Table F.IV-1.Crystal Ball and Excel Percentile Interval Analysis of Longnormal Distributions

Forecast Values	Excel Calculated Percentiles	Crystal Ball Percentiles	Difference
1.60E-08	0.004	0	0.00
5.37E-08	9.220	10	0.78
6.64E-08	19.19	20	0.81
7.71E-08	29.19	30	0.81
8.77E-08	39.40	40	0.60
9.93E-08	50.00	50	0.00
1.12E-07	60.33	60	0.33
1.27E-07	70.25	70	0.25
1.47E-07	80.18	80	0.18
1.81E-07	90.31	90	0.31
5.64E-07	99.99	100	0.01
Mu	-16.1253	Mean	1.10E-07
Sigma	0.4626	Median	9.93E-08

Source: Original

APPENDIX F.V
DERIVATION OF ERROR FACTORS

It was necessary to provide an error factor for each initiating event frequency, which was calculated using data provided by Crystal Ball. The software output in Appendix F.VI provides the mean and median necessary to determine the error factor. Equation F.V-1 is utilized to calculate the log standard deviation.

$$\sigma = \sqrt{2\ln\left(\frac{mean}{median}\right)} \qquad \text{(Eq. F.V-1)}$$

$$\text{EF} = e^{\sigma \times 1.645} \qquad \text{(Eq. F.V-2)}$$

The resultant error factors for each initiating event frequency are displayed in Table F5.7-7, as well as the mean and median utilized to calculate the error factor.

Several of the initiating event frequencies were not utilized as originally anticipated, many were summed for the purpose of developing split fractions. It was necessary to develop error factors for these summed figures as well. This was accomplished by directly summing the figures, then defining the summation as a Crystal Ball forecast value. The Crystal Ball results (Table F5.7-7) provided a mean and median by which the error factor can be calculated using Equations F.V-1 and F.V-2.

INTENTIONALLY LEFT BLANK

APPENDIX F.VI
CRYSTAL BALL FULL RESULTS

Initiating Event	97.5% Percentile
Large Fire Threatens TAD or DPC (TTC & VTC) in AO (Diesel Present)	1.4E-05
Large Fire Threatens TAD or DPC (TTC & VTC) in CTM	1.1E-06
Large Fire Threatens TC/DPC (HTC) (Diesel Present)	4.1E-06
Large Fire Threatens TC/DPC (HTC) (No Diesel)	2.6E-05
Large Fire Threatens TC/DPC (TTC) (No Diesel)	3.8E-05
Large Fire Threatens TC/DPC (VTC) (No Diesel)	2.9E-05
Large Fire Threatens TC/TAD (No Diesel)	2.5E-05
Large Fire Threatens TC/TAD or TC/DPC (TTC & VTC) (Diesel Present)	2.0E-06
Localized Fire Threatens TAD or DPC (incl TTC & VTC) in Transfer Room	2.5E-07
Localized Fire Threatens TAD or DPC (incl. TTC & VTC) in AO in Loading Room (Diesel Present)	7.9E-07
Localized Fire Threatens TAD or DPC (incl. TTC & VTC) in AO in Vestibule/Lid Bolting Room (Diesel Present)	1.8E-06
Localized Fire Threatens TC/DPC (HTC) in Preparation Area (No Diesel Present)	1.1E-05
Localized Fire Threatens TC/DPC (HTC) in Vestibule/Preparation Area (Diesel Present)	2.1E-06
Localized Fire Threatens TC/DPC (TTC) in Cask Unloading Room	4.4E-07
Localized Fire Threatens TC/DPC (TTC) in Preparation Area (No Diesel Present)	1.0E-05
Localized Fire Threatens TC/DPC (TTC) in Vestibule/Preparation Area (Diesel Present)	1.0E-06
Localized Fire Threatens TC/DPC (VTC) in Cask Unloading Room	4.4E-07
Localized Fire Threatens TC/DPC (VTC) in Preparation Area (No Diesel Present)	5.5E-06
Localized Fire Threatens TC/DPC (VTC) in Vestibule/Preparation Area (Diesel Present)	1.0E-06
Localized Fire Threatens TC/DPC (VTC, incl TTC) in Preparation Area	4.8E-06
Localized Fire Threatens TC/TAD in Cask Unloading Room	8.7E-07
Localized Fire Threatens TC/TAD in Preparation Area	2.1E-06
Localized Fire Threatens TC/TAD in Preparation Area (No Diesel Present	6.9E-06
Localized Fire Threatens TC/TAD in Vestibule/Preparation Area (Diesel Present)	1.0E-06

NOTE: AO = aging overpack; DPC = dual-purpose canister; HTC = transportation cask in the horizontal position; TAD = transportation, aging, and disposal canister; TC = transportation cask; TTC = transportation cask in the tilted position; VTC = transportation cask in the vertical position.

Source: Crystal Ball "extract data" output

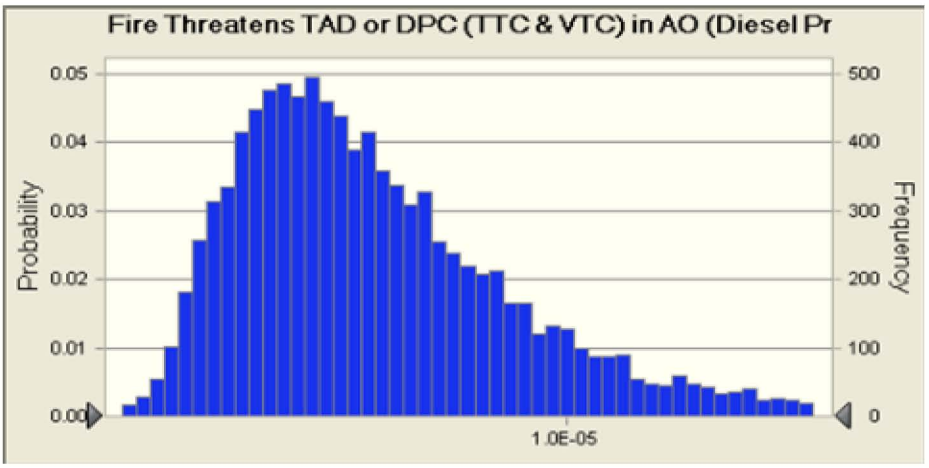
The Crystal Ball report, forecast worksheets, and "assumptions" follow. The term "assumptions" is used by Crystal Ball to denote the probability distributions of the inputs, and does not refer to assumptions as defined by the calculations and analysis procedure.

Worksheet: [RF Fire Frequency_NoSuppression.xls]Initiating Event Frequency

Forecast: Large Fire Threatens TAD or DPC (TTC & VTC) in AO (Diesel Present) Cell: K124

Summary:

Entire range is from 7.5E-07 to 3.1E-05
Base case is 5.6E-06
After 10,000 trials, the std. error of the mean is 3.2E-08



Statistics:	Forecast values
Trials	10,000
Mean	6.1E-06
Median	5.5E-06
Mode	3.0E-06
Standard Deviation	3.2E-06
Variance	1.0E-11
Skewness	1.49
Kurtosis	6.69
Coeff. of Variability	0.5204
Minimum	7.5E-07
Maximum	3.1E-05
Range Width	3.1E-05
Mean Std. Error	3.2E-08

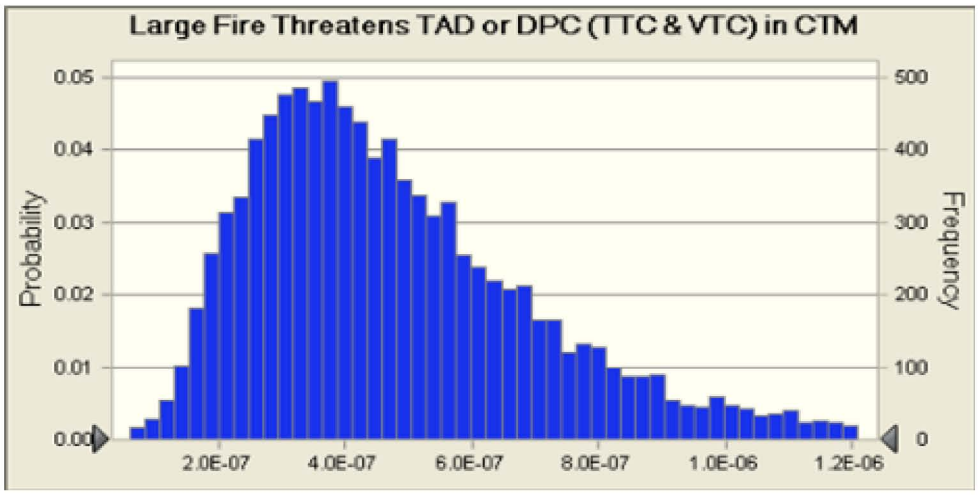
Forecast: Large Fire Threatens TAD or DPC (TTC & VTC) in AO (Diesel Present) (cont'd) Cell: K124

Percentiles:	Forecast values
0%	7.5E-07
10%	2.8E-06
20%	3.6E-06
30%	4.2E-06
40%	4.8E-06
50%	5.5E-06
60%	6.2E-06
70%	7.1E-06
80%	8.3E-06
90%	1.0E-05
100%	3.1E-05

Forecast: Large Fire Threatens TAD or DPC (TTC & VTC) in CTM **Cell: K123**

Summary:

Entire range is from 6.0E-08 to 2.5E-06
Base case is 4.4E-07
After 10,000 trials, the std. error of the mean is 2.6E-09



Statistics:	Forecast values
Trials	10,000
Mean	4.9E-07
Median	4.4E-07
Mode	2.4E-07
Standard Deviation	2.6E-07
Variance	6.6E-14
Skewness	1.49
Kurtosis	6.69
Coeff. of Variability	0.5204
Minimum	6.0E-08
Maximum	2.5E-06
Range Width	2.5E-06
Mean Std. Error	2.6E-09

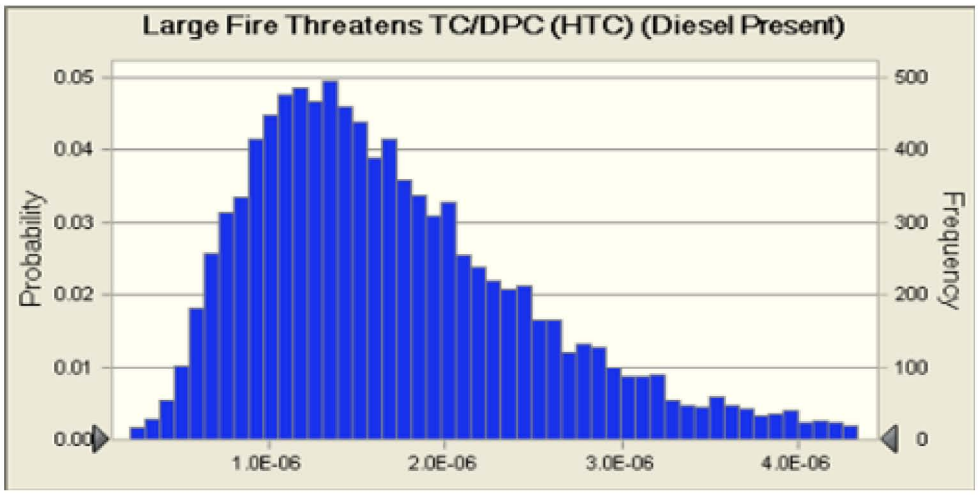
Forecast: Large Fire Threatens TAD or DPC (TTC & VTC) in CTM (cont'd) **Cell: K123**

Percentiles:	Forecast values
0%	6.0E-08
10%	2.3E-07
20%	2.9E-07
30%	3.4E-07
40%	3.8E-07
50%	4.4E-07
60%	5.0E-07
70%	5.7E-07
80%	6.6E-07
90%	8.2E-07
100%	2.5E-06

Forecast: Large Fire Threatens TC/DPC (HTC) (Diesel Present) **Cell: K127**

Summary:

Entire range is from 2.1E-07 to 9.0E-06
Base case is 1.6E-06
After 10,000 trials, the std. error of the mean is 9.2E-09



Statistics:	Forecast values
Trials	10,000
Mean	1.8E-06
Median	1.6E-06
Mode	8.7E-07
Standard Deviation	9.2E-07
Variance	8.4E-13
Skewness	1.49
Kurtosis	6.69
Coeff. of Variability	0.5204
Minimum	2.1E-07
Maximum	9.0E-06
Range Width	8.8E-06
Mean Std. Error	9.2E-09

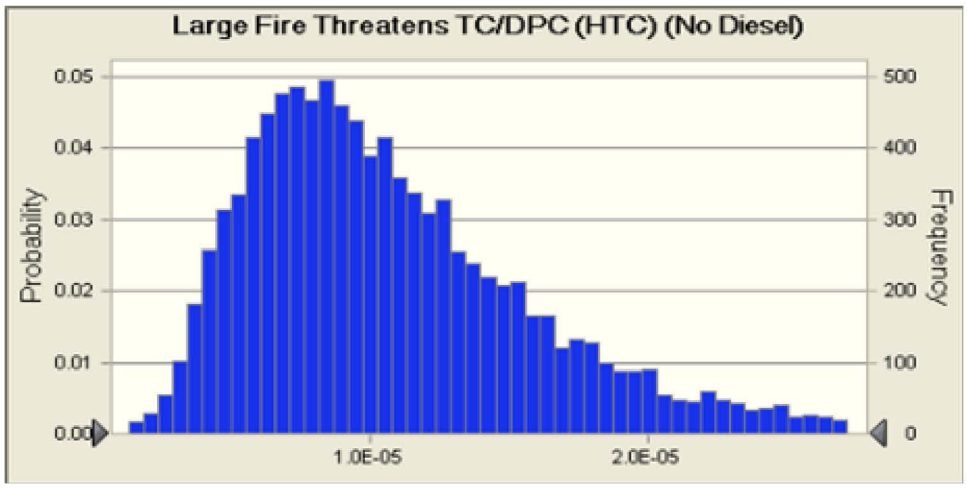
Forecast: Large Fire Threatens TC/DPC (HTC) (Diesel Present) (cont'd) **Cell: K127**

Percentiles:	Forecast values
0%	2.1E-07
10%	8.1E-07
20%	1.0E-06
30%	1.2E-06
40%	1.4E-06
50%	1.6E-06
60%	1.8E-06
70%	2.0E-06
80%	2.4E-06
90%	3.0E-06
100%	9.0E-06

Forecast: Large Fire Threatens TC/DPC (HTC) (No Diesel) **Cell: K128**

Summary:

Entire range is from 1.3E-06 to 5.7E-05
Base case is 1.0E-05
After 10,000 trials, the std. error of the mean is 5.8E-08



Statistics:	Forecast values
Trials	10,000
Mean	1.1E-05
Median	9.8E-06
Mode	5.5E-06
Standard Deviation	5.8E-06
Variance	3.3E-11
Skewness	1.49
Kurtosis	6.69
Coeff. of Variability	0.5204
Minimum	1.3E-06
Maximum	5.7E-05
Range Width	5.5E-05
Mean Std. Error	5.8E-08

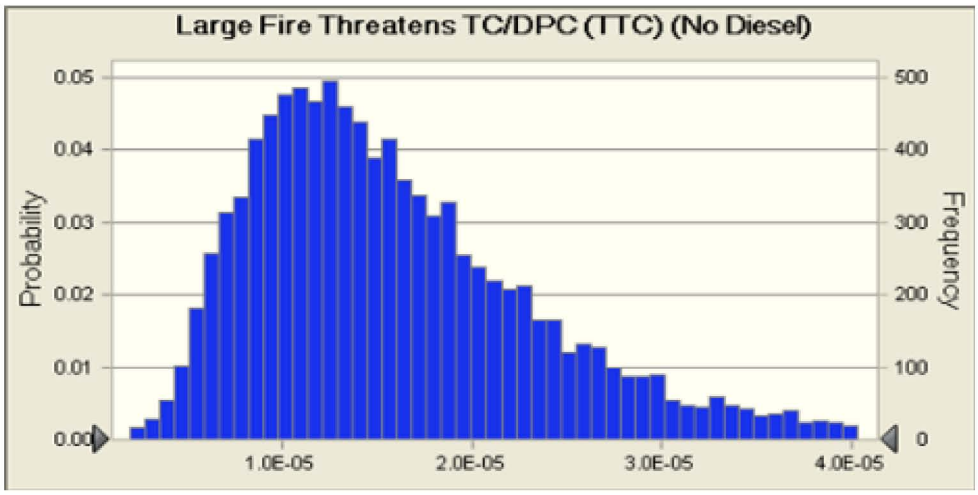
Forecast: Large Fire Threatens TC/DPC (HTC) (No Diesel) (cont'd) **Cell: K128**

Percentiles:	Forecast values
0%	1.3E-06
10%	5.1E-06
20%	6.4E-06
30%	7.5E-06
40%	8.6E-06
50%	9.8E-06
60%	1.1E-05
70%	1.3E-05
80%	1.5E-05
90%	1.9E-05
100%	5.7E-05

Forecast: Large Fire Threatens TC/DPC (TTC) (No Diesel) **Cell: K125**

Summary:

Entire range is from 2.0E-06 to 8.4E-05
Base case is 1.5E-05
After 10,000 trials, the std. error of the mean is 8.5E-08



Statistics:	Forecast values
Trials	10,000
Mean	1.6E-05
Median	1.5E-05
Mode	8.1E-06
Standard Deviation	8.5E-06
Variance	7.3E-11
Skewness	1.49
Kurtosis	6.69
Coeff. of Variability	0.5204
Minimum	2.0E-06
Maximum	8.4E-05
Range Width	8.2E-05
Mean Std. Error	8.5E-08

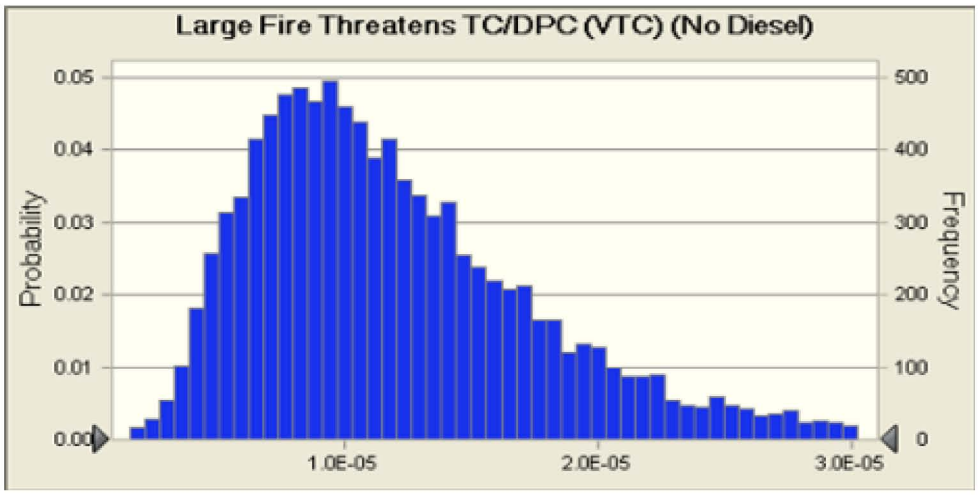
Forecast: Large Fire Threatens TC/DPC (TTC) (No Diesel) (cont'd) **Cell: K125**

Percentiles:	Forecast values
0%	2.0E-06
10%	7.6E-06
20%	9.5E-06
30%	1.1E-05
40%	1.3E-05
50%	1.5E-05
60%	1.7E-05
70%	1.9E-05
80%	2.2E-05
90%	2.7E-05
100%	8.4E-05

Forecast: Large Fire Threatens TC/DPC (VTC) (No Diesel) **Cell: K126**

Summary:

Entire range is from 1.5E-06 to 6.3E-05
Base case is 1.1E-05
After 10,000 trials, the std. error of the mean is 6.4E-08



Statistics:	Forecast values
Trials	10,000
Mean	1.2E-05
Median	1.1E-05
Mode	6.1E-06
Standard Deviation	6.4E-06
Variance	4.1E-11
Skewness	1.49
Kurtosis	6.69
Coeff. of Variability	0.5204
Minimum	1.5E-06
Maximum	6.3E-05
Range Width	6.2E-05
Mean Std. Error	6.4E-08

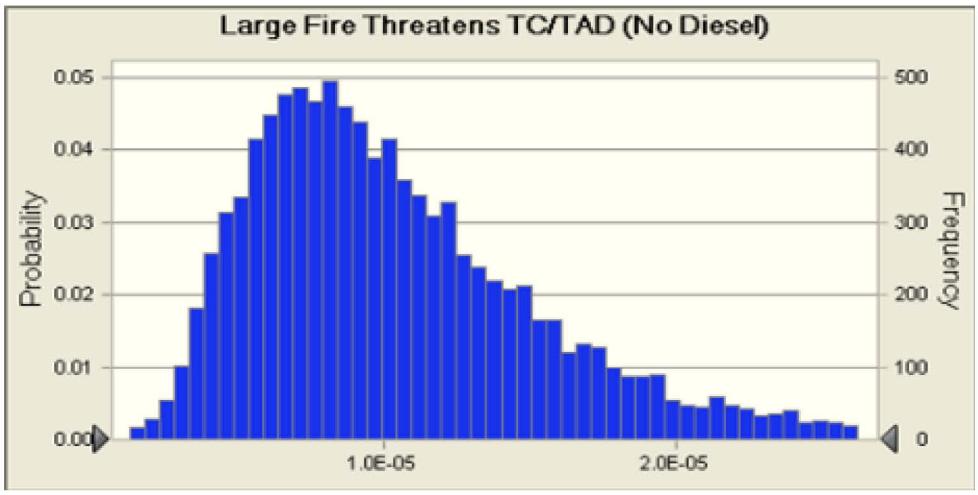
Forecast: Large Fire Threatens TC/DPC (VTC) (No Diesel) (cont'd) **Cell: K126**

Percentiles:	Forecast values
0%	1.5E-06
10%	5.7E-06
20%	7.2E-06
30%	8.4E-06
40%	9.6E-06
50%	1.1E-05
60%	1.2E-05
70%	1.4E-05
80%	1.7E-05
90%	2.1E-05
100%	6.3E-05

Forecast: Large Fire Threatens TC/TAD (No Diesel) **Cell: K122**

Summary:

Entire range is from 1.3E-06 to 5.5E-05
Base case is 9.6E-06
After 10,000 trials, the std. error of the mean is 5.5E-08



Statistics:	Forecast values
Trials	10,000
Mean	1.1E-05
Median	9.5E-06
Mode	5.3E-06
Standard Deviation	5.5E-06
Variance	3.1E-11
Skewness	1.49
Kurtosis	6.69
Coeff. of Variability	0.5204
Minimum	1.3E-06
Maximum	5.5E-05
Range Width	5.3E-05
Mean Std. Error	5.5E-08

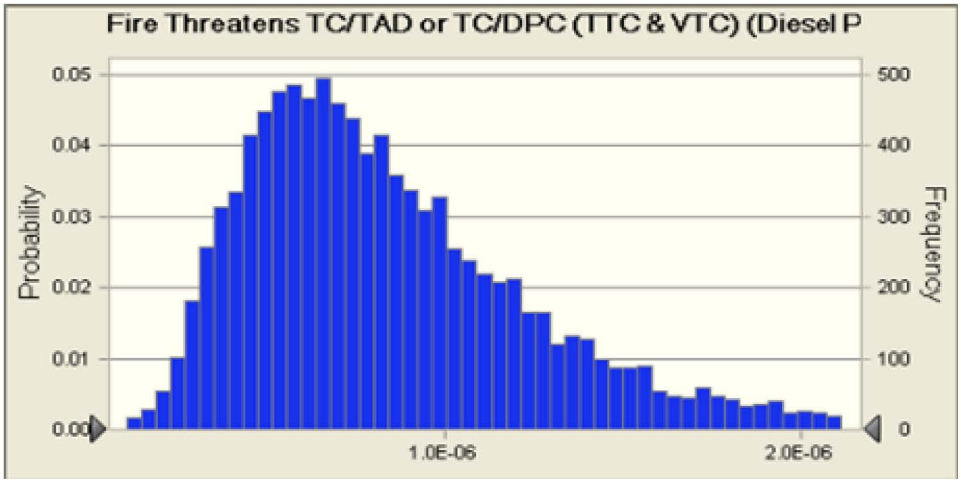
Forecast: Large Fire Threatens TC/TAD (No Diesel) (cont'd) **Cell: K122**

Percentiles:	Forecast values
0%	1.3E-06
10%	4.9E-06
20%	6.2E-06
30%	7.3E-06
40%	8.3E-06
50%	9.5E-06
60%	1.1E-05
70%	1.2E-05
80%	1.4E-05
90%	1.8E-05
100%	5.5E-05

Forecast: Large Fire Threatens TC/TAD or TC/DPC (TTC & VTC) (Diesel Present) Cell: K121

Summary:

Entire range is from 1.0E-07 to 4.4E-06
Base case is 7.8E-07
After 10,000 trials, the std. error of the mean is 4.5E-09



Statistics:	Forecast values
Trials	10,000
Mean	8.6E-07
Median	7.6E-07
Mode	4.3E-07
Standard Deviation	4.5E-07
Variance	2.0E-13
Skewness	1.49
Kurtosis	6.69
Coeff. of Variability	0.5204
Minimum	1.0E-07
Maximum	4.4E-06
Range Width	4.3E-06
Mean Std. Error	4.5E-09

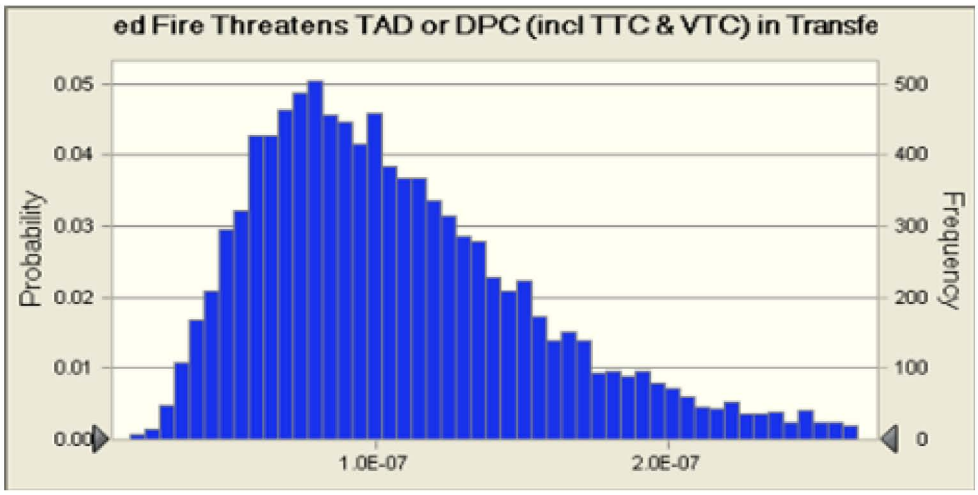
Forecast: Large Fire Threatens TC/TAD or TC/DPC (TTC & VTC) (Diesel Present) Cell: K121 (cont'd)

Percentiles:	Forecast values
0%	1.0E-07
10%	4.0E-07
20%	5.0E-07
30%	5.9E-07
40%	6.7E-07
50%	7.6E-07
60%	8.7E-07
70%	9.9E-07
80%	1.2E-06
90%	1.4E-06
100%	4.4E-06

Forecast: Localized Fire Threatens TAD or DPC (incl TTC & VTC) in Transfer RoomCell: K113

Summary:

Entire range is from 1.6E-08 to 5.6E-07
Base case is 1.0E-07
After 10,000 trials, the std. error of the mean is 5.5E-10



Statistics:	Forecast values
Trials	10,000
Mean	1.1E-07
Median	9.9E-08
Mode	5.1E-08
Standard Deviation	5.5E-08
Variance	3.0E-15
Skewness	1.51
Kurtosis	6.85
Coeff. of Variability	0.4968
Minimum	1.6E-08
Maximum	5.6E-07
Range Width	5.5E-07
Mean Std. Error	5.5E-10

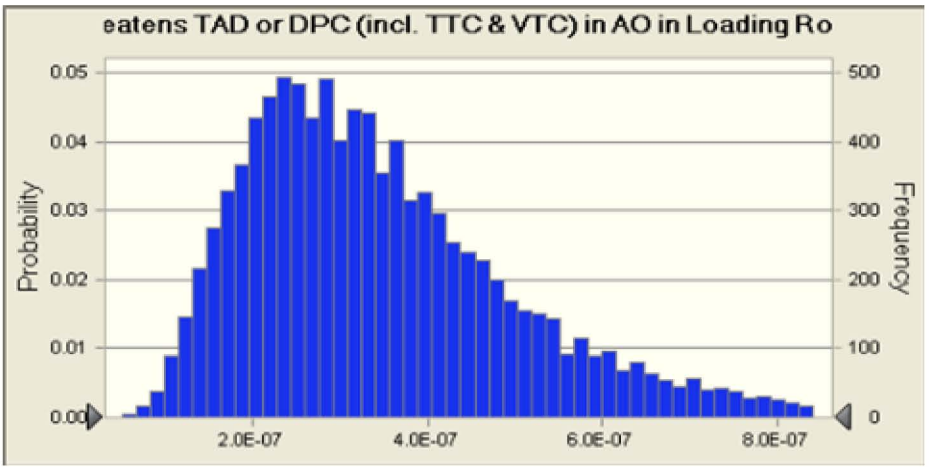
Forecast: Localized Fire Threatens TAD or DPC (incl TTC & VTC) in Transfer RoomCell: K113

Percentiles:	Forecast values
0%	1.6E-08
10%	5.4E-08
20%	6.6E-08
30%	7.7E-08
40%	8.8E-08
50%	9.9E-08
60%	1.1E-07
70%	1.3E-07
80%	1.5E-07
90%	1.8E-07
100%	5.6E-07

Forecast: Localized Fire Threatens TAD or DPC (incl. TTC & VTC) in AO in Loading Room (Diesel Present) **Cell: K28**

Summary:

Entire range is from 5.1E-08 to 1.7E-06
Base case is 3.2E-07
After 10,000 trials, the std. error of the mean is 1.7E-09



Statistics:	Forecast values
Trials	10,000
Mean	3.5E-07
Median	3.2E-07
Mode	1.6E-07
Standard Deviation	1.7E-07
Variance	3.0E-14
Skewness	1.49
Kurtosis	6.73
Coeff. of Variability	0.4894
Minimum	5.1E-08
Maximum	1.7E-06
Range Width	1.7E-06
Mean Std. Error	1.7E-09

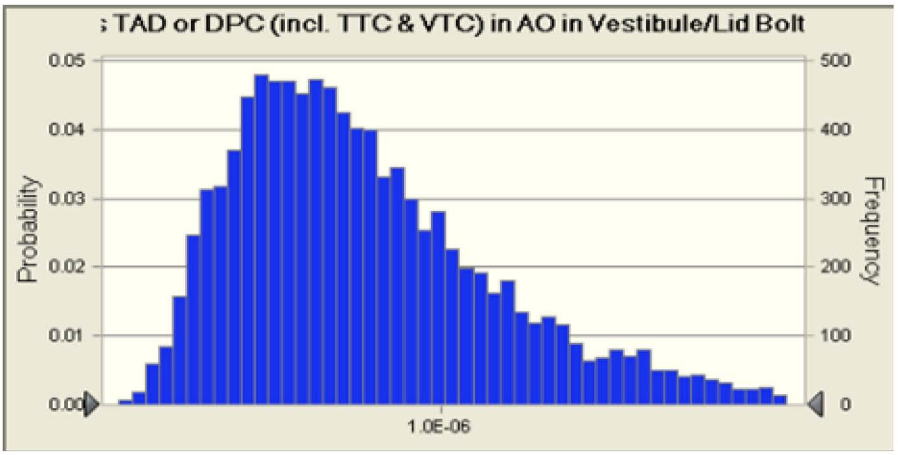
Forecast: Localized Fire Threatens TAD or DPC (incl. TTC & VTC) in AO in Loading Room (Diesel Present) (cont'd) **Cell: K28**

Percentiles:	Forecast values
0%	5.1E-08
10%	1.7E-07
20%	2.1E-07
30%	2.5E-07
40%	2.8E-07
50%	3.2E-07
60%	3.6E-07
70%	4.1E-07
80%	4.7E-07
90%	5.8E-07
100%	1.7E-06

Forecast: Localized Fire Threatens TAD or DPC (incl. TTC & VTC) in AO in Vestibule/Lid Bolting Room (Diesel Present) **Cell: K16**

Summary:

Entire range is from 1.2E-07 to 3.8E-06
Base case is 7.4E-07
After 10,000 trials, the std. error of the mean is 4.0E-09



Statistics:	Forecast values
Trials	10,000
Mean	8.1E-07
Median	7.3E-07
Mode	3.8E-07
Standard Deviation	4.0E-07
Variance	1.6E-13
Skewness	1.49
Kurtosis	6.80
Coeff. of Variability	0.4965
Minimum	1.2E-07
Maximum	3.8E-06
Range Width	3.7E-06
Mean Std. Error	4.0E-09

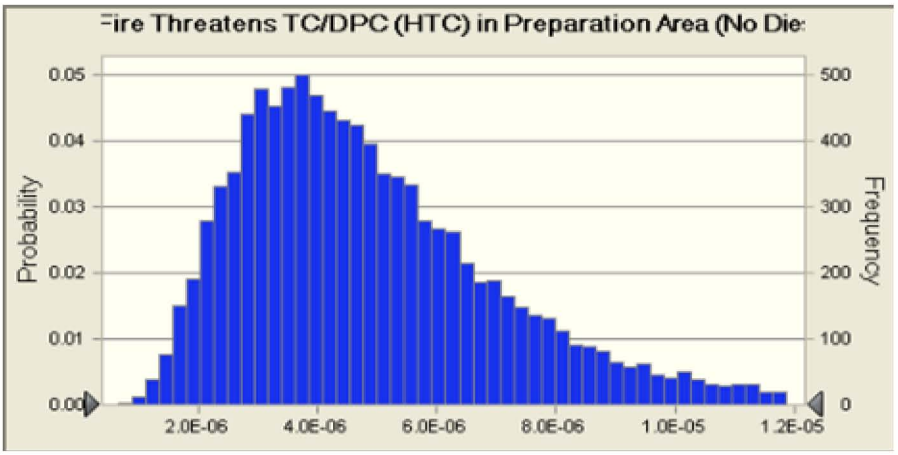
Forecast: Localized Fire Threatens TAD or DPC (incl. TTC & VTC) in AO in Vestibule/Lid Bolting Room (Diesel Present) (cont'd) **Cell: K16**

Percentiles:	Forecast values
0%	1.2E-07
10%	3.9E-07
20%	4.9E-07
30%	5.7E-07
40%	6.5E-07
50%	7.3E-07
60%	8.2E-07
70%	9.3E-07
80%	1.1E-06
90%	1.3E-06
100%	3.8E-06

Forecast: Localized Fire Threatens TC/DPC (HTC) in Preparation Area (No Diesel Present) **Cell: Q64**

Summary:

Entire range is from 6.7E-07 to 2.1E-05
Base case is 4.5E-06
After 10,000 trials, the std. error of the mean is 2.5E-08



Statistics:	Forecast values
Trials	10,000
Mean	5.0E-06
Median	4.5E-06
Mode	2.3E-06
Standard Deviation	2.5E-06
Variance	6.0E-12
Skewness	1.50
Kurtosis	6.66
Coeff. of Variability	0.4912
Minimum	6.7E-07
Maximum	2.1E-05
Range Width	2.0E-05
Mean Std. Error	2.5E-08

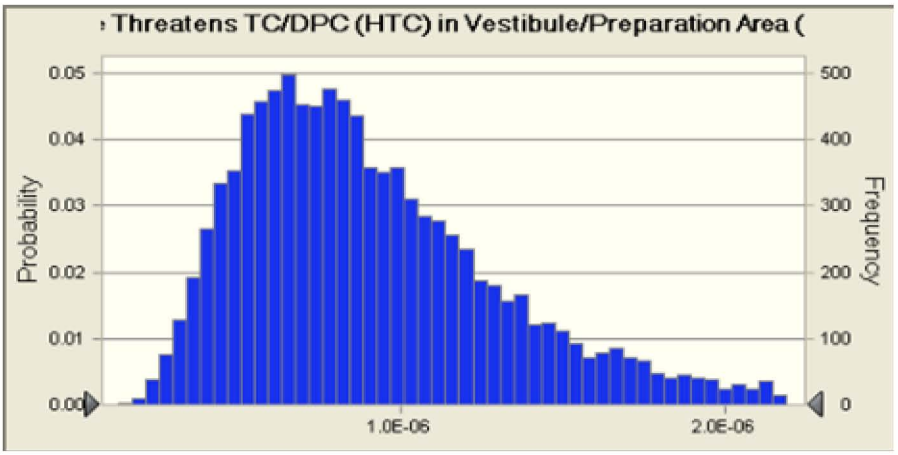
Forecast: Localized Fire Threatens TC/DPC (HTC) in Preparation Area (No Diesel Present) (cont'd) **Cell: Q64**

Percentiles:	Forecast values
0%	6.7E-07
10%	2.5E-06
20%	3.0E-06
30%	3.5E-06
40%	4.0E-06
50%	4.5E-06
60%	5.1E-06
70%	5.7E-06
80%	6.6E-06
90%	8.1E-06
100%	2.1E-05

Forecast: Localized Fire Threatens TC/DPC (HTC) in Vestibule/Preparation Area (Diesel Present) **Cell: Q46**

Summary:

Entire range is from 1.3E-07 to 4.2E-06
Base case is 8.4E-07
After 10,000 trials, the std. error of the mean is 4.5E-09



Statistics:	Forecast values
Trials	10,000
Mean	9.3E-07
Median	8.3E-07
Mode	4.3E-07
Standard Deviation	4.5E-07
Variance	2.0E-13
Skewness	1.48
Kurtosis	6.65
Coeff. of Variability	0.4877
Minimum	1.3E-07
Maximum	4.2E-06
Range Width	4.1E-06
Mean Std. Error	4.5E-09

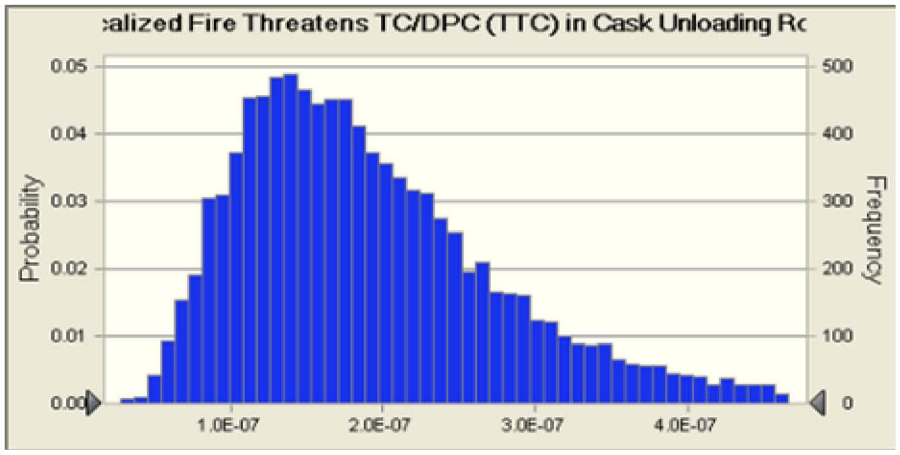
Forecast: Localized Fire Threatens TC/DPC (HTC) in Vestibule/Preparation Area (Diesel Present) (cont'd) **Cell: Q46**

Percentiles:	Forecast values
0%	1.3E-07
10%	4.6E-07
20%	5.6E-07
30%	6.5E-07
40%	7.4E-07
50%	8.3E-07
60%	9.4E-07
70%	1.1E-06
80%	1.2E-06
90%	1.5E-06
100%	4.2E-06

Forecast: Localized Fire Threatens TC/DPC (TTC) in Cask Unloading Room **Cell: M100**

Summary:

Entire range is from 2.8E-08 to 9.5E-07
Base case is 1.8E-07
After 10,000 trials, the std. error of the mean is 9.6E-10



Statistics:	Forecast values
Trials	10,000
Mean	2.0E-07
Median	1.8E-07
Mode	9.2E-08
Standard Deviation	9.6E-08
Variance	9.3E-15
Skewness	1.49
Kurtosis	6.69
Coeff. of Variability	0.4911
Minimum	2.8E-08
Maximum	9.5E-07
Range Width	9.2E-07
Mean Std. Error	9.6E-10

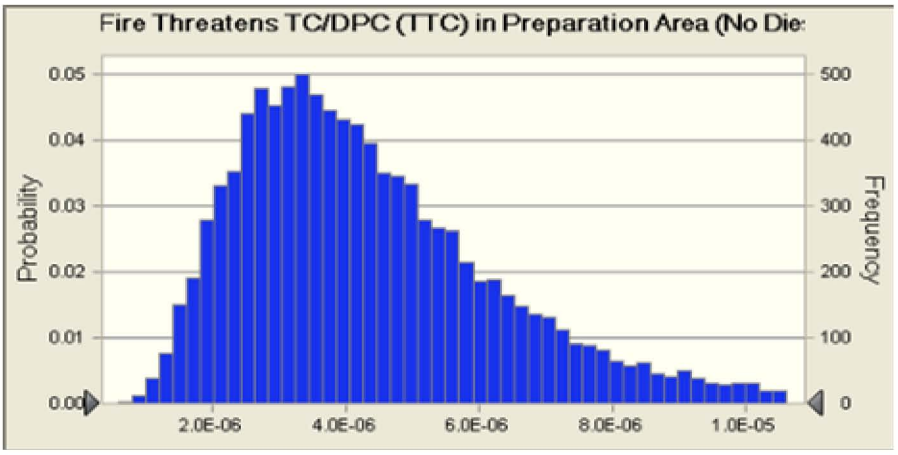
Forecast: Localized Fire Threatens TC/DPC (TTC) in Cask Unloading Room (cont'd) **Cell: M100**

Percentiles:	Forecast values
0%	2.8E-08
10%	9.6E-08
20%	1.2E-07
30%	1.4E-07
40%	1.6E-07
50%	1.8E-07
60%	2.0E-07
70%	2.3E-07
80%	2.6E-07
90%	3.2E-07
100%	9.5E-07

Forecast: Localized Fire Threatens TC/DPC (TTC) in Preparation Area (No Diesel Cell: M62

Summary:

Entire range is from 6.0E-07 to 1.9E-05
Base case is 4.1E-06
After 10,000 trials, the std. error of the mean is 2.2E-08



Statistics:	Forecast values
Trials	10,000
Mean	4.5E-06
Median	4.0E-06
Mode	2.1E-06
Standard Deviation	2.2E-06
Variance	4.8E-12
Skewness	1.50
Kurtosis	6.66
Coeff. of Variability	0.4912
Minimum	6.0E-07
Maximum	1.9E-05
Range Width	1.8E-05
Mean Std. Error	2.2E-08

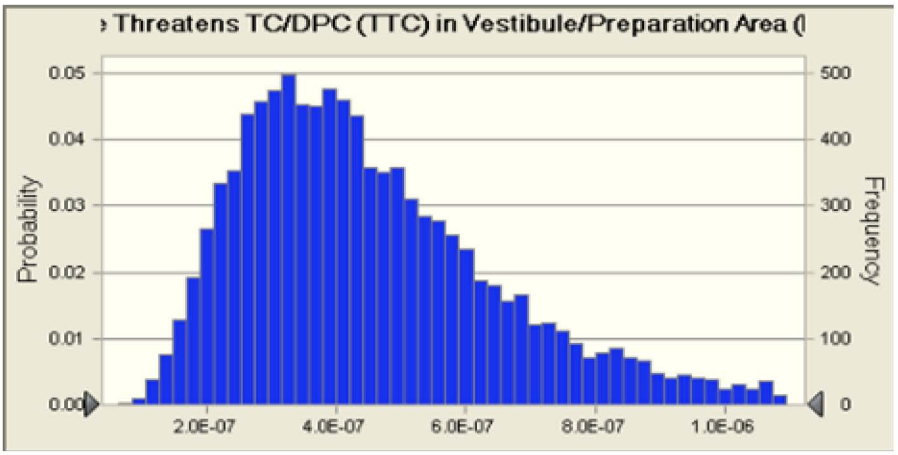
Forecast: Localized Fire Threatens TC/DPC (TTC) in Preparation Area (No Diesel Present) (cont'd) Cell: M62

Percentiles:	Forecast values
0%	6.0E-07
10%	2.2E-06
20%	2.7E-06
30%	3.1E-06
40%	3.6E-06
50%	4.0E-06
60%	4.5E-06
70%	5.1E-06
80%	5.9E-06
90%	7.3E-06
100%	1.9E-05

Forecast: Localized Fire Threatens TC/DPC (TTC) in Vestibule/Preparation Area (Diesel Present) **Cell: M44**

Summary:

Entire range is from 6.3E-08 to 2.1E-06
Base case is 4.2E-07
After 10,000 trials, the std. error of the mean is 2.3E-09



Statistics:	Forecast values
Trials	10,000
Mean	4.6E-07
Median	4.2E-07
Mode	2.1E-07
Standard Deviation	2.3E-07
Variance	5.1E-14
Skewness	1.48
Kurtosis	6.65
Coeff. of Variability	0.4877
Minimum	6.3E-08
Maximum	2.1E-06
Range Width	2.0E-06
Mean Std. Error	2.3E-09

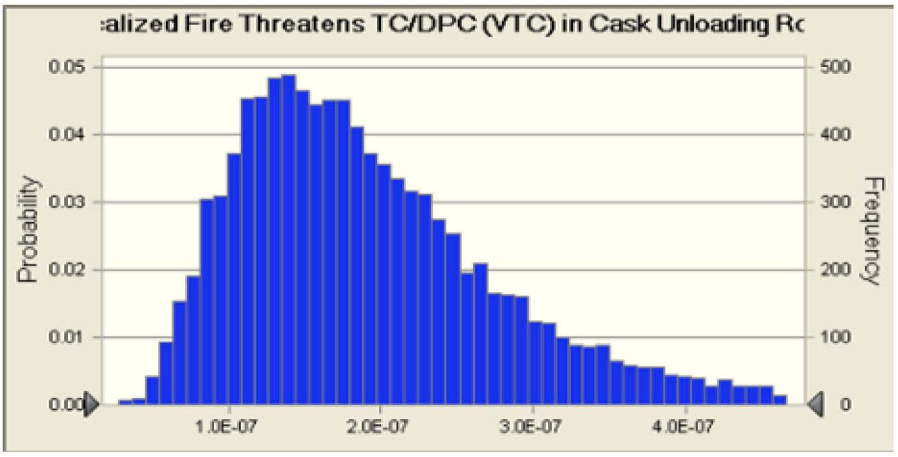
Forecast: Localized Fire Threatens TC/DPC (TTC) in Vestibule/Preparation Area (Diesel Present) (cont'd) **Cell: M44**

Percentiles:	Forecast values
0%	6.3E-08
10%	2.3E-07
20%	2.8E-07
30%	3.3E-07
40%	3.7E-07
50%	4.2E-07
60%	4.7E-07
70%	5.3E-07
80%	6.1E-07
90%	7.5E-07
100%	2.1E-06

Forecast: Localized Fire Threatens TC/DPC (VTC) in Cask Unloading Room **Cell: O101**

Summary:

Entire range is from 2.8E-08 to 9.5E-07
Base case is 1.8E-07
After 10,000 trials, the std. error of the mean is 9.6E-10



Statistics:	Forecast values
Trials	10,000
Mean	2.0E-07
Median	1.8E-07
Mode	9.2E-08
Standard Deviation	9.6E-08
Variance	9.3E-15
Skewness	1.49
Kurtosis	6.69
Coeff. of Variability	0.4911
Minimum	2.8E-08
Maximum	9.5E-07
Range Width	9.2E-07
Mean Std. Error	9.6E-10

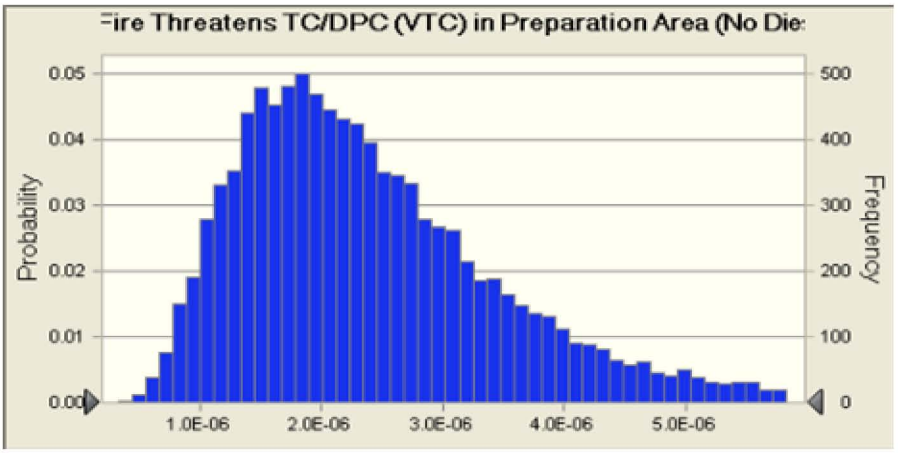
Forecast: Localized Fire Threatens TC/DPC (VTC) in Cask Unloading Room (cont'd) **Cell: O101**

Percentiles:	Forecast values
0%	2.8E-08
10%	9.6E-08
20%	1.2E-07
30%	1.4E-07
40%	1.6E-07
50%	1.8E-07
60%	2.0E-07
70%	2.3E-07
80%	2.6E-07
90%	3.2E-07
100%	9.5E-07

Forecast: Localized Fire Threatens TC/DPC (VTC) in Preparation Area (No Diesel Present) **Cell: O63**

Summary:

Entire range is from 3.3E-07 to 1.0E-05
Base case is 2.2E-06
After 10,000 trials, the std. error of the mean is 1.2E-08



Statistics:	Forecast values
Trials	10,000
Mean	2.5E-06
Median	2.2E-06
Mode	1.1E-06
Standard Deviation	1.2E-06
Variance	1.5E-12
Skewness	1.50
Kurtosis	6.66
Coeff. of Variability	0.4912
Minimum	3.3E-07
Maximum	1.0E-05
Range Width	1.0E-05
Mean Std. Error	1.2E-08

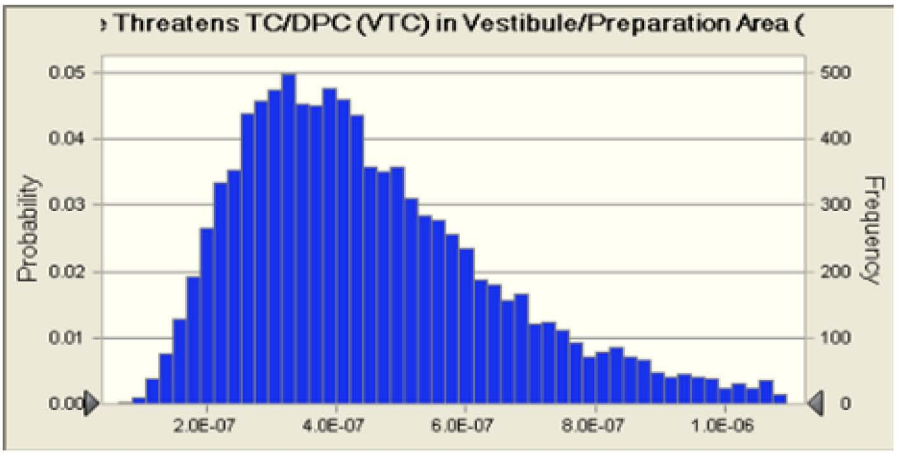
Forecast: Localized Fire Threatens TC/DPC (VTC) in Preparation Area (No Diesel Present) (cont'd) **Cell: O63**

Percentiles:	Forecast values
0%	3.3E-07
10%	1.2E-06
20%	1.5E-06
30%	1.7E-06
40%	2.0E-06
50%	2.2E-06
60%	2.5E-06
70%	2.8E-06
80%	3.3E-06
90%	4.0E-06
100%	1.0E-05

Forecast: Localized Fire Threatens TC/DPC (VTC) in Vestibule/Preparation Area (Diesel Present) **Cell: O45**

Summary:

Entire range is from 6.3E-08 to 2.1E-06
Base case is 4.2E-07
After 10,000 trials, the std. error of the mean is 2.3E-09



Statistics:	Forecast values
Trials	10,000
Mean	4.6E-07
Median	4.2E-07
Mode	2.1E-07
Standard Deviation	2.3E-07
Variance	5.1E-14
Skewness	1.48
Kurtosis	6.65
Coeff. of Variability	0.4877
Minimum	6.3E-08
Maximum	2.1E-06
Range Width	2.0E-06
Mean Std. Error	2.3E-09

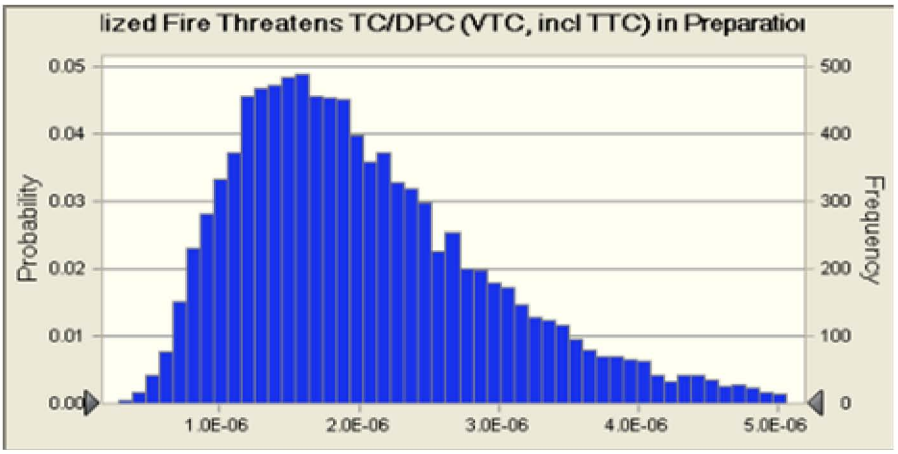
Forecast: Localized Fire Threatens TC/DPC (VTC) in Vestibule/Preparation Area (Diesel Present) (cont'd) **Cell: O45**

Percentiles:	Forecast values
0%	6.3E-08
10%	2.3E-07
20%	2.8E-07
30%	3.3E-07
40%	3.7E-07
50%	4.2E-07
60%	4.7E-07
70%	5.3E-07
80%	6.1E-07
90%	7.5E-07
100%	2.1E-06

Forecast: Localized Fire Threatens TC/DPC (VTC, incl TTC) in Preparation Area **Cell: M82**

Summary:

Entire range is from 2.8E-07 to 9.3E-06
Base case is 1.9E-06
After 10,000 trials, the std. error of the mean is 1.1E-08



Statistics:	Forecast values
Trials	10,000
Mean	2.1E-06
Median	1.9E-06
Mode	9.6E-07
Standard Deviation	1.1E-06
Variance	1.1E-12
Skewness	1.52
Kurtosis	6.78
Coeff. of Variability	0.5005
Minimum	2.8E-07
Maximum	9.3E-06
Range Width	9.0E-06
Mean Std. Error	1.1E-08

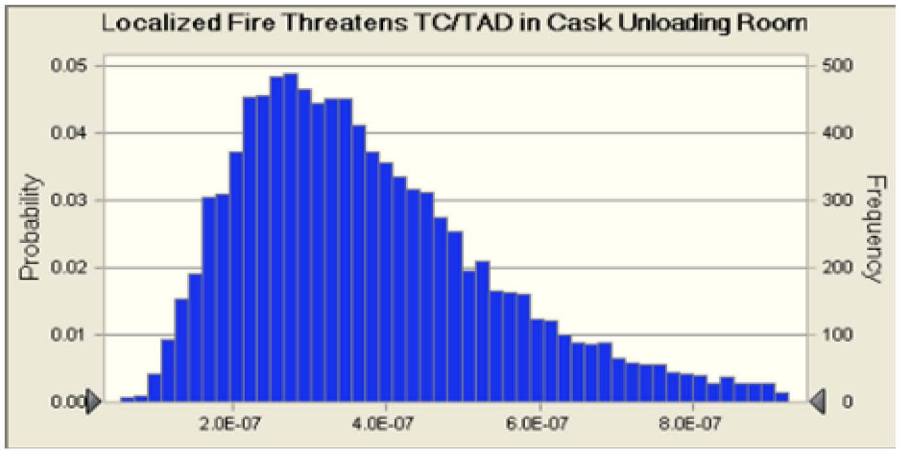
Forecast: Localized Fire Threatens TC/DPC (VTC, incl TTC) in Preparation Area (cont'd) **Cell: M82**

Percentiles:	Forecast values
0%	2.8E-07
10%	1.0E-06
20%	1.3E-06
30%	1.5E-06
40%	1.7E-06
50%	1.9E-06
60%	2.1E-06
70%	2.4E-06
80%	2.8E-06
90%	3.5E-06
100%	9.3E-06

Forecast: Localized Fire Threatens TC/TAD in Cask Unloading Room **Cell: K99**

Summary:

Entire range is from 5.5E-08 to 1.9E-06
Base case is 3.5E-07
After 10,000 trials, the std. error of the mean is 1.9E-09



Statistics:	Forecast values
Trials	10,000
Mean	3.9E-07
Median	3.5E-07
Mode	1.8E-07
Standard Deviation	1.9E-07
Variance	3.6E-14
Skewness	1.49
Kurtosis	6.69
Coeff. of Variability	0.4911
Minimum	5.5E-08
Maximum	1.9E-06
Range Width	1.8E-06
Mean Std. Error	1.9E-09

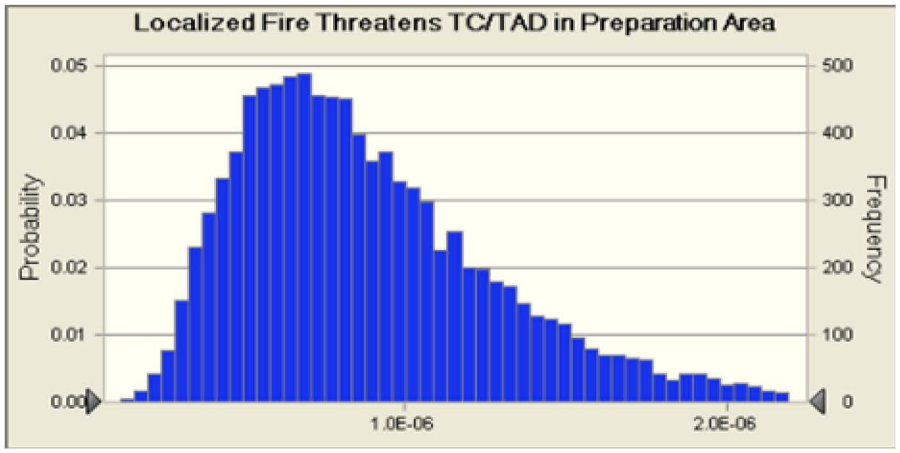
Forecast: Localized Fire Threatens TC/TAD in Cask Unloading Room (cont'd) **Cell: K99**

Percentiles:	Forecast values
0%	5.5E-08
10%	1.9E-07
20%	2.3E-07
30%	2.7E-07
40%	3.1E-07
50%	3.5E-07
60%	3.9E-07
70%	4.5E-07
80%	5.2E-07
90%	6.3E-07
100%	1.9E-06

Forecast: Localized Fire Threatens TC/TAD in Preparation Area **Cell: K81**

Summary:

Entire range is from 1.2E-07 to 4.0E-06
Base case is 8.3E-07
After 10,000 trials, the std. error of the mean is 4.6E-09



Statistics:	Forecast values
Trials	10,000
Mean	9.1E-07
Median	8.1E-07
Mode	4.2E-07
Standard Deviation	4.6E-07
Variance	2.1E-13
Skewness	1.52
Kurtosis	6.78
Coeff. of Variability	0.5005
Minimum	1.2E-07
Maximum	4.0E-06
Range Width	3.9E-06
Mean Std. Error	4.6E-09

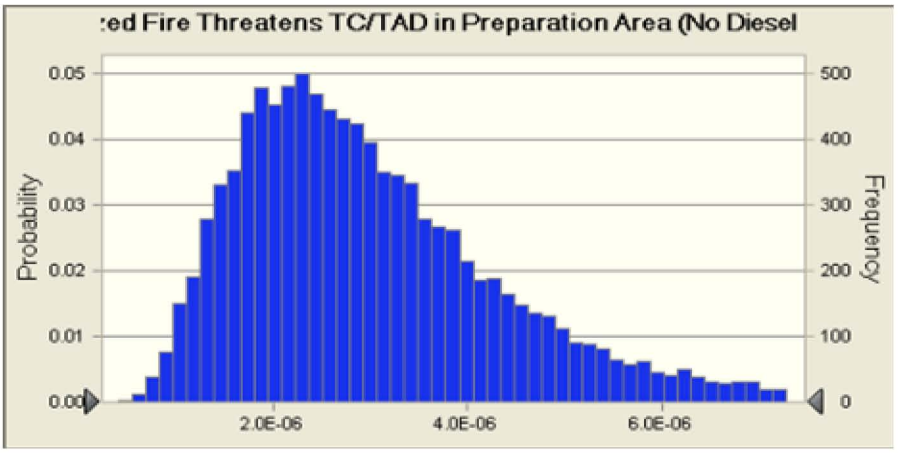
Forecast: Localized Fire Threatens TC/TAD in Preparation Area (cont'd) **Cell: K81**

Percentiles:	Forecast values
0%	1.2E-07
10%	4.4E-07
20%	5.5E-07
30%	6.4E-07
40%	7.2E-07
50%	8.1E-07
60%	9.2E-07
70%	1.0E-06
80%	1.2E-06
90%	1.5E-06
100%	4.0E-06

Forecast: Localized Fire Threatens TC/TAD in Preparation Area (No Diesel Present Cell: K61

Summary:

Entire range is from 4.1E-07 to 1.3E-05
Base case is 2.8E-06
After 10,000 trials, the std. error of the mean is 1.5E-08



Statistics:	Forecast values
Trials	10,000
Mean	3.1E-06
Median	2.8E-06
Mode	1.4E-06
Standard Deviation	1.5E-06
Variance	2.3E-12
Skewness	1.50
Kurtosis	6.66
Coeff. of Variability	0.4912
Minimum	4.1E-07
Maximum	1.3E-05
Range Width	1.3E-05
Mean Std. Error	1.5E-08

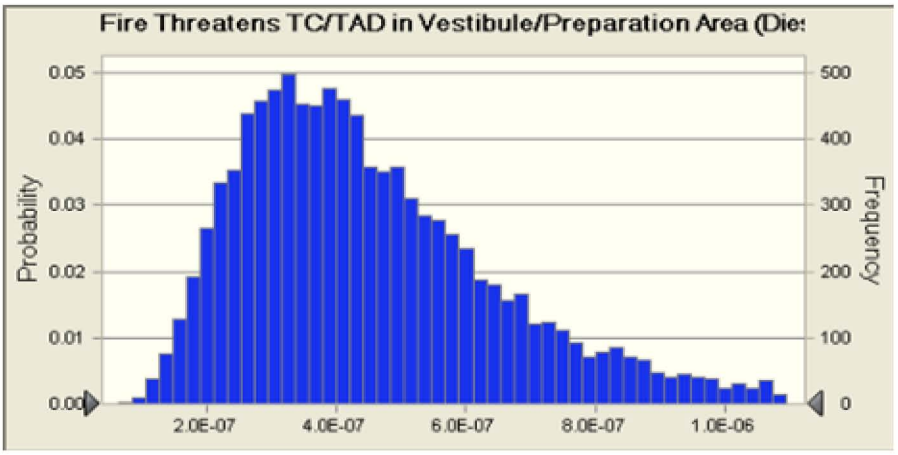
Forecast: Localized Fire Threatens TC/TAD in Preparation Area (No Diesel Present Cell: K61

Percentiles:	Forecast values
0%	4.1E-07
10%	1.5E-06
20%	1.9E-06
30%	2.2E-06
40%	2.4E-06
50%	2.8E-06
60%	3.1E-06
70%	3.5E-06
80%	4.1E-06
90%	5.0E-06
100%	1.3E-05

Forecast: Localized Fire Threatens TC/TAD in Vestibule/Preparation Area (Diesel Present) **Cell: K43**

Summary:

Entire range is from 6.3E-08 to 2.1E-06
Base case is 4.2E-07
After 10,000 trials, the std. error of the mean is 2.3E-09



Statistics:	Forecast values
Trials	10,000
Mean	4.6E-07
Median	4.2E-07
Mode	2.1E-07
Standard Deviation	2.3E-07
Variance	5.1E-14
Skewness	1.48
Kurtosis	6.65
Coeff. of Variability	0.4877
Minimum	6.3E-08
Maximum	2.1E-06
Range Width	2.0E-06
Mean Std. Error	2.3E-09

Forecast: Localized Fire Threatens TC/TAD in Vestibule/Preparation Area (Diesel Present) (cont'd) **Cell: K43**

Percentiles:	Forecast values
0%	6.3E-08
10%	2.3E-07
20%	2.8E-07
30%	3.3E-07
40%	3.7E-07
50%	4.2E-07
60%	4.7E-07
70%	5.3E-07
80%	6.1E-07
90%	7.5E-07
100%	2.1E-06

End of Forecasts

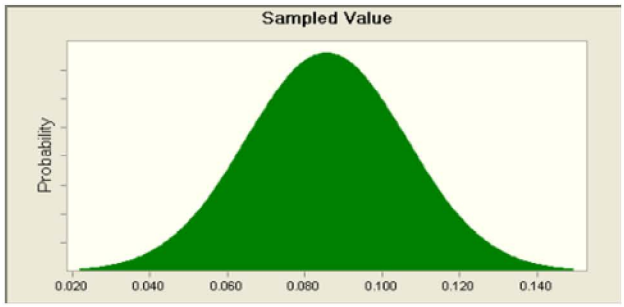
Assumptions

Worksheet: [RF Fire Frequency_NoSuppression.xls]Ignition Source Frequency

Assumption: Sampled Value **Cell: H2**

Normal distribution with parameters:

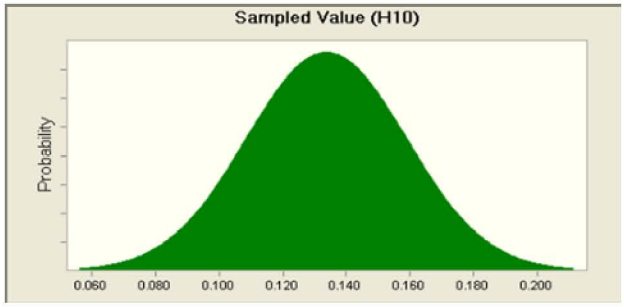
Mean	0.086	(=I2)
97.5%	0.126	(=J2)



Assumption: Sampled Value (H10) **Cell: H10**

Normal distribution with parameters:

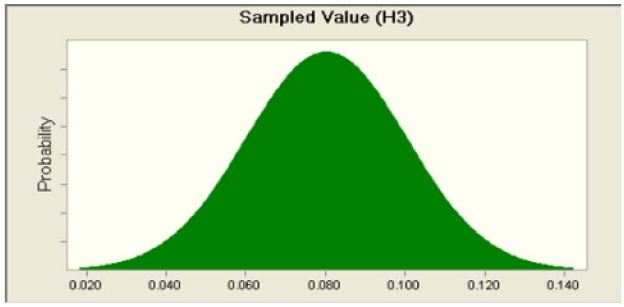
Mean	0.134	(=I10)
97.5%	0.183	(=J10)



Assumption: Sampled Value (H3) **Cell: H3**

Normal distribution with parameters:

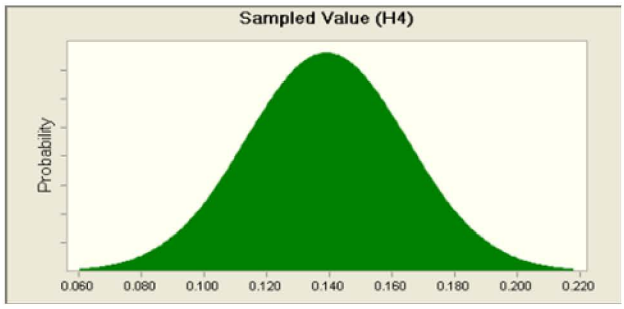
Mean	0.080	(=I3)
97.5%	0.120	(=J3)



Assumption: Sampled Value (H4) **Cell: H4**

Normal distribution with parameters:

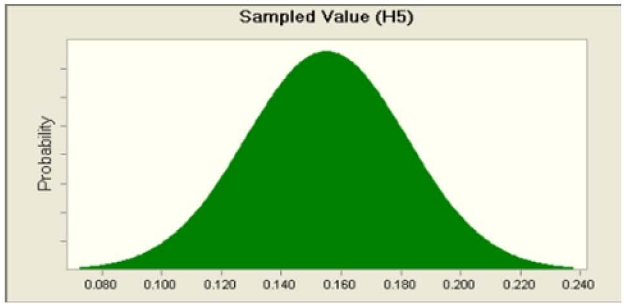
Mean	0.139	(=I4)
97.5%	0.189	(=J4)



Assumption: Sampled Value (H5) **Cell: H5**

Normal distribution with parameters:

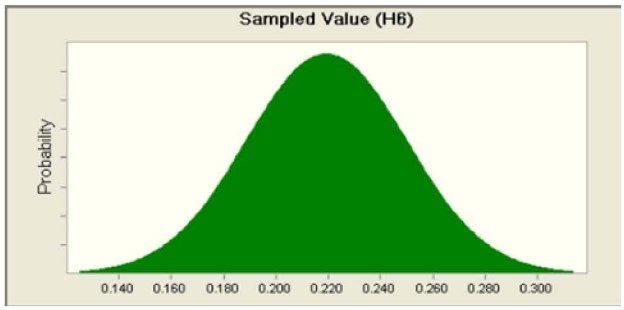
Mean	0.155	(=I5)
97.5%	0.207	(=J5)



Assumption: Sampled Value (H6) **Cell: H6**

Normal distribution with parameters:

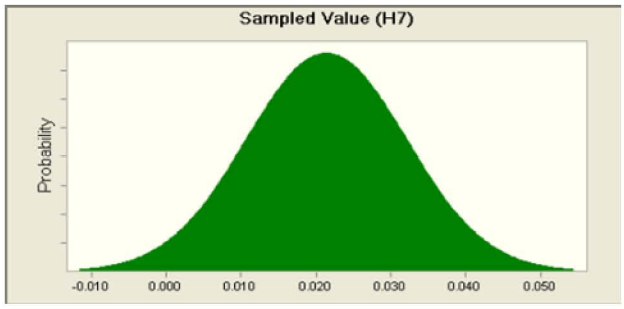
Mean	0.219	(=I6)
97.5%	0.279	(=J6)



Assumption: Sampled Value (H7) **Cell: H7**

Normal distribution with parameters:

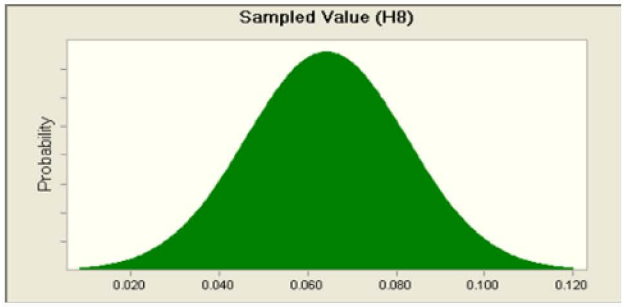
Mean	0.021	(=I7)
97.5%	0.042	(=J7)



Assumption: Sampled Value (H8) **Cell: H8**

Normal distribution with parameters:

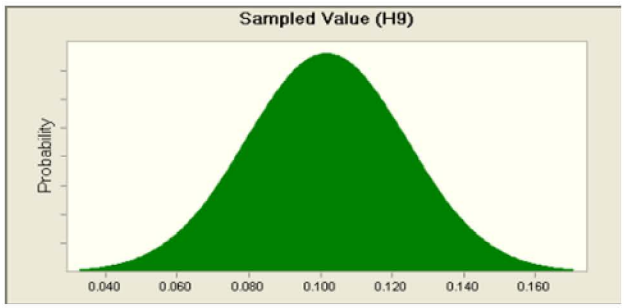
Mean	0.064	(=I8)
97.5%	0.100	(=J8)



Assumption: Sampled Value (H9) **Cell: H9**

Normal distribution with parameters:

Mean	0.102	(=I9)
97.5%	0.145	(=J9)

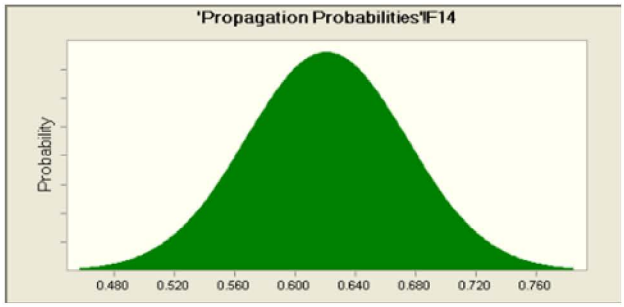


Worksheet: [RF Fire Frequency_NoSuppression.xls]Propagation Probabilities

Assumption: F14 **Cell: F14**

Normal distribution with parameters:

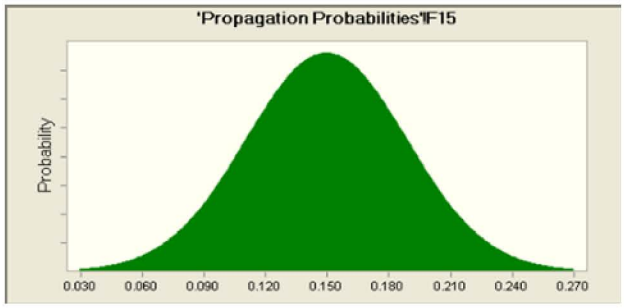
Mean	0.621	(=G14)
97.5%	0.725	(=H14)



Assumption: F15 **Cell: F15**

Normal distribution with parameters:

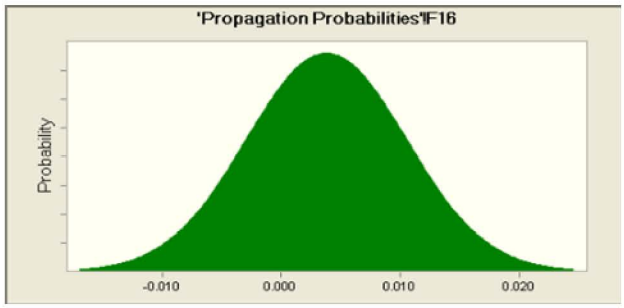
Mean	0.149	(=G15)
97.5%	0.226	(=H15)



Assumption: F16 **Cell: F16**

Normal distribution with parameters:

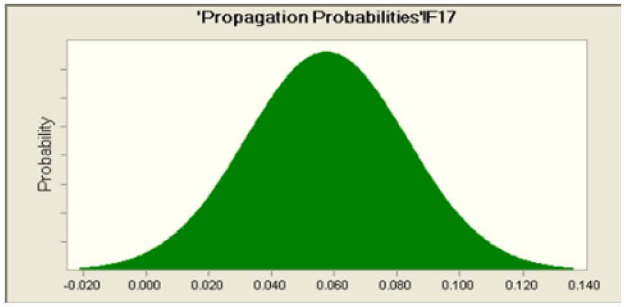
Mean	0.004	(=G16)
97.5%	0.017	(=H16)



Assumption: F17 **Cell: F17**

Normal distribution with parameters:

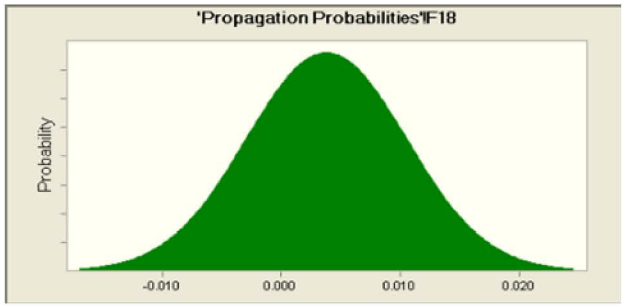
Mean	0.057	(=G17)
97.5%	0.107	(=H17)



Assumption: F18 **Cell: F18**

Normal distribution with parameters:

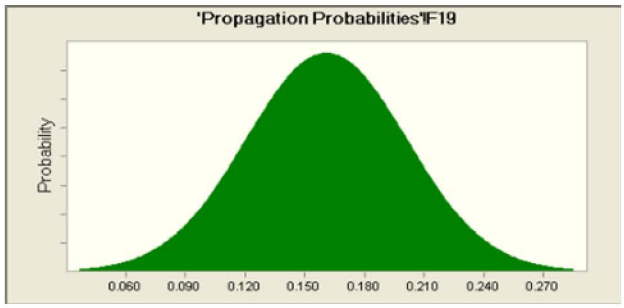
Mean	0.004	(=G18)
97.5%	0.017	(=H18)



Assumption: F19 **Cell: F19**

Normal distribution with parameters:

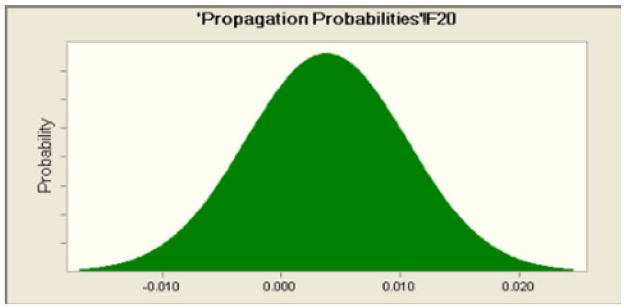
Mean	0.161	(=G19)
97.5%	0.240	(=H19)



Assumption: F20 **Cell: F20**

Normal distribution with parameters:

Mean	0.004	(=G20)
97.5%	0.017	(=H20)

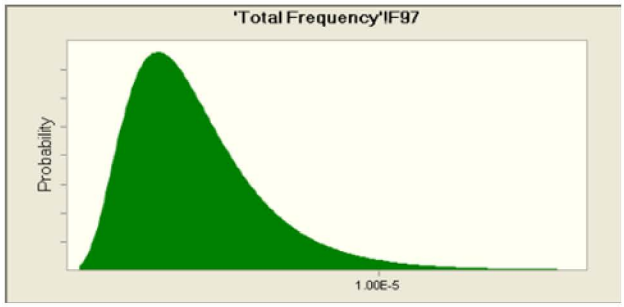


Worksheet: [RF Fire Frequency_NoSuppression.xls]Total Frequency

Assumption: F97 **Cell: F97**

Lognormal distribution with parameters:

50%	4.05E-6	(=G97)
97.5%	9.64E-6	(=I97)



End of Assumptions

Source: Crystal Ball software output

INTENTIONALLY LEFT BLANK

ATTACHMENT G
EVENT SEQUENCE QUANTIFICATION SUMMARY TABLES

ATTACHMENT G
EVENT SEQUENCE QUANTIFICATION SUMMARY TABLE

Attachment G contains the Event Sequence Quantification summary table (Table G-1), which is referenced in Section 6.7. It also contains Table G-2, Final Event Sequences Summary; Table G-3, Beyond Category 2 Final Event Sequences Summary; and Table G-4, Important to Criticality Final Event Sequences Summary, which are referenced in Section 6.8. The results in this attachment have been produced from the SAPHIRE model in Attachment H using SAPHIRE's "mincut" (minimal cut set upper bound) option with no frequency cutoff. This well-known method estimates the frequency of an event sequence (the union of the corresponding cut-set frequencies) as 1 minus the product of the complements of the cut set frequencies. The mincut method economically computes accurate event sequence frequencies provided that the cut-set frequencies are not too small (on the order of 10^{-15} or less). If a cut set frequency is actually zero, as it is in some cases, the lack of a contribution to the event sequence frequency is accurately reflected. Likewise, for event sequence frequencies of interest in this analysis, that is, within several orders of magnitude of the Category 2 threshold (10^{-4}), the mincut method produces accurate results. However, when a cut-set frequency is very small but greater than zero, the method would encounter the limits of the numerical precision of the computer. To avoid numerical difficulties, SAPHIRE rounds the complement of the cut set frequency (1 minus the frequency) to 1 when the cut-set frequency is less than about 10^{-15}. This rounding can result in an underestimate of the event sequence frequency and, in the extreme case, a computed value of zero if all of the complements are rounded to 1. As a result of rounding, very small frequency values may be reported as zero in this attachment. Even so, numbers less than 10^{-15} may appear, because they are calculated as 1 minus the product of the complements of numbers greater than about 10^{-15}.

Table G-1. Event Sequence Quantification Summary

Event Tree	Seq.	Description	Logic	End State	Mean	Median	Std. Dev.
RF-ESD01-DPC	2-2	This sequence represents a structural challenge to a DPC inside a transportation cask resulting in a direct exposure from degradation of shielding due to a railcar derailment. In this sequence the transportation cask remains intact, and the shielding fails.	ESD1-DPC-DERAIL, /ESD1-DPC-DERAIL-TCASK, ESD1-DPC-DERAIL-SHIELD	DE-SHIELD-DEGRADE	1.633E-009	1.633E-009	2.563E-011
RF-ESD01-DPC	2-3	This sequence represents a structural challenge to a DPC inside a transportation cask resulting in a direct exposure from loss of shielding due to a railcar derailment. In this sequence the transportation cask fails, and the canister remains intact.	ESD1-DPC-DERAIL, ESD1-DPC-DERAIL-TCASK, /ESD1-DPC-DERAIL-CAN	DE-SHIELD-LOSS	+0.000E+000	+0.000E+000	+0.000E+000
RF-ESD01-DPC	2-4	This sequence represents a structural challenge to a DPC inside a transportation cask resulting in a filtered radionuclide release due to a railcar derailment. In this sequence the transportation cask fails, the canister fails, the confinement boundary remains intact, and a moderator is excluded from entering canister.	ESD1-DPC-DERAIL, ESD1-DPC-DERAIL-TCASK, ESD1-DPC-DERAIL-CAN, /200-CONFINEMENT, /200-MODERATOR-SOURCE	RR-FILTERED	1.633E-012	1.652E-012	2.808E-014
RF-ESD01-DPC	2-5	This sequence represents a structural challenge to a DPC inside a transportation cask resulting in a filtered radionuclide release also important to criticality due to a railcar derailment. In this sequence the transportation cask fails, the canister fails, the confinement boundary remains intact, and a moderator enters canister.	ESD1-DPC-DERAIL, ESD1-DPC-DERAIL-TCASK, ESD1-DPC-DERAIL-CAN, /200-CONFINEMENT, 200-MODERATOR-SOURCE	RR-ITC-FILTERED	+0.000E+000	+0.000E+000	+0.000E+000
RF-ESD01-DPC	2-6	This sequence represents a structural challenge to a DPC inside a transportation cask resulting in an unfiltered radionuclide release due to a railcar derailment. In this sequence the transportation cask fails, the canister fails, the confinement boundary fails, and a moderator is excluded from entering canister.	ESD1-DPC-DERAIL, ESD1-DPC-DERAIL-TCASK, ESD1-DPC-DERAIL-CAN, 200-CONFINEMENT, /200-MODERATOR-SOURCE	RR-UNFILTERED	5.337E-014	3.841E-014	8.900E-014
RF-ESD01-DPC	2-7	This sequence represents a structural challenge to a DPC inside a transportation cask resulting in a filtered radionuclide release also important to criticality due to a railcar derailment. In this sequence the transportation cask fails, the canister fails, the confinement boundary fails, and a moderator enters canister.	ESD1-DPC-DERAIL, ESD1-DPC-DERAIL-TCASK, ESD1-DPC-DERAIL-CAN, 200-CONFINEMENT, 200-MODERATOR-SOURCE	RR-ITC-UNFILTERED	+0.000E+000	+0.000E+000	+0.000E+000
RF-ESD01-DPC	3-2	This sequence represents a structural challenge to a DPC inside a transportation cask resulting in a direct exposure from degradation of shielding due to a railcar collision with structures or equipment. In this sequence the transportation cask remains intact, and the shielding fails.	ESD1-DPC-COLLIDE, /ESD1-DPC-COLLIDE-TCASK, ESD1-DPC-COLLIDE-SHIELD	DE-SHIELD-DEGRADE	1.489E-005	8.214E-006	3.677E-005
RF-ESD01-DPC	3-3	This sequence represents a structural challenge to a DPC inside a transportation cask resulting in a direct exposure from loss of shielding due to a railcar collision with structures or equipment. In this sequence the transportation cask fails, and the canister remains intact.	ESD1-DPC-COLLIDE, ESD1-DPC-COLLIDE-TCASK, /ESD1-DPC-COLLIDE-CAN	DE-SHIELD-LOSS	+0.000E+000	+0.000E+000	+0.000E+000
RF-ESD01-DPC	3-4	This sequence represents a structural challenge to a DPC inside a transportation cask resulting in a filtered radionuclide release due to a railcar collision with structures or equipment. In this sequence the transportation cask fails, the canister fails, the confinement boundary remains intact, and a moderator is excluded from entering canister.	ESD1-DPC-COLLIDE, ESD1-DPC-COLLIDE-TCASK, ESD1-DPC-COLLIDE-CAN, /200-CONFINEMENT, /200-MODERATOR-SOURCE	RR-FILTERED	1.489E-008	8.214E-009	3.677E-008
RF-ESD01-DPC	3-5	This sequence represents a structural challenge to a DPC inside a transportation cask resulting in a filtered radionuclide release also important to criticality due to a railcar collision with structures or equipment. In this sequence the transportation cask fails, the canister fails, the confinement boundary remains intact, and a moderator enters canister.	ESD1-DPC-COLLIDE, ESD1-DPC-COLLIDE-TCASK, ESD1-DPC-COLLIDE-CAN, /200-CONFINEMENT, 200-MODERATOR-SOURCE	RR-ITC-FILTERED	1.678E-012	2.689E-013	1.420E-011
RF-ESD01-DPC	3-6	This sequence represents a structural challenge to a DPC inside a transportation cask resulting in an unfiltered radionuclide release due to a railcar collision with structures or equipment. In this sequence the transportation cask fails, the canister fails, the confinement boundary fails, and a moderator is excluded from entering canister.	ESD1-DPC-COLLIDE, ESD1-DPC-COLLIDE-TCASK, ESD1-DPC-COLLIDE-CAN, 200-CONFINEMENT, /200-MODERATOR-SOURCE	RR-UNFILTERED	4.996E-010	1.421E-010	1.829E-009
RF-ESD01-DPC	3-7	This sequence represents a structural challenge to a DPC inside a transportation cask resulting in a filtered radionuclide release also important to criticality due to a railcar collision with structures or equipment. In this sequence the transportation cask fails, the canister fails, the confinement boundary fails, and a moderator enters canister.	ESD1-DPC-COLLIDE, ESD1-DPC-COLLIDE-TCASK, ESD1-DPC-COLLIDE-CAN, 200-CONFINEMENT, 200-MODERATOR-SOURCE	RR-ITC-UNFILTERED	4.519E-014	+0.000E+000	5.175E-013
RF-ESD01-TAD	2-2	This sequence represents a structural challenge to a TAD canister inside a transportation cask resulting in a direct exposure from degradation of shielding due to a railcar derailment. In this sequence the transportation cask remains intact, and the shielding fails.	ESD1-TAD-DERAIL, /ESD1-TAD-DERAIL-TCASK, ESD1-TAD-DERAIL-SHIELD	DE-SHIELD-DEGRADE	3.293E-008	3.293E-008	5.168E-010
RF-ESD01-TAD	2-3	This sequence represents a structural challenge to a TAD canister inside a transportation cask resulting in a direct exposure from loss of shielding due to a railcar derailment. In this sequence the transportation cask fails, and the canister remains intact.	ESD1-TAD-DERAIL, ESD1-TAD-DERAIL-TCASK, /ESD1-TAD-DERAIL-CAN	DE-SHIELD-LOSS	+0.000E+000	+0.000E+000	+0.000E+000

Table G-1. Event Sequence Quantification Summary (Continued)

Event Tree	Seq.	Description	Logic	End State	Mean	Median	Std. Dev.
RF-ESD01-TAD	2-4	This sequence represents a structural challenge to a TAD canister inside a transportation cask resulting in a filtered radionuclide release due to a railcar derailment. In this sequence the transportation cask fails, the canister fails, the confinement boundary remains intact, and a moderator is excluded from entering canister.	ESD1-TAD-DERAIL, ESD1-TAD-DERAIL-TCASK, ESD1-TAD-DERAIL-CAN, /200-CONFINEMENT, /200-MODERATOR-SOURCE	RR-FILTERED	3.293E-011	3.330E-011	5.661E-013
RF-ESD01-TAD	2-5	This sequence represents a structural challenge to a TAD canister inside a transportation cask resulting in a filtered radionuclide release also important to criticality due to a railcar derailment. In this sequence the transportation cask fails, the canister fails, the confinement boundary remains intact, and a moderator enters canister.	ESD1-TAD-DERAIL, ESD1-TAD-DERAIL-TCASK, ESD1-TAD-DERAIL-CAN, /200-CONFINEMENT, 200-MODERATOR-SOURCE	RR-ITC-FILTERED	+0.000E+000	+0.000E+000	+0.000E+000
RF-ESD01-TAD	2-6	This sequence represents a structural challenge to a TAD canister inside a transportation cask resulting in an unfiltered radionuclide release due to a railcar derailment. In this sequence the transportation cask fails, the canister fails, the confinement boundary fails, and a moderator is excluded from entering canister.	ESD1-TAD-DERAIL, ESD1-TAD-DERAIL-TCASK, ESD1-TAD-DERAIL-CAN, 200-CONFINEMENT, /200-MODERATOR-SOURCE	RR-UNFILTERED	1.076E-012	7.745E-013	1.794E-012
RF-ESD01-TAD	2-7	This sequence represents a structural challenge to a TAD canister inside a transportation cask resulting in a filtered radionuclide release also important to criticality due to a railcar derailment. In this sequence the transportation cask fails, the canister fails, the confinement boundary fails, and a moderator enters canister.	ESD1-TAD-DERAIL, ESD1-TAD-DERAIL-TCASK, ESD1-TAD-DERAIL-CAN, 200-CONFINEMENT, 200-MODERATOR-SOURCE	RR-ITC-UNFILTERED	+0.000E+000	+0.000E+000	+0.000E+000
RF-ESD01-TAD	3-2	This sequence represents a structural challenge to a TAD canister inside a transportation cask resulting in a direct exposure from degradation of shielding due to a railcar collision with structures or equipment. In this sequence the transportation cask remains intact, and the shielding fails.	ESD1-TAD-COLLIDE, /ESD1-TAD-COLLIDE-TCASK, ESD1-TAD-COLLIDE-SHIELD	DE-SHIELD-DEGRADE	3.002E-004	1.656E-004	7.413E-004
RF-ESD01-TAD	3-3	This sequence represents a structural challenge to a TAD canister inside a transportation cask resulting in a direct exposure from loss of shielding due to a railcar collision with structures or equipment. In this sequence the transportation cask fails, and the canister remains intact.	ESD1-TAD-COLLIDE, ESD1-TAD-COLLIDE-TCASK, /ESD1-TAD-COLLIDE-CAN	DE-SHIELD-LOSS	+0.000E+000	+0.000E+000	+0.000E+000
RF-ESD01-TAD	3-4	This sequence represents a structural challenge to a TAD canister inside a transportation cask resulting in a filtered radionuclide release due to a railcar collision with structures or equipment. In this sequence the transportation cask fails, the canister fails, the confinement boundary remains intact, and a moderator is excluded from entering canister.	ESD1-TAD-COLLIDE, ESD1-TAD-COLLIDE-TCASK, ESD1-TAD-COLLIDE-CAN, /200-CONFINEMENT, /200-MODERATOR-SOURCE	RR-FILTERED	3.002E-007	1.656E-007	7.413E-007
RF-ESD01-TAD	3-5	This sequence represents a structural challenge to a TAD canister inside a transportation cask resulting in a filtered radionuclide release also important to criticality due to a railcar collision with structures or equipment. In this sequence the transportation cask fails, the canister fails, the confinement boundary remains intact, and a moderator enters canister.	ESD1-TAD-COLLIDE, ESD1-TAD-COLLIDE-TCASK, ESD1-TAD-COLLIDE-CAN, /200-CONFINEMENT, 200-MODERATOR-SOURCE	RR-ITC-FILTERED	3.383E-011	5.421E-012	2.863E-010
RF-ESD01-TAD	3-6	This sequence represents a structural challenge to a TAD canister inside a transportation cask resulting in an unfiltered radionuclide release due to a railcar collision with structures or equipment. In this sequence the transportation cask fails, the canister fails, the confinement boundary fails, and a moderator is excluded from entering canister.	ESD1-TAD-COLLIDE, ESD1-TAD-COLLIDE-TCASK, ESD1-TAD-COLLIDE-CAN, 200-CONFINEMENT, /200-MODERATOR-SOURCE	RR-UNFILTERED	1.007E-008	2.865E-009	3.688E-008
RF-ESD01-TAD	3-7	This sequence represents a structural challenge to a TAD canister inside a transportation cask resulting in a filtered radionuclide release also important to criticality due to a railcar collision with structures or equipment. In this sequence the transportation cask fails, the canister fails, the confinement boundary fails, and a moderator enters canister.	ESD1-TAD-COLLIDE, ESD1-TAD-COLLIDE-TCASK, ESD1-TAD-COLLIDE-CAN, 200-CONFINEMENT, 200-MODERATOR-SOURCE	RR-ITC-UNFILTERED	9.110E-013	+0.000E+000	1.043E-011
RF-ESD02-DPC	2-2	This sequence represents a structural challenge to a DPC inside a transportation cask resulting in a direct exposure from degradation of shielding due to a drop of the cask at the operational height. In this sequence the transportation cask remains intact, and the shielding fails.	ESD2-DPC-DROP, /ESD2-DPC-DROP-TCASK, ESD2-DPC-DROP-SHIELD	DE-SHIELD-DEGRADE	9.046E-007	7.583E-007	1.001E-006
RF-ESD02-DPC	2-3	This sequence represents a structural challenge to a DPC inside a transportation cask resulting in a direct exposure from loss of shielding due to a drop of the cask at the operational height. In this sequence the transportation cask fails, and the canister remains intact.	ESD2-DPC-DROP, ESD2-DPC-DROP-TCASK, /ESD2-DPC-DROP-CAN	DE-SHIELD-LOSS	+0.000E+000	+0.000E+000	+0.000E+000
RF-ESD02-DPC	2-4	This sequence represents a structural challenge to a DPC inside a transportation cask resulting in a filtered radionuclide release due to a drop of the cask at the operational height. In this sequence the transportation cask fails, the canister fails, the confinement boundary remains intact, and a moderator is excluded from entering canister.	ESD2-DPC-DROP, ESD2-DPC-DROP-TCASK, ESD2-DPC-DROP-CAN, /200-CONFINEMENT, /200-MODERATOR-SOURCE	RR-FILTERED	9.046E-007	7.583E-007	1.001E-006
RF-ESD02-DPC	2-5	This sequence represents a structural challenge to a DPC inside a transportation cask resulting in a filtered radionuclide release also important to criticality due to a drop of the cask at the operational height. In this sequence the transportation cask fails, the canister fails, the confinement boundary remains intact, and a moderator enters canister.	ESD2-DPC-DROP, ESD2-DPC-DROP-TCASK, ESD2-DPC-DROP-CAN, /200-CONFINEMENT, 200-MODERATOR-SOURCE	RR-ITC-FILTERED	8.144E-011	2.539E-011	2.559E-010

Table G-1. Event Sequence Quantification Summary (Continued)

Event Tree	Seq.	Description	Logic	End State	Mean	Median	Std. Dev.
RF-ESD02-DPC	2-6	This sequence represents a structural challenge to a DPC inside a transportation cask resulting in an unfiltered radionuclide release due to a drop of the cask at the operational height. In this sequence the transportation cask fails, the canister fails, the confinement boundary fails, and a moderator is excluded from entering canister.	ESD2-DPC-DROP, ESD2-DPC-DROP-TCASK, ESD2-DPC-DROP-CAN, 200-CONFINEMENT, /200-MODERATOR-SOURCE	RR-UNFILTERED	3.005E-008	1.202E-008	6.099E-008
RF-ESD02-DPC	2-7	This sequence represents a structural challenge to a DPC inside a transportation cask resulting in a filtered radionuclide release also important to criticality due to a drop of the cask at the operational height. In this sequence the transportation cask fails, the canister fails, the confinement boundary fails, and a moderator enters canister.	ESD2-DPC-DROP, ESD2-DPC-DROP-TCASK, ESD2-DPC-DROP-CAN, 200-CONFINEMENT, 200-MODERATOR-SOURCE	RR-ITC-UNFILTERED	2.782E-012	4.226E-013	1.615E-011
RF-ESD02-DPC	3-2	This sequence represents a structural challenge to a DPC inside a transportation cask resulting in a direct exposure from degradation of shielding due to a TC tipover. In this sequence the transportation cask remains intact, and the shielding fails.	ESD2-DPC-TIP, /ESD2-DPC-TIP-TCASK, ESD2-DPC-TIP-SHIELD	DE-SHIELD-DEGRADE	3.388E-007	2.131E-007	4.031E-007
RF-ESD02-DPC	3-3	This sequence represents a structural challenge to a DPC inside a transportation cask resulting in a direct exposure from loss of shielding due to a TC tipover. In this sequence the transportation cask fails, and the canister remains intact.	ESD2-DPC-TIP, ESD2-DPC-TIP-TCASK, /ESD2-DPC-TIP-CAN	DE-SHIELD-LOSS	+0.000E+000	+0.000E+000	+0.000E+000
RF-ESD02-DPC	3-4	This sequence represents a structural challenge to a DPC inside a transportation cask resulting in a filtered radionuclide release due to a TC tipover. In this sequence the transportation cask fails, the canister fails, the confinement boundary remains intact, and a moderator is excluded from entering canister.	ESD2-DPC-TIP, ESD2-DPC-TIP-TCASK, ESD2-DPC-TIP-CAN, /200-CONFINEMENT, /200-MODERATOR-SOURCE	RR-FILTERED	3.388E-007	2.131E-007	4.031E-007
RF-ESD02-DPC	3-5	This sequence represents a structural challenge to a DPC inside a transportation cask resulting in a filtered radionuclide release also important to criticality due to a TC tipover. In this sequence the transportation cask fails, the canister fails, the confinement boundary remains intact, and a moderator enters canister.	ESD2-DPC-TIP, ESD2-DPC-TIP-TCASK, ESD2-DPC-TIP-CAN, /200-CONFINEMENT, 200-MODERATOR-SOURCE	RR-ITC-FILTERED	3.170E-011	7.491E-012	1.245E-010
RF-ESD02-DPC	3-6	This sequence represents a structural challenge to a DPC inside a transportation cask resulting in an unfiltered radionuclide release due to a TC tipover. In this sequence the transportation cask fails, the canister fails, the confinement boundary fails, and a moderator is excluded from entering canister.	ESD2-DPC-TIP, ESD2-DPC-TIP-TCASK, ESD2-DPC-TIP-CAN, 200-CONFINEMENT, /200-MODERATOR-SOURCE	RR-UNFILTERED	1.096E-008	3.515E-009	2.595E-008
RF-ESD02-DPC	3-7	This sequence represents a structural challenge to a DPC inside a transportation cask resulting in a filtered radionuclide release also important to criticality due to a TC tipover. In this sequence the transportation cask fails, the canister fails, the confinement boundary fails, and a moderator enters canister.	ESD2-DPC-TIP, ESD2-DPC-TIP-TCASK, ESD2-DPC-TIP-CAN, 200-CONFINEMENT, 200-MODERATOR-SOURCE	RR-ITC-UNFILTERED	9.900E-013	1.152E-013	5.201E-012
RF-ESD02-DPC	4-2	This sequence represents a structural challenge to a DPC inside a transportation cask resulting in a direct exposure from degradation of shielding due to a collision involving a side impact to a TC. In this sequence the transportation cask remains intact, and the shielding fails.	ESD2-DPC-IMPACT, /ESD2-DPC-IMPACT-TCASK, ESD2-DPC-IMPACT-SHIELD	DE-SHIELD-DEGRADE	2.123E-008	1.603E-008	1.870E-008
RF-ESD02-DPC	4-3	This sequence represents a structural challenge to a DPC inside a transportation cask resulting in a direct exposure from loss of shielding due to a collision involving a side impact to a TC. In this sequence the transportation cask fails, and the canister remains intact.	ESD2-DPC-IMPACT, ESD2-DPC-IMPACT-TCASK, /ESD2-DPC-IMPACT-CAN	DE-SHIELD-LOSS	+0.000E+000	+0.000E+000	+0.000E+000
RF-ESD02-DPC	4-4	This sequence represents a structural challenge to a DPC inside a transportation cask resulting in a filtered radionuclide release due to a collision involving a side impact to a TC. In this sequence the transportation cask fails, the canister fails, the confinement boundary remains intact, and a moderator is excluded from entering canister.	ESD2-DPC-IMPACT, ESD2-DPC-IMPACT-TCASK, ESD2-DPC-IMPACT-CAN, /200-CONFINEMENT, /200-MODERATOR-SOURCE	RR-FILTERED	2.123E-008	1.603E-008	1.870E-008
RF-ESD02-DPC	4-5	This sequence represents a structural challenge to a DPC inside a transportation cask resulting in a filtered radionuclide release also important to criticality due to a collision involving a side impact to a TC. In this sequence the transportation cask fails, the canister fails, the confinement boundary remains intact, and a moderator enters canister.	ESD2-DPC-IMPACT, ESD2-DPC-IMPACT-TCASK, ESD2-DPC-IMPACT-CAN, /200-CONFINEMENT, 200-MODERATOR-SOURCE	RR-ITC-FILTERED	1.902E-012	5.378E-013	6.423E-012
RF-ESD02-DPC	4-6	This sequence represents a structural challenge to a DPC inside a transportation cask resulting in an unfiltered radionuclide release due to a collision involving a side impact to a TC. In this sequence the transportation cask fails, the canister fails, the confinement boundary fails, and a moderator is excluded from entering canister.	ESD2-DPC-IMPACT, ESD2-DPC-IMPACT-TCASK, ESD2-DPC-IMPACT-CAN, 200-CONFINEMENT, /200-MODERATOR-SOURCE	RR-UNFILTERED	7.221E-010	2.732E-010	1.560E-009
RF-ESD02-DPC	4-7	This sequence represents a structural challenge to a DPC inside a transportation cask resulting in a filtered radionuclide release also important to criticality due to a collision involving a side impact to a TC. In this sequence the transportation cask fails, the canister fails, the confinement boundary fails, and a moderator enters canister.	ESD2-DPC-IMPACT, ESD2-DPC-IMPACT-TCASK, ESD2-DPC-IMPACT-CAN, 200-CONFINEMENT, 200-MODERATOR-SOURCE	RR-ITC-UNFILTERED	5.272E-014	+0.000E+000	2.236E-013

Table G-1. Event Sequence Quantification Summary (Continued)

Event Tree	Seq.	Description	Logic	End State	Mean	Median	Std. Dev.
RF-ESD02-DPC	5-2	This sequence represents a structural challenge to a DPC inside a transportation cask resulting in a direct exposure from degradation of shielding due to an impact from unplanned carrier movement. In this sequence the transportation cask remains intact, and the shielding fails.	ESD2-DPC-MOVE, /ESD2-DPC-MOVE-TCASK, ESD2-DPC-MOVE-SHIELD	DE-SHIELD-DEGRADE	1.320E-012	5.762E-013	3.574E-012
RF-ESD02-DPC	5-3	This sequence represents a structural challenge to a DPC inside a transportation cask resulting in a direct exposure from loss of shielding due to an impact from unplanned carrier movement. In this sequence the transportation cask fails, and the canister remains intact.	ESD2-DPC-MOVE, ESD2-DPC-MOVE-TCASK, /ESD2-DPC-MOVE-CAN	DE-SHIELD-LOSS	+0.000E+000	+0.000E+000	+0.000E+000
RF-ESD02-DPC	5-4	This sequence represents a structural challenge to a DPC inside a transportation cask resulting in a filtered radionuclide release due to an impact from unplanned carrier movement. In this sequence the transportation cask fails, the canister fails, the confinement boundary remains intact, and a moderator is excluded from entering canister.	ESD2-DPC-MOVE, ESD2-DPC-MOVE-TCASK, ESD2-DPC-MOVE-CAN, /200-CONFINEMENT, /200-MODERATOR-SOURCE	RR-FILTERED	1.320E-012	5.762E-013	3.574E-012
RF-ESD02-DPC	5-5	This sequence represents a structural challenge to a DPC inside a transportation cask resulting in a filtered radionuclide release also important to criticality due to an impact from unplanned carrier movement. In this sequence the transportation cask fails, the canister fails, the confinement boundary remains intact, and a moderator enters canister.	ESD2-DPC-MOVE, ESD2-DPC-MOVE-TCASK, ESD2-DPC-MOVE-CAN, /200-CONFINEMENT, 200-MODERATOR-SOURCE	RR-ITC-FILTERED	1.152E-017	+0.000E+000	6.653E-016
RF-ESD02-DPC	5-6	This sequence represents a structural challenge to a DPC inside a transportation cask resulting in an unfiltered radionuclide release due to an impact from unplanned carrier movement. In this sequence the transportation cask fails, the canister fails, the confinement boundary fails, and a moderator is excluded from entering canister.	ESD2-DPC-MOVE, ESD2-DPC-MOVE-TCASK, ESD2-DPC-MOVE-CAN, 200-CONFINEMENT, /200-MODERATOR-SOURCE	RR-UNFILTERED	3.563E-014	+0.000E+000	1.447E-013
RF-ESD02-DPC	5-7	This sequence represents a structural challenge to a DPC inside a transportation cask resulting in a filtered radionuclide release also important to criticality due to an impact from unplanned carrier movement. In this sequence the transportation cask fails, the canister fails, the confinement boundary fails, and a moderator enters canister.	ESD2-DPC-MOVE, ESD2-DPC-MOVE-TCASK, ESD2-DPC-MOVE-CAN, 200-CONFINEMENT, 200-MODERATOR-SOURCE	RR-ITC-UNFILTERED	+0.000E+000	+0.000E+000	+0.000E+000
RF-ESD02-DPC	6-2	This sequence represents a structural challenge to a DPC inside a transportation cask resulting in a direct exposure from degradation of shielding due to a drop of a heavy object onto the cask. In this sequence the transportation cask remains intact, and the shielding fails.	ESD2-DPC-DROPON, /ESD2-DPC-DROPON-TCASK, ESD2-DPC-DROPON-SHIELD	DE-SHIELD-DEGRADE	2.868E-007	2.918E-008	1.993E-006
RF-ESD02-DPC	6-3	This sequence represents a structural challenge to a DPC inside a transportation cask resulting in a direct exposure from loss of shielding due to a drop of a heavy object onto the cask. In this sequence the transportation cask fails, and the canister remains intact.	ESD2-DPC-DROPON, ESD2-DPC-DROPON-TCASK, /ESD2-DPC-DROPON-CAN	DE-SHIELD-LOSS	+0.000E+000	+0.000E+000	+0.000E+000
RF-ESD02-DPC	6-4	This sequence represents a structural challenge to a DPC inside a transportation cask resulting in a filtered radionuclide release due to a drop of a heavy object onto the cask. In this sequence the transportation cask fails, the canister fails, the confinement boundary remains intact, and a moderator is excluded from entering canister.	ESD2-DPC-DROPON, ESD2-DPC-DROPON-TCASK, ESD2-DPC-DROPON-CAN, /200-CONFINEMENT, /200-MODERATOR-SOURCE	RR-FILTERED	2.868E-007	2.918E-008	1.993E-006
RF-ESD02-DPC	6-5	This sequence represents a structural challenge to a DPC inside a transportation cask resulting in a filtered radionuclide release also important to criticality due to a drop of a heavy object onto the cask. In this sequence the transportation cask fails, the canister fails, the confinement boundary remains intact, and a moderator enters canister.	ESD2-DPC-DROPON, ESD2-DPC-DROPON-TCASK, ESD2-DPC-DROPON-CAN, /200-CONFINEMENT, 200-MODERATOR-SOURCE	RR-ITC-FILTERED	2.440E-011	1.037E-012	2.081E-010
RF-ESD02-DPC	6-6	This sequence represents a structural challenge to a DPC inside a transportation cask resulting in an unfiltered radionuclide release due to a drop of a heavy object onto the cask. In this sequence the transportation cask fails, the canister fails, the confinement boundary fails, and a moderator is excluded from entering canister.	ESD2-DPC-DROPON, ESD2-DPC-DROPON-TCASK, ESD2-DPC-DROPON-CAN, 200-CONFINEMENT, /200-MODERATOR-SOURCE	RR-UNFILTERED	1.006E-008	5.142E-010	1.373E-007
RF-ESD02-DPC	6-7	This sequence represents a structural challenge to a DPC inside a transportation cask resulting in a filtered radionuclide release also important to criticality due to a drop of a heavy object onto the cask. In this sequence the transportation cask fails, the canister fails, the confinement boundary fails, and a moderator enters canister.	ESD2-DPC-DROPON, ESD2-DPC-DROPON-TCASK, ESD2-DPC-DROPON-CAN, 200-CONFINEMENT, 200-MODERATOR-SOURCE	RR-ITC-UNFILTERED	6.884E-013	+0.000E+000	7.590E-012
RF-ESD02-DPC	7-2	This sequence represents a structural challenge to a DPC inside a transportation cask resulting in a direct exposure from degradation of shielding due to a drop of the cask above the operational height. In this sequence the transportation cask remains intact, and the shielding fails.	ESD2-DPC-2BLK, /ESD2-DPC-2BLK-TCASK2, ESD2-DPC-2BLK-SHIELD	DE-SHIELD-DEGRADE	4.333E-009	1.507E-009	1.018E-008
RF-ESD02-DPC	7-3	This sequence represents a structural challenge to a DPC inside a transportation cask resulting in a direct exposure from loss of shielding due to a drop of the cask above the operational height. In this sequence the transportation cask fails, and the canister remains intact.	ESD2-DPC-2BLK, ESD2-DPC-2BLK-TCASK2, /ESD2-DPC-2BLK-CAN2	DE-SHIELD-LOSS	+0.000E+000	+0.000E+000	+0.000E+000

Table G-1. Event Sequence Quantification Summary (Continued)

Event Tree	Seq.	Description	Logic	End State	Mean	Median	Std. Dev.
RF-ESD02-DPC	7-4	This sequence represents a structural challenge to a DPC inside a transportation cask resulting in a filtered radionuclide release due to a drop of the cask above the operational height. In this sequence the transportation cask fails, the canister fails, the confinement boundary remains intact, and a moderator is excluded from entering canister.	ESD2-DPC-2BLK, ESD2-DPC-2BLK-TCASK2, ESD2-DPC-2BLK-CAN2, /200-CONFINEMENT, /200-MODERATOR-SOURCE	RR-FILTERED	4.333E-009	1.507E-009	1.018E-008
RF-ESD02-DPC	7-5	This sequence represents a structural challenge to a DPC inside a transportation cask resulting in a filtered radionuclide release also important to criticality due to a drop of the cask above the operational height. In this sequence the transportation cask fails, the canister fails, the confinement boundary remains intact, and a moderator enters canister.	ESD2-DPC-2BLK, ESD2-DPC-2BLK-TCASK2, ESD2-DPC-2BLK-CAN2, /200-CONFINEMENT, 200-MODERATOR-SOURCE	RR-ITC-FILTERED	4.156E-013	3.841E-014	2.449E-012
RF-ESD02-DPC	7-6	This sequence represents a structural challenge to a DPC inside a transportation cask resulting in an unfiltered radionuclide release due to a drop of the cask above the operational height. In this sequence the transportation cask fails, the canister fails, the confinement boundary fails, and a moderator is excluded from entering canister.	ESD2-DPC-2BLK, ESD2-DPC-2BLK-TCASK2, ESD2-DPC-2BLK-CAN2, 200-CONFINEMENT, /200-MODERATOR-SOURCE	RR-UNFILTERED	1.410E-010	2.443E-011	5.382E-010
RF-ESD02-DPC	7-7	This sequence represents a structural challenge to a DPC inside a transportation cask resulting in a filtered radionuclide release also important to criticality due to a drop of the cask above the operational height. In this sequence the transportation cask fails, the canister fails, the confinement boundary fails, and a moderator enters canister.	ESD2-DPC-2BLK, ESD2-DPC-2BLK-TCASK2, ESD2-DPC-2BLK-CAN2, 200-CONFINEMENT, 200-MODERATOR-SOURCE	RR-ITC-UNFILTERED	1.108E-014	+0.000E+000	8.482E-014
RF-ESD02-TAD	2-2	This sequence represents a structural challenge to a TAD canister inside a transportation cask resulting in a direct exposure from degradation of shielding due to a drop of the cask at the operational height. In this sequence the transportation cask remains intact, and the shielding fails.	ESD2-TAD-DROP, /ESD2-TAD-DROP-TCASK, ESD2-TAD-DROP-SHIELD	DE-SHIELD-DEGRADE	1.826E-006	1.582E-007	1.123E-005
RF-ESD02-TAD	2-3	This sequence represents a structural challenge to a TAD canister inside a transportation cask resulting in a direct exposure from loss of shielding due to a drop of the cask at the operational height. In this sequence the transportation cask fails, and the canister remains intact.	ESD2-TAD-DROP, ESD2-TAD-DROP-TCASK, /ESD2-TAD-DROP-CAN	DE-SHIELD-LOSS	+0.000E+000	+0.000E+000	+0.000E+000
RF-ESD02-TAD	2-4	This sequence represents a structural challenge to a TAD canister inside a transportation cask resulting in a filtered radionuclide release due to a drop of the cask at the operational height. In this sequence the transportation cask fails, the canister fails, the confinement boundary remains intact, and a moderator is excluded from entering canister.	ESD2-TAD-DROP, ESD2-TAD-DROP-TCASK, ESD2-TAD-DROP-CAN, /200-CONFINEMENT, /200-MODERATOR-SOURCE	RR-FILTERED	1.826E-006	1.582E-007	1.123E-005
RF-ESD02-TAD	2-5	This sequence represents a structural challenge to a TAD canister inside a transportation cask resulting in a filtered radionuclide release also important to criticality due to a drop of the cask at the operational height. In this sequence the transportation cask fails, the canister fails, the confinement boundary remains intact, and a moderator enters canister.	ESD2-TAD-DROP, ESD2-TAD-DROP-TCASK, ESD2-TAD-DROP-CAN, /200-CONFINEMENT, 200-MODERATOR-SOURCE	RR-ITC-FILTERED	1.915E-010	5.421E-012	2.212E-009
RF-ESD02-TAD	2-6	This sequence represents a structural challenge to a TAD canister inside a transportation cask resulting in an unfiltered radionuclide release due to a drop of the cask at the operational height. In this sequence the transportation cask fails, the canister fails, the confinement boundary fails, and a moderator is excluded from entering canister.	ESD2-TAD-DROP, ESD2-TAD-DROP-TCASK, ESD2-TAD-DROP-CAN, 200-CONFINEMENT, /200-MODERATOR-SOURCE	RR-UNFILTERED	6.255E-008	2.578E-009	5.082E-007
RF-ESD02-TAD	2-7	This sequence represents a structural challenge to a TAD canister inside a transportation cask resulting in a filtered radionuclide release also important to criticality due to a drop of the cask at the operational height. In this sequence the transportation cask fails, the canister fails, the confinement boundary fails, and a moderator enters canister.	ESD2-TAD-DROP, ESD2-TAD-DROP-TCASK, ESD2-TAD-DROP-CAN, 200-CONFINEMENT, 200-MODERATOR-SOURCE	RR-ITC-UNFILTERED	5.521E-012	+0.000E+000	5.934E-011
RF-ESD02-TAD	3-2	This sequence represents a structural challenge to a TAD canister inside a transportation cask resulting in a direct exposure from degradation of shielding due to a TC tipover. In this sequence the transportation cask remains intact, and the shielding fails.	ESD2-TAD-TIP, /ESD2-TAD-TIP-TCASK, ESD2-TAD-TIP-SHIELD	DE-SHIELD-DEGRADE	6.831E-006	4.297E-006	8.128E-006
RF-ESD02-TAD	3-3	This sequence represents a structural challenge to a TAD canister inside a transportation cask resulting in a direct exposure from loss of shielding due to a TC tipover. In this sequence the transportation cask fails, and the canister remains intact.	ESD2-TAD-TIP, ESD2-TAD-TIP-TCASK, /ESD2-TAD-TIP-CAN	DE-SHIELD-LOSS	+0.000E+000	+0.000E+000	+0.000E+000
RF-ESD02-TAD	3-4	This sequence represents a structural challenge to a TAD canister inside a transportation cask resulting in a filtered radionuclide release due to a TC tipover. In this sequence the transportation cask fails, the canister fails, the confinement boundary remains intact, and a moderator is excluded from entering canister.	ESD2-TAD-TIP, ESD2-TAD-TIP-TCASK, ESD2-TAD-TIP-CAN, /200-CONFINEMENT, /200-MODERATOR-SOURCE	RR-FILTERED	6.831E-006	4.297E-006	8.128E-006
RF-ESD02-TAD	3-5	This sequence represents a structural challenge to a TAD canister inside a transportation cask resulting in a filtered radionuclide release also important to criticality due to a TC tipover. In this sequence the transportation cask fails, the canister fails, the confinement boundary remains intact, and a moderator enters canister.	ESD2-TAD-TIP, ESD2-TAD-TIP-TCASK, ESD2-TAD-TIP-CAN, /200-CONFINEMENT, 200-MODERATOR-SOURCE	RR-ITC-FILTERED	6.391E-010	1.510E-010	2.510E-009

Table G-1. Event Sequence Quantification Summary (Continued)

Event Tree	Seq.	Description	Logic	End State	Mean	Median	Std. Dev.
RF-ESD02-TAD	3-6	This sequence represents a structural challenge to a TAD canister inside a transportation cask resulting in an unfiltered radionuclide release due to a TC tipover. In this sequence the transportation cask fails, the canister fails, the confinement boundary fails, and a moderator is excluded from entering canister.	ESD2-TAD-TIP, ESD2-TAD-TIP-TCASK, ESD2-TAD-TIP-CAN, 200-CONFINEMENT, /200-MODERATOR-SOURCE	RR-UNFILTERED	2.209E-007	7.087E-008	5.231E-007
RF-ESD02-TAD	3-7	This sequence represents a structural challenge to a TAD canister inside a transportation cask resulting in a filtered radionuclide release also important to criticality due to a TC tipover. In this sequence the transportation cask fails, the canister fails, the confinement boundary fails, and a moderator enters canister.	ESD2-TAD-TIP, ESD2-TAD-TIP-TCASK, ESD2-TAD-TIP-CAN, 200-CONFINEMENT, 200-MODERATOR-SOURCE	RR-ITC-UNFILTERED	1.996E-011	2.324E-012	1.049E-010
RF-ESD02-TAD	4-2	This sequence represents a structural challenge to a TAD canister inside a transportation cask resulting in a direct exposure from degradation of shielding due to a collision involving a side impact to a TC. In this sequence the transportation cask remains intact, and the shielding fails.	ESD2-TAD-IMPACT, /ESD2-TAD-IMPACT-TCASK, ESD2-TAD-IMPACT-SHIELD	DE-SHIELD-DEGRADE	4.280E-007	3.233E-007	3.770E-007
RF-ESD02-TAD	4-3	This sequence represents a structural challenge to a TAD canister inside a transportation cask resulting in a direct exposure from loss of shielding due to a collision involving a side impact to a TC. In this sequence the transportation cask fails, and the canister remains intact.	ESD2-TAD-IMPACT, ESD2-TAD-IMPACT-TCASK, /ESD2-TAD-IMPACT-CAN	DE-SHIELD-LOSS	+0.000E+000	+0.000E+000	+0.000E+000
RF-ESD02-TAD	4-4	This sequence represents a structural challenge to a TAD canister inside a transportation cask resulting in a filtered radionuclide release due to a collision involving a side impact to a TC. In this sequence the transportation cask fails, the canister fails, the confinement boundary remains intact, and a moderator is excluded from entering canister.	ESD2-TAD-IMPACT, ESD2-TAD-IMPACT-TCASK, ESD2-TAD-IMPACT-CAN, /200-CONFINEMENT, /200-MODERATOR-SOURCE	RR-FILTERED	4.280E-007	3.233E-007	3.770E-007
RF-ESD02-TAD	4-5	This sequence represents a structural challenge to a TAD canister inside a transportation cask resulting in a filtered radionuclide release also important to criticality due to a collision involving a side impact to a TC. In this sequence the transportation cask fails, the canister fails, the confinement boundary remains intact, and a moderator enters canister.	ESD2-TAD-IMPACT, ESD2-TAD-IMPACT-TCASK, ESD2-TAD-IMPACT-CAN, /200-CONFINEMENT, 200-MODERATOR-SOURCE	RR-ITC-FILTERED	3.835E-011	1.084E-011	1.295E-010
RF-ESD02-TAD	4-6	This sequence represents a structural challenge to a TAD canister inside a transportation cask resulting in an unfiltered radionuclide release due to a collision involving a side impact to a TC. In this sequence the transportation cask fails, the canister fails, the confinement boundary fails, and a moderator is excluded from entering canister.	ESD2-TAD-IMPACT, ESD2-TAD-IMPACT-TCASK, ESD2-TAD-IMPACT-CAN, 200-CONFINEMENT, /200-MODERATOR-SOURCE	RR-UNFILTERED	1.454E-008	5.509E-009	3.146E-008
RF-ESD02-TAD	4-7	This sequence represents a structural challenge to a TAD canister inside a transportation cask resulting in a filtered radionuclide release also important to criticality due to a collision involving a side impact to a TC. In this sequence the transportation cask fails, the canister fails, the confinement boundary fails, and a moderator enters canister.	ESD2-TAD-IMPACT, ESD2-TAD-IMPACT-TCASK, ESD2-TAD-IMPACT-CAN, 200-CONFINEMENT, 200-MODERATOR-SOURCE	RR-ITC-UNFILTERED	1.063E-012	+0.000E+000	4.508E-012
RF-ESD02-TAD	5-2	This sequence represents a structural challenge to a TAD canister inside a transportation cask resulting in a direct exposure from degradation of shielding due to an impact from unplanned carrier movement. In this sequence the transportation cask remains intact, and the shielding fails.	ESD2-TAD-MOVE, /ESD2-TAD-MOVE-TCASK, ESD2-TAD-MOVE-SHIELD	DE-SHIELD-DEGRADE	2.662E-011	1.162E-011	7.206E-011
RF-ESD02-TAD	5-3	This sequence represents a structural challenge to a TAD canister inside a transportation cask resulting in a direct exposure from loss of shielding due to an impact from unplanned carrier movement. In this sequence the transportation cask fails, and the canister remains intact.	ESD2-TAD-MOVE, ESD2-TAD-MOVE-TCASK, /ESD2-TAD-MOVE-CAN	DE-SHIELD-LOSS	+0.000E+000	+0.000E+000	+0.000E+000
RF-ESD02-TAD	5-4	This sequence represents a structural challenge to a TAD canister inside a transportation cask resulting in a filtered radionuclide release due to an impact from unplanned carrier movement. In this sequence the transportation cask fails, the canister fails, the confinement boundary remains intact, and a moderator is excluded from entering canister.	ESD2-TAD-MOVE, ESD2-TAD-MOVE-TCASK, ESD2-TAD-MOVE-CAN, /200-CONFINEMENT, /200-MODERATOR-SOURCE	RR-FILTERED	2.662E-011	1.162E-011	7.206E-011
RF-ESD02-TAD	5-5	This sequence represents a structural challenge to a TAD canister inside a transportation cask resulting in a filtered radionuclide release also important to criticality due to an impact from unplanned carrier movement. In this sequence the transportation cask fails, the canister fails, the confinement boundary remains intact, and a moderator enters canister.	ESD2-TAD-MOVE, ESD2-TAD-MOVE-TCASK, ESD2-TAD-MOVE-CAN, /200-CONFINEMENT, 200-MODERATOR-SOURCE	RR-ITC-FILTERED	2.324E-016	+0.000E+000	1.341E-014
RF-ESD02-TAD	5-6	This sequence represents a structural challenge to a TAD canister inside a transportation cask resulting in an unfiltered radionuclide release due to an impact from unplanned carrier movement. In this sequence the transportation cask fails, the canister fails, the confinement boundary fails, and a moderator is excluded from entering canister.	ESD2-TAD-MOVE, ESD2-TAD-MOVE-TCASK, ESD2-TAD-MOVE-CAN, 200-CONFINEMENT, /200-MODERATOR-SOURCE	RR-UNFILTERED	7.183E-013	+0.000E+000	2.918E-012
RF-ESD02-TAD	5-7	This sequence represents a structural challenge to a TAD canister inside a transportation cask resulting in a filtered radionuclide release also important to criticality due to an impact from unplanned carrier movement. In this sequence the transportation cask fails, the canister fails, the confinement boundary fails, and a moderator enters canister.	ESD2-TAD-MOVE, ESD2-TAD-MOVE-TCASK, ESD2-TAD-MOVE-CAN, 200-CONFINEMENT, 200-MODERATOR-SOURCE	RR-ITC-UNFILTERED	+0.000E+000	+0.000E+000	+0.000E+000

Table G-1. Event Sequence Quantification Summary (Continued)

Event Tree	Seq.	Description	Logic	End State	Mean	Median	Std. Dev.
RF-ESD02-TAD	6-2	This sequence represents a structural challenge to a TAD canister inside a transportation cask resulting in a direct exposure from degradation of shielding due to a drop of a heavy object onto the cask. In this sequence the transportation cask remains intact, and the shielding fails.	ESD2-TAD-DROPON, /ESD2-TAD-DROPON-TCASK, ESD2-TAD-DROPON-SHIELD	DE-SHIELD-DEGRADE	5.783E-006	5.883E-007	4.017E-005
RF-ESD02-TAD	6-3	This sequence represents a structural challenge to a TAD canister inside a transportation cask resulting in a direct exposure from loss of shielding due to a drop of a heavy object onto the cask. In this sequence the transportation cask fails, and the canister remains intact.	ESD2-TAD-DROPON, ESD2-TAD-DROPON-TCASK, /ESD2-TAD-DROPON-CAN	DE-SHIELD-LOSS	+0.000E+000	+0.000E+000	+0.000E+000
RF-ESD02-TAD	6-4	This sequence represents a structural challenge to a TAD canister inside a transportation cask resulting in a filtered radionuclide release due to a drop of a heavy object onto the cask. In this sequence the transportation cask fails, the canister fails, the confinement boundary remains intact, and a moderator is excluded from entering canister.	ESD2-TAD-DROPON, ESD2-TAD-DROPON-TCASK, ESD2-TAD-DROPON-CAN, /200-CONFINEMENT, /200-MODERATOR-SOURCE	RR-FILTERED	5.783E-006	5.883E-007	4.017E-005
RF-ESD02-TAD	6-5	This sequence represents a structural challenge to a TAD canister inside a transportation cask resulting in a filtered radionuclide release also important to criticality due to a drop of a heavy object onto the cask. In this sequence the transportation cask fails, the canister fails, the confinement boundary remains intact, and a moderator enters canister.	ESD2-TAD-DROPON, ESD2-TAD-DROPON-TCASK, ESD2-TAD-DROPON-CAN, /200-CONFINEMENT, 200-MODERATOR-SOURCE	RR-ITC-FILTERED	4.919E-010	2.091E-011	4.196E-009
RF-ESD02-TAD	6-6	This sequence represents a structural challenge to a TAD canister inside a transportation cask resulting in an unfiltered radionuclide release due to a drop of a heavy object onto the cask. In this sequence the transportation cask fails, the canister fails, the confinement boundary fails, and a moderator is excluded from entering canister.	ESD2-TAD-DROPON, ESD2-TAD-DROPON-TCASK, ESD2-TAD-DROPON-CAN, 200-CONFINEMENT, /200-MODERATOR-SOURCE	RR-UNFILTERED	2.028E-007	1.037E-008	2.768E-006
RF-ESD02-TAD	6-7	This sequence represents a structural challenge to a TAD canister inside a transportation cask resulting in a filtered radionuclide release also important to criticality due to a drop of a heavy object onto the cask. In this sequence the transportation cask fails, the canister fails, the confinement boundary fails, and a moderator enters canister.	ESD2-TAD-DROPON, ESD2-TAD-DROPON-TCASK, ESD2-TAD-DROPON-CAN, 200-CONFINEMENT, 200-MODERATOR-SOURCE	RR-ITC-UNFILTERED	1.388E-011	+0.000E+000	1.530E-010
RF-ESD02-TAD	7-2	This sequence represents a structural challenge to a TAD canister inside a transportation cask resulting in a direct exposure from degradation of shielding due to a drop of the cask above the operational height. In this sequence the transportation cask remains intact, and the shielding fails.	ESD2-TAD-2BLK, /ESD2-TAD-2BLK-TCASK2, ESD2-TAD-2BLK-SHIELD	DE-SHIELD-DEGRADE	2.912E-008	1.013E-008	6.844E-008
RF-ESD02-TAD	7-3	This sequence represents a structural challenge to a TAD canister inside a transportation cask resulting in a direct exposure from loss of shielding due to a drop of the cask above the operational height. In this sequence the transportation cask fails, and the canister remains intact.	ESD2-TAD-2BLK, ESD2-TAD-2BLK-TCASK2, /ESD2-TAD-2BLK-CAN2	DE-SHIELD-LOSS	+0.000E+000	+0.000E+000	+0.000E+000
RF-ESD02-TAD	7-4	This sequence represents a structural challenge to a TAD canister inside a transportation cask resulting in a filtered radionuclide release due to a drop of the cask above the operational height. In this sequence the transportation cask fails, the canister fails, the confinement boundary remains intact, and a moderator is excluded from entering canister.	ESD2-TAD-2BLK, ESD2-TAD-2BLK-TCASK2, ESD2-TAD-2BLK-CAN2, /200-CONFINEMENT, /200-MODERATOR-SOURCE	RR-FILTERED	2.912E-008	1.013E-008	6.844E-008
RF-ESD02-TAD	7-5	This sequence represents a structural challenge to a TAD canister inside a transportation cask resulting in a filtered radionuclide release also important to criticality due to a drop of the cask above the operational height. In this sequence the transportation cask fails, the canister fails, the confinement boundary remains intact, and a moderator enters canister.	ESD2-TAD-2BLK, ESD2-TAD-2BLK-TCASK2, ESD2-TAD-2BLK-CAN2, /200-CONFINEMENT, 200-MODERATOR-SOURCE	RR-ITC-FILTERED	2.759E-012	+0.000E+000	1.646E-011
RF-ESD02-TAD	7-6	This sequence represents a structural challenge to a TAD canister inside a transportation cask resulting in an unfiltered radionuclide release due to a drop of the cask above the operational height. In this sequence the transportation cask fails, the canister fails, the confinement boundary fails, and a moderator is excluded from entering canister.	ESD2-TAD-2BLK, ESD2-TAD-2BLK-TCASK2, ESD2-TAD-2BLK-CAN2, 200-CONFINEMENT, /200-MODERATOR-SOURCE	RR-UNFILTERED	9.476E-010	1.642E-010	3.617E-009
RF-ESD02-TAD	7-7	This sequence represents a structural challenge to a TAD canister inside a transportation cask resulting in a filtered radionuclide release also important to criticality due to a drop of the cask above the operational height. In this sequence the transportation cask fails, the canister fails, the confinement boundary fails, and a moderator enters canister.	ESD2-TAD-2BLK, ESD2-TAD-2BLK-TCASK2, ESD2-TAD-2BLK-CAN2, 200-CONFINEMENT, 200-MODERATOR-SOURCE	RR-ITC-UNFILTERED	6.312E-014	+0.000E+000	5.717E-013
RF-ESD03-DPC	2-2	This sequence represents a structural challenge to a DPC inside a transportation cask resulting in a direct exposure from degradation of shielding due to a drop of the cask at the operational height. In this sequence the transportation cask remains intact, and the shielding fails.	ESD3-DPC-DROP, /ESD3-DPC-DROP-TCASK, ESD3-DPC-DROP-SHIELD	DE-SHIELD-DEGRADE	+0.000E+000	+0.000E+000	+0.000E+000
RF-ESD03-DPC	2-3	This sequence represents a structural challenge to a DPC inside a transportation cask resulting in a direct exposure from loss of shielding due to a drop of the cask at the operational height. In this sequence the transportation cask fails, and the canister remains intact.	ESD3-DPC-DROP, ESD3-DPC-DROP-TCASK, /ESD3-DPC-DROP-CAN	DE-SHIELD-LOSS	+0.000E+000	+0.000E+000	+0.000E+000

Table G-1. Event Sequence Quantification Summary (Continued)

Event Tree	Seq.	Description	Logic	End State	Mean	Median	Std. Dev.
RF-ESD03-DPC	2-4	This sequence represents a structural challenge to a DPC inside a transportation cask resulting in a filtered radionuclide release due to a drop of the cask at the operational height. In this sequence the transportation cask fails, the canister fails, the confinement boundary remains intact, and a moderator is excluded from entering canister.	ESD3-DPC-DROP, ESD3-DPC-DROP-TCASK, ESD3-DPC-DROP-CAN, /200-CONFINEMENT, /200-MODERATOR-SOURCE	RR-FILTERED	+0.000E+000	+0.000E+000	+0.000E+000
RF-ESD03-DPC	2-5	This sequence represents a structural challenge to a DPC inside a transportation cask resulting in a filtered radionuclide release also important to criticality due to a drop of the cask at the operational height. In this sequence the transportation cask fails, the canister fails, the confinement boundary remains intact, and a moderator enters canister.	ESD3-DPC-DROP, ESD3-DPC-DROP-TCASK, ESD3-DPC-DROP-CAN, /200-CONFINEMENT, 200-MODERATOR-SOURCE	RR-ITC-FILTERED	+0.000E+000	+0.000E+000	+0.000E+000
RF-ESD03-DPC	2-6	This sequence represents a structural challenge to a DPC inside a transportation cask resulting in an unfiltered radionuclide release due to a drop of the cask at the operational height. In this sequence the transportation cask fails, the canister fails, the confinement boundary fails, and a moderator is excluded from entering canister.	ESD3-DPC-DROP, ESD3-DPC-DROP-TCASK, ESD3-DPC-DROP-CAN, 200-CONFINEMENT, /200-MODERATOR-SOURCE	RR-UNFILTERED	+0.000E+000	+0.000E+000	+0.000E+000
RF-ESD03-DPC	2-7	This sequence represents a structural challenge to a DPC inside a transportation cask resulting in a filtered radionuclide release also important to criticality due to a drop of the cask at the operational height. In this sequence the transportation cask fails, the canister fails, the confinement boundary fails, and a moderator enters canister.	ESD3-DPC-DROP, ESD3-DPC-DROP-TCASK, ESD3-DPC-DROP-CAN, 200-CONFINEMENT, 200-MODERATOR-SOURCE	RR-ITC-UNFILTERED	+0.000E+000	+0.000E+000	+0.000E+000
RF-ESD03-DPC	3-2	This sequence represents a structural challenge to a DPC inside a transportation cask resulting in a direct exposure from degradation of shielding due to a TC tipover. In this sequence the transportation cask remains intact, and the shielding fails.	ESD3-DPC-TIP, /ESD3-DPC-TIP-TCASK, ESD3-DPC-TIP-SHIELD	DE-SHIELD-DEGRADE	3.342E-007	1.294E-007	6.969E-007
RF-ESD03-DPC	3-3	This sequence represents a structural challenge to a DPC inside a transportation cask resulting in a direct exposure from loss of shielding due to a TC tipover. In this sequence the transportation cask fails, and the canister remains intact.	ESD3-DPC-TIP, ESD3-DPC-TIP-TCASK, /ESD3-DPC-TIP-CAN	DE-SHIELD-LOSS	+0.000E+000	+0.000E+000	+0.000E+000
RF-ESD03-DPC	3-4	This sequence represents a structural challenge to a DPC inside a transportation cask resulting in a filtered radionuclide release due to a TC tipover. In this sequence the transportation cask fails, the canister fails, the confinement boundary remains intact, and a moderator is excluded from entering canister.	ESD3-DPC-TIP, ESD3-DPC-TIP-TCASK, ESD3-DPC-TIP-CAN, /200-CONFINEMENT, /200-MODERATOR-SOURCE	RR-FILTERED	3.342E-007	1.294E-007	6.969E-007
RF-ESD03-DPC	3-5	This sequence represents a structural challenge to a DPC inside a transportation cask resulting in a filtered radionuclide release also important to criticality due to a TC tipover. In this sequence the transportation cask fails, the canister fails, the confinement boundary remains intact, and a moderator enters canister.	ESD3-DPC-TIP, ESD3-DPC-TIP-TCASK, ESD3-DPC-TIP-CAN, /200-CONFINEMENT, 200-MODERATOR-SOURCE	RR-ITC-FILTERED	3.010E-011	4.379E-012	1.323E-010
RF-ESD03-DPC	3-6	This sequence represents a structural challenge to a DPC inside a transportation cask resulting in an unfiltered radionuclide release due to a TC tipover. In this sequence the transportation cask fails, the canister fails, the confinement boundary fails, and a moderator is excluded from entering canister.	ESD3-DPC-TIP, ESD3-DPC-TIP-TCASK, ESD3-DPC-TIP-CAN, 200-CONFINEMENT, /200-MODERATOR-SOURCE	RR-UNFILTERED	1.105E-008	2.234E-009	4.253E-008
RF-ESD03-DPC	3-7	This sequence represents a structural challenge to a DPC inside a transportation cask resulting in a filtered radionuclide release also important to criticality due to a TC tipover. In this sequence the transportation cask fails, the canister fails, the confinement boundary fails, and a moderator enters canister.	ESD3-DPC-TIP, ESD3-DPC-TIP-TCASK, ESD3-DPC-TIP-CAN, 200-CONFINEMENT, 200-MODERATOR-SOURCE	RR-ITC-UNFILTERED	1.000E-012	7.683E-014	6.906E-012
RF-ESD03-DPC	4-2	This sequence represents a structural challenge to a DPC inside a transportation cask resulting in a direct exposure from degradation of shielding due to a collision involving a side impact to a TC. In this sequence the transportation cask remains intact, and the shielding fails.	ESD3-DPC-IMPACT, /ESD3-DPC-IMPACT-TCASK, ESD3-DPC-IMPACT-SHIELD	DE-SHIELD-DEGRADE	2.156E-008	1.665E-008	1.797E-008
RF-ESD03-DPC	4-3	This sequence represents a structural challenge to a DPC inside a transportation cask resulting in a direct exposure from loss of shielding due to a collision involving a side impact to a TC. In this sequence the transportation cask fails, and the canister remains intact.	ESD3-DPC-IMPACT, ESD3-DPC-IMPACT-TCASK, /ESD3-DPC-IMPACT-CAN	DE-SHIELD-LOSS	+0.000E+000	+0.000E+000	+0.000E+000
RF-ESD03-DPC	4-4	This sequence represents a structural challenge to a DPC inside a transportation cask resulting in a filtered radionuclide release due to a collision involving a side impact to a TC. In this sequence the transportation cask fails, the canister fails, the confinement boundary remains intact, and a moderator is excluded from entering canister.	ESD3-DPC-IMPACT, ESD3-DPC-IMPACT-TCASK, ESD3-DPC-IMPACT-CAN, /200-CONFINEMENT, /200-MODERATOR-SOURCE	RR-FILTERED	2.156E-008	1.665E-008	1.797E-008
RF-ESD03-DPC	4-5	This sequence represents a structural challenge to a DPC inside a transportation cask resulting in a filtered radionuclide release also important to criticality due to a collision involving a side impact to a TC. In this sequence the transportation cask fails, the canister fails, the confinement boundary remains intact, and a moderator enters canister.	ESD3-DPC-IMPACT, ESD3-DPC-IMPACT-TCASK, ESD3-DPC-IMPACT-CAN, /200-CONFINEMENT, 200-MODERATOR-SOURCE	RR-ITC-FILTERED	1.939E-012	5.762E-013	5.681E-012

Table G-1. Event Sequence Quantification Summary (Continued)

Event Tree	Seq.	Description	Logic	End State	Mean	Median	Std. Dev.
RF-ESD03-DPC	4-6	This sequence represents a structural challenge to a DPC inside a transportation cask resulting in an unfiltered radionuclide release due to a collision involving a side impact to a TC. In this sequence the transportation cask fails, the canister fails, the confinement boundary fails, and a moderator is excluded from entering canister.	ESD3-DPC-IMPACT, ESD3-DPC-IMPACT-TCASK, ESD3-DPC-IMPACT-CAN, 200-CONFINEMENT, /200-MODERATOR-SOURCE	RR-UNFILTERED	7.253E-010	2.734E-010	1.618E-009
RF-ESD03-DPC	4-7	This sequence represents a structural challenge to a DPC inside a transportation cask resulting in a filtered radionuclide release also important to criticality due to a collision involving a side impact to a TC. In this sequence the transportation cask fails, the canister fails, the confinement boundary fails, and a moderator enters canister.	ESD3-DPC-IMPACT, ESD3-DPC-IMPACT-TCASK, ESD3-DPC-IMPACT-CAN, 200-CONFINEMENT, 200-MODERATOR-SOURCE	RR-ITC-UNFILTERED	5.422E-014	+0.000E+000	3.206E-013
RF-ESD03-DPC	5-2	This sequence represents a structural challenge to a DPC inside a transportation cask resulting in a direct exposure from degradation of shielding due to a drop of a heavy object onto the cask. In this sequence the transportation cask remains intact, and the shielding fails.	ESD3-DPC-DROPON, /ESD3-DPC-DROPON-TCASK, ESD3-DPC-DROPON-SHIELD	DE-SHIELD-DEGRADE	2.868E-007	2.918E-008	1.993E-006
RF-ESD03-DPC	5-3	This sequence represents a structural challenge to a DPC inside a transportation cask resulting in a direct exposure from loss of shielding due to a drop of a heavy object onto the cask. In this sequence the transportation cask fails, and the canister remains intact.	ESD3-DPC-DROPON, ESD3-DPC-DROPON-TCASK, /ESD3-DPC-DROPON-CAN	DE-SHIELD-LOSS	+0.000E+000	+0.000E+000	+0.000E+000
RF-ESD03-DPC	5-4	This sequence represents a structural challenge to a DPC inside a transportation cask resulting in a filtered radionuclide release due to a drop of a heavy object onto the cask. In this sequence the transportation cask fails, the canister fails, the confinement boundary remains intact, and a moderator is excluded from entering canister.	ESD3-DPC-DROPON, ESD3-DPC-DROPON-TCASK, ESD3-DPC-DROPON-CAN, /200-CONFINEMENT, /200-MODERATOR-SOURCE	RR-FILTERED	2.868E-007	2.918E-008	1.993E-006
RF-ESD03-DPC	5-5	This sequence represents a structural challenge to a DPC inside a transportation cask resulting in a filtered radionuclide release also important to criticality due to a drop of a heavy object onto the cask. In this sequence the transportation cask fails, the canister fails, the confinement boundary remains intact, and a moderator enters canister.	ESD3-DPC-DROPON, ESD3-DPC-DROPON-TCASK, ESD3-DPC-DROPON-CAN, /200-CONFINEMENT, 200-MODERATOR-SOURCE	RR-ITC-FILTERED	2.440E-011	1.037E-012	2.081E-010
RF-ESD03-DPC	5-6	This sequence represents a structural challenge to a DPC inside a transportation cask resulting in an unfiltered radionuclide release due to a drop of a heavy object onto the cask. In this sequence the transportation cask fails, the canister fails, the confinement boundary fails, and a moderator is excluded from entering canister.	ESD3-DPC-DROPON, ESD3-DPC-DROPON-TCASK, ESD3-DPC-DROPON-CAN, 200-CONFINEMENT, /200-MODERATOR-SOURCE	RR-UNFILTERED	1.006E-008	5.142E-010	1.373E-007
RF-ESD03-DPC	5-7	This sequence represents a structural challenge to a DPC inside a transportation cask resulting in a filtered radionuclide release also important to criticality due to a drop of a heavy object onto the cask. In this sequence the transportation cask fails, the canister fails, the confinement boundary fails, and a moderator enters canister.	ESD3-DPC-DROPON, ESD3-DPC-DROPON-TCASK, ESD3-DPC-DROPON-CAN, 200-CONFINEMENT, 200-MODERATOR-SOURCE	RR-ITC-UNFILTERED	6.884E-013	+0.000E+000	7.590E-012
RF-ESD03-TAD	2-2	This sequence represents a structural challenge to a TAD canister inside a transportation cask resulting in a direct exposure from degradation of shielding due to a drop of the cask at the operational height. In this sequence the transportation cask remains intact, and the shielding fails.	ESD3-TAD-DROP, /ESD3-TAD-DROP-TCASK, ESD3-TAD-DROP-SHIELD	DE-SHIELD-DEGRADE	+0.000E+000	+0.000E+000	+0.000E+000
RF-ESD03-TAD	2-3	This sequence represents a structural challenge to a TAD canister inside a transportation cask resulting in a direct exposure from loss of shielding due to a drop of the cask at the operational height. In this sequence the transportation cask fails, and the canister remains intact.	ESD3-TAD-DROP, ESD3-TAD-DROP-TCASK, /ESD3-TAD-DROP-CAN	DE-SHIELD-LOSS	+0.000E+000	+0.000E+000	+0.000E+000
RF-ESD03-TAD	2-4	This sequence represents a structural challenge to a TAD canister inside a transportation cask resulting in a filtered radionuclide release due to a drop of the cask at the operational height. In this sequence the transportation cask fails, the canister fails, the confinement boundary remains intact, and a moderator is excluded from entering canister.	ESD3-TAD-DROP, ESD3-TAD-DROP-TCASK, ESD3-TAD-DROP-CAN, /200-CONFINEMENT, /200-MODERATOR-SOURCE	RR-FILTERED	+0.000E+000	+0.000E+000	+0.000E+000
RF-ESD03-TAD	2-5	This sequence represents a structural challenge to a TAD canister inside a transportation cask resulting in a filtered radionuclide release also important to criticality due to a drop of the cask at the operational height. In this sequence the transportation cask fails, the canister fails, the confinement boundary remains intact, and a moderator enters canister.	ESD3-TAD-DROP, ESD3-TAD-DROP-TCASK, ESD3-TAD-DROP-CAN, /200-CONFINEMENT, 200-MODERATOR-SOURCE	RR-ITC-FILTERED	+0.000E+000	+0.000E+000	+0.000E+000
RF-ESD03-TAD	2-6	This sequence represents a structural challenge to a TAD canister inside a transportation cask resulting in an unfiltered radionuclide release due to a drop of the cask at the operational height. In this sequence the transportation cask fails, the canister fails, the confinement boundary fails, and a moderator is excluded from entering canister.	ESD3-TAD-DROP, ESD3-TAD-DROP-TCASK, ESD3-TAD-DROP-CAN, 200-CONFINEMENT, /200-MODERATOR-SOURCE	RR-UNFILTERED	+0.000E+000	+0.000E+000	+0.000E+000
RF-ESD03-TAD	2-7	This sequence represents a structural challenge to a TAD canister inside a transportation cask resulting in a filtered radionuclide release also important to criticality due to a drop of the cask at the operational height. In this sequence the transportation cask fails, the canister fails, the confinement boundary fails, and a moderator enters canister.	ESD3-TAD-DROP, ESD3-TAD-DROP-TCASK, ESD3-TAD-DROP-CAN, 200-CONFINEMENT, 200-MODERATOR-SOURCE	RR-ITC-UNFILTERED	+0.000E+000	+0.000E+000	+0.000E+000

Table G-1. Event Sequence Quantification Summary (Continued)

Event Tree	Seq.	Description	Logic	End State	Mean	Median	Std. Dev.
RF-ESD03-TAD	3-2	This sequence represents a structural challenge to a TAD canister inside a transportation cask resulting in a direct exposure from degradation of shielding due to a TC tipover. In this sequence the transportation cask remains intact, and the shielding fails.	ESD3-TAD-TIP, /ESD3-TAD-TIP-TCASK, ESD3-TAD-TIP-SHIELD	DE-SHIELD-DEGRADE	6.739E-006	2.610E-006	1.405E-005
RF-ESD03-TAD	3-3	This sequence represents a structural challenge to a TAD canister inside a transportation cask resulting in a direct exposure from loss of shielding due to a TC tipover. In this sequence the transportation cask fails, and the canister remains intact.	ESD3-TAD-TIP, ESD3-TAD-TIP-TCASK, /ESD3-TAD-TIP-CAN	DE-SHIELD-LOSS	+0.000E+000	+0.000E+000	+0.000E+000
RF-ESD03-TAD	3-4	This sequence represents a structural challenge to a TAD canister inside a transportation cask resulting in a filtered radionuclide release due to a TC tipover. In this sequence the transportation cask fails, the canister fails, the confinement boundary remains intact, and a moderator is excluded from entering canister.	ESD3-TAD-TIP, ESD3-TAD-TIP-TCASK, ESD3-TAD-TIP-CAN, /200-CONFINEMENT, /200-MODERATOR-SOURCE	RR-FILTERED	6.739E-006	2.610E-006	1.405E-005
RF-ESD03-TAD	3-5	This sequence represents a structural challenge to a TAD canister inside a transportation cask resulting in a filtered radionuclide release also important to criticality due to a TC tipover. In this sequence the transportation cask fails, the canister fails, the confinement boundary remains intact, and a moderator enters canister.	ESD3-TAD-TIP, ESD3-TAD-TIP-TCASK, ESD3-TAD-TIP-CAN, /200-CONFINEMENT, 200-MODERATOR-SOURCE	RR-ITC-FILTERED	6.069E-010	8.829E-011	2.667E-009
RF-ESD03-TAD	3-6	This sequence represents a structural challenge to a TAD canister inside a transportation cask resulting in an unfiltered radionuclide release due to a TC tipover. In this sequence the transportation cask fails, the canister fails, the confinement boundary fails, and a moderator is excluded from entering canister.	ESD3-TAD-TIP, ESD3-TAD-TIP-TCASK, ESD3-TAD-TIP-CAN, 200-CONFINEMENT, /200-MODERATOR-SOURCE	RR-UNFILTERED	2.228E-007	4.504E-008	8.575E-007
RF-ESD03-TAD	3-7	This sequence represents a structural challenge to a TAD canister inside a transportation cask resulting in a filtered radionuclide release also important to criticality due to a TC tipover. In this sequence the transportation cask fails, the canister fails, the confinement boundary fails, and a moderator enters canister.	ESD3-TAD-TIP, ESD3-TAD-TIP-TCASK, ESD3-TAD-TIP-CAN, 200-CONFINEMENT, 200-MODERATOR-SOURCE	RR-ITC-UNFILTERED	2.017E-011	1.549E-012	1.392E-010
RF-ESD03-TAD	4-2	This sequence represents a structural challenge to a TAD canister inside a transportation cask resulting in a direct exposure from degradation of shielding due to a collision involving a side impact to a TC. In this sequence the transportation cask remains intact, and the shielding fails.	ESD3-TAD-IMPACT, /ESD3-TAD-IMPACT-TCASK, ESD3-TAD-IMPACT-SHIELD	DE-SHIELD-DEGRADE	4.346E-007	3.357E-007	3.622E-007
RF-ESD03-TAD	4-3	This sequence represents a structural challenge to a TAD canister inside a transportation cask resulting in a direct exposure from loss of shielding due to a collision involving a side impact to a TC. In this sequence the transportation cask fails, and the canister remains intact.	ESD3-TAD-IMPACT, ESD3-TAD-IMPACT-TCASK, /ESD3-TAD-IMPACT-CAN	DE-SHIELD-LOSS	+0.000E+000	+0.000E+000	+0.000E+000
RF-ESD03-TAD	4-4	This sequence represents a structural challenge to a TAD canister inside a transportation cask resulting in a filtered radionuclide release due to a collision involving a side impact to a TC. In this sequence the transportation cask fails, the canister fails, the confinement boundary remains intact, and a moderator is excluded from entering canister.	ESD3-TAD-IMPACT, ESD3-TAD-IMPACT-TCASK, ESD3-TAD-IMPACT-CAN, /200-CONFINEMENT, /200-MODERATOR-SOURCE	RR-FILTERED	4.346E-007	3.357E-007	3.622E-007
RF-ESD03-TAD	4-5	This sequence represents a structural challenge to a TAD canister inside a transportation cask resulting in a filtered radionuclide release also important to criticality due to a collision involving a side impact to a TC. In this sequence the transportation cask fails, the canister fails, the confinement boundary remains intact, and a moderator enters canister.	ESD3-TAD-IMPACT, ESD3-TAD-IMPACT-TCASK, ESD3-TAD-IMPACT-CAN, /200-CONFINEMENT, 200-MODERATOR-SOURCE	RR-ITC-FILTERED	3.909E-011	1.162E-011	1.145E-010
RF-ESD03-TAD	4-6	This sequence represents a structural challenge to a TAD canister inside a transportation cask resulting in an unfiltered radionuclide release due to a collision involving a side impact to a TC. In this sequence the transportation cask fails, the canister fails, the confinement boundary fails, and a moderator is excluded from entering canister.	ESD3-TAD-IMPACT, ESD3-TAD-IMPACT-TCASK, ESD3-TAD-IMPACT-CAN, 200-CONFINEMENT, /200-MODERATOR-SOURCE	RR-UNFILTERED	1.462E-008	5.513E-009	3.261E-008
RF-ESD03-TAD	4-7	This sequence represents a structural challenge to a TAD canister inside a transportation cask resulting in a filtered radionuclide release also important to criticality due to a collision involving a side impact to a TC. In this sequence the transportation cask fails, the canister fails, the confinement boundary fails, and a moderator enters canister.	ESD3-TAD-IMPACT, ESD3-TAD-IMPACT-TCASK, ESD3-TAD-IMPACT-CAN, 200-CONFINEMENT, 200-MODERATOR-SOURCE	RR-ITC-UNFILTERED	1.093E-012	+0.000E+000	6.463E-012
RF-ESD03-TAD	5-2	This sequence represents a structural challenge to a TAD canister inside a transportation cask resulting in a direct exposure from degradation of shielding due to a drop of a heavy object onto the cask. In this sequence the transportation cask remains intact, and the shielding fails.	ESD3-TAD-DROPON, /ESD3-TAD-DROPON-TCASK, ESD3-TAD-DROPON-SHIELD	DE-SHIELD-DEGRADE	1.928E-006	1.961E-007	1.339E-005
RF-ESD03-TAD	5-3	This sequence represents a structural challenge to a TAD canister inside a transportation cask resulting in a direct exposure from loss of shielding due to a drop of a heavy object onto the cask. In this sequence the transportation cask fails, and the canister remains intact.	ESD3-TAD-DROPON, ESD3-TAD-DROPON-TCASK, /ESD3-TAD-DROPON-CAN	DE-SHIELD-LOSS	+0.000E+000	+0.000E+000	+0.000E+000

Table G-1. Event Sequence Quantification Summary (Continued)

Event Tree	Seq.	Description	Logic	End State	Mean	Median	Std. Dev.
RF-ESD03-TAD	5-4	This sequence represents a structural challenge to a TAD canister inside a transportation cask resulting in a filtered radionuclide release due to a drop of a heavy object onto the cask. In this sequence the transportation cask fails, the canister fails, the confinement boundary remains intact, and a moderator is excluded from entering canister.	ESD3-TAD-DROPON, ESD3-TAD-DROPON-TCASK, ESD3-TAD-DROPON-CAN, /200-CONFINEMENT, /200-MODERATOR-SOURCE	RR-FILTERED	1.928E-006	1.961E-007	1.339E-005
RF-ESD03-TAD	5-5	This sequence represents a structural challenge to a TAD canister inside a transportation cask resulting in a filtered radionuclide release also important to criticality due to a drop of a heavy object onto the cask. In this sequence the transportation cask fails, the canister fails, the confinement boundary remains intact, and a moderator enters canister.	ESD3-TAD-DROPON, ESD3-TAD-DROPON-TCASK, ESD3-TAD-DROPON-CAN, /200-CONFINEMENT, 200-MODERATOR-SOURCE	RR-ITC-FILTERED	1.639E-010	6.970E-012	1.399E-009
RF-ESD03-TAD	5-6	This sequence represents a structural challenge to a TAD canister inside a transportation cask resulting in an unfiltered radionuclide release due to a drop of a heavy object onto the cask. In this sequence the transportation cask fails, the canister fails, the confinement boundary fails, and a moderator is excluded from entering canister.	ESD3-TAD-DROPON, ESD3-TAD-DROPON-TCASK, ESD3-TAD-DROPON-CAN, 200-CONFINEMENT, /200-MODERATOR-SOURCE	RR-UNFILTERED	6.761E-008	3.456E-009	9.228E-007
RF-ESD03-TAD	5-7	This sequence represents a structural challenge to a TAD canister inside a transportation cask resulting in a filtered radionuclide release also important to criticality due to a drop of a heavy object onto the cask. In this sequence the transportation cask fails, the canister fails, the confinement boundary fails, and a moderator enters canister.	ESD3-TAD-DROPON, ESD3-TAD-DROPON-TCASK, ESD3-TAD-DROPON-CAN, 200-CONFINEMENT, 200-MODERATOR-SOURCE	RR-ITC-UNFILTERED	4.585E-012	+0.000E+000	5.101E-011
RF-ESD04-DPC	2-2	This sequence represents a structural challenge to a DPC resulting in a direct exposure from loss of shielding due to an impact to the TC. In this sequence the canister remains intact, and the shielding fails.	ESD4-DPC-IMPACT, /ESD4-DPC-IMPACT-CAN, ESD4-DPC-IMPACT-SHIELD	DE-SHIELD-LOSS	+0.000E+000	+0.000E+000	+0.000E+000
RF-ESD04-DPC	2-3	This sequence represents a structural challenge to a DPC resulting in a filtered radionuclide release due to an impact to the TC. In this sequence the canister fails, the confinement boundary remains intact, and a moderator is excluded from entering canister.	ESD4-DPC-IMPACT, ESD4-DPC-IMPACT-CAN, /200-CONFINEMENT, /200-MODERATOR-SOURCE	RR-FILTERED	+0.000E+000	+0.000E+000	+0.000E+000
RF-ESD04-DPC	2-4	This sequence represents a structural challenge to a DPC resulting in a filtered radionuclide release also important to criticality due to an impact to the TC. In this sequence the canister fails, the confinement boundary remains intact, and a moderator enters canister.	ESD4-DPC-IMPACT, ESD4-DPC-IMPACT-CAN, /200-CONFINEMENT, 200-MODERATOR-SOURCE	RR-ITC-FILTERED	+0.000E+000	+0.000E+000	+0.000E+000
RF-ESD04-DPC	2-5	This sequence represents a structural challenge to a DPC resulting in an unfiltered radionuclide release due to an impact to the TC. In this sequence the canister fails, the confinement boundary fails, and a moderator is excluded from entering canister.	ESD4-DPC-IMPACT, ESD4-DPC-IMPACT-CAN, 200-CONFINEMENT, /200-MODERATOR-SOURCE	RR-UNFILTERED	+0.000E+000	+0.000E+000	+0.000E+000
RF-ESD04-DPC	2-6	This sequence represents a structural challenge to a DPC resulting in a filtered radionuclide release also important to criticality due to an impact to the TC. In this sequence the canister fails, the confinement boundary fails, and a moderator enters canister.	ESD4-DPC-IMPACT, ESD4-DPC-IMPACT-CAN, 200-CONFINEMENT, 200-MODERATOR-SOURCE	RR-ITC-UNFILTERED	+0.000E+000	+0.000E+000	+0.000E+000
RF-ESD04-DPC	3-2	This sequence represents a structural challenge to a DPC resulting in a direct exposure from loss of shielding due to a CTT collision with structures or equipment. In this sequence the canister remains intact, and the shielding fails.	ESD4-DPC-COLLIDE, /ESD4-DPC-COLLIDE-CAN, ESD4-DPC-COLLIDE-SHIELD	DE-SHIELD-LOSS	3.466E-009	2.113E-009	4.316E-009
RF-ESD04-DPC	3-3	This sequence represents a structural challenge to a DPC resulting in a filtered radionuclide release due to a CTT collision with structures or equipment. In this sequence the canister fails, the confinement boundary remains intact, and a moderator is excluded from entering canister.	ESD4-DPC-COLLIDE, ESD4-DPC-COLLIDE-CAN, /200-CONFINEMENT, /200-MODERATOR-SOURCE	RR-FILTERED	3.466E-009	2.113E-009	4.316E-009
RF-ESD04-DPC	3-4	This sequence represents a structural challenge to a DPC resulting in a filtered radionuclide release also important to criticality due to a CTT collision with structures or equipment. In this sequence the canister fails, the confinement boundary remains intact, and a moderator enters canister.	ESD4-DPC-COLLIDE, ESD4-DPC-COLLIDE-CAN, /200-CONFINEMENT, 200-MODERATOR-SOURCE	RR-ITC-FILTERED	3.385E-013	7.683E-014	1.659E-012
RF-ESD04-DPC	3-5	This sequence represents a structural challenge to a DPC resulting in an unfiltered radionuclide release due to a CTT collision with structures or equipment. In this sequence the canister fails, the confinement boundary fails, and a moderator is excluded from entering canister.	ESD4-DPC-COLLIDE, ESD4-DPC-COLLIDE-CAN, 200-CONFINEMENT, /200-MODERATOR-SOURCE	RR-UNFILTERED	1.182E-010	3.480E-011	3.529E-010
RF-ESD04-DPC	3-6	This sequence represents a structural challenge to a DPC resulting in a filtered radionuclide release also important to criticality due to a CTT collision with structures or equipment. In this sequence the canister fails, the confinement boundary fails, and a moderator enters canister.	ESD4-DPC-COLLIDE, ESD4-DPC-COLLIDE-CAN, 200-CONFINEMENT, 200-MODERATOR-SOURCE	RR-ITC-UNFILTERED	8.659E-015	+0.000E+000	6.330E-014
RF-ESD04-TAD	2-2	This sequence represents a structural challenge to a TAD canister resulting in a direct exposure from loss of shielding due to an impact to the TC. In this sequence the canister remains intact, and the shielding fails.	ESD4-TAD-IMPACT, /ESD4-TAD-IMPACT-CAN, ESD4-TAD-IMPACT-SHIELD	DE-SHIELD-LOSS	+0.000E+000	+0.000E+000	+0.000E+000

Table G-1. Event Sequence Quantification Summary (Continued)

Event Tree	Seq.	Description	Logic	End State	Mean	Median	Std. Dev.
RF-ESD04-TAD	2-3	This sequence represents a structural challenge to a TAD canister resulting in a filtered radionuclide release due to an impact to the TC. In this sequence the canister fails, the confinement boundary remains intact, and a moderator is excluded from entering canister.	ESD4-TAD-IMPACT, ESD4-TAD-IMPACT-CAN, /200-CONFINEMENT, /200-MODERATOR-SOURCE	RR-FILTERED	+0.000E+000	+0.000E+000	+0.000E+000
RF-ESD04-TAD	2-4	This sequence represents a structural challenge to a TAD canister resulting in a filtered radionuclide release also important to criticality due to an impact to the TC. In this sequence the canister fails, the confinement boundary remains intact, and a moderator enters canister.	ESD4-TAD-IMPACT, ESD4-TAD-IMPACT-CAN, /200-CONFINEMENT, 200-MODERATOR-SOURCE	RR-ITC-FILTERED	+0.000E+000	+0.000E+000	+0.000E+000
RF-ESD04-TAD	2-5	This sequence represents a structural challenge to a TAD canister resulting in an unfiltered radionuclide release due to an impact to the TC. In this sequence the canister fails, the confinement boundary fails, and a moderator is excluded from entering canister.	ESD4-TAD-IMPACT, ESD4-TAD-IMPACT-CAN, 200-CONFINEMENT, /200-MODERATOR-SOURCE	RR-UNFILTERED	+0.000E+000	+0.000E+000	+0.000E+000
RF-ESD04-TAD	2-6	This sequence represents a structural challenge to a TAD canister resulting in a filtered radionuclide release also important to criticality due to an impact to the TC. In this sequence the canister fails, the confinement boundary fails, and a moderator enters canister.	ESD4-TAD-IMPACT, ESD4-TAD-IMPACT-CAN, 200-CONFINEMENT, 200-MODERATOR-SOURCE	RR-ITC-UNFILTERED	+0.000E+000	+0.000E+000	+0.000E+000
RF-ESD04-TAD	3-2	This sequence represents a structural challenge to a TAD canister resulting in a direct exposure from loss of shielding due to a CTT collision with structures or equipment. In this sequence the canister remains intact, and the shielding fails.	ESD4-TAD-COLLIDE, /ESD4-TAD-COLLIDE-CAN, ESD4-TAD-COLLIDE-SHIELD	DE-SHIELD-LOSS	6.987E-008	4.259E-008	8.702E-008
RF-ESD04-TAD	3-3	This sequence represents a structural challenge to a TAD canister resulting in a filtered radionuclide release due to a CTT collision with structures or equipment. In this sequence the canister fails, the confinement boundary remains intact, and a moderator is excluded from entering canister.	ESD4-TAD-COLLIDE, ESD4-TAD-COLLIDE-CAN, /200-CONFINEMENT, /200-MODERATOR-SOURCE	RR-FILTERED	6.987E-008	4.259E-008	8.702E-008
RF-ESD04-TAD	3-4	This sequence represents a structural challenge to a TAD canister resulting in a filtered radionuclide release also important to criticality due to a CTT collision with structures or equipment. In this sequence the canister fails, the confinement boundary remains intact, and a moderator enters canister.	ESD4-TAD-COLLIDE, ESD4-TAD-COLLIDE-CAN, /200-CONFINEMENT, 200-MODERATOR-SOURCE	RR-ITC-FILTERED	6.824E-012	1.549E-012	3.344E-011
RF-ESD04-TAD	3-5	This sequence represents a structural challenge to a TAD canister resulting in an unfiltered radionuclide release due to a CTT collision with structures or equipment. In this sequence the canister fails, the confinement boundary fails, and a moderator is excluded from entering canister.	ESD4-TAD-COLLIDE, ESD4-TAD-COLLIDE-CAN, 200-CONFINEMENT, /200-MODERATOR-SOURCE	RR-UNFILTERED	2.383E-009	7.017E-010	7.114E-009
RF-ESD04-TAD	3-6	This sequence represents a structural challenge to a TAD canister resulting in a filtered radionuclide release also important to criticality due to a CTT collision with structures or equipment. In this sequence the canister fails, the confinement boundary fails, and a moderator enters canister.	ESD4-TAD-COLLIDE, ESD4-TAD-COLLIDE-CAN, 200-CONFINEMENT, 200-MODERATOR-SOURCE	RR-ITC-UNFILTERED	1.746E-013	+0.000E+000	1.276E-012
RF-ESD05-DPC	03	This sequence represents a structural challenge to a DPC resulting in a direct exposure from loss of shielding due to an impact with a RF shield door. In this sequence the cell door structure remains intact, the canister remains intact, and the shielding fails.	ESD5-DPC-IMPACT, /ESD5-DPC-IMPACT-DOOR, /ESD5-DPC-IMPACT-CONT, ESD5-DPC-IMPACT-SHIELD	DE-SHIELD-LOSS	1.135E-011	4.187E-012	2.045E-011
RF-ESD05-DPC	04	This sequence represents a structural challenge to a DPC resulting in a filtered radionuclide release due to an impact with a RF shield door. In this sequence the cell door structure remains intact, the canister fails, the confinement boundary remains intact, and a moderator is excluded from entering canister.	ESD5-DPC-IMPACT, /ESD5-DPC-IMPACT-DOOR, ESD5-DPC-IMPACT-CONT, /200-CONFINEMENT, /200-MODERATOR-SOURCE	RR-FILTERED	1.135E-011	4.187E-012	2.045E-011
RF-ESD05-DPC	05	This sequence represents a structural challenge to a DPC resulting in a filtered radionuclide release also important to criticality due to an impact with a RF shield door. In this sequence the cell door structure remains intact, the canister fails, the confinement boundary remains intact, and a moderator enters canister.	ESD5-DPC-IMPACT, /ESD5-DPC-IMPACT-DOOR, ESD5-DPC-IMPACT-CONT, /200-CONFINEMENT, 200-MODERATOR-SOURCE	RR-ITC-FILTERED	2.727E-016	+0.000E+000	5.045E-015
RF-ESD05-DPC	06	This sequence represents a structural challenge to a DPC resulting in an unfiltered radionuclide release due to an impact with a RF shield door. In this sequence the cell door structure remains intact, the canister fails, the confinement boundary fails, and a moderator is excluded from entering canister.	ESD5-DPC-IMPACT, /ESD5-DPC-IMPACT-DOOR, ESD5-DPC-IMPACT-CONT, 200-CONFINEMENT, /200-MODERATOR-SOURCE	RR-UNFILTERED	3.562E-013	7.683E-014	1.275E-012
RF-ESD05-DPC	07	This sequence represents a structural challenge to a DPC resulting in a filtered radionuclide release also important to criticality due to an impact with a RF shield door. In this sequence the cell door structure remains intact, the canister fails, the confinement boundary fails, and a moderator enters canister.	ESD5-DPC-IMPACT, /ESD5-DPC-IMPACT-DOOR, ESD5-DPC-IMPACT-CONT, 200-CONFINEMENT, 200-MODERATOR-SOURCE	RR-ITC-UNFILTERED	+0.000E+000	+0.000E+000	+0.000E+000
RF-ESD05-DPC	09	This sequence represents a structural challenge to a DPC resulting in a direct exposure from loss of shielding due to an impact with a RF shield door. In this sequence the cell door fails and impacts the waste form, the canister remains intact, and the shielding fails.	ESD5-DPC-IMPACT, ESD5-DPC-IMPACT-DOOR, /ESD5-DPC-IMPACT-CONT, ESD5-DPC-IMPACT-SHIELD	DE-SHIELD-LOSS	+0.000E+000	+0.000E+000	+0.000E+000

Table G-1. Event Sequence Quantification Summary (Continued)

Event Tree	Seq.	Description	Logic	End State	Mean	Median	Std. Dev.
RF-ESD05-DPC	10	This sequence represents a structural challenge to a DPC resulting in a filtered radionuclide release due to an impact with a RF shield door. In this sequence the cell door fails and impacts the waste form, the canister fails, the confinement boundary remains intact, and a moderator is excluded from entering canister.	ESD5-DPC-IMPACT, ESD5-DPC-IMPACT-DOOR, ESD5-DPC-IMPACT-CONT, /200-CONFINEMENT, /200-MODERATOR-SOURCE	RR-FILTERED	+0.000E+000	+0.000E+000	+0.000E+000
RF-ESD05-DPC	11	This sequence represents a structural challenge to a DPC resulting in a filtered radionuclide release also important to criticality due to an impact with a RF shield door. In this sequence the cell door fails and impacts the waste form, the canister fails, the confinement boundary remains intact, and a moderator enters canister.	ESD5-DPC-IMPACT, ESD5-DPC-IMPACT-DOOR, ESD5-DPC-IMPACT-CONT, /200-CONFINEMENT, 200-MODERATOR-SOURCE	RR-ITC-FILTERED	+0.000E+000	+0.000E+000	+0.000E+000
RF-ESD05-DPC	12	This sequence represents a structural challenge to a DPC resulting in an unfiltered radionuclide release due to an impact with a RF shield door. In this sequence the cell door fails and impacts the waste form, the canister fails, the confinement boundary fails, and a moderator is excluded from entering canister.	ESD5-DPC-IMPACT, ESD5-DPC-IMPACT-DOOR, ESD5-DPC-IMPACT-CONT, 200-CONFINEMENT, /200-MODERATOR-SOURCE	RR-UNFILTERED	+0.000E+000	+0.000E+000	+0.000E+000
RF-ESD05-DPC	13	This sequence represents a structural challenge to a DPC resulting in a filtered radionuclide release also important to criticality due to an impact with a RF shield door. In this sequence the cell door fails and impacts the waste form, the canister fails, the confinement boundary fails, and a moderator enters canister.	ESD5-DPC-IMPACT, ESD5-DPC-IMPACT-DOOR, ESD5-DPC-IMPACT-CONT, 200-CONFINEMENT, 200-MODERATOR-SOURCE	RR-ITC-UNFILTERED	+0.000E+000	+0.000E+000	+0.000E+000
RF-ESD05-TAD	03	This sequence represents a structural challenge to a TAD canister resulting in a direct exposure from loss of shielding due to an impact with a RF shield door. In this sequence the cell door structure remains intact, the canister remains intact, and the shielding fails.	ESD5-TAD-IMPACT, /ESD5-TAD-IMPACT-DOOR, /ESD5-TAD-IMPACT-CONT, ESD5-TAD-IMPACT-SHI	DE-SHIELD-LOSS	2.288E-010	8.442E-011	4.124E-010
RF-ESD05-TAD	04	This sequence represents a structural challenge to a TAD canister resulting in a filtered radionuclide release due to an impact with a RF shield door. In this sequence the cell door structure remains intact, the canister fails, the confinement boundary remains intact, and a moderator is excluded from entering canister.	ESD5-TAD-IMPACT, /ESD5-TAD-IMPACT-DOOR, ESD5-TAD-IMPACT-CONT, /200-CONFINEMENT, /200-MODERATOR-SOURCE	RR-FILTERED	2.288E-010	8.442E-011	4.124E-010
RF-ESD05-TAD	05	This sequence represents a structural challenge to a TAD canister resulting in a filtered radionuclide release also important to criticality due to an impact with a RF shield door. In this sequence the cell door structure remains intact, the canister fails, the confinement boundary remains intact, and a moderator enters canister.	ESD5-TAD-IMPACT, /ESD5-TAD-IMPACT-DOOR, ESD5-TAD-IMPACT-CONT, /200-CONFINEMENT, 200-MODERATOR-SOURCE	RR-ITC-FILTERED	5.499E-015	+0.000E+000	1.017E-013
RF-ESD05-TAD	06	This sequence represents a structural challenge to a TAD canister resulting in an unfiltered radionuclide release due to an impact with a RF shield door. In this sequence the cell door structure remains intact, the canister fails, the confinement boundary fails, and a moderator is excluded from entering canister.	ESD5-TAD-IMPACT, /ESD5-TAD-IMPACT-DOOR, ESD5-TAD-IMPACT-CONT, 200-CONFINEMENT, /200-MODERATOR-SOURCE	RR-UNFILTERED	7.181E-012	1.549E-012	2.570E-011
RF-ESD05-TAD	07	This sequence represents a structural challenge to a TAD canister resulting in a filtered radionuclide release also important to criticality due to an impact with a RF shield door. In this sequence the cell door structure remains intact, the canister fails, the confinement boundary fails, and a moderator enters canister.	ESD5-TAD-IMPACT, /ESD5-TAD-IMPACT-DOOR, ESD5-TAD-IMPACT-CONT, 200-CONFINEMENT, 200-MODERATOR-SOURCE	RR-ITC-UNFILTERED	+0.000E+000	+0.000E+000	+0.000E+000
RF-ESD05-TAD	09	This sequence represents a structural challenge to a TAD canister resulting in a direct exposure from loss of shielding due to an impact with a RF shield door. In this sequence the cell door fails and impacts the waste form, the canister remains intact, and the shielding fails.	ESD5-TAD-IMPACT, ESD5-TAD-IMPACT-DOOR, /ESD5-TAD-IMPACT-CONT, ESD5-TAD-IMPACT-SHI	DE-SHIELD-LOSS	+0.000E+000	+0.000E+000	+0.000E+000
RF-ESD05-TAD	10	This sequence represents a structural challenge to a TAD canister resulting in a filtered radionuclide release due to an impact with a RF shield door. In this sequence the cell door fails and impacts the waste form, the canister fails, the confinement boundary remains intact, and a moderator is excluded from entering canister.	ESD5-TAD-IMPACT, ESD5-TAD-IMPACT-DOOR, ESD5-TAD-IMPACT-CONT, /200-CONFINEMENT, /200-MODERATOR-SOURCE	RR-FILTERED	+0.000E+000	+0.000E+000	+0.000E+000
RF-ESD05-TAD	11	This sequence represents a structural challenge to a TAD canister resulting in a filtered radionuclide release also important to criticality due to an impact with a RF shield door. In this sequence the cell door fails and impacts the waste form, the canister fails, the confinement boundary remains intact, and a moderator enters canister.	ESD5-TAD-IMPACT, ESD5-TAD-IMPACT-DOOR, ESD5-TAD-IMPACT-CONT, /200-CONFINEMENT, 200-MODERATOR-SOURCE	RR-ITC-FILTERED	+0.000E+000	+0.000E+000	+0.000E+000
RF-ESD05-TAD	12	This sequence represents a structural challenge to a TAD canister resulting in an unfiltered radionuclide release due to an impact with a RF shield door. In this sequence the cell door fails and impacts the waste form, the canister fails, the confinement boundary fails, and a moderator is excluded from entering canister.	ESD5-TAD-IMPACT, ESD5-TAD-IMPACT-DOOR, ESD5-TAD-IMPACT-CONT, 200-CONFINEMENT, /200-MODERATOR-SOURCE	RR-UNFILTERED	+0.000E+000	+0.000E+000	+0.000E+000