A PUMP
P21-TRN-RE-PUMP2B	8.07E-03	2.88E-04	1.03	FAILURE TO RESTORE RCCW TRAIN 2B PUMP
P21-TRN-RE-PUMP3A	8.07E-03	2.93E-04	1.04	FAILURE TO RESTORE RCCW TRAIN 3A PUMP
P21-TRN-RE-PUMP3B	8.07E-03	2.88E-04	1.03	FAILURE TO RESTORE RCCW TRAIN 3B PUMP
P21-UV_-CC-0001A1	1.00E-04	4.03E-07	1	CHECK VALVE 0001A1 FAILS TO OPEN
P21-UV_-CC-0001A2	1.00E-04	4.03E-07	1	CHECK VALVE 0001A2 FAILS TO OPEN
P21-UV_-CC-0001A3	1.00E-04	4.03E-07	1	CHECK VALVE 0001A3 FAILS TO OPEN
P21-UV_-CC-0001B1	1.00E-04	4.03E-07	1	CHECK VALVE 0001B1 FAILS TO OPEN
P21-UV_-CC-0001B2	1.00E-04	4.03E-07	1	CHECK VALVE 0001B2 FAILS TO OPEN
P21-UV_-CC-0001B3	1.00E-04	4.03E-07	1	CHECK VALVE 0001B3 FAILS TO OPEN

Table 22.13-11
Importance Measures Report Fussell-Vesely and Risk Achievement Worth
Internal Flooding Sensitivity Study
CDF = 3.30 E-9/year

Event Name	Probability	Fus Ves	RAW	Description
P22-NSC-TM-HXS	7.50E-05	2.02E-06	1.03	MULTIPLE TCCW HXS OUT FOR TESTING/ MAINTENANCE
P22-NSC-TM-PUMPS	7.50E-05	2.02E-06	1.03	MULTIPLE TCCW PUMPS OUT FOR TESTING/ MAINTENANCE
P30-ACV-CC_1_2	1.93E-04	7.26E-06	1.03	CCF of two components: P30-ACV-CC-F023 & P30-ACV-CC-F026
P41-ACV-CC_ALL	1.21E-04	2.33E-05	1.19	CCF of all components in group 'P41-ACV-CC'
P41-ACV-CC-F004A	2.00E-03	4.29E-05	1.02	AIR OPERATED VALVE F004A FAILS TO OPEN
P41-ACV-CC-F004B	2.00E-03	4.15E-05	1.02	AIR OPERATED VALVE F004B FAILS TO OPEN
P41-ACV-CC-F006A	2.00E-03	4.29E-05	1.02	AIR OPERATED VALVE F006A FAILS TO OPEN
P41-ACV-CC-F006B	2.00E-03	4.15E-05	1.02	AIR OPERATED VALVE F006B FAILS TO OPEN
P41-ACV-CC-F009A	2.00E-03	4.29E-05	1.02	AIR OPERATED VALVE F009A FAILS TO OPEN
P41-ACV-CC-F009B	2.00E-03	4.15E-05	1.02	AIR OPERATED VALVE F009B FAILS TO OPEN
P41-FAN-FR_1_2	4.44E-06	4.31E-05	10.53	CCF of two components: P41-FAN-FR-0001A & P41-FAN-FR-0001B
P41-FAN-FR_1_2_3	4.44E-07	2.49E-06	6.52	CCF of three components: P41-FAN-FR-0001A & P41-FAN-FR-0001B & P41-FAN-FR-0002A
P41-FAN-FR_1_2_4	4.44E-07	2.49E-06	6.52	CCF of three components: P41-FAN-FR-0001A & P41-FAN-FR-0001B & P41-FAN-FR-0002B
P41-FAN-FR_1_3_4	4.44E-07	2.49E-06	6.52	CCF of three components: P41-FAN-FR-0001A & P41-FAN-FR-0002A & P41-FAN-FR-0002B
P41-FAN-FR_1_4	4.44E-06	4.31E-05	10.53	CCF of two components: P41-FAN-FR-0001A & P41-FAN-FR-0002B
P41-FAN-FR_2_3	4.44E-06	4.31E-05	10.53	CCF of two components: P41-FAN-FR-0001B & P41-FAN-FR-0002A
P41-FAN-FR_2_3_4	4.44E-07	2.49E-06	6.52	CCF of three components: P41-FAN-FR-0001B & P41-FAN-FR-0002A & P41-FAN-FR-0002B
P41-FAN-FR_3_4	4.44E-06	4.31E-05	10.53	CCF of two components: P41-FAN-FR-0002A & P41-FAN-FR-0002B

Table 22.13-11
Importance Measures Report Fussell-Vesely and Risk Achievement Worth
Internal Flooding Sensitivity Study
CDF = 3.30 E-9/year

Event Name	Probability	Fus Ves	RAW	Description
P41-FAN-FR_ALL	1.20E-05	1.25E-04	11.37	CCF of all components in group 'P41-FAN-FR'
P41-FAN-FS-0001B	6.00E-04	4.70E-07	1	MECHANICAL DRAFT COOLING TOWER FAN 1B FAILS TO START
P41-FAN-FS-0002B	6.00E-04	4.70E-07	1	MECHANICAL DRAFT COOLING TOWER FAN 2B FAILS TO START
P41-MOV-CC-PMP_ALL	1.45E-04	1.57E-05	1.11	CCF of all components in group 'P41-MOV-CC-PMP'
P41-MOV-CC-PMPF002A	4.00E-03	7.12E-06	1	MOTOR OPERATED VALVE F002A FAILS TO OPEN
P41-MOV-CC-PMPF002B	4.00E-03	7.12E-06	1	MOTOR OPERATED VALVE F002B FAILS TO OPEN
P41-MOV-CC-PMPF004A	4.00E-03	5.63E-05	1.01	MOTOR OPERATED VALVE MV-F004A FAILS TO OPEN
P41-MOV-CC-PMPF004B	4.00E-03	5.63E-05	1.01	MOTOR OPERATED VALVE F004B FAILS TO OPEN
P41-MPW-FR_ALL	3.20E-06	3.06E-05	10.38	CCF of all components in group 'P41-MPW-FR'
P41-MPW-FR-C001A	6.00E-04	4.50E-06	1.01	MOTOR DRIVEN PUMP C001A FAILS TO RUN
P41-MPW-FR-C001B	6.00E-04	4.50E-06	1.01	MOTOR DRIVEN PUMP C001B FAILS TO RUN,
P41-MPW-FR-C002A	6.00E-04	4.50E-06	1.01	MOTOR DRIVEN PUMP C002A FAILS TO RUN
P41-MPW-FR-C002B	6.00E-04	4.50E-06	1.01	MOTOR-DRIVEN PUMP C002B FAILS TO RUN
P41-MPW-FS_1_2_3	1.89E-05	8.06E-07	1.04	CCF of three components: P41-MPW-FS-C001A & P41-MPW-FS-C001B & P41-MPW-FS-C002A
P41-MPW-FS_1_2_4	1.89E-05	8.06E-07	1.04	CCF of three components: P41-MPW-FS-C001A & P41-MPW-FS-C001B & P41-MPW-FS-C002B
P41-MPW-FS_1_3_4	1.89E-05	8.06E-07	1.04	CCF of three components: P41-MPW-FS-C001A & P41-MPW-FS-C002A & P41-MPW-FS-C002B
P41-MPW-FS_2_3_4	1.89E-05	8.06E-07	1.04	CCF of three components: P41-MPW-FS-C001B & P41-MPW-FS-C002A & P41-MPW-FS-C002B
P41-MPW-FS_ALL	1.15E-04	1.22E-05	1.1	CCF of all components in group 'P41-MPW-FS'

Table 22.13-11
Importance Measures Report Fussell-Vesely and Risk Achievement Worth
Internal Flooding Sensitivity Study
CDF = 3.30 E-9/year

Event Name	Probability	Fus Ves	RAW	Description
P41-MPW-FS-C001A	2.00E-03	1.34E-06	1	MOTOR-DRIVEN PUMP C001A FAILS TO START
P41-MPW-FS-C001B	2.00E-03	1.34E-06	1	MOTOR-DRIVEN PUMP C001B FAILS TO START
P41-MPW-FS-C002A	2.00E-03	2.15E-05	1.01	MOTOR-DRIVEN PUMP C002A FAILS TO START
P41-MPW-FS-C002B	2.00E-03	2.15E-05	1.01	MOTOR-DRIVEN PUMP C002B FAILS TO START
P41-NSC-TM-C002A	1.50E-03	1.34E-05	1.01	PUMP C002A IN MAINTENANCE
P41-NSC-TM-C002B	1.50E-03	1.34E-05	1.01	PUMP C002B IN MAINTENANCE
P41-STR-PG_ALL	5.68E-06	5.69E-05	10.91	CCF of all components in group 'P41-STR-PG'
P41-STR-PG-D01A	2.40E-04	3.36E-07	1	STRAINER P41-D001A PLUGGED
P41-STR-PG-D01B	2.40E-04	3.36E-07	1	STRAINER P41-D001B PLUGGED
P41-STR-PG-D02A	2.40E-04	3.36E-07	1	STRAINER P41-D002A PLUGGED
P41-STR-PG-D02B	2.40E-04	3.36E-07	1	STRAINER P41-D002B PLUGGED
P41-SYS-FC-HVACPSW-A	1.00E-03	1.65E-04	1.16	PSW-A ROOM COOLING FAILURE
P41-SYS-FC-HVACPSW-B	1.00E-03	1.65E-04	1.16	PSW-B ROOM COOLING FAILURE
P41-TRN-RE-PUMP1A	8.07E-03	1.77E-05	1	FAILURE TO RESTORE PSW PUMP 1A
P41-TRN-RE-PUMP1B	8.07E-03	1.77E-05	1	FAILURE TO RESTORE PSW PUMP 1B
P41-TRN-RE-PUMP2A	8.07E-03	1.24E-04	1.01	FAILURE TO RESTORE PSW PUMP 2A
P41-TRN-RE-PUMP2B	8.07E-03	1.24E-04	1.01	FAILURE TO RESTORE PSW PUMP 2B
P51-CMP-FR-0001-A	2.40E-03	6.79E-06	1	MOTOR-DRIVEN AIR COMPRESSOR 0001-A FAILS TO RUN
P51-CMP-FR-CCF_1_2	2.10E-05	4.70E-07	1.02	CCF of two components: P51-CMP-FR-0001-A & P51-CMP-FR-0001-B
P51-CMP-FR-CCF_ALL	5.68E-05	1.52E-04	3.65	CCF of all components in group 'P51-CMP-FR-CCF'
P51-CMP-FS-0001-A	2.00E-02	3.23E-06	1	MOTOR-DRIVEN AIR COMPRESS. 0001-A FAILS TO START
P51-CMP-FS-0001-B	2.00E-02	5.31E-06	1	MOTOR-DRIVEN AIR COMPRESS. 0001-B FAILS TO START

Table 22.13-11
Importance Measures Report Fussell-Vesely and Risk Achievement Worth
Internal Flooding Sensitivity Study
CDF = 3.30 E-9/year

Event Name	Probability	Fus Ves	RAW	Description
P51-CMP-FS-0001-C	2.00E-02	1.75E-06	1	MOTOR-DRIVEN AIR COMPRESS. 0001-C FAILS TO START
P51-CMP-FS-0001-D	2.00E-02	2.08E-06	1	MOTOR-DRIVEN AIR COMPRESS. 0001-D FAILS TO START
P51-CMP-FS-CCF_1_3	3.70E-04	1.48E-06	1	CCF of two components: P51-CMP-FS-0001-A & P51-CMP-FS-0001-C
P51-CMP-FS-CCF_2_4	3.70E-04	1.48E-06	1	CCF of two components: P51-CMP-FS-0001-B & P51-CMP-FS-0001-D
P51-CMP-FS-CCF_ALL	1.00E-03	1.87E-05	1.02	CCF of all components in group 'P51-CMP-FS-CCF'
P51-CMP-RE-0001-B	8.07E-03	4.70E-07	1	SERVICE AIR SYSTEM COMPRESSOR RESTORATION ERROR
P51-NST-TM-CMP0001-CD	9.00E-03	6.05E-07	1	BACKUP COMPRESSOR IN TEST OR MAINTENANCE
P51-XHE-FO-0001-CD	1.77E-02	5.04E-06	1	OPERATOR FAILS TO ALIGN ONE BACKUP CMP TO STANDBY
P51-XHE-P21-BU	1.77E-02	3.55E-03	1.2	OPERATOR ACTION TO CONNECT ALTERNATE COOLING GIVEN RCCW FAILED
P52-ACV_OC-0001-A	2.40E-05	5.38E-07	1.02	AOV FAILS TO REMAIN OPEN
P52-BV_-OC-0008	7.20E-07	9.41E-07	2.31	MANUAL VALVE TRANSFERS CLOSED
P52-FLT-PG-DRY-0001-A	2.40E-04	7.86E-06	1.03	DRYER 0001-A PLUGGED
P52-XHE-CC-0001-B	1.77E-02	2.68E-04	1.01	OPERATOR FAILS TO OPEN STANDBY TRAIN AOV 0001-B
P54-ACV-CC-F014	2.00E-03	2.85E-04	1.14	AIR OPERATED VALVE F014 FAILS TO OPEN
P54-ACV-OC-F009	2.40E-05	1.34E-06	1.06	F009 SPURIOUSLY CLOSED
P54-BV_-RE-F013A	4.04E-03	6.23E-04	1.15	RESTERATION ERROR OF F013A
P54-CPV-OC-F016	2.64E-05	1.34E-06	1.05	PRESSURE REGULATING FAILURE
P54-UV_-CC-F010	1.00E-04	9.68E-06	1.09	CHECK VALVE FAILS TO OPEN
R10-LOSP-EPRI	3.00E-03	1.94E-02	7.4	CONSEQUENTIAL LOSS OF PREFERRED OFFSITE POWER DUE TO A TRANSIENT
R10-MCB-CO-UATA	1.44E-05	2.15E-06	1.14	MEDIUM VOLTAGE CIRCUIT BREAKER ON UAT A OPENS

Table 22.13-11
Importance Measures Report Fussell-Vesely and Risk Achievement Worth
Internal Flooding Sensitivity Study
CDF = 3.30 E-9/year

Event Name	Probability	Fus Ves	RAW	Description
				SPURIOUSLY
R10-MCB-CO-UATB	1.44E-05	2.15E-06	1.14	MEDIUM VOLTAGE CIRCUIT BREAKER ON UAT B OPENS SPURIOUSLY
R10-SYS-FF-500KV	1.00E-03	5.18E-04	1.51	500KV SWITCHYARD FAILS DURING OPERATION
R10-SYS-TM-230KV	1.00E-02	2.69E-06	1	230 KV SWITCHYARD IN MAINTENANCE
R10-XFH-LP-UATA	2.88E-05	5.58E-06	1.19	TRANSFORMER (HIGH VOLTAGE) UAT A FAILS TO CONTINUE OPERATING
R10-XFH-LP-UATB	2.88E-05	5.58E-06	1.19	TRANSFORMER (HIGH VOLTAGE) UAT B FAILS TO CONTINUE OPERATING
R10-XFH-TM-UATA	1.00E-04	2.67E-05	1.26	TRANSFORMER (HIGH VOLTAGE) UAT A IN MAINTENANCE
R10-XFH-TM-UATB	1.00E-04	2.61E-05	1.26	TRANSFORMER (HIGH VOLTAGE) UAT B IN MAINTENANCE
R11-BAC-LP-100A3	4.80E-06	1.29E-05	3.66	6.9 KV AC PIP-A LOADS BUS 1000A3 FAILS DURING OPERATION
R11-BAC-LP-PIP_1_2	2.53E-07	3.56E-06	15.1	CCF of two components: R11-BAC-LP-100A3 & R11-BAC-LP-100B3
R11-BAC-TM-100A3	4.80E-06	1.29E-05	3.66	6.9 KV AC PIP-A LOADS BUS 1000A3 IN MAINTENANCE
R11-MCB-CC-A3RATAY	5.00E-04	3.96E-06	1.01	MEDIUM CIRCUIT BREAKER FOR RAT A Y-WINDING FAILS TO OPEN
R11-MCB-CC-A3UATAY	4.00E-03	9.00E-05	1.02	MEDIUM VOLTAGE CIRCUIT BREAKER FOR UAT A Y-WINDING FAILS TO OPEN
R11-MCB-CC-B3RATBY	5.00E-04	3.96E-06	1.01	MEDIUM CIRCUIT BREAKER FOR RAT B Y-WINDING FAILS TO OPEN
R11-MCB-CC-B3UATBY	4.00E-03	7.58E-05	1.02	MEDIUM VOLTAGE CIRCUIT BREAKER FOR UAT B Y-WINDING FAILS TO OPEN
R11-MCB-CC-CCFNORM_3_7	3.18E-05	1.21E-06	1.04	CCF of two components: R11-MCB-CC-A3RATAY & R11-MCB-CC-B3RATBY

Table 22.13-11
Importance Measures Report Fussell-Vesely and Risk Achievement Worth
Internal Flooding Sensitivity Study
CDF = 3.30 E-9/year

Event Name	Probability	Fus Ves	RAW	Description
R11-MCB-CC-CCFNORM_3_8	3.18E-05	1.21E-06	1.04	CCF of two components: R11-MCB-CC-A3RATAY & R11-MCB-CC-B3UATBY
R11-MCB-CC-CCFNORM_4_7	3.18E-05	1.21E-06	1.04	CCF of two components: R11-MCB-CC-A3UATAY & R11-MCB-CC-B3RATBY
R11-MCB-CC-CCFNORM_4_8	3.18E-05	1.21E-06	1.04	CCF of two components: R11-MCB-CC-A3UATAY & R11-MCB-CC-B3UATBY
R11-MCB-CC-CCFNORM_ALL	2.00E-04	1.72E-05	1.09	CCF of all components in group 'R11-MCB-CC-CCFNORM'
R11-MCB-CO-A3UATAY	1.44E-05	2.15E-06	1.14	MEDIUM VOLTAGE CIRCUIT BREAKER FOR UAT A Y-WINDING OPENS SPURIOUSLY
R11-MCB-CO-B3UATBY	1.44E-05	2.15E-06	1.14	MEDIUM VOLTAGE CIRCUIT BREAKER FOR UAT B Y-WINDING OPENS SPURIOUSLY
R11-MCB-OO-A3DGA	2.40E-03	4.21E-05	1.02	MEDIUM VOLTAGE CIRCUIT BREAKER FOR DG-A FAILS TO CLOSE
R11-MCB-OO-B3DGA	2.40E-03	4.05E-05	1.02	MEDIUM VOLTAGE CIRCUIT BREAKER FOR DG-B FAILS TO CLOSE
R11-MCB-OO-CCFALT_3_7	1.91E-05	8.06E-07	1.04	CCF of two components: R11-MCB-OO-A3DGA & R11-MCB-OO-B3DGA
R11-MCB-OO-CCFALT_ALL	1.20E-04	9.21E-06	1.07	CCF of all components in group 'R11-MCB-OO-CCFALT'
R11-RE_-FO-CCFUV_ALL	4.38E-05	1.75E-06	1.04	CCF of all components in group 'R11-RE_-FO-CCFUV'
R11-RE_-FO-UV00A3	8.75E-04	9.47E-06	1.01	1000A3 UV RELAY FAILS TO OPERATE ON UV COND
R11-RE_-FO-UV00B3	8.75E-04	8.33E-06	1.01	1000B3 UV RELAY FAILS TO OPERATE ON UV COND
R12-LCB-CO-BO14A	1.20E-05	1.81E-06	1.15	R12-TB1-A XMFR OUTPUT CIRCUIT BREAKER TO BUS R12-TB1-A OPEN SPURIOUSLY
R12-LCB-CO-BO14B	1.20E-05	1.81E-06	1.15	R12-TB1-B XMFR OUTPUT CIRCUIT BREAKER TO BUS R12-TB1-B OPEN SPURIOUSLY

Table 22.13-11
Importance Measures Report Fussell-Vesely and Risk Achievement Worth
Internal Flooding Sensitivity Study
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Event Name	Probability	Fus Ves	RAW	Description
R12-LCB-CO-BOA2-02A	1.20E-05	1.81E-06	1.15	R12-A2-02A XMFR OUTPUT CIRCUIT BREAKER TO BUS R12-A2-02A OPEN SPURIOUSLY
R12-LCB-CO-BOB2-02B	1.20E-05	1.81E-06	1.15	R12-B2-02B XMFR OUTPUT CIRCUIT BREAKER TO BUS R12-B2-02B OPEN SPURIOUSLY
R12-MCB-CO-BI14A	1.44E-05	2.49E-06	1.17	R12-TB1-A XMFR INPUT CIRCUIT BREAKER FROM PIP BUS 1000A3 OPENS SPURIOUSLY
R12-MCB-CO-BI14B	1.44E-05	2.15E-06	1.14	R12-TB1-B XMFR INPUT CIRCUIT BREAKER FROM PIP BUS 1000B3 OPENS SPURIOUSLY
R12-MCB-CO-BIA2-02A	1.44E-05	2.15E-06	1.14	R12-A2-02A XMFR INPUT CIRCUIT BREAKER FROM PIP BUS 1000A3 OPENS SPURIOUSLY
R12-MCB-CO-BIB2-02B	1.44E-05	2.15E-06	1.14	R12-B2-02B XMFR INPUT CIRCUIT BREAKER FROM PIP BUS 1000B3 OPENS SPURIOUSLY
R12-XFL-LP-X014A	1.92E-05	3.29E-06	1.17	R12-TB1-A XMFR FROM PIP BUS 1000A3 FAILS TO OPERATE
R12-XFL-LP-X014B	1.92E-05	2.82E-06	1.15	R12-TB1-B XMFR FROM PIP BUS 1000B3 FAILS TO OPERATE
R12-XFL-LP-XA2-02A	1.92E-05	2.82E-06	1.15	R12-A2-02A XMFR FROM PIP BUS 1000A3 FAILS TO OPERATE
R12-XFL-LP-XB2-02B	1.92E-05	2.82E-06	1.15	R12-B2-02B XMFR FROM PIP BUS 1000B3 FAILS TO OPERATE
R13-BAC-LP-R13C	4.80E-06	1.32E-04	28.35	BUS R13-C FAILS DURING OPERATION
R13-BAC-LP-R13CBC	4.80E-06	1.32E-04	28.35	R13 CONTROL BLDG LOAD GROUP C FAILS DURING OPERATION
R13-BAC-LP-R13RBC	4.80E-06	1.32E-04	28.35	R13 REACTOR BLDG LOAD GROUP C FAILS DURING OPERATION
R13-BAC-LP-R13TBC	4.80E-06	1.21E-06	1.24	R13 TURBINE/SWGR BLDG LOAD GROUP C FAILS DURING OPERATION
R13-DIO-FC-R16CR13C	3.43E-05	1.00E-03	30.16	DIODE FROM R16-C FAILS TO OPERATE

Table 22.13-11
Importance Measures Report Fussell-Vesely and Risk Achievement Worth
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Event Name	Probability	Fus Ves	RAW	Description
R13-INV-FC-CCFNSR_1_2_5	2.11E-07	4.10E-06	20.14	CCF of three components: R13-INV-FC-R13A1 & R13-INV-FC-R13A2 & R13-INV-FC-R13C
R13-INV-FC-CCFNSR_1_3	3.16E-06	3.83E-06	2.17	CCF of two components: R13-INV-FC-R13A1 & R13-INV-FC-R13B1
R13-INV-FC-CCFNSR_1_3_5	2.11E-07	1.44E-04	679.2	CCF of three components: R13-INV-FC-R13A1 & R13-INV-FC-R13B1 & R13-INV-FC-R13C
R13-INV-FC-CCFNSR_1_4_5	2.11E-07	4.10E-06	20.14	CCF of three components: R13-INV-FC-R13A1 & R13-INV-FC-R13B2 & R13-INV-FC-R13C
R13-INV-FC-CCFNSR_1_5	3.16E-06	8.49E-05	27.68	CCF of two components: R13-INV-FC-R13A1 & R13-INV-FC-R13C
R13-INV-FC-CCFNSR_2_3_5	2.11E-07	4.10E-06	20.14	CCF of three components: R13-INV-FC-R13A2 & R13-INV-FC-R13B1 & R13-INV-FC-R13C
R13-INV-FC-CCFNSR_2_4	3.16E-06	3.36E-07	1.11	CCF of two components: R13-INV-FC-R13A2 & R13-INV-FC-R13B2
R13-INV-FC-CCFNSR_2_4_5	2.11E-07	4.10E-06	20.14	CCF of three components: R13-INV-FC-R13A2 & R13-INV-FC-R13B2 & R13-INV-FC-R13C
R13-INV-FC-CCFNSR_2_5	3.16E-06	8.49E-05	27.68	CCF of two components: R13-INV-FC-R13A2 & R13-INV-FC-R13C
R13-INV-FC-CCFNSR_3_4_5	2.11E-07	4.10E-06	20.14	CCF of three components: R13-INV-FC-R13B1 & R13-INV-FC-R13B2 & R13-INV-FC-R13C
R13-INV-FC-CCFNSR_3_5	3.16E-06	8.49E-05	27.68	CCF of two components: R13-INV-FC-R13B1 & R13-INV-FC-R13C
R13-INV-FC-CCFNSR_4_5	3.16E-06	8.49E-05	27.68	CCF of two components: R13-INV-FC-R13B2 & R13-INV-FC-R13C
R13-INV-FC-CCFNSR_ALL	1.14E-05	9.07E-03	797.18	CCF of all components in group 'R13-INV-FC-CCFNSR'
R13-INV-FC-CCFSR_ALL	1.14E-05	3.26E-03	286.45	CCF of all components in group 'R13-INV-FC-CCFSR'
R13-INV-FC-R13C	4.80E-04	1.46E-02	31.32	INVERTER TO R13-C FAILS
R13-LCB-CO-FR13CBC	1.20E-05	3.40E-04	29.17	CIRCUIT BREAKER 1 TO R13-CBC OPENS SPURIOUSLY

Table 22.13-11
Importance Measures Report Fussell-Vesely and Risk Achievement Worth
Internal Flooding Sensitivity Study
CDF = 3.30 E-9/year

Event Name	Probability	Fus Ves	RAW	Description
R13-LCB-CO-FR13RBC	1.20E-05	3.40E-04	29.17	CIRCUIT BREAKER 1 TO R13-RBC OPENS SPURIOUSLY
R13-LCB-CO-FR13TBC	1.20E-05	2.96E-06	1.25	CIRCUIT BREAKER 1 TO R13-TBC OPENS SPURIOUSLY
R13-LCB-CO-R13CBC	1.20E-05	3.40E-04	29.17	CIRCUIT BREAKER 2 TO R13-CBC OPENS SPURIOUSLY
R13-LCB-CO-R13RBC	1.20E-05	3.40E-04	29.17	CIRCUIT BREAKER 2 TO R13-RBC OPENS SPURIOUSLY
R13-LCB-CO-R13TBC	1.20E-05	2.96E-06	1.25	CIRCUIT BREAKER 2 TO R13-TBC OPENS SPURIOUSLY
R13-LCB-CO-R16CR13C	1.20E-05	3.40E-04	29.17	CIRCUIT BREAKER FROM R16-C OPENS SPURIOUSLY
R13-LCB-CO-TOR13C	1.20E-05	3.40E-04	29.17	CIRCUIT BREAKER TO R13-C OPENS SPURIOUSLY
R13-MTS-CO-R13C	2.40E-05	6.95E-04	29.9	MAINTENANCE TRANSFER SWITCH FOR R13-C SPURIOUSLY OPENS
R13-SXS-CO-R13C	2.40E-05	6.95E-04	29.9	STATIC SWITCH FOR R13-C SPURIOUSLY OPENS
R13-XFL-LP-CCFNSR2_1_2	5.05E-08	3.23E-06	63.51	CCF of two components: R13-XFL-LP-R13CBA & R13-XFL-LP-R13CBB
R13-XFL-LP-CCFNSR2_1_2_3	1.12E-09	1.46E-05	1.30E+04	CCF of three components: R13-XFL-LP-R13CBA & R13-XFL-LP-R13CBB & R13-XFL-LP-R13C
R13-XFL-LP-CCFNSR2_1_3	5.05E-08	5.38E-07	10.97	CCF of two components: R13-XFL-LP-R13CBA & R13-XFL-LP-R13CBC
R13-XFL-LP-CCFNSR2_1_8	5.05E-08	5.38E-07	10.97	CCF of two components: R13-XFL-LP-R13CBA & R13-XFL-LP-R13RBC
R13-XFL-LP-CCFNSR2_2_3	5.05E-08	5.38E-07	10.97	CCF of two components: R13-XFL-LP-R13CBB & R13-XFL-LP-R13CBC
R13-XFL-LP-CCFNSR2_2_8	5.05E-08	5.38E-07	10.97	CCF of two components: R13-XFL-LP-R13CBB & R13-XFL-LP-R13RBC
R13-XFL-LP-CCFNSR2_3_10	5.05E-08	5.38E-07	10.97	CCF of two components: R13-XFL-LP-R13CBC & R13-XFL-LP-R13TBB
R13-XFL-LP-CCFNSR2_3_11	5.05E-08	5.38E-07	10.97	CCF of two components: R13-XFL-LP-R13CBC & R13-XFL-LP-R13TBC
R13-XFL-LP-CCFNSR2_3_4	5.05E-08	5.38E-07	10.97	CCF of two components: R13-XFL-LP-R13CBC & R13-XFL-LP-R13CPA
R13-XFL-LP-CCFNSR2_3_5	5.05E-08	5.38E-07	10.97	CCF of two components: R13-XFL-LP-R13CBC & R13-XFL-LP-R13CPB
R13-XFL-LP-CCFNSR2_3_6	5.05E-08	5.38E-07	10.97	CCF of two components: R13-XFL-LP-R13CBC & R13-XFL-LP-R13RBA
R13-XFL-LP-CCFNSR2_3_7	5.05E-08	5.38E-07	10.97	CCF of two components: R13-XFL-LP-R13CBC & R13-XFL-LP-R13RBB

Table 22.13-11
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Event Name	Probability	Fus Ves	RAW	Description
R13-XFL-LP-CCFNSR2_3_8	5.05E-08	5.38E-07	10.97	CCF of two components: R13-XFL-LP-R13CBC & R13-XFL-LP-R13RBC
R13-XFL-LP-CCFNSR2_3_9	5.05E-08	5.38E-07	10.97	CCF of two components: R13-XFL-LP-R13CBC & R13-XFL-LP-R13TBA
R13-XFL-LP-CCFNSR2_4_8	5.05E-08	5.38E-07	10.97	CCF of two components: R13-XFL-LP-R13CPA & R13-XFL-LP-R13RBC
R13-XFL-LP-CCFNSR2_5_8	5.05E-08	5.38E-07	10.97	CCF of two components: R13-XFL-LP-R13CPB & R13-XFL-LP-R13RBC
R13-XFL-LP-CCFNSR2_6_7	5.05E-08	3.23E-06	63.51	CCF of two components: R13-XFL-LP-R13RBA & R13-XFL-LP-R13RBB
R13-XFL-LP-CCFNSR2_6_8	5.05E-08	5.38E-07	10.97	CCF of two components: R13-XFL-LP-R13RBA & R13-XFL-LP-R13RBC
R13-XFL-LP-CCFNSR2_7_8	5.05E-08	5.38E-07	10.97	CCF of two components: R13-XFL-LP-R13RBB & R13-XFL-LP-R13RBC
R13-XFL-LP-CCFNSR2_8_10	5.05E-08	5.38E-07	10.97	CCF of two components: R13-XFL-LP-R13RBC & R13-XFL-LP-R13TBB
R13-XFL-LP-CCFNSR2_8_11	5.05E-08	5.38E-07	10.97	CCF of two components: R13-XFL-LP-R13RBC & R13-XFL-LP-R13TBC
R13-XFL-LP-CCFNSR2_8_9	5.05E-08	5.38E-07	10.97	CCF of two components: R13-XFL-LP-R13RBC & R13-XFL-LP-R13TBA
R13-XFL-LP-CCFNSR2_ALL	4.55E-07	7.47E-03	1.64E+04	CCF of all components in group 'R13-XFL-LP-CCFNSR2'
R13-XFL-LP-R13CBC	1.92E-05	5.53E-04	29.7	TRANSFORMER FOR R13-CBC FAILS DURING OPERATION
R13-XFL-LP-R13RBC	1.92E-05	5.53E-04	29.7	TRANSFORMER FOR R13-RBC FAILS DURING OPERATION
R13-XFL-LP-R13TBC	1.92E-05	5.24E-06	1.27	TRANSFORMER FOR R13-TBC FAILS DURING OPERATION
R13-XHE-FO-ADG	1.61E-02	2.38E-03	1.14	OPERATOR FAILS TO ALIGN THE ADG BUSES TO UPS BUSES
R16-BDC-LP-R16C	4.80E-06	1.32E-04	28.35	DC BUS R16-C FAILS DURING OPERATION
R16-BDC-TM-R16A3	5.00E-04	6.38E-05	1.13	DC BUS R16-A3 IN MAINTENANCE
R16-BDC-TM-R16B3	5.00E-04	3.96E-06	1.01	DC BUS R16-B3 IN MAINTENANCE
R16-BDC-TM-R16C	5.00E-04	1.52E-02	31.32	DC BUS R16-C IN MAINTENANCE
R16-BT_-LP-CCFNSR_1_3_5	1.51E-08	6.05E-06	397.59	CCF of three components: R16-BT_-LP-R16BTA1 & R16-BT_-LP-R16BTB1 & R16-BT_-LP-R1
R16-BT_-LP-CCFNSR_1_5	3.00E-07	5.78E-06	20.15	CCF of two components: R16-BT_-LP-R16BTA1 & R16-BT_-LP-R16BTC

Table 22.13-11
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Internal Flooding Sensitivity Study
CDF = 3.30 E-9/year

Event Name	Probability	Fus Ves	RAW	Description
R16-BT_-LP-CCFNSR_2_5	3.00E-07	5.78E-06	20.15	CCF of two components: R16-BT_-LP-R16BTA2 & R16-BT_-LP-R16BTC
R16-BT_-LP-CCFNSR_3_5	3.00E-07	5.78E-06	20.15	CCF of two components: R16-BT_-LP-R16BTB1 & R16-BT_-LP-R16BTC
R16-BT_-LP-CCFNSR_4_5	3.00E-07	5.78E-06	20.15	CCF of two components: R16-BT_-LP-R16BTB2 & R16-BT_-LP-R16BTC
R16-BT_-LP-CCFNSR_ALL	8.14E-07	5.98E-04	731.73	CCF of all components in group 'R16-BT_-LP-CCFNSR'
R16-BT_-LP-CCFSR_ALL	8.14E-07	1.80E-04	220.24	CCF of all components in group 'R16-BT_-LP-CCFSR'
R16-BT_-LP-R16BTC	4.80E-05	1.41E-03	30.35	BATTERY R16-BTC FAILS TO PROVIDE OUTPUT
R16-BT_-TM-R16BTA3	5.00E-04	6.38E-05	1.13	BATTERY R16-BTA3 IN TEST AND MAINTENANCE
R16-BT_-TM-R16BTB3	5.00E-04	3.96E-06	1.01	BATTERY R16-BTB3 IN TEST AND MAINTENANCE
R16-BT_-TM-R16BTC	5.00E-04	1.52E-02	31.32	BATTERY R16-BTC IN TEST AND MAINTENANCE
R16-LCB-CO-FROMR16BTC	1.20E-05	3.40E-04	29.17	CIRCUIT BREAKER FROM R16-BTC OPENS SPURIOUSLY
R21-AHU-FR-3A	2.40E-04	9.41E-07	1	AIR HANDLING UNIT FAILS TO RUN
R21-AHU-FR-3B	2.40E-04	9.41E-07	1	AIR HANDLING UNIT FAILS TO RUN
R21-AHU-FS-3A	6.00E-03	1.99E-04	1.03	AIR HANDLING UNIT FAILS TO START
R21-AHU-FS-3B	6.00E-03	1.94E-04	1.03	AIR HANDLING UNIT FAILS TO START
R21-AHU-FS-AHU3_1_2	6.67E-04	1.21E-04	1.18	CCF of two components: R21-AHU-FS-3A & R21-AHU-FS-3B
R21-DG_-FR-ADG_1_2	2.95E-03	2.97E-04	1.1	CCF of two components: R21-DG_-FR-ADGA & R21-DG_-FR-ADGB
R21-DG_-FR-ADGA	5.60E-02	7.60E-04	1.01	ADG-A FAILS TO RUN
R21-DG_-FR-ADGB	5.60E-02	7.60E-04	1.01	DIESEL GENERATOR FAILS TO RUN
R21-DG_-FR-CCF_1_2	4.41E-03	1.00E-03	1.23	CCF of two components: R21-DG_-FR-DGA & R21-DG_-FR-DGB
R21-DG_-FR-DGA	5.60E-02	3.10E-03	1.05	DIESEL GENERATOR "A" FAILS TO RUN GIVEN START
R21-DG_-FR-DGB	5.60E-02	3.04E-03	1.05	DIESEL GENERATOR "B" FAILS TO RUN GIVEN START
R21-DG_-FS-ADG_1_2	1.56E-03	1.36E-04	1.08	CCF of two components: R21-DG_-FS-ADGA & R21-DG_-FS-ADGB

Table 22.13-11
Importance Measures Report Fussell-Vesely and Risk Achievement Worth
Internal Flooding Sensitivity Study
CDF = 3.30 E-9/year

Event Name	Probability	Fus Ves	RAW	Description
R21-DG_-FS-ADGA	1.40E-02	1.06E-04	1.01	DIESEL GENERATOR FAILS TO START AND LOAD
R21-DG_-FS-ADGB	1.40E-02	1.06E-04	1.01	DIESEL GENERATOR FAILS TO START AND LOAD
R21-DG_-FS-CCF_1_2	2.86E-04	4.35E-05	1.15	CCF of two components: R21-DG_-FS-DGA & R21-DG_-FS-DGB
R21-DG_-FS-DGA	1.40E-02	5.76E-04	1.04	DG-A FAILS TO START AND LOAD
R21-DG_-FS-DGB	1.40E-02	5.63E-04	1.04	DG-B FAILS TO START AND LOAD
R21-DG_-TM-ADGA	4.60E-02	3.91E-04	1.01	ANCILLARY DG-A IN MAINTENANCE
R21-DG_-TM-ADGB	4.60E-02	3.91E-04	1.01	ANCILLARY DG-B IN MAINTENANCE
R21-DG_-TM-DGA	4.60E-02	2.03E-03	1.04	STANDBY DIESEL GENERATOR "A" IN MAINTENANCE
R21-DG_-TM-DGB	4.60E-02	1.98E-03	1.04	STANDBY DIESEL GENERATOR "B" IN MAINTENANCE
R21-FAN-FR-AHU2A	2.40E-04	9.41E-07	1	DG-A NORMAL VENTILATION FAN FAILS TO RUN
R21-FAN-FR-AHU2B	2.40E-04	9.41E-07	1	DG-B NORMAL VENTILATION FAN FAILS TO RUN
R21-FAN-FS-ADG_1_2	6.67E-05	6.72E-07	1.01	CCF of two components: R21-FAN-FS-ADGA & R21-FAN-FS-ADGB
R21-FAN-FS-AHU2_1_2	6.67E-05	5.24E-06	1.08	CCF of two components: R21-FAN-FS-AHU2A & R21-FAN-FS-AHU2B
R21-FAN-FS-AHU2A	6.00E-04	6.12E-06	1.01	DG-A NORMAL VENTILATION FAN FAILS TO RESTART
R21-FAN-FS-AHU2B	6.00E-04	6.12E-06	1.01	DG-B NORMAL VENTILATION FAN FAILS TO RESTART
R21-FAN-FS-ROOF_ALL	3.00E-05	2.55E-06	1.08	CCF of all components in group 'R21-FAN-FS-ROOF'
R21-FLT-PG-ADGA	1.08E-02	7.30E-05	1.01	FILTER PLUGGED
R21-FLT-PG-ADGB	1.08E-02	7.30E-05	1.01	FILTER PLUGGED
R21-FLT-PG-DGA	1.08E-02	4.19E-04	1.04	FILTER PLUGGED
R21-FLT-PG-DGB	1.08E-02	4.09E-04	1.04	FILTER PLUGGED
R21-MCB-CC-1LOAD1	5.00E-04	3.96E-06	1.01	CIRCUIT BREAKER TO LOAD 1 FAILS TO OPEN
R21-MCB-CC-1LOAD2	5.00E-04	3.96E-06	1.01	CIRCUIT BREAKER TO LOAD 2 FAILS TO OPEN

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Event Name	Probability	Fus Ves	RAW	Description
R21-MCB-CC-1LOAD3	5.00E-04	3.96E-06	1.01	CIRCUIT BREAKER TO LOAD 3 FAILS TO OPEN
R21-MCB-CC-1LOAD4	5.00E-04	3.96E-06	1.01	CIRCUIT BREAKER TO LOAD 4 FAILS TO OPEN
R21-MCB-CC-1LOAD5	5.00E-04	3.96E-06	1.01	CIRCUIT BREAKER TO LOAD 5 FAILS TO OPEN
R21-MCB-CC-2LOAD1	5.00E-04	3.96E-06	1.01	CIRCUIT BREAKER TO LOAD 1 FAILS TO OPEN
R21-MCB-CC-2LOAD2	5.00E-04	3.96E-06	1.01	CIRCUIT BREAKER TO LOAD 2 FAILS TO OPEN
R21-MCB-CC-2LOAD3	5.00E-04	3.96E-06	1.01	CIRCUIT BREAKER TO LOAD 3 FAILS TO OPEN
R21-MCB-CC-2LOAD4	5.00E-04	3.96E-06	1.01	CIRCUIT BREAKER TO LOAD 4 FAILS TO OPEN
R21-MCB-CC-2LOAD5	5.00E-04	3.96E-06	1.01	CIRCUIT BREAKER TO LOAD 5 FAILS TO OPEN
R21-MCB-CC-CCFLS_1_2	5.56E-05	4.57E-06	1.08	CCF of two components: R21-MCB-CC-1LOAD1 & R21-MCB-CC-2LOAD1
R21-MOD-CC-1A	3.00E-03	7.48E-05	1.02	MOTOR-OPERATED DAMPER FAILS TO OPEN
R21-MOD-CC-1B	3.00E-03	7.28E-05	1.02	MOTOR-OPERATED DAMPER FAILS TO OPEN
R21-MOD-CC-2A	3.00E-03	7.48E-05	1.02	MOTOR-OPERATED DAMPER FAILS TO OPEN
R21-MOD-CC-2B	3.00E-03	7.28E-05	1.02	MOTOR-OPERATED DAMPER FAILS TO OPEN
R21-MOD-CC-3A	3.00E-03	7.48E-05	1.02	MOTOR-OPERATED DAMPER FAILS TO OPEN
R21-MOD-CC-3B	3.00E-03	7.28E-05	1.02	MOTOR-OPERATED DAMPER FAILS TO OPEN
R21-MOD-CC-EXH_ALL	1.50E-04	1.62E-05	1.11	CCF of all components in group 'R21-MOD-CC-EXH'
R21-MOD-CC-INL_1_2	3.33E-05	2.69E-06	1.08	CCF of two components: R21-MOD-CC-1A & R21-MOD-CC-1B
R21-MOD-CC-INL_1_4	3.33E-05	2.69E-06	1.08	CCF of two components: R21-MOD-CC-1A & R21-MOD-CC-2B
R21-MOD-CC-INL_1_6	3.33E-05	2.69E-06	1.08	CCF of two components: R21-MOD-CC-1A & R21-MOD-CC-3B
R21-MOD-CC-INL_2_3	3.33E-05	2.69E-06	1.08	CCF of two components: R21-MOD-CC-1B & R21-MOD-CC-2A
R21-MOD-CC-INL_2_5	3.33E-05	2.69E-06	1.08	CCF of two components: R21-MOD-CC-1B & R21-MOD-CC-3A
R21-MOD-CC-INL_3_4	3.33E-05	2.69E-06	1.08	CCF of two components: R21-MOD-CC-2A & R21-MOD-CC-2B

Table 22.13-11
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Event Name	Probability	Fus Ves	RAW	Description
R21-MOD-CC-INL_3_6	3.33E-05	2.69E-06	1.08	CCF of two components: R21-MOD-CC-2A & R21-MOD-CC-3B
R21-MOD-CC-INL_4_5	3.33E-05	2.69E-06	1.08	CCF of two components: R21-MOD-CC-2B & R21-MOD-CC-3A
R21-MOD-CC-INL_5_6	3.33E-05	2.69E-06	1.08	CCF of two components: R21-MOD-CC-3A & R21-MOD-CC-3B
R21-MOD-CC-INL_ALL	1.50E-04	1.62E-05	1.11	CCF of all components in group 'R21-MOD-CC-INL'
R21-MP_-FS-ADG_1_2	2.22E-04	7.26E-06	1.03	CCF of two components: R21-MP_-FS-FOADGA & R21-MP_-FS-FOADGB
R21-MP_-FS-FOADGA	2.00E-03	3.36E-06	1	MOTOR-DRIVEN PUMP (ALL TYPES) FAILS TO START
R21-MP_-FS-FOADGB	2.00E-03	3.36E-06	1	MOTOR-DRIVEN PUMP (ALL TYPES) FAILS TO START
R21-MP_-FS-FOPUMP_ALL	1.00E-04	1.06E-05	1.1	CCF of all components in group 'R21-MP_-FS-FOPUMP'
R21-NSC-TM-ANCA	1.50E-03	7.31E-04	1.48	ADG BUS A IN TEST OR MAINTENANCE
R21-NSC-TM-ANCB	1.50E-03	8.06E-07	1	ADG BUS B IN TEST OR MAINTENANCE
R21-RE_-FO-ADG_1_2	9.73E-05	9.41E-07	1.01	CCF of two components: R21-RE_-FO-ADGA & R21-RE_-FO-ADGB
R21-TRN-RE-FOADGA	2.42E-02	2.47E-04	1.01	FAILURE TO RESTORE FUEL OIL TRANSFER TRAIN FOR ADG-A
R21-TRN-RE-FOADGB	2.42E-02	2.47E-04	1.01	FAILURE TO RESTORE FUEL OIL TRANSFER TRAIN FOR ADG-A
R21-TRN-RE-FODG1A	2.42E-02	6.05E-06	1	FAILURE TO RESTORE FUEL OIL TRANSFER TRAIN 1 FOR DG-A
R21-TRN-RE-FODG1B	2.42E-02	6.05E-06	1	FAILURE TO RESTORE FUEL OIL TRANSFER TRAIN 1 FOR DG-B
R21-TRN-RE-FODG2A	2.42E-02	6.05E-06	1	FAILURE TO RESTORE FUEL OIL TRANSFER TRAIN 2 FOR DG-A
R21-TRN-RE-FODG2B	2.42E-02	6.05E-06	1	FAILURE TO RESTORE FUEL OIL TRANSFER TRAIN 2 FOR DG-B
R21-XHE-FO-ADG	1.61E-02	2.46E-03	1.15	OPERATOR FAILS TO CONTROL THE LOADS ON ANCILLARY DG BUSES
T10-ACV-OO-ISV1	2.00E-03	5.67E-05	1.03	AIR OPERATED VALVE FAILS TO CLOSE
T10-ACV-OO-ISV2	2.00E-03	5.67E-05	1.03	AIR OPERATED VALVE FAILS TO CLOSE
T10-ACV-OO-ISV3	2.00E-03	5.67E-05	1.03	AIR OPERATED VALVE FAILS TO CLOSE

Table 22.13-11
Importance Measures Report Fussell-Vesely and Risk Achievement Worth
Internal Flooding Sensitivity Study
CDF = 3.30 E-9/year

Event Name	Probability	Fus Ves	RAW	Description
T10-VB_-CC_1_2_3	5.56E-07	1.32E-04	237.21	CCF of three components: T10-VB_-CC-VB1 & T10-VB_-CC-VB2 & T10-VB_-CC-VB3
T10-VB_-LK-VB1	1.00E-04	3.58E-04	4.55	PROBABILITY OF LEAK IN VACUUM BREAKER 1
T10-VB_-LK-VB2	1.00E-04	3.58E-04	4.55	PROBABILITY OF LEAK IN VACUUM BREAKER 2
T10-VB_-LK-VB3	1.00E-04	3.58E-04	4.55	PROBABILITY OF LEAK IN VACUUM BREAKER 3
T10-XHE-FO-CONTVENT	1.77E-02	8.00E-05	1	OPERATOR FAILS TO ACTUATE CONTAINMENT VENTING
T15-FLT-PP_ALL	5.68E-07	2.51E-04	435.82	CCF of all components in group 'T15-FLT-PP'
T15-HX_-PP_ALL	5.68E-08	9.68E-06	171.24	CCF of all components in group 'T15-HX_-PP'
T31-P54-SUPPLY	9.00E-01	9.19E-04	1	CIS SYSTEM NORMAL NITROGEN SUPPLY
U43-BV_CC_1_2	8.77E-07	1.34E-06	2.53	CCF of two components: U43-BV_-CC-F426A & U43-BV_-CC-F426B
U43-BV_CC_1_4	8.77E-07	1.34E-06	2.53	CCF of two components: U43-BV_-CC-F426A & U43-BV_-CC-FU435B
U43-BV_CC_2_3	8.77E-07	1.34E-06	2.53	CCF of two components: U43-BV_-CC-F426B & U43-BV_-CC-FU435A
U43-BV_CC_3_4	8.77E-07	1.34E-06	2.53	CCF of two components: U43-BV_-CC-FU435A & U43-BV_-CC-FU435B
U43-BV_CC_ALL	2.37E-06	4.57E-06	2.9	CCF of all components in group 'U43-BV_CC'
U43-EDP-FR_1_2	5.58E-04	7.53E-06	1.01	CCF of two components: U43-EDP-FR-P1A & U43-EDP-FR-P2A
U43-EDP-FR-P1A	2.37E-02	1.99E-05	1	DIESEL-DRIVEN PUMP FAILS TO RUN
U43-EDP-FR-P2A	2.37E-02	1.45E-05	1	DIESEL-DRIVEN PUMP FAILS TO RUN
U43-EDP-FS_1_2	2.22E-03	4.65E-05	1.02	CCF of two components: U43-EDP-FS-P1A & U43-EDP-FS-P2A
U43-EDP-FS-P1A	2.00E-02	1.61E-05	1	DIESEL-DRIVEN PUMP FAILS TO START
U43-EDP-FS-P2A	2.00E-02	1.18E-05	1	DIESEL-DRIVEN PUMP 2A FAILS TO START
U43-TNK-RP-T1A	3.72E-05	5.91E-06	1.16	PRIMARY TANK 1A FAILS CATASTOPHICALLY

Table 22.13-11
Importance Measures Report Fussell-Vesely and Risk Achievement Worth
Internal Flooding Sensitivity Study
CDF = 3.30 E-9/year

Event Name	Probability	Fus Ves	RAW	Description
U43-UV_-CC2_1_2_3	9.18E-07	1.61E-06	2.61	CCF of three components: G21-UV_-CC-F427A & G21-UV_-CC-F427B & U43-UV_-CC-FU434A
U43-UV_-CC2_1_2_4	9.18E-07	1.61E-06	2.61	CCF of three components: G21-UV_-CC-F427A & G21-UV_-CC-F427B & U43-UV_-CC-FU434B
U43-UV_-CC2_1_3_4	9.18E-07	1.61E-06	2.61	CCF of three components: G21-UV_-CC-F427A & U43-UV_-CC-FU434A & U43-UV_-CC-FU434
U43-UV_-CC2_2_3_4	9.18E-07	1.61E-06	2.61	CCF of three components: G21-UV_-CC-F427B & U43-UV_-CC-FU434A & U43-UV_-CC-FU434
U43-UV_-CC2_ALL	1.69E-05	7.41E-05	5.34	CCF of all components in group 'U43-UV_-CC'
U43-XHE-FO-2ND	1.61E-02	9.68E-06	1	OPERATOR FAILS TO ALIGN FPS CROSSTIE
U43-XHE-FO-ISOLATE	1.61E-01	3.95E-02	1.21	OPERATOR FAILS TO ISOLATE FPS BREAKS
U43-XHE-FO-LPCI	1.61E-03	7.83E-04	1.48	OPERATOR FAILS TO ACTUATE U43 IN LPCI MODE
U43-XHE-FO-MAKEUP	1.61E-02	2.64E-03	1.16	OPERATOR FAILS TO ACTUATE U43 IN MAKE UP MODE
U43-XHE-FO-PMPTRK	2.66E-02	2.73E-03	1.1	OPERATOR FAIL TO SUPPLY WATER FROM PUMP TRUCKS
XXX-XHE-FO-DEPRESS	1.61E-01	1.25E-01	1.65	OPERATOR FAILS TO RECOGNIZE NEED OF DEPRESSURIZATION
XXX-XHE-FO-ICPCS	1.61E-03	1.07E-02	7.62	Operator fails to recognize the need to makeup ICS/PCCS Pool level.
XXX-XHE-FO-LPMAKEUP	1.61E-01	5.84E-02	1.3	OP. FAILS TO RECOG. NEED FOR LOW PRESS. MAKEUP AFTER DEPRESSURIZATION

22.3 CHANGES TO SHUTDOWN PRA MODEL

The RWCU/SDC Break Outside of Containment (BOC) event trees have been modified to include a top event for four DPVs actuating prior to GDCS actuation. This modification makes the RWCU/SDC BOC trees consistent with other shutdown (SD) PRA event trees. This change slightly increases the SD risk values since new sequences are added. However, the contribution from these new sequences is negligible because they involve multiple failures of the injections systems. The Mode 6 event trees do not require depressurization, so this change has no impact on event trees “M6F-RWCU-BOC.eta” and “M6U-RWCU-BOC.eta”.

The updated Figures 22.16.4-31 and 22.16.4-32 for the RWCU BOC event trees for Mode 5 and 5 Open are shown as below. In the Mode 5 and Mode 5 Open event trees, top event XD-TOPDPV has been added before top SD-GDCS. Four new core damage sequences are generated, which are also classified as CD-V (i.e., bypassing the containment):

- M5-RWCU-BOC006A
- M5-RWCU-BOC-018A
- M5O-RWCU-BOC005A
- M5O-RWCU-BOC016A

Based on the updated event trees, the new top logic associated with these four sequences is:

M5-RWCU-BOC006A	AANB M5-RWCU-BOC006A_F	M5-RWCU-BOC006A_S		
M5-RWCU-BOC006A_F	AND %M5_RWCU_BOC	B32-3LOOPSFAIL	UD-TOPINJ2	VL-TOPINJ VM-TOPINJXD-TOPDPVFL_M5-RWCU-BOC006
M5-RWCU-BOC006A_S	OR	BC-TOPRWCU	MS-TOP18	MS-TOP2
M5-RWCU-BOC018A	AANB M5-RWCU-BOC018A_F	M5-RWCU-BOC018A_S		
M5-RWCU-BOC018A_F	AND %M5_RWCU_BOC	BC-TOPRWCU	B32-3LOOPSFAIL	UD-TOPINJ2 VL-TOPINJVM-TOPINJXD-TOPDPVFL_M5-RWCU-BOC018
M5-RWCU-BOC018A_S	OR	IM-TOPSDCMS-TOP18	MS-TOP2	
M5O-RWCU-BOC005A	AANB M5O-RWCU-BOC005A_F	M5O-RWCU-BOC005A_S		
M5O-RWCU-BOC005A_F	AND %M5O_RWCU_BOC	UD-TOPINJ2	VL-TOPINJVM-TOPINJXD-TOPDPV	FL_M5O-RWCU-BOC005
M5O-RWCU-BOC005A_S	OR	BC-TOPRWCU	MS-TOP18	MS-TOP2
M5O-RWCU-BOC016A	AANB M5O-RWCU-BOC016A_F	M5O-RWCU-BOC016A_S		
M5O-RWCU-BOC016A_F	AND %M5O_RWCU_BOC	BC-TOPRWCU	UD-TOPINJ2	VL-TOPINJ VM-TOPINJXD-TOPDPVFL_M5O-RWCU-BOC016
M5O-RWCU-BOC016A_S	OR	IM-TOPSDCMS-TOP18	MS-TOP2	

Since the new top logic does not bring in any new system model changes, the updated SD baseline internal events model fault tree simply incorporated the above new sequences M5-RWCU-BOC006A, M5-RWCU-BOC-018A, M5O-RWCU-BOC005A, and M5O-RWCU-BOC016A under gates “~M5_RWCU-BOC” and “~M5O-RWCU-BOC”, respectively.

For this sensitivity study, only the new sequences are quantified since the total impact to the SD baseline result is negligible. For convenience, the total contribution from the new sequences are quantified with a new added top gate “SD_CDF_NEW”, which is defined as follows:

SD_CDF_NEW	OR	M5-RWCU-BOC006A	M5-RWCU-BOC018A	M5O-RWCU-BOC005A
		M5O-RWCU-BOC016A		

No evaluation to the SD focus/RTNSS studies is performed with the updated model files described in above subsections because the impact to the baseline model is negligible.

The above model changes do not impact the SD external events models (fire, flood and high wind analyses) and their associated focus/RTNSS studies. Since the SD external events initiators do not follow the RWCU BOC sequences, the added new sequences have no impact on the SD external events models.

The updated SD internal events model generates a total additional CDF / LRF contribution of 2.03E-12 /yr for the new SD RWCU BOC sequences, which is 0.012% of the baseline SD CDF / LRF of 1.70E-8 /yr in Section 16. As discussed above, the CDF / LRF increase associated with the addition of new sequences is negligible to the SD baseline CDF/LRF value.

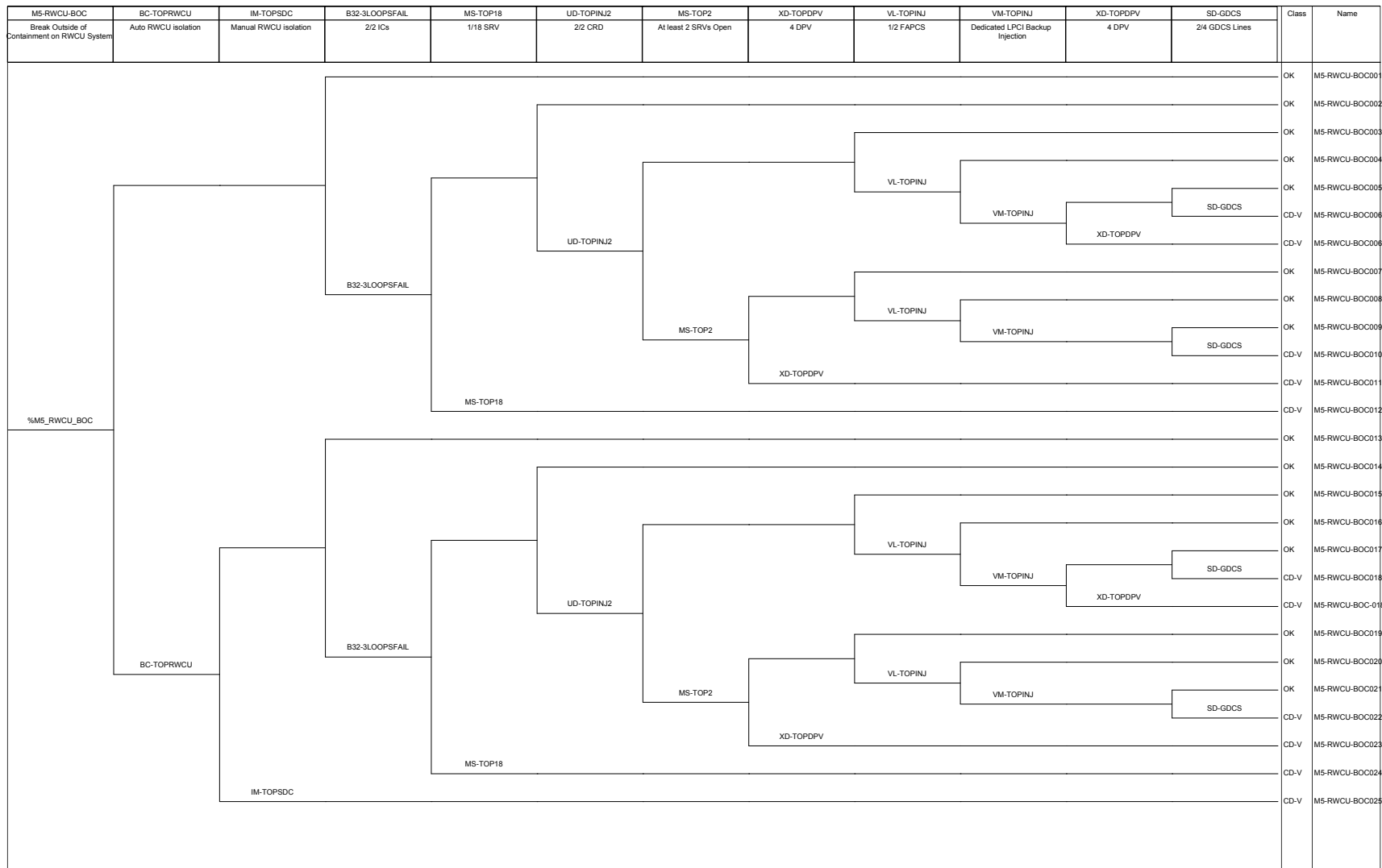


Figure 22.16.4-31. (Updated) LOCA – RWCU Break Outside Containment (Mode 5)

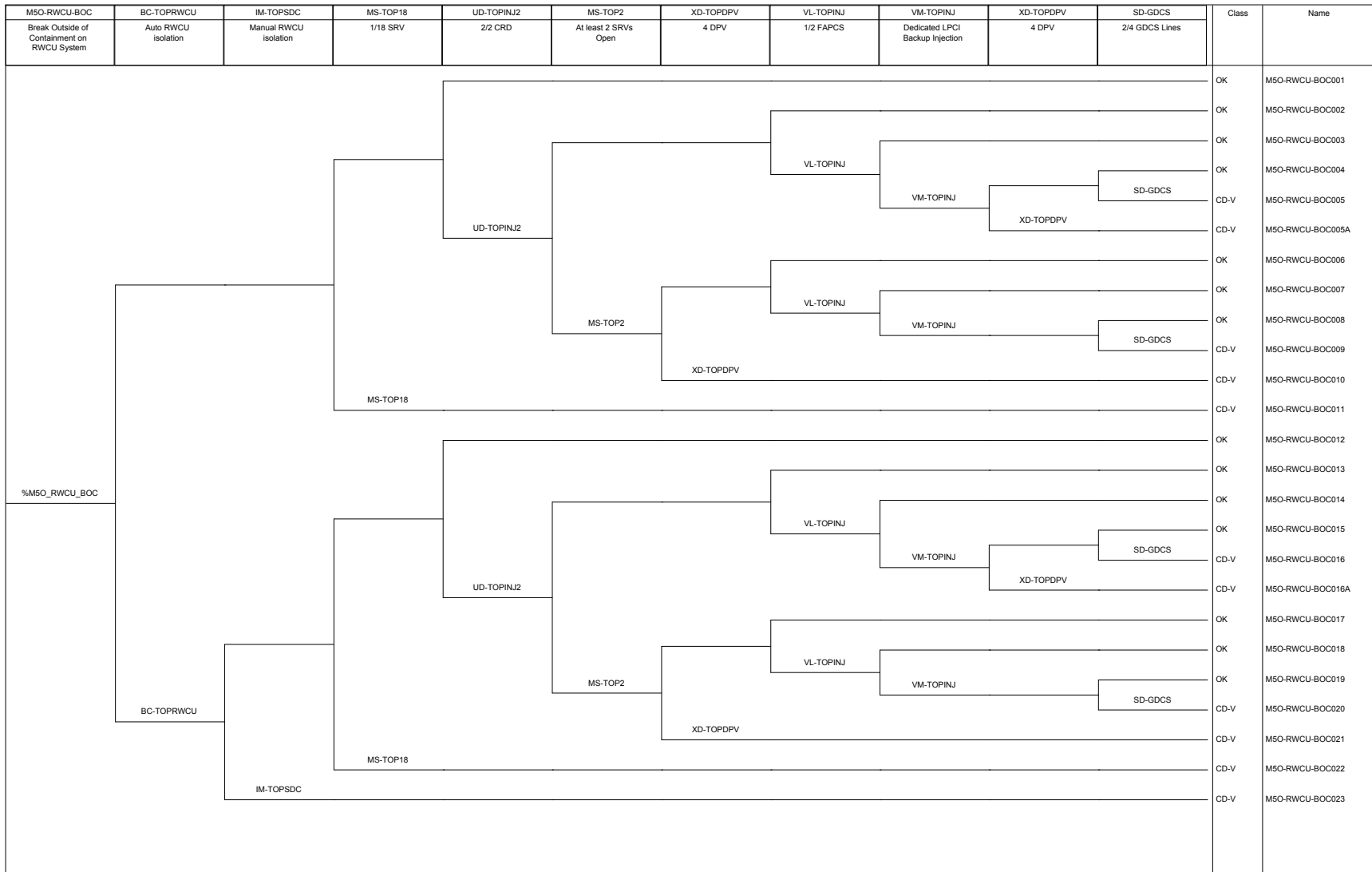


Figure 22.16.4-32. (Updated) LOCA – RWCU Break Outside Containment (Mode 5 Open)