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Table F5.4-1. Ignition Source Population by Room (Continued)

| Ignition Source / Room Number | Electrical Equipment | Mechanical/ Electrical HVAC Equipment | Mechanical Process Equipment | Heat Generating Process Equipment | Torches, Welders, Burners | Internal Combustion Engines | Office/Kitchen Equipment | Portable and Special Equipment |
|---|---|---|---|---|---|---|---|---|
| 2004 (Canister Transfer Room) | | | **CTM Maintenance Crane**<br>050-HTC0-CRN-00001<br>• **2+1 motors @ 35, 2, & 7.5 hp**<br>**Canister Transfer Machine**<br>050-HTC0-FHM-00001<br>• **5+1 motors @ 45, 3, 7.5, 7.5, 60, & 5 hp**<br>**2 Port Slide Gates**<br>050-HTC0-HTCH-00001<br>050-HTC0-HTCH-00002<br>• **2 motors each @ 0.5 hp each** | | **Portable Welding Receptacle – WWF = 5 points** | | | **Assume 4% of all such eq.**<br>• **2 points** |
| 2005A (Corridor) | | | | | | | | |
| 2005B (Corridor) | | | | | | | | |
| 2006 (Corridor) | | | | | | | | |
| 2007A (Corridor) | | | | | | | | |
| 2007B (Corridor) | | | | | | | | |
| 2008 (Crane Maint. Area) | | | | | **Portable Welding Receptacle – WWF = 5 points** | | | |
| 2010 (HVAC Room S) | | **2 Air Handling Units, 4 motors**<br>050-VNI0-AHU-00001<br>050-VNI0-AHU-00002<br>• **60 hp (supply)**<br>• **25 hp (return)** | | | | | | **Assume 7.7% of all such eq.**<br>• **4 points** |
| 2011A (Back-up Central Comm. Room) | | | | | | | **Assume 10% of all such equipment**<br>• **2 points** | |
| 2011B (Back-up Central Comm. Room) | | | | | | | **Assume 10% of all such equipment**<br>• **2 points** | |
| 2012 (Operations Room) | **6 Control Consoles** | | | | | | **Assume 10% of all such equipment**<br>• **2 points** | |
| 2013 (Operations Supervisor Room) | | | | | | | | |

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Table F5.4-1. Ignition Source Population by Room (Continued)

| Ignition Source / Room Number | Electrical Equipment | Mechanical/ Electrical HVAC Equipment | Mechanical Process Equipment | Heat Generating Process Equipment | Torches, Welders, Burners | Internal Combustion Engines | Office/Kitchen Equipment | Portable and Special Equipment |
|---|---|---|---|---|---|---|---|---|
| 2024 (Stair #1) | | | | | | | | |
| 2025 (Stair #2) | | | | | | | | |
| 2026 (Stair #3) | | | | | | | | |
| 2027 (Stair #4) | | | | | | | | |
| 2029 (Elevator Lobby) | | | | | | | | |
| 2030 (Elevator Machine Room) | | | | | | | | |
| 2032 (Corridor) | | | | | | | | |
| 2033 (Elevator Lobby) | | | | | | | | |
| 2034 (Corridor) | | | | | | | | |
| 2201 (Briefing Room) | | | | | | | Assume 5% of all such equipment<br>• 1 point | |
| 2202 (RP Staff Work Room) | | | | | | | Assume 5% of all such equipment<br>• 1 point | |
| 2203 (Break/ Vending Room) | | | | | | | Assume 15% of all such equipment<br>• 3 points | |
| 2204 (Womens Restroom) | | | | | | | | |

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Table F5.4-1. Ignition Source Population by Room (Continued)

| Ignition Source / Room Number | Electrical Equipment | Mechanical/ Electrical HVAC Equipment | Mechanical Process Equipment | Heat Generating Process Equipment | Torches, Welders, Burners | Internal Combustion Engines | Office/Kitchen Equipment | Portable and Special Equipment |
|---|---|---|---|---|---|---|---|---|
| 2205 (Mens Restroom) | | | | | | | | |
| 2206 (Janitor Room) | | | | | | | | |

NOTE: [1]Residence weighting factor (RWF) is for equipment that can be in multiple rooms. Factor represents the percent of exposure (i.e., waste residence) time that the piece of equipment spends in the particular room. For the office/kitchen equipment and for the portable/process equipment, these were distributed across various locations of the building where such equipment is likely to be used. The results of the analysis are largely insensitive to this distribution. For the other types of major equipment used in the facility to move waste forms around, the residence fraction is based on the facility throughput analysis.
[2]Welding weighting factor (WWF) represents the relative number of total welding activity (hours/year) that occurs in each location where welding is performed. The number of hours for maintenance-related welding is based on about 8 hours/week in the primary maintenance welding location and 5 hours per year in each satellite welding location (for repairs that must be performed locally). Waste Package Closure Room welding is estimated based in the IHF throughput Gantt chart and the total number of waste packages expected to be handled, as follows: (1) the preclosure period is 50 years; (2) the welding machine actually operates for about 15 hours per TAD canister; (3) the WHF will produce 1165 TAD canisters; 1165x15/50 = 350 hours per year. Note that for any given WP being processed, the total welding score is "at" the WP.
[3]Power ratings are for each motor unless otherwise noted.
[4]The blank cells in this table are intentional and have been verified. Information that would appear in the blank locations is not applicable for the room/location identified in the first column.
[5]Ignition sources are shown in bold red text. Motors not considered as ignition sources (<5 hp) are shown in grey text, and are not further considered in the fire ignition frequency analysis.

cabs = cabinet; Comm. = communications; CTM = canister transfer machine; DCIMS = digital control and management information system; Decon = decontamination; Dist. = distribution; DPC = dual-purpose canister; eq. = equipment; HEPA = high-efficiency particulate air; HVAC = heating, ventilation, and air conditioning; kVA = kilovolt amperes; LLW = low-level radioactive waste; Maint = maintenance; MCC = motor control center; MP = mechanical process; Plat. = platform; PLC = programmable logic controller; RP = radiation protection; TAD = transportation, aging, and disposal (canister); WP = waste package; hp = horsepower; UPS = uninterruptable power supply; V = volt; WWF = welding weighting factor; XFMR = transformer.

Source: Original

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Table F5.5-1. Fire Ignition Frequencies by Room

| | Ignition Source Category and Room-by-Room Population | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Room | Electrical | HVAC | Mechanical Equipment | Heat-Generating Equipment | Torches, Welders, Burners | Internal Combustion Engines | Office/ Kitchen Equipment | Portable Equipment | No Equipment Involved | Room Ignition Frequency |
| B001 | | | | | | | | | 69 | 1.81E-03 |
| B002 | | | 2 | | | | | | 65 | 1.46E-02 |
| B003 | | | | | | | | | 38 | 1.01E-03 |
| B004 | | | | | | | | | 68 | 1.80E-03 |
| B005 | | | | | | | | | 35 | 9.32E-04 |
| B006 | | | | | | | | | 3 | 7.35E-05 |
| B007 | | | | | | | | | 7 | 1.77E-04 |
| B008 | | | | | | | | | 62 | 1.63E-03 |
| B009 | | | | | | | | | 65 | 1.71E-03 |
| P001 (incl. in 1016) | | | | | | | | | 0 | 0.00E+00 |
| 1001 | | 4 | 3 | | 10 | 22 | | | 1630 | 9.66E-02 |
| 1002 | 22 | 2 | | | 5 | | | 4 | 186 | 6.76E-02 |
| 1003 | 1 | 4 | | | | | | | 30 | 2.14E-02 |
| 1004 | | 4 | | | 5 | | | 4 | 216 | 5.23E-02 |
| 1005 | | | | | | | | | 9 | 2.43E-04 |
| 1006 | | 6 | | | | | | 4 | 160 | 5.66E-02 |
| 1007 | | | | | | 61 | | | 182 | 2.38E-02 |
| 1008 | | | 0.03 | | | | | 2 | 133 | 1.53E-02 |
| 1009 | | | | | 5 | | | | 228 | 1.00E-02 |
| 1010 | | | | | | | | | 38 | 9.93E-04 |
| 1011A | | | | | | | | | 51 | 1.35E-03 |
| 1011B | | | | | | | | | 137 | 3.63E-03 |
| 1012A | | | | | | | | | 49 | 1.30E-03 |
| 1012B | | | | | | | | | 100 | 2.65E-03 |
| 1013 | | | 1 | | 5 | | | | 315 | 1.88E-02 |
| 1014 | | | | | | | | | 18 | 4.85E-04 |
| 1015 | | | | | | | | | 6 | 1.54E-04 |
| 1016 | | | 36.97 | | 365 | 78 | | 8 | 4097 | 7.09E-01 |
| 1017 | 5 | | 4 | | | | | | 269 | 3.87E-02 |
| 1018 | | 2 | | | 400 | | | | 21 | 3.31E-01 |
| 1018A | | | | | | | | | 14 | 3.82E-04 |
| 1018B | | | | | | | | | 14 | 3.82E-04 |

Table F5.5-1. Fire Ignition Frequencies by Room (Continued)

| | Ignition Source Category and Room-by-Room Population | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Room | Electrical | HVAC | Mechanical Equipment | Heat-Generating Equipment | Torches, Welders, Burners | Internal Combustion Engines | Office/ Kitchen Equipment | Portable Equipment | No Equipment Involved | Room Ignition Frequency |
| 1019 | 23 | 2 | | | 5 | | | 4 | 186 | 6.87E-02 |
| 1020 | 1 | 4 | | | | | | | 30 | 2.14E-02 |
| 1021 | | 4 | | | | | | 4 | 216 | 4.83E-02 |
| 1022 | | | | | | | | | 6 | 1.54E-04 |
| 1023 | | 3 | 4 | | | 39 | | | 434 | 6.39E-02 |
| 1024 | | | | | | | | | 20 | 5.30E-04 |
| 1025 | | | | | | | | | 29 | 7.65E-04 |
| 1026 | | | | | | | | | 31 | 8.24E-04 |
| 1027 | | | | | | | | | 31 | 8.24E-04 |
| 1028 | | | 1 | | | | | | 56 | 7.91E-03 |
| 1029 | | | | | | | | | 28 | 7.35E-04 |
| 1030 | | | | | | | | | 17 | 4.41E-04 |
| 1031 | | | | | | | | | 31 | 8.09E-04 |
| 1032 | | | | | | | | | 27 | 7.06E-04 |
| 1032A | | | | | | | | | 22 | 5.88E-04 |
| 1033 | | | | | | | | | 32 | 8.53E-04 |
| 1034 | | | | | | | | | 29 | 7.65E-04 |
| 1035 | | | | | | | | | 17 | 4.41E-04 |
| 1036 | | | 1 | | | | | | 17 | 6.88E-03 |
| 1037 | | | | | | | | | 7 | 1.91E-04 |
| 1038 | | | | | | | | | 7 | 6.61E-03 |
| 1039 | | | | | | | | | 7 | 1.72E-04 |
| 1042A | | | 1 | | | | | | 19 | 6.95E-03 |
| 1042B | | | 1 | | | | | | 19 | 6.95E-03 |
| 1042C | | | 1 | | | | | | 19 | 6.95E-03 |
| 1043A | | | | | | | | | 30 | 7.97E-04 |
| 1043B | | | | | | | | | 30 | 7.97E-04 |
| 1043C | | | | | | | | | 30 | 7.97E-04 |
| 1044A | | | | | | | | | 25 | 6.69E-04 |
| 1044B | | | | | | | | | 25 | 6.69E-04 |
| 1044C | | | | | | | | | 25 | 6.69E-04 |

Table F5.5-1. Fire Ignition Frequencies by Room (Continued)

| | Ignition Source Category and Room-by-Room Population | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Room | Electrical | HVAC | Mechanical Equipment | Heat-Generating Equipment | Torches, Welders, Burners | Internal Combustion Engines | Office/ Kitchen Equipment | Portable Equipment | No Equipment Involved | Room Ignition Frequency |
| 1045A | | | | | | | | | 33 | 8.83E-04 |
| 1045B | | | | | | | | | 33 | 8.83E-04 |
| 1045C | | | 1 | | | | | | 100 | 9.08E-03 |
| 1045D | | | | | | | | | 99 | 2.61E-03 |
| 1046 | 92 | | | | | | | | 158 | 1.12E-01 |
| 1201 | | | | | | | | | 8 | 2.21E-04 |
| 1202 | | | | | | | 1 | | 21 | 1.00E-02 |
| 1203 | | | | | | | | | 34 | 9.02E-04 |
| 1204 | | | | | | | | | 40 | 1.06E-03 |
| 1205 | | | | | | | 1 | | 44 | 1.06E-02 |
| 1206 | | | | | | | | | 12 | 3.14E-04 |
| 1207 | | | | | | | | | 51 | 1.33E-03 |
| 1208 | | | | | | | | | 9 | 2.35E-04 |
| 1209 | | | | | | | 1 | | 39 | 1.05E-02 |
| 1210 | | | | | | | 1 | | 22 | 1.01E-02 |
| 1211 | | | | | | | 1 | | 12 | 9.80E-03 |
| 1212 | | | | | | | 1 | | 21 | 1.00E-02 |
| 1213 | | | | | | | | | 15 | 3.92E-04 |
| 1214 | | | | | | | | | 15 | 3.92E-04 |
| 1215 | | | | | | | 1 | | 70 | 1.13E-02 |
| 1216 | | | | | | | 1 | | 25 | 1.01E-02 |
| 1217 | | | | | | | 1 | | 25 | 1.01E-02 |
| 1218A | | | | | | | | | 60 | 1.59E-03 |
| 1218B | | | | | | | | | 30 | 7.80E-04 |
| 1218C | | | | | | | | | 58 | 1.53E-03 |
| M001 | | 3 | | | | | | 4 | 474 | 5.03E-02 |
| 2001 | 66 | | | | | | | 4 | 140 | 1.04E-01 |
| 2001A | 1 | 4 | | | | | | | 46 | 2.18E-02 |
| 2002 | | 2 | | | | | | 4 | 216 | 3.86E-02 |
| 2003 | | 1 | | | | | | 4 | 134 | 3.16E-02 |
| 2004 | | | 7 | | 5 | | | 2 | 1017 | 8.75E-02 |

Table F5.5-1. Fire Ignition Frequencies by Room (Continued)

| | Ignition Source Category and Room-by-Room Population | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Room | Electrical | HVAC | Mechanical Equipment | Heat-Generating Equipment | Torches, Welders, Burners | Internal Combustion Engines | Office/ Kitchen Equipment | Portable Equipment | No Equipment Involved | Room Ignition Frequency |
| 2005A | | | | | | | | | 142 | 3.76E-03 |
| 2005B | | | | | | | | | 90 | 2.38E-03 |
| 2006 | | | | | | | | | 136 | 3.58E-03 |
| 2007A | | | | | | | | | 52 | 1.37E-03 |
| 2007B | | | | | | | | | 197 | 5.20E-03 |
| 2008 | | | | | 5 | | | | 522 | 1.78E-02 |
| 2010 | | 4 | | | | | | 4 | 216 | 4.83E-02 |
| 2011A | | | | | | | 2 | | 95 | 2.15E-02 |
| 2011B | | | | | | | 2 | | 120 | 2.21E-02 |
| 2012 | 6 | | | | | | 2 | | 241 | 3.23E-02 |
| 2013 | | | | | | | | | 14 | 3.82E-04 |
| 2024 | | | | | | | | | 18 | 4.85E-04 |
| 2025 | | | | | | | | | 45 | 1.19E-03 |
| 2026 | | | | | | | | | 31 | 8.24E-04 |
| 2027 | | | | | | | | | 31 | 8.24E-04 |
| 2029 | | | | | | | | | 17 | 4.41E-04 |
| 2030 | | | | | | | | | 14 | 3.68E-04 |
| 2032 | | | | | | | | | 9 | 2.50E-04 |
| 2033 | | | | | | | | | 12 | 3.09E-04 |
| 2034 | | | | | | | | | 29 | 7.65E-04 |
| 2201 | | | | | | | 1 | | 19 | 9.99E-03 |
| 2202 | | | | | | | 1 | | 30 | 1.03E-02 |
| 2203 | | | | | | | 3 | | 52 | 2.98E-02 |
| 2204 | | | | | | | | | 12 | 3.09E-04 |
| 2205 | | | | | | | | | 13 | 3.43E-04 |
| 2206 | | | | | | | | | 8 | 2.06E-04 |
| | | | | | | | | | | |
| TOTAL | 217 | 49 | 64 | 0 | 810 | 200 | 20 | 52 | | 2.51E+00 |
| | | | | | | | | | | |
| | | | | | | | | | | |

NOTE: The blank cells in this table are intentional and have been verified. Information that would appear in the blank locations is not applicable for the room identified in the first column.

HVAC = heating, ventilation, and air conditioning.

Source: Original

Table F5.6-1. Fire Propagation Probabilities

| | Conditional Probability | | | Sampled Value | Mean Fraction | 97.5% Value | 97.5th percentile add |
|---|---|---|---|---|---|---|---|
| Alternative Definition | | | | | | | |
| No Propagation | 0.551 | | 0.551 | 0.551 | 0.551 | 0.667 | 0.117 |
| Spreads Through Part of Room of Origin | 0.317 | | 0.317 | 0.317 | 0.317 | 0.426 | 0.109 |
| Spreads Throughout Room of Origin | 0.028 | | 0.028 | 0.028 | 0.028 | 0.066 | 0.038 |
| Spreads Throughout Fire-Rated Area of Origin | 0.005 | | 0.005 | 0.005 | 0.005 | 0.020 | 0.016 |
| Spreads Throughout Floor of Origin | 0.069 | | 0.069 | 0.069 | 0.069 | 0.128 | 0.059 |
| Spreads Throughout Building | 0.028 | | 0.028 | 0.028 | 0.028 | 0.055 | 0.028 |
| Breaches Building Boundary | 0.005 | | 0.005 | 0.005 | 0.005 | 0.020 | 0.016 |
| | 1.000 | | 1.000 | | | | |
| | | | | | | | |
| | | | | | | | |
| Alternative Definition | | | | | | | |
| No Propagation | 0.621 | | 0.621 | 0.621 | 0.621 | 0.725 | 0.104 |
| Spreads Through Part of Room of Origin | 0.149 | | 0.149 | 0.149 | 0.149 | 0.226 | 0.076 |
| Spreads Throughout Room of Origin | 0.004 | | 0.004 | 0.004 | 0.004 | 0.017 | 0.013 |
| Spreads Throughout Fire-Rated Area of Origin | 0.057 | | 0.057 | 0.057 | 0.057 | 0.107 | 0.050 |
| Spreads Throughout Floor of Origin | 0.004 | | 0.004 | 0.004 | 0.004 | 0.017 | 0.013 |
| Spreads Throughout Building | 0.161 | | 0.161 | 0.161 | 0.161 | 0.240 | 0.079 |
| Breaches Building Boundary | 0.004 | | 0.004 | 0.004 | 0.004 | 0.017 | 0.013 |
| | 1.000 | | 1.000 | | | | |

Source: Original

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Table F5.7-1. TAD canister, DPC, and SNF Residence Fractions

| WHF Residence Times and Fractions | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | |
| **Section I - Localized Fires** | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| BFD Task | Steps (if needed) | Time (m) | Fraction | | BFD Task | Steps (if needed) | Time (m) | Fraction | | BFD Task | Steps (if needed) | Time (m) | Fraction | |
| | | | | | | | | | | | | | | |
| **TC/SNF on Truck Trailer in Receipt Area w/Tractor (Diesel Present)** | | | | | **TC/DPC (TTC) on Railcar/Trailer in Receipt Area w/Tractor/SPM (Diesel Present)** | | | | | **TC/DPC on Truck Trailer in Receipt Area w/Tractor (Diesel Present)** | | | | |
| 1.1.1 | | 44 | | | 1.1.1 | | 44 | | | 1.1.1 | Steps 1-4 | 44 | | |
| **Total** | | **44** | **1.7E-06** | | **Total** | | **44** | **1.7E-06** | | **Total** | | **44** | **1.7E-06** | |
| | | | | | | | | | | | | | | |
| **TC/SNF on Truck Trailer in Receipt Area w/o Tractor (No Diesel)** | | | | | **TC/DPC (TTC) on Railcar/Trailer in Receipt Area w/o Tractor/SPM (No Diesel)** | | | | | **TC/DPC on Truck Trailer in Receipt Area w/o Tractor (No Diesel)** | | | | |
| 1.1.2 | | 15 | | | 1.1.2 | | 15 | | | 1.1.1 | Step 5 | 75 | | |
| 1.1.10 | | 160 | | | Not in BFD | | 170 | | | 1.1.2 | | 15 | | |
| Not in BFD | Prepare CHC | 15 | | | 1.1.3 | | 90 | | | 1.1.10 | | 206 | | |
| 1.1.11 | | 60 | | | 1.1.4 | Prepare CHC | 80 | | | Not in BFD | Prepare CHC | 15 | | |
| 1.1.12 | | 15 | | | 1.1.5 | | 220 | | | 1.1.11 | | 60 | | |
| 1.1.13 | Step 1 | 5 | | | 1.1.6 | | 95 | | | 1.1.12 | | 30 | | |
| **Total** | | **270** | **1.0E-05** | | 1.1.7 | | 40 | | | 1.1.24 | | 20 | | |
| | | | | | Not in BFD | Prepare CHC | 25 | | | 1.1.26 | Step 1 | 5 | | |
| | | | | | 1.1.8 | | 15 | | | **Total** | | **426** | **1.6E-05** | |
| | | | | | 1.1.9 | | 40 | | | | | | | |
| | | | | | 1.1.24 | | 20 | | | | | | | |
| | | | | | 1.1.26 | Step 1 | 5 | | | | | | | |
| | | | | | **Total** | | **815** | **3.1E-05** | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| **TC/SNF in Preparation Station (Dry Cavity)** | | | | | **TC/DPC (TTC) on CTT in Preparation Station** | | | | | **TC/DPC on CTT in Preparation Station** | | | | |
| 1.1.13 | Steps 2-4 | 50 | | | 1.1.26 | Steps 2-4 | 35 | | | (Same as TTC) | | | | |
| Not in BFD | Remove/Store Platform | 15 | | | 1.1.27 | | 200 | | | | | | | |
| 1.1.15 | Steps 1-8 | 38 | | | 1.1.28 | | 202 | | | | | | | |
| **Total** | | **103** | **3.9E-06** | | 1.1.29 | | 30 | | | | | | | |
| | | | | | 1.1.30 | | 20 | | | | | | | |
| **TC/SNF in Preparation Station (Wet Cavity)** | | | | | 1.1.31 | | 40 | | | | | | | |
| 1.1.15 | Steps 9-13 | 46 | | | 1.1.32 | | 40 | | | | | | | |
| 1.1.16 | | 36 | | | 1.1.33 | | 40 | | | | | | | |
| 1.1.17 | | 45 | | | 1.1.34 | | 20 | | | | | | | |
| Not in BFD | Prepare CHC | 20 | | | **Total** | | **627** | **2.4E-05** | | | | | | |
| 1.1.18 | Steps 1-6 | 55 | | | | | | | | | | | | |
| **Total** | 38 | **202** | **7.7E-06** | | | | | | | | | | | |

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Table F5.7-1. TAD canister, DPC, and SNF Residence Fractions (Continued)

| BFD Task | Steps (if needed) | Time (m) | Fraction | | BFD Task | Steps (if needed) | Time (m) | Fraction | | BFD Task | Steps (if needed) | Time (m) | Fraction |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | **TC/DPC (TTC) on CTT in Unloading Room** | | | | | **TC/DPC on CTT in Unloading Room** | | | |
| | | | | | 1.1.34 | again | 20 | | | (Same as TTC) | | | |
| | | | | | 5.2.11 | | 5 | | | | | | |
| | | | | | 5.2.12 | | 2 | | | | | | |
| | | | | | 5.2.13 | | 25 | | | | | | |
| | | | | | **Total** | | **52** | **2.0E-06** | | | | | |
| | | | | | | | | | | | | | |
| | | | | | **DPC (TTC) in CTM in Transfer Room** | | | | | **DPC in CTM in Transfer Room** | | | |
| | | | | | 5.2.13 | Step 3 (again) | 10 | | | (Same as TTC) | | | |
| | | | | | 5.2.14 | | 2 | | | | | | |
| | | | | | 5.2.15 | | 5 | | | | | | |
| | | | | | 5.2.27 | | 5 | | | | | | |
| | | | | | 5.2.28 | | 2 | | | | | | |
| | | | | | 5.2.29 | Step 1 | 5 | | | | | | |
| | | | | | **Total** | | **29** | **1.1E-06** | | | | | |
| | | | | | | | | | | | | | |
| | | | | | **STC/DPC (TTC) on CTT in Unloading Room** | | | | | **STC/DPC on CTT in Unloading Room** | | | |
| | | | | | 5.2.29 | again | 35 | | | (Same as TTC) | | | |
| | | | | | 5.2.30 | | 2 | | | | | | |
| | | | | | 5.2.31 | | 75 | | | | | | |
| | | | | | 5.2.32 | | 20 | | | | | | |
| | | | | | **Total** | | **132** | **5.0E-06** | | | | | |
| | | | | | | | | | | | | | |
| | | | | | **STC/DPC (TTC) on CTT in Preparation Station** | | | | | **STC/DPC on CTT in Preparation Station** | | | |
| | | | | | 5.2.32 | Again | 20 | | | (Same as TTC) | | | |
| | | | | | 5.2.33 | | 35 | | | | | | |
| | | | | | 5.2.34 | | 40 | | | | | | |
| | | | | | 5.2.35 | | 69 | | | | | | |
| | | | | | 5.2.36 | | 40 | | | | | | |
| | | | | | 5.2.37 | | 75 | | | | | | |
| | | | | | 5.2.38 | | 270 | | | | | | |
| | | | | | 5.2.39 | | 220 | | | | | | |
| | | | | | 5.2.40 | Steps 1-6 | 35 | | | | | | |
| | | | | | **Total** | | **804** | **3.1E-05** | | | | | |
| | | | | | | | | | | | | | |
| | | | | | **STC/DPC (TTC) in DPC Cutting Station (Dry Cavity, Dry Annulus)** | | | | | **STC/DPC in DPC Cutting Station (Dry Cavity, Dry Annulus)** | | | |
| | | | | | 5.2.40 | Steps 7-12 | 55 | | | (Same as TTC) | | | |
| | | | | | 3.1.1 | | 105 | | | | | | |
| | | | | | **Total** | | **160** | **6.1E-06** | | | | | |

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Table F5.7-1. TAD canister, DPC, and SNF Residence Fractions (Continued)

| BFD Task | Steps (if needed) | Time (m) | Fraction | | BFD Task | Steps (if needed) | Time (m) | Fraction | | BFD Task | Steps (if needed) | Time (m) | Fraction |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | **STC/DPC (TTC) in DPC Cutting Station (Dry Cavity, Wet Annulus)** | | | | | **STC/DPC in DPC Cutting Station (Dry Cavity, Wet Annulus)** | | | |
| | | | | | 3.1.2 | | 5 | | | (Same as TTC) | | | |
| | | | | | 3.1.3 | | 12 | | | | | | |
| | | | | | 3.1.4 | | 65 | | | | | | |
| | | | | | 3.1.5 | | 40 | | | | | | |
| | | | | | 3.1.6 | | 30 | | | | | | |
| | | | | | 3.1.7 | | 10 | | | | | | |
| | | | | | 3.1.8 | | 75 | | | | | | |
| | | | | | 3.1.9 | | 250 | | | | | | |
| | | | | | 3.1.10 | | 160 | | | | | | |
| | | | | | 3.1.11 | | 10 | | | | | | |
| | | | | | 3.1.12 | | 30 | | | | | | |
| | | | | | 3.1.13 | | 250 | | | | | | |
| | | | | | 3.1.14 | | 55 | | | | | | |
| | | | | | 3.1.15 | | 60 | | | | | | |
| | | | | | 3.1.16 | | 40 | | | | | | |
| | | | | | **Total** | | **1092** | **4.2E-05** | | | | | |
| | | | | | | | | | | | | | |
| | | | | | **STC/DPC (TTC) in DPC Cutting Station (Wet Cavity, Wet Annulus)** | | | | | **STC/DPC in DPC Cutting Station (Wet Cavity, Wet Annulus)** | | | |
| | | | | | 3.1.17 | | 5 | | | (Same as TTC) | | | |
| | | | | | 3.1.21 | | 480 | | | | | | |
| | | | | | 3.1.22 | | 30 | | | | | | |
| | | | | | 3.1.23 | | 15 | | | | | | |
| | | | | | 3.1.24 | | 10 | | | | | | |
| | | | | | 3.1.25 | | 30 | | | | | | |
| | | | | | 3.1.26 | | 25 | | | | | | |
| | | | | | 3.1.27 | | 15 | | | | | | |
| | | | | | 3.1.28 | | 40 | | | | | | |
| | | | | | 3.1.29 | | 55 | | | | | | |
| | | | | | 3.1.30 | | 101 | | | | | | |
| | | | | | 3.1.31 | | 5 | | | | | | |
| | | | | | Not in BFD | Prepare CHC | 20 | | | | | | |
| | | | | | 3.1.32 | Steps 1-6 | 55 | | | | | | |
| | | | | | **Total** | | **886** | **3.4E-05** | | | | | |

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Table F5.7-1. TAD canister, DPC, and SNF Residence Fractions (Continued)

| BFD Task | Steps (if needed) | Time (m) | Fraction | | BFD Task | Steps (if needed) | Time (m) | Fraction | | BFD Task | Steps (if needed) | Time (m) | Fraction |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **STC/TAD in TAD Closure Station (Wet Cavity)** | | | | | **STC/TAD in TAD Closure Station (Wet Cavity)** | | | | | **STC/TAD in TAD Closure Station (Wet Cavity)** | | | |
| 4.1.8 | Step 4 | 15 | | | (Same) | | | | | (Same) | | | |
| 4.1.9 | | 30 | | | | | | | | | | | |
| 4.1.10 | | 20 | | | | | | | | | | | |
| Not in BFD | Clean up CHC | 25 | | | | | | | | | | | |
| Not in BFD | PPE/Temp Shielding | 90 | | | | | | | | | | | |
| 4.1.11 | | 34 | | | | | | | | | | | |
| 4.1.12 | | 12 | | | | | | | | | | | |
| 4.1.13 | | 35 | | | | | | | | | | | |
| 4.1.14 | | 35 | | | | | | | | | | | |
| 4.1.15 | | 32 | | | | | | | | | | | |
| 4.1.16 | | 15 | | | | | | | | | | | |
| 4.1.17 | | 50 | | | | | | | | | | | |
| 4.1.18 | | 440 | | | | | | | | | | | |
| Not in BFD | Inspect weld | 200 | | | | | | | | | | | |
| 4.1.19 | | 34 | | | | | | | | | | | |
| **Total** | | **1067** | **4.1E-05** | | | | | | | | | | |
| | | | | | | | | | | | | | |
| **STC/TAD in TAD Closure Station (Dry Cavity, Wet Annulus)** | | | | | **STC/TAD in TAD Closure Station (Dry Cavity, Wet Annulus)** | | | | | **STC/TAD in TAD Closure Station (Dry Cavity, Wet Annulus)** | | | |
| 4.1.20 | | 325 | | | (Same) | | | | | (Same) | | | |
| 4.1.21 | | 200 | | | | | | | | | | | |
| Not in BFD | Inspect weld | 140 | | | | | | | | | | | |
| 4.1.22 | | 35 | | | | | | | | | | | |
| 4.1.23 | | 45 | | | | | | | | | | | |
| 4.1.24 | | 65 | | | | | | | | | | | |
| 4.1.25 | | 440 | | | | | | | | | | | |
| Not in BFD | Inspect weld | 200 | | | | | | | | | | | |
| 4.1.26 | | 35 | | | | | | | | | | | |
| 4.1.27 | | 35 | | | | | | | | | | | |
| 4.1.28 | | 40 | | | | | | | | | | | |
| 4.1.29 | | 240 | | | | | | | | | | | |
| 4.1.30 | | 6 | | | | | | | | | | | |
| 4.1.31 | | 38 | | | | | | | | | | | |
| **Total** | | **1844** | **7.0E-05** | | | | | | | | | | |
| | | | | | | | | | | | | | |
| **STC/TAD in TAD Closure Station (Dry Cavity, Dry Annulus)** | | | | | **STC/TAD in TAD Closure Station (Dry Cavity, Dry Annulus)** | | | | | **STC/TAD in TAD Closure Station (Dry Cavity, Dry Annulus)** | | | |
| 4.1.32 | | 110 | | | (Same) | | | | | (Same) | | | |
| Not in BFD | Close STC Drain Port | 11 | | | | | | | | | | | |
| 1.5.6 | Prepare CHC | 45 | | | | | | | | | | | |
| 1.5.7 | | 200 | | | | | | | | | | | |
| 1.5.8 | | 12 | | | | | | | | | | | |
| 1.5.9 | | 32 | | | | | | | | | | | |
| **Total** | | **410** | **1.6E-05** | | | | | | | | | | |

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Table F5.7-1. TAD canister, DPC, and SNF Residence Fractions (Continued)

| BFD Task | Steps (if needed) | Time (m) | Fraction | | BFD Task | Steps (if needed) | Time (m) | Fraction | | BFD Task | Steps (if needed) | Time (m) | Fraction |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **STC/TAD on CTT in Unloading Room** | | | | | **STC/TAD on CTT in Unloading Room** | | | | | **STC/TAD on CTT in Unloading Room** | | | |
| 1.5.9 | Steps 2-4 (again) | 20 | | | **(Same as TC/SNF from here down)** | | | | | **(Same as TC/SNF from here down)** | | | |
| 5.1.1 | | 30 | | | | | | | | | | | |
| 5.1.2 | | 5 | | | | | | | | | | | |
| 5.1.3 | | 30 | | | | | | | | | | | |
| 5.1.4 | | 2 | | | | | | | | | | | |
| 5.1.5 | | 25 | | | | | | | | | | | |
| **Total** | | **112** | **4.3E-06** | | | | | | | | | | |
| | | | | | | | | | | | | | |
| **TAD in CTM in Transfer Room** | | | | | | | | | | | | | |
| 5.1.5 | Step 3 (again) | 10 | | | | | | | | | | | |
| 5.1.6 | | 2 | | | | | | | | | | | |
| 5.1.7 | | 5 | | | | | | | | | | | |
| 5.1.8 | | 2 | | | | | | | | | | | |
| 5.1.9 | Step 1 | 5 | | | | | | | | | | | |
| **Total** | | **24** | **9.1E-07** | | | | | | | | | | |
| | | | | | | | | | | | | | |
| **TAD in AO in Loading Room** | | | | | | | | | | | | | |
| 5.1.9 | Again | 35 | | | | | | | | | | | |
| 5.1.10 | | 2 | | | | | | | | | | | |
| 1.6.1 | | 45 | | | | | | | | | | | |
| 1.6.2 | | 14 | | | | | | | | | | | |
| **Total** | | **96** | **3.7E-06** | | | | | | | | | | |
| | | | | | | | | | | | | | |
| **TAD in AO in Bolting Room** | | | | | | | | | | | | | |
| 1.6.2 | Again | 14 | | | | | | | | | | | |
| 1.6.3 | | 240 | | | | | | | | | | | |
| **Total** | | **254** | **9.7E-06** | | | | | | | | | | |
| | | | | | | | | | | | | | |
| **Section II - Large Fire** | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| **TC/SNF or TC/DPC (incl. TTC) w/Tractor/SPM (Diesel Present)** | | | | | | | | | | | | | |
| 1.1.1 | | 44 | | | | | | | | | | | |
| **Total** | | **44** | **1.7E-06** | | | | | | | | | | |

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Table F5.7-1. TAD canister, DPC, and SNF Residence Fractions (Continued)

| BFD Task | Steps (if needed) | Time (m) | Fraction | | BFD Task | Steps (if needed) | Time (m) | Fraction | | BFD Task | Steps (if needed) | Time (m) | Fraction |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **TC/SNF (No Diesel)** | | | | | **TC/DPC (TTC) (No Diesel)** | | | | | **TC/DPC (No Diesel)** | | | |
| 1.1.2 | | 15 | | | 1.1.2 | | 15 | | | 1.1.1 | Step 5 | 75 | |
| 1.1.10 | | 160 | | | Not in BFD | | 170 | | | 1.1.2 | | 15 | |
| Not in BFD | Prepare CHC | 15 | | | 1.1.3 | | 90 | | | 1.1.10 | | 206 | |
| 1.1.11 | | 60 | | | 1.1.4 | Prepare CHC | 80 | | | Not in BFD | Prepare CHC | 15 | |
| 1.1.12 | | 15 | | | 1.1.5 | | 220 | | | 1.1.11 | | 60 | |
| 1.1.13 | | 55 | | | 1.1.6 | | 95 | | | 1.1.12 | | 30 | |
| Not in BFD | Remove/Store Platform | 15 | | | 1.1.7 | | 40 | | | 1.1.24 | | 20 | |
| 1.1.15 | Steps 1-8 | 38 | | | Not in BFD | Prepare CHC | 25 | | | 1.1.26 | | 40 | |
| **Total** | | **373** | **1.4E-05** | | 1.1.8 | | 15 | | | 1.1.27 | | 200 | |
| | | | | | 1.1.9 | | 40 | | | 1.1.28 | | 202 | |
| | | | | | 1.1.24 | | 20 | | | 1.1.29 | | 30 | |
| | | | | | 1.1.26 | | 40 | | | 1.1.30 | | 20 | |
| | | | | | 1.1.27 | | 200 | | | 1.1.31 | | 40 | |
| | | | | | 1.1.28 | | 202 | | | 1.1.32 | | 20 | |
| | | | | | 1.1.29 | | 30 | | | 1.1.26 | | 5 | |
| | | | | | 1.1.30 | | 20 | | | 1.1.32 | again | 20 | |
| | | | | | 1.1.31 | | 40 | | | 5.2.11 | | 5 | |
| | | | | | 1.1.32 | | 40 | | | 5.2.12 | | 2 | |
| | | | | | 1.1.33 | | 40 | | | 5.2.13 | | 25 | |
| | | | | | 1.1.34 | | 20 | | | **Total** | | **1030** | **3.9E-05** |
| | | | | | 5.2.11 | | 5 | | | | | | |
| | | | | | 5.2.12 | | 2 | | | | | | |
| | | | | | 5.2.13 | | 25 | | | | | | |
| | | | | | **Total** | | **1474** | **5.6E-05** | | | | | |
| | | | | | | | | | | | | | |
| | | | | | **DPC (incl TTC) in CTM** | | | | | | | | |
| | | | | | 5.2.13 | Step 3 (again) | 10 | | | | | | |
| | | | | | 5.2.14 | | 2 | | | | | | |
| | | | | | 5.2.15 | | 5 | | | | | | |
| | | | | | 5.2.27 | | 5 | | | | | | |
| | | | | | 5.2.28 | | 2 | | | | | | |
| | | | | | 5.2.29 | Step 1 | 5 | | | | | | |
| | | | | | **Total** | | **29** | **1.1E-06** | | | | | |

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Table F5.7-1. TAD canister, DPC, and SNF Residence Fractions (Continued)

| BFD Task | Steps (if needed) | Time (m) | Fraction | | BFD Task | Steps (if needed) | Time (m) | Fraction |
|---|---|---|---|---|---|---|---|---|
| | | | | | **STC/DPC (incl TTC)** | | | |
| | | | | | 5.2.29 | again | 35 | |
| | | | | | 5.2.30 | | 2 | |
| | | | | | 5.2.31 | | 75 | |
| | | | | | 5.2.32 | | 20 | |
| | | | | | 5.2.33 | | 35 | |
| | | | | | 5.2.34 | | 40 | |
| | | | | | 5.2.35 | | 69 | |
| | | | | | 5.2.36 | | 40 | |
| | | | | | 5.2.37 | | 75 | |
| | | | | | 5.2.38 | | 270 | |
| | | | | | 5.2.39 | | 220 | |
| | | | | | 5.2.40 | | 90 | |
| | | | | | 3.1.1 | | 105 | |
| | | | | | **Total** | | **1076** | **4.1E-05** |
| | | | | | | | | |
| | | | | | **STC/DPC (incl TTC) (Dry Cavity, Wet Annulus)** | | | |
| | | | | | 3.1.2 | | 5 | |
| | | | | | 3.1.3 | | 12 | |
| | | | | | 3.1.4 | | 65 | |
| | | | | | 3.1.5 | | 40 | |
| | | | | | 3.1.6 | | 30 | |
| | | | | | 3.1.7 | | 10 | |
| | | | | | 3.1.8 | | 75 | |
| | | | | | 3.1.9 | | 250 | |
| | | | | | 3.1.10 | | 160 | |
| | | | | | 3.1.11 | | 10 | |
| | | | | | 3.1.12 | | 30 | |
| | | | | | 3.1.13 | | 250 | |
| | | | | | 3.1.14 | | 55 | |
| | | | | | 3.1.15 | | 60 | |
| | | | | | 3.1.16 | | 40 | |
| | | | | | **Total** | | **1092** | **4.2E-05** |

Table F5.7-1. TAD canister, DPC, and SNF Residence Fractions (Continued)

| BFD Task | Steps (if needed) | Time (m) | Fraction | | BFD Task | Steps (if needed) | Time (m) | Fraction |
|---|---|---|---|---|---|---|---|---|
| | | | | | **STC/DPC (incl TTC) (Wet Cavity, Wet Annulus)** | | | |
| | | | | | 3.1.17 | | 5 | |
| | | | | | 3.1.21 | | 480 | |
| | | | | | 3.1.22 | | 30 | |
| | | | | | 3.1.23 | | 15 | |
| | | | | | 3.1.24 | | 10 | |
| | | | | | 3.1.25 | | 30 | |
| | | | | | 3.1.26 | | 25 | |
| | | | | | 3.1.27 | | 15 | |
| | | | | | 3.1.28 | | 40 | |
| | | | | | 3.1.29 | | 55 | |
| | | | | | 3.1.30 | | 101 | |
| | | | | | 3.1.31 | | 5 | |
| | | | | | Not in BFD | Prepare CHC | 20 | |
| | | | | | 3.1.32 | Steps 1-6 | 55 | |
| | | | | | **Total** | | **886** | **3.4E-05** |
| | | | | | | | | |
| **TC/SNF (Wet Cavity)** | | | | | | | | |
| 1.1.15 | Steps 9-13 | 46 | | | | | | |
| 1.1.16 | | 36 | | | | | | |
| 1.1.17 | | 45 | | | | | | |
| Not in BFD | Prepare CHC | 20 | | | | | | |
| 1.1.18 | Steps 1-6 | 55 | | | | | | |
| **Total** | | **202** | **7.7E-06** | | | | | |

Table F5.7-1. TAD canister, DPC, and SNF Residence Fractions (Continued)

| BFD Task | Steps (if needed) | Time (m) | Fraction | | BFD Task | Steps (if needed) | Time (m) |
|---|---|---|---|---|---|---|---|
| **STC/TAD (Wet Cavity)** | | | | | **STC/TAD** | | |
| 4.1.8 | Step 4 | 15 | | | TC/DPC (incl TTC) same as TC/SNF from here down) | | |
| 4.1.9 | | 30 | | | | | |
| 4.1.10 | | 20 | | | | | |
| Not in BFD | Clean up CHC | 25 | | | | | |
| Not in BFD | PPE/Temp Shielding | 90 | | | | | |
| 4.1.11 | | 34 | | | | | |
| 4.1.12 | | 12 | | | | | |
| 4.1.13 | | 35 | | | | | |
| 4.1.14 | | 35 | | | | | |
| 4.1.15 | | 32 | | | | | |
| 4.1.16 | | 15 | | | | | |
| 4.1.17 | | 50 | | | | | |
| 4.1.18 | | 440 | | | | | |
| Not in BFD | Inspect weld | 200 | | | | | |
| 4.1.19 | | 34 | | | | | |
| **Total** | | **1067** | **4.1E-05** | | | | |
| | | | | | | | |
| **STC/TAD (Dry Cavity, Wet Annulus)** | | | | | | | |
| 4.1.20 | | 325 | | | | | |
| 4.1.21 | | 200 | | | | | |
| Not in BFD | Inspect weld | 140 | | | | | |
| 4.1.22 | | 35 | | | | | |
| 4.1.23 | | 45 | | | | | |
| 4.1.24 | | 65 | | | | | |
| 4.1.25 | | 440 | | | | | |
| Not in BFD | Inspect weld | 200 | | | | | |
| 4.1.26 | | 35 | | | | | |
| 4.1.27 | | 35 | | | | | |
| 4.1.28 | | 40 | | | | | |
| 4.1.29 | | 240 | | | | | |
| 4.1.30 | | 6 | | | | | |
| 4.1.31 | | 38 | | | | | |
| **Total** | | **1844** | **7.0E-05** | | | | |

Table F5.7-1. TAD canister, DPC, and SNF Residence Fractions (Continued)

| BFD Task | Steps (if needed) | Time (m) | Fraction |
|---|---|---|---|
| **STC/TAD (Dry Cavity, Dry Annulus)** | | | |
| 4.1.32 | | 110 | |
| Not in BFD | Close STC Drain Port | 11 | |
| 1.5.6 | Prepare CHC | 45 | |
| 1.5.7 | | 200 | |
| 1.5.8 | | 12 | |
| 1.5.9 | | 32 | |
| 5.1.1 | | 30 | |
| 5.1.2 | | 5 | |
| 5.1.3 | | 30 | |
| 5.1.4 | | 2 | |
| 5.1.5 | Steps 1-2 | 15 | |
| **Total** | | **492** | **1.9E-05** |
| | | | |
| **TAD in CTM** | | | |
| 5.1.5 | Step 3 | 10 | |
| 5.1.6 | | 2 | |
| 5.1.7 | | 5 | |
| 5.1.8 | | 2 | |
| 5.1.9 | Step 1 | 5 | |
| **Total** | | **24** | **9.1E-07** |
| | | | |
| **TAD in AO** | | | |
| 5.1.9 | Steps 2+ | 30 | |
| 5.1.10 | | 2 | |
| 1.6.1 | | 45 | |
| 1.6.2 | | 14 | |
| 1.6.3 | | 240 | |
| **Total** | | **331** | **1.3E-05** |

NOTE: The blank cells in this table are intentional and have been verified.

AO = aging overpack; BFD = block flow diagram; CHC = cask handling crane; CTM = canister transfer machine; CTT = cask transfer trolley; DPC = dual-purpose canister; PPE = personnel protective equipment; SNF = spent nuclear fuel; SPM = site prime mover; STC = shielded transfer cask; TAD = transportation, aging, and disposal canister; TC = transportation cask; TTC = a transportation cask that is upended using a tilt frame.

Source: Original

Table F5.7-2. Localized Fire Initiating Event Frequencies

| **Localized Fire Threatens Waste Form** | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | |
| Contributions from Rooms Containing Waste Form | | | | | | | | | | | | | | |
| Room of Origin (includes comments field as needed) | Ignition Source (If Applicable) | Number in Room | Frequency per Unit (50 years) | Number at Target | Number Near Target | Propagation Probability to Target | Number Away from Target | Propagation Probability to Target | Target Exposure Time (Fraction) | Contribution to IE Frequency (50 years) | Target Exposure Time (Fraction) | Contribution to IE Frequency (50 years) | Target Exposure Time (Fraction) | Contribution to IE Frequency (50 years) |
| | | | | | | | | | | | | | | |
| Entry represents a vulnerability due to the Railcar/Truck (Diesel Present) | | | | | | | | | TC/SNF or TC/DPC (incl. TTC) | | | | | |
| 1001 | Electrical | 0 | 1.17E-03 | | | 0.211 | | 0.061 | 1.7E-06 | 0.0E+00 | | | | |
| 1016 | HVAC | 4 | 4.85E-03 | 4 | | 0.211 | | 0.061 | 1.7E-06 | 3.2E-08 | | | | |
| B001 | Mechanical Equipment | 39.97 | 6.44E-03 | 9 | 11.97 | 0.211 | 19 | 0.061 | 1.7E-06 | 1.4E-07 | | | | |
| B007 | Heat Generating Equipment | 0 | 0.00E+00 | | | 0.211 | | 0.061 | 1.7E-06 | 0.0E+00 | | | | |
| B009 | Torches, welders, burners | 375 | 8.01E-04 | | | 0.211 | 375 | 0.061 | 1.7E-06 | 3.1E-08 | | | | |
| | Internal combustion engines | 100 | 3.11E-04 | 100 | | 0.211 | | 0.061 | 1.7E-06 | 5.2E-08 | | | | |
| | Office/kitchen equipment | 0 | 9.48E-03 | | | 0.211 | | 0.061 | 1.7E-06 | 0.0E+00 | | | | |
| | Portable Equipment | 8 | 5.81E-03 | 1 | 2 | 0.211 | 5 | 0.061 | 1.7E-06 | 1.7E-08 | | | | |
| | No equipment involved | 5866 | 2.64E-05 | 2808 | 120 | 0.211 | 2938 | 0.061 | 1.7E-06 | 1.3E-07 | | | | |
| Propagation from rooms in Fire Zone FA-00-01 | | | | | | | | | | | | | | |
| 1022 | | | 1.54E-04 | | | 0.057 | | | 1.7E-06 | 1.5E-11 | | | | |
| B002 | | | 1.46E-02 | | | 0.057 | | | 1.7E-06 | 1.4E-09 | | | | |
| B003 | | | 1.01E-03 | | | 0.057 | | | 1.7E-06 | 9.8E-11 | | | | |
| B004 | | | 1.80E-03 | | | 0.057 | | | 1.7E-06 | 1.7E-10 | | | | |
| B006 | | | 7.35E-05 | | | 0.057 | | | 1.7E-06 | 7.1E-12 | | | | |
| B008 | | | 1.63E-03 | | | 0.057 | | | 1.7E-06 | 1.6E-10 | | | | |
| P001 | | | 0.00E+00 | | | 0.057 | | | 1.7E-06 | 0.0E+00 | | | | |
| **Localized Fire Threatens TC/SNF or TC/DPC (incl. TTC) on Railcar/Trailer in Receipt Area w/Tractor (Diesel Present)** | | | | | | | | | | 4.0E-07 | | | | |

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Table F5.7-2. Localized Fire Initiating Event Frequencies (Continued)

| Room of Origin (includes comments field as needed) | Ignition Source (If Applicable) | Number in Room | Frequency per Unit (50 years) | Number at Target | Number Near Target | Propagation Probability to Target | Number Away from Target | Propagation Probability to Target | Target Exposure Time (Fraction) | Contribution to IE Frequency (50 years) | Target Exposure Time (Fraction) | Contribution to IE Frequency (50 years) | Target Exposure Time (Fraction) | Contribution to IE Frequency (50 years) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Entry represents a vulnerability due to the Railcar/Truck (Diesel Present) | | | | | | | | | TC/SNF | | TC/DPC (TTC) | | TC/DPC | |
| 1001 | Electrical | 0 | 1.17E-03 | | | 0.211 | | 0.061 | 1.0E-05 | 0.0E+00 | 3.1E-05 | 0.0E+00 | 1.6E-05 | 0.0E+00 |
| 1016 | HVAC | 4 | 4.85E-03 | 4 | | 0.211 | | 0.061 | 1.0E-05 | 2.0E-07 | 3.1E-05 | 6.0E-07 | 1.6E-05 | 3.1E-07 |
| B001 | Mechanical Equipment | 39.97 | 6.44E-03 | 9 | 11.97 | 0.211 | 19 | 0.061 | 1.0E-05 | 8.4E-07 | 3.1E-05 | 2.5E-06 | 1.6E-05 | 1.3E-06 |
| B007 | Heat Generating Equipment | 0 | 0.00E+00 | | | 0.211 | | 0.061 | 1.0E-05 | 0.0E+00 | 3.1E-05 | 0.0E+00 | 1.6E-05 | 0.0E+00 |
| B009 | Torches, welders, burners | 375 | 8.01E-04 | | | 0.211 | 375 | 0.061 | 1.0E-05 | 1.9E-07 | 3.1E-05 | 5.7E-07 | 1.6E-05 | 3.0E-07 |
| | Internal combustion engines | 100 | 3.11E-04 | | | 0.211 | 100 | 0.061 | 1.0E-05 | 2.0E-08 | 3.1E-05 | 5.9E-08 | 1.6E-05 | 3.1E-08 |
| | Office/kitchen equipment | 0 | 9.48E-03 | | | 0.211 | | 0.061 | 1.0E-05 | 0.0E+00 | 3.1E-05 | 0.0E+00 | 1.6E-05 | 0.0E+00 |
| | Portable Equipment | 8 | 5.81E-03 | 1 | 2 | 0.211 | 5 | 0.061 | 1.0E-05 | 1.0E-07 | 3.1E-05 | 3.1E-07 | 1.6E-05 | 1.6E-07 |
| | No equipment involved | 5866 | 2.64E-05 | 2808 | 120 | 0.211 | 2938 | 0.061 | 1.0E-05 | 8.2E-07 | 3.1E-05 | 2.5E-06 | 1.6E-05 | 1.3E-06 |
| Propagation from rooms in Fire Zone FA-00-01 | | | | | | | | | | | | | | |
| 1022 | | | 1.54E-04 | | | 0.057 | | | 1.0E-05 | 9.1E-11 | 3.1E-05 | 2.8E-10 | 1.6E-05 | 1.4E-10 |
| B002 | | | 1.46E-02 | | | 0.057 | | | 1.0E-05 | 8.6E-09 | 3.1E-05 | 2.6E-08 | 1.6E-05 | 1.4E-08 |
| B003 | | | 1.01E-03 | | | 0.057 | | | 1.0E-05 | 6.0E-10 | 3.1E-05 | 1.8E-09 | 1.6E-05 | 9.5E-10 |
| B004 | | | 1.80E-03 | | | 0.057 | | | 1.0E-05 | 1.1E-09 | 3.1E-05 | 3.2E-09 | 1.6E-05 | 1.7E-09 |
| B006 | | | 7.35E-05 | | | 0.057 | | | 1.0E-05 | 4.3E-11 | 3.1E-05 | 1.3E-10 | 1.6E-05 | 6.9E-11 |
| B008 | | | 1.63E-03 | | | 0.057 | | | 1.0E-05 | 9.6E-10 | 3.1E-05 | 2.9E-09 | 1.6E-05 | 1.5E-09 |
| P001 | | | 0.00E+00 | | | 0.057 | | | 1.0E-05 | 0.0E+00 | 3.1E-05 | 0.0E+00 | 1.6E-05 | 0.0E+00 |
| **Localized Fire Threatens Waste Form on Railcar/Trailer in Receipt Area w/o Tractor/SPM (No Diesel Present)** | | | | | | | | | | | | | | |
| | **Localized Fire Threatens TC/SNF on Truck Trailer in Receipt Area w/o Tractor (No Diesel Present)** | | | | | | | | | **2.2E-06** | | | | |
| | **Localized Fire Threatens TC/DPC (TTC) on Railcar/Trailer in Receipt Area w/o Tractor/SPM (No Diesel Present)** | | | | | | | | | | | **6.6E-06** | | |
| | **Localized Fire Threatens TC/DPC on Truck Trailer in Receipt Area w/o Tractor (No Diesel Present)** | | | | | | | | | | | | | **3.4E-06** |
| | | | | | | | | | | | | | | |
| Entry represents a vulnerability due to the Preparation Station | | | | | | | | | TC/SNF (Dry Cavity) | | TC/SNF (Wet Cavity) | | | |
| 1016 | Electrical | 0 | 1.17E-03 | | | 0.211 | | 0.061 | 3.9E-06 | 0.0E+00 | 7.7E-06 | 0.0E+00 | | |
| B001 | HVAC | 0 | 4.85E-03 | | | 0.211 | | 0.061 | 3.9E-06 | 0.0E+00 | 7.7E-06 | 0.0E+00 | | |
| B007 | Mechanical Equipment | 36.97 | 6.44E-03 | 13 | 9 | 0.211 | 14.97 | 0.061 | 3.9E-06 | 4.0E-07 | 7.7E-06 | 7.8E-07 | | |
| B009 | Heat Generating Equipment | 0 | 0.00E+00 | | | 0.211 | | 0.061 | 3.9E-06 | 0.0E+00 | 7.7E-06 | 0.0E+00 | | |
| | Torches, welders, burners | 365 | 8.01E-04 | 365 | | 0.211 | | 0.061 | 3.9E-06 | 1.1E-06 | 7.7E-06 | 2.2E-06 | | |
| | Internal combustion engines | 78 | 3.11E-04 | | | 0.211 | 78 | 0.061 | 3.9E-06 | 5.8E-09 | 7.7E-06 | 1.1E-08 | | |
| | Office/kitchen equipment | 0 | 9.48E-03 | | | 0.211 | | 0.061 | 3.9E-06 | 0.0E+00 | 7.7E-06 | 0.0E+00 | | |
| | Portable Equipment | 8 | 5.81E-03 | | 3 | 0.211 | 5 | 0.061 | 3.9E-06 | 2.1E-08 | 7.7E-06 | 4.2E-08 | | |
| | No equipment involved | 4237 | 2.64E-05 | 30 | 120 | 0.211 | 4087 | 0.061 | 3.9E-06 | 3.2E-08 | 7.7E-06 | 6.2E-08 | | |
| Propagation from rooms in Fire Zone FA-00-01 | | | | | | | | | | | | | | |
| 1001 | | | 9.66E-02 | | | 0.057 | | | 3.9E-06 | 2.2E-08 | 7.7E-06 | 4.3E-08 | | |
| 1022 | | | 1.54E-04 | | | 0.057 | | | 3.9E-06 | 3.5E-11 | 7.7E-06 | 6.8E-11 | | |
| B002 | | | 1.46E-02 | | | 0.057 | | | 3.9E-06 | 3.3E-09 | 7.7E-06 | 6.4E-09 | | |
| B003 | | | 1.01E-03 | | | 0.057 | | | 3.9E-06 | 2.3E-10 | 7.7E-06 | 4.5E-10 | | |
| B004 | | | 1.80E-03 | | | 0.057 | | | 3.9E-06 | 4.1E-10 | 7.7E-06 | 8.0E-10 | | |
| B006 | | | 7.35E-05 | | | 0.057 | | | 3.9E-06 | 1.7E-11 | 7.7E-06 | 3.2E-11 | | |
| B008 | | | 1.63E-03 | | | 0.057 | | | 3.9E-06 | 3.7E-10 | 7.7E-06 | 7.2E-10 | | |
| P001 | | | 0.00E+00 | | | 0.057 | | | 3.9E-06 | 0.0E+00 | 7.7E-06 | 0.0E+00 | | |
| **Localized Fire Threatens TC/SNF in the Preparation Area** | | | | | | | | | | | | | | |
| | **Localized Fire Threatens TC/SNF (Dry Cavity) in the Preparation Station in the Preparation Area** | | | | | | | | | **1.6E-06** | | | | |
| | **Localized Fire Threatens TC/SNF (Wet Cavity) in the Preparation Station in the Preparation Area** | | | | | | | | | | | **3.2E-06** | | |

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Table F5.7-2. Localized Fire Initiating Event Frequencies (Continued)

| Room of Origin (includes comments field as needed) | Ignition Source (If Applicable) | Number in Room | Frequency per Unit (50 years) | Number at Target | Number Near Target | Propagation Probability to Target | Number Away from Target | Propagation Probability to Target | Target Exposure Time (Fraction) | Contribution to IE Frequency (50 years) | Target Exposure Time (Fraction) | Contribution to IE Frequency (50 years) | Target Exposure Time (Fraction) | Contribution to IE Frequency (50 years) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Entry represents a vulnerability due to the CTT and Preparation Station | | | | | | | | | TC/DPC | | STC/DPC | | | |
| 1016 | Electrical | 0 | 1.17E-03 | | | 0.211 | | 0.061 | 2.4E-05 | 0.0E+00 | 3.1E-05 | 0.0E+00 | | |
| B001 | HVAC | 0 | 4.85E-03 | | | 0.211 | | 0.061 | 2.4E-05 | 0.0E+00 | 3.1E-05 | 0.0E+00 | | |
| B007 | Mechanical Equipment | 36.97 | 6.44E-03 | 13.97 | 9 | 0.211 | 14 | 0.061 | 2.4E-05 | 2.6E-06 | 3.1E-05 | 3.3E-06 | | |
| B009 | Heat Generating Equipment | 0 | 0.00E+00 | | | 0.211 | | 0.061 | 2.4E-05 | 0.0E+00 | 3.1E-05 | 0.0E+00 | | |
| | Torches, welders, burners | 365 | 8.01E-04 | | | 0.211 | 365 | 0.061 | 2.4E-05 | 4.3E-07 | 3.1E-05 | 5.5E-07 | | |
| | Internal combustion engines | 78 | 3.11E-04 | | | 0.211 | 78 | 0.061 | 2.4E-05 | 3.5E-08 | 3.1E-05 | 4.5E-08 | | |
| | Office/kitchen equipment | 0 | 9.48E-03 | | | 0.211 | | 0.061 | 2.4E-05 | 0.0E+00 | 3.1E-05 | 0.0E+00 | | |
| | Portable Equipment | 8 | 5.81E-03 | | 3 | 0.211 | 5 | 0.061 | 2.4E-05 | 1.3E-07 | 3.1E-05 | 1.7E-07 | | |
| | No equipment involved | 4237 | 2.64E-05 | 30 | 120 | 0.211 | 4087 | 0.061 | 2.4E-05 | 1.9E-07 | 3.1E-05 | 2.5E-07 | | |
| Propagation from rooms in Fire Zone FA-00-01 | | | | | | | | | | | | | | |
| 1001 | | | 9.66E-02 | | | 0.057 | | | 2.4E-05 | 1.3E-07 | 3.1E-05 | 1.7E-07 | | |
| 1022 | | | 1.54E-04 | | | 0.057 | | | 2.4E-05 | 2.1E-10 | 3.1E-05 | 2.7E-10 | | |
| B002 | | | 1.46E-02 | | | 0.057 | | | 2.4E-05 | 2.0E-08 | 3.1E-05 | 2.6E-08 | | |
| B003 | | | 1.01E-03 | | | 0.057 | | | 2.4E-05 | 1.4E-09 | 3.1E-05 | 1.8E-09 | | |
| B004 | | | 1.80E-03 | | | 0.057 | | | 2.4E-05 | 2.5E-09 | 3.1E-05 | 3.2E-09 | | |
| B006 | | | 7.35E-05 | | | 0.057 | | | 2.4E-05 | 1.0E-10 | 3.1E-05 | 1.3E-10 | | |
| B008 | | | 1.63E-03 | | | 0.057 | | | 2.4E-05 | 2.2E-09 | 3.1E-05 | 2.9E-09 | | |
| P001 | | | 0.00E+00 | | | 0.057 | | | 2.4E-05 | 0.0E+00 | 3.1E-05 | 0.0E+00 | | |
| **Localized Fire Threatens TC/DPC or STC/DPC on CTT in the Preparation Station** | | | | | | | | | | | | | | |
| | **Localized Fire Threatens TC/DPC (all) on CTT in the Preparation Station in the Preparation Area** | | | | | | | | | **3.5E-06** | | | | |
| | **Localized Fire Threatens STC/DPC (all) on CTT in the Preparation Station in the Preparation Area** | | | | | | | | | | | **4.5E-06** | | |
| | | | | | | | | | | | | | | |
| Entry represents a vulnerability due to the Cask Transfer Trolley | | | | | | | | | TC/DPC | | STC/DPC | | STC/TAD | |
| 1008 | Electrical | 0 | 1.17E-03 | | | 0.211 | | 0.061 | 2.0E-06 | 0.0E+00 | 5.0E-06 | 0.0E+00 | 4.3E-06 | 0.0E+00 |
| 2004 | HVAC | 0 | 4.85E-03 | | | 0.211 | | 0.061 | 2.0E-06 | 0.0E+00 | 5.0E-06 | 0.0E+00 | 4.3E-06 | 0.0E+00 |
| | Mechanical Equipment | 7.98 | 6.44E-03 | 7.98 | 0 | 0.211 | | 0.061 | 2.0E-06 | 1.0E-07 | 5.0E-06 | 2.6E-07 | 4.3E-06 | 2.2E-07 |
| | Heat Generating Equipment | 0 | 0.00E+00 | | | 0.211 | | 0.061 | 2.0E-06 | 0.0E+00 | 5.0E-06 | 0.0E+00 | 4.3E-06 | 0.0E+00 |
| | Torches, welders, burners | 5 | 8.01E-04 | | | 0.211 | 5 | 0.061 | 2.0E-06 | 4.9E-10 | 5.0E-06 | 1.2E-09 | 4.3E-06 | 1.0E-09 |
| | Internal combustion engines | 0 | 3.11E-04 | | | 0.211 | | 0.061 | 2.0E-06 | 0.0E+00 | 5.0E-06 | 0.0E+00 | 4.3E-06 | 0.0E+00 |
| | Office/kitchen equipment | 0 | 9.48E-03 | | | 0.211 | | 0.061 | 2.0E-06 | 0.0E+00 | 5.0E-06 | 0.0E+00 | 4.3E-06 | 0.0E+00 |
| | Portable Equipment | 4 | 5.81E-03 | | 2 | 0.211 | 2 | 0.061 | 2.0E-06 | 6.3E-09 | 5.0E-06 | 1.6E-08 | 4.3E-06 | 1.3E-08 |
| | No equipment involved | 1150 | 2.64E-05 | 150 | 120 | 0.211 | 880 | 0.061 | 2.0E-06 | 1.2E-08 | 5.0E-06 | 3.0E-08 | 4.3E-06 | 2.6E-08 |
| Propagation from rooms in Fire Zone FA-32-01 | | | | | | | | | | | | | | |
| 2003 | | | 3.16E-02 | | | 0.057 | | | 2.0E-06 | 3.6E-09 | 5.0E-06 | 9.1E-09 | 4.3E-06 | 7.7E-09 |
| 2006 | | | 3.58E-03 | | | 0.057 | | | 2.0E-06 | 4.1E-10 | 5.0E-06 | 1.0E-09 | 4.3E-06 | 8.8E-10 |
| 2032 | | | 2.50E-04 | | | 0.057 | | | 2.0E-06 | 2.8E-11 | 5.0E-06 | 7.2E-11 | 4.3E-06 | 6.1E-11 |
| **Localized Fire Threatens Waste Form on CTT in the Unloading Room** | | | | | | | | | | | | | | |
| | **Localized Fire Threatens TC/DPC (all) on CTT in the Unloading Room** | | | | | | | | | **1.2E-07** | | | | |
| | **Localized Fire Threatens STC/DPC (all) on CTT in the Unloading Room** | | | | | | | | | | | **3.2E-07** | | |
| | **Localized Fire Threatens STC/TAD on CTT in the Unloading Room** | | | | | | | | | | | | | **2.7E-07** |

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Table F5.7-2. Localized Fire Initiating Event Frequencies (Continued)

| Room of Origin (includes comments field as needed) | Ignition Source (If Applicable) | Number in Room | Frequency per Unit (50 years) | Number at Target | Number Near Target | Propagation Probability to Target | Number Away from Target | Propagation Probability to Target | Target Exposure Time (Fraction) | Contribution to IE Frequency (50 years) | Target Exposure Time (Fraction) | Contribution to IE Frequency (50 years) | Target Exposure Time (Fraction) | Contribution to IE Frequency (50 years) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Entry represents a vulnerability due to the Canister Transfer Machine | | | | | | | | | DPC | | TAD | | | |
| 2004 | Electrical | 0 | 1.17E-03 | | | 0.211 | | 0.061 | 1.1E-06 | 0.0E+00 | 9.1E-07 | 0.0E+00 | | |
| | HVAC | 0 | 4.85E-03 | | | 0.211 | | 0.061 | 1.1E-06 | 0.0E+00 | 9.1E-07 | 0.0E+00 | | |
| | Mechanical Equipment | 7.95 | 6.44E-03 | 7.95 | | 0.211 | | 0.061 | 1.1E-06 | 5.6E-08 | 9.1E-07 | 4.7E-08 | | |
| | Heat Generating Equipment | 0 | 0.00E+00 | | | 0.211 | | 0.061 | 1.1E-06 | 0.0E+00 | 9.1E-07 | 0.0E+00 | | |
| | Torches, welders, burners | 5 | 8.01E-04 | | | 0.211 | 5 | 0.061 | 1.1E-06 | 2.7E-10 | 9.1E-07 | 2.2E-10 | | |
| | Internal combustion engines | 0 | 3.11E-04 | | | 0.211 | | 0.061 | 1.1E-06 | 0.0E+00 | 9.1E-07 | 0.0E+00 | | |
| | Office/kitchen equipment | 0 | 9.48E-03 | | | 0.211 | | 0.061 | 1.1E-06 | 0.0E+00 | 9.1E-07 | 0.0E+00 | | |
| | Portable Equipment | 2 | 5.81E-03 | | 1 | 0.211 | 1 | 0.061 | 1.1E-06 | 1.7E-09 | 9.1E-07 | 1.4E-09 | | |
| | No equipment involved | 1017 | 2.64E-05 | 163 | 120 | 0.211 | 734 | 0.061 | 1.1E-06 | 6.8E-09 | 9.1E-07 | 5.6E-09 | | |
| Propagation from rooms in Fire Zone FA-32-01 | | | | | | | | | | | | | | |
| 2003 | | | 3.16E-02 | | | 0.057 | | | 1.1E-06 | 2.0E-09 | 9.1E-07 | 1.7E-09 | | |
| 2006 | | | 3.58E-03 | | | 0.057 | | | 1.1E-06 | 2.3E-10 | 9.1E-07 | 1.9E-10 | | |
| 2032 | | | 2.50E-04 | | | 0.057 | | | 1.1E-06 | 1.6E-11 | 9.1E-07 | 1.3E-11 | | |
| **Localized Fire Threatens DPC or TAD in the Transfer Room** | | | | | | | | | | | | | | |
| | **Localized Fire Threatens DPC (all) in the Transfer Room** | | | | | | | | | **6.8E-08** | | | | |
| | **Localized Fire Threatens TAD in the Transfer Room** | | | | | | | | | | | **5.6E-08** | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | STC/DPC | | STC/DPC (Dry Cavity, | | STC/DPC (Wet Cavity, | |
| Entry represents a vulnerability due to the DPC Cutting Station | | | | | | | | | (Dry Cavity, Dry Annulus) | | Wet Annulus) | | Wet Annulus) | |
| 1016 | Electrical | 0 | 1.17E-03 | | | 0.211 | | 0.061 | 6.1E-06 | 0.0E+00 | 4.2E-05 | 0.0E+00 | 3.4E-05 | 0.0E+00 |
| B001 | HVAC | 0 | 4.85E-03 | | | 0.211 | | 0.061 | 6.1E-06 | 0.0E+00 | 4.2E-05 | 0.0E+00 | 3.4E-05 | 0.0E+00 |
| B007 | Mechanical Equipment | 36.97 | 6.44E-03 | 13.97 | 7 | 0.211 | 16 | 0.061 | 6.1E-06 | 6.4E-07 | 4.2E-05 | 4.4E-06 | 3.4E-05 | 3.6E-06 |
| B009 | Heat Generating Equipment | 0 | 0.00E+00 | | | 0.211 | | 0.061 | 6.1E-06 | 0.0E+00 | 4.2E-05 | 0.0E+00 | 3.4E-05 | 0.0E+00 |
| | Torches, welders, burners | 365 | 8.01E-04 | | 365 | 0.211 | | 0.061 | 6.1E-06 | 3.8E-07 | 4.2E-05 | 2.6E-06 | 3.4E-05 | 2.1E-06 |
| | Internal combustion engines | 78 | 3.11E-04 | | | 0.211 | 78 | 0.061 | 6.1E-06 | 9.1E-09 | 4.2E-05 | 6.2E-08 | 3.4E-05 | 5.0E-08 |
| | Office/kitchen equipment | 0 | 9.48E-03 | | | 0.211 | | 0.061 | 6.1E-06 | 0.0E+00 | 4.2E-05 | 0.0E+00 | 3.4E-05 | 0.0E+00 |
| | Portable Equipment | 8 | 5.81E-03 | | 3 | 0.211 | 5 | 0.061 | 6.1E-06 | 3.3E-08 | 4.2E-05 | 2.3E-07 | 3.4E-05 | 1.8E-07 |
| | No equipment involved | 4237 | 2.64E-05 | 30 | 120 | 0.211 | 4087 | 0.061 | 6.1E-06 | 4.9E-08 | 4.2E-05 | 3.4E-07 | 3.4E-05 | 2.7E-07 |
| Propagation from rooms in Fire Zone FA-00-01 | | | | | | | | | | | | | | |
| 1001 | | | 9.66E-02 | | | 0.057 | | | 6.1E-06 | 3.4E-08 | 4.2E-05 | 2.3E-07 | 3.4E-05 | 1.9E-07 |
| 1022 | | | 1.54E-04 | | | 0.057 | | | 6.1E-06 | 5.4E-11 | 4.2E-05 | 3.7E-10 | 3.4E-05 | 3.0E-10 |
| B002 | | | 1.46E-02 | | | 0.057 | | | 6.1E-06 | 5.1E-09 | 4.2E-05 | 3.5E-08 | 3.4E-05 | 2.8E-08 |
| B003 | | | 1.01E-03 | | | 0.057 | | | 6.1E-06 | 3.6E-10 | 4.2E-05 | 2.4E-09 | 3.4E-05 | 2.0E-09 |
| B004 | | | 1.80E-03 | | | 0.057 | | | 6.1E-06 | 6.3E-10 | 4.2E-05 | 4.3E-09 | 3.4E-05 | 3.5E-09 |
| B006 | | | 7.35E-05 | | | 0.057 | | | 6.1E-06 | 2.6E-11 | 4.2E-05 | 1.8E-10 | 3.4E-05 | 1.4E-10 |
| B008 | | | 1.63E-03 | | | 0.057 | | | 6.1E-06 | 5.7E-10 | 4.2E-05 | 3.9E-09 | 3.4E-05 | 3.1E-09 |
| P001 | | | 0.00E+00 | | | 0.057 | | | 6.1E-06 | 0.0E+00 | 4.2E-05 | 0.0E+00 | 3.4E-05 | 0.0E+00 |
| **Localized Fire Threatens STC/DPC in DPC Cutting Station in the Preparation Area** | | | | | | | | | | | | | | |
| | **Localized Fire Threatens STC/DPC (all) in DPC Cutting Station (Dry Cavity, Dry Annulus) in the Preparation Area** | | | | | | | | | **1.2E-06** | | | | |
| | **Localized Fire Threatens STC/DPC (all) in DPC Cutting Station (Dry Cavity, Wet Annulus) in the Preparation Area** | | | | | | | | | | | **7.9E-06** | | |
| | **Localized Fire Threatens STC/DPC (all) in DPC Cutting Station (Wet Cavity, Wet Annulus) in the Preparation Area** | | | | | | | | | | | | | **6.4E-06** |

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Table F5.7-2. Localized Fire Initiating Event Frequencies (Continued)

| Room of Origin (includes comments field as needed) | Ignition Source (If Applicable) | Number in Room | Frequency per Unit (50 years) | Number at Target | Number Near Target | Propagation Probability to Target | Number Away from Target | Propagation Probability to Target | Target Exposure Time (Fraction) | Contribution to IE Frequency (50 years) | Target Exposure Time (Fraction) | Contribution to IE Frequency (50 years) | Target Exposure Time (Fraction) | Contribution to IE Frequency (50 years) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | STC/TAD | | STC/TAD | | STC/TAD | |
| Entry represents a vulnerability due to the TAD Closure Station | | | | | | | | | (Dry Cavity, Dry Annulus) | | (Dry Cavity, Wet | | (Wet Cavity Annulus) | |
| 1016 | Electrical | 0 | 1.17E-03 | | | 0.211 | | 0.061 | 1.6E-05 | 0.0E+00 | 7.0E-05 | 0.0E+00 | 4.1E-05 | 0.0E+00 |
| B001 | HVAC | 0 | 4.85E-03 | | | 0.211 | | 0.061 | 1.6E-05 | 0.0E+00 | 7.0E-05 | 0.0E+00 | 4.1E-05 | 0.0E+00 |
| B007 | Mechanical Equipment | 36.97 | 6.44E-03 | 14 | 9.97 | 0.211 | 13 | 0.061 | 1.6E-05 | 1.7E-06 | 7.0E-05 | 4.4E-06 | 4.1E-05 | 3.6E-06 |
| B009 | Heat Generating Equipment | 0 | 0.00E+00 | | | 0.211 | | 0.061 | 1.6E-05 | 0.0E+00 | 7.0E-05 | 0.0E+00 | 4.1E-05 | 0.0E+00 |
| | Torches, welders, burners | 365 | 8.01E-04 | 365 | | 0.211 | | 0.061 | 1.6E-05 | 4.6E-06 | 7.0E-05 | 2.6E-06 | 4.1E-05 | 2.1E-06 |
| | Internal combustion engines | 78 | 3.11E-04 | | | 0.211 | 78 | 0.061 | 1.6E-05 | 2.3E-08 | 7.0E-05 | 6.2E-08 | 4.1E-05 | 5.0E-08 |
| | Office/kitchen equipment | 0 | 9.48E-03 | | | 0.211 | | 0.061 | 1.6E-05 | 0.0E+00 | 7.0E-05 | 0.0E+00 | 4.1E-05 | 0.0E+00 |
| | Portable Equipment | 8 | 5.81E-03 | | 3 | 0.211 | 5 | 0.061 | 1.6E-05 | 8.5E-08 | 7.0E-05 | 2.3E-07 | 4.1E-05 | 1.8E-07 |
| | No equipment involved | 4237 | 2.64E-05 | 30 | 120 | 0.211 | 4087 | 0.061 | 1.6E-05 | 1.3E-07 | 7.0E-05 | 3.4E-07 | 4.1E-05 | 2.7E-07 |
| Propagation from rooms in Fire Zone FA-00-01 | | | | | | | | | | | | | | |
| 1001 | | | 9.66E-02 | | | 0.057 | | | 1.6E-05 | 8.7E-08 | 7.0E-05 | 3.9E-07 | 4.1E-05 | 2.3E-07 |
| 1022 | | | 1.54E-04 | | | 0.057 | | | 1.6E-05 | 1.4E-10 | 7.0E-05 | 6.2E-10 | 4.1E-05 | 3.6E-10 |
| B002 | | | 1.46E-02 | | | 0.057 | | | 1.6E-05 | 1.3E-08 | 7.0E-05 | 5.9E-08 | 4.1E-05 | 3.4E-08 |
| B003 | | | 1.01E-03 | | | 0.057 | | | 1.6E-05 | 9.1E-10 | 7.0E-05 | 4.1E-09 | 4.1E-05 | 2.4E-09 |
| B004 | | | 1.80E-03 | | | 0.057 | | | 1.6E-05 | 1.6E-09 | 7.0E-05 | 7.3E-09 | 4.1E-05 | 4.2E-09 |
| B006 | | | 7.35E-05 | | | 0.057 | | | 1.6E-05 | 6.6E-11 | 7.0E-05 | 3.0E-10 | 4.1E-05 | 1.7E-10 |
| B008 | | | 1.63E-03 | | | 0.057 | | | 1.6E-05 | 1.5E-09 | 7.0E-05 | 6.6E-09 | 4.1E-05 | 3.8E-09 |
| **Localized Fire Threatens STC/TAD in TAD Closure Station in the Preparation Area** | | | | | | | | | | | | | | |
| | **Localized Fire Threatens STC/TAD in TAD Closure Station (Dry Cavity, Dry Annulus) in the Preparation Area** | | | | | | | | | **6.6E-06** | | | | |
| | **Localized Fire Threatens STC/TAD in TAD Closure Station (Dry Cavity, Wet Annulus) in the Preparation Area** | | | | | | | | | | | **8.0E-06** | | |
| | **Localized Fire Threatens STC/TAD in TAD Closure Station (Wet Cavity, Wet Annulus) in the Preparation Area** | | | | | | | | | | | | | **6.4E-06** |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| Entry represents a vulnerability due to the Site Transporter | | | | | | | | | TAD in AO | | | | | |
| 1007 | Electrical | 0 | 1.17E-03 | | | 0.211 | | 0.061 | 3.7E-06 | 0.0E+00 | | | | |
| 2004 | HVAC | 0 | 4.85E-03 | | | 0.211 | | 0.061 | 3.7E-06 | 0.0E+00 | | | | |
| | Mechanical Equipment | 7 | 6.44E-03 | 5 | | 0.211 | 2 | 0.061 | 3.7E-06 | 1.2E-07 | | | | |
| | Heat Generating Equipment | 0 | 0.00E+00 | | | 0.211 | | 0.061 | 3.7E-06 | 0.0E+00 | | | | |
| | Torches, welders, burners | 5 | 8.01E-04 | | | 0.211 | 5 | 0.061 | 3.7E-06 | 9.0E-10 | | | | |
| | Internal combustion engines | 61 | 3.11E-04 | 61 | | 0.211 | | 0.061 | 3.7E-06 | 6.9E-08 | | | | |
| | Office/kitchen equipment | 0 | 9.48E-03 | | | 0.211 | | 0.061 | 3.7E-06 | 0.0E+00 | | | | |
| | Portable Equipment | 2 | 5.81E-03 | 1 | | 0.211 | 1 | 0.061 | 3.7E-06 | 2.3E-08 | | | | |
| | No equipment involved | 1199 | 2.64E-05 | 182 | 120 | 0.211 | 897 | 0.061 | 3.7E-06 | 2.5E-08 | | | | |
| Propagation from rooms in Fire Zone FA-32-01 | | | | | | | | | | | | | | |
| 2003 | | | 3.16E-02 | | | 0.057 | | | 3.7E-06 | 6.6E-09 | | | | |
| 2006 | | | 3.58E-03 | | | 0.057 | | | 3.7E-06 | 7.5E-10 | | | | |
| 2032 | | | 2.50E-04 | | | 0.057 | | | 3.7E-06 | 5.3E-11 | | | | |
| **Localized Fire Threatens TAD in AO in Loading Room** | | | | | | | | | | **2.5E-07** | | | | |
| | | | | | | | | | | | | | | |

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Table F5.7-2. Localized Fire Initiating Event Frequencies (Continued)

| Room of Origin (includes comments field as needed) | Ignition Source (If Applicable) | Number in Room | Frequency per Unit (50 years) | Number at Target | Number Near Target | Propagation Probability to Target | Number Away from Target | Propagation Probability to Target | Target Exposure Time (Fraction) | Contribution to IE Frequency (50 years) | Target Exposure Time (Fraction) | Contribution to IE Frequency (50 years) | Target Exposure Time (Fraction) | Contribution to IE Frequency (50 years) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Entry represents a vulnerability due to the Site Transporter | | | | | | | | | TAD in AO | | | | | |
| 1023 | Electrical | 0 | 1.17E-03 | | | 0.211 | | 0.061 | 9.7E-06 | 0.0E+00 | | | | |
| | HVAC | 3 | 4.85E-03 | | 3 | 0.211 | | 0.061 | 9.7E-06 | 3.0E-08 | | | | |
| | Mechanical Equipment | 4 | 6.44E-03 | 2 | 2 | 0.211 | | 0.061 | 9.7E-06 | 1.5E-07 | | | | |
| | Heat Generating Equipment | 0 | 0.00E+00 | | | 0.211 | | 0.061 | 9.7E-06 | 0.0E+00 | | | | |
| | Torches, welders, burners | 0 | 8.01E-04 | | | 0.211 | | 0.061 | 9.7E-06 | 0.0E+00 | | | | |
| | Internal combustion engines | 39 | 3.11E-04 | 39 | | 0.211 | | 0.061 | 9.7E-06 | 1.2E-07 | | | | |
| | Office/kitchen equipment | 0 | 9.48E-03 | | | 0.211 | | 0.061 | 9.7E-06 | 0.0E+00 | | | | |
| | Portable Equipment | 0 | 5.81E-03 | | | 0.211 | | 0.061 | 9.7E-06 | 0.0E+00 | | | | |
| | No equipment involved | 434 | 2.64E-05 | 280 | 120 | 0.211 | 34 | 0.061 | 9.7E-06 | 7.8E-08 | | | | |
| **Localized Fire Threatens TAD in AO in Bolting Room** | | | | | | | | | | 3.8E-07 | | | | |

NOTE: The blank cells in this table are intentional and have been verified.

AO = aging overpack; CTT = cask transfer trolley; DPC = dual-purpose canister; HVAC = heating, ventilation, and air conditioning; IE = initiating event; SNF = spent nuclear fuel; SPM = site prime mover; STC = shielded transfer cask; TAD = transportation, aging, and disposal canister; TC = transportation cask; TTC = a transportation cask that is upended using a tilt frame.

Source: Original

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Table F5.7-3. Localized Fire Initiating Events with Multiple Rooms of Origin

| Rooms | Vulnerability | Justification |
|---|---|---|
| 1001<br>1016<br>B001<br>B007<br>B009 | Railcar/Truck (Diesel) | Rooms 1001 and 1016 are open to each other due to open doors as the Railcar/Truck moves from 1001 to 1016. Room 1016 is open to rooms B001, B007, and B009. |
| 1016<br>B001<br>B007<br>B009 | Railcar/Truck (Diesel)<br>Preparation Station<br>DPC Cutting Station<br>Cask Transfer Trolley | Room 1016 is open to rooms B001, B007, and B009 at all times. |
| 1008<br>2004 | Cask Transfer Trolley | Rooms open to each other through the port slide gates as the cask is accessed from room 2004 |

Source: Original

Table F5.7-4. Large Fire Initiating Event Frequencies

| Large Fire Threatens Waste Form In Fire Zones Containing Vulnerable Waste Forms | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Large fires are those that spread beyond the boundaries of a fire area, up through those that breach the building boundary. | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | Total Ignition Frequency | Propagation Probability Beyond Fire -rated Area | | | Target Exposure Time (Fraction) | Contribution to IE Frequency |
| | | | | | | | | | | |
| **Large Fire Threatens TC/SNF or TC/DPC (all) (Diesel Present)** | | | | | 2.51E+00 | 0.169 | | | 1.7E-06 | 7.1E-07 |
| **Large Fire Threatens TC/SNF (No Diesel)** | | | | | 2.51E+00 | 0.169 | | | 1.4E-05 | 6.0E-06 |
| **Large Fire Threatens TC/DPC (TTC) (No Diesel)** | | | | | 2.51E+00 | 0.169 | | | 5.6E-05 | 2.4E-05 |
| **Large Fire Threatens TC/DPC (No Diesel)** | | | | | 2.51E+00 | 0.169 | | | 3.9E-05 | 1.7E-05 |
| **Large Fire Threatens DPC (all) in CTM** | | | | | 2.51E+00 | 0.169 | | | 1.1E-06 | 4.7E-07 |
| **Large Fire Threatens STC/DPC (all)** | | | | | 2.51E+00 | 0.169 | | | 4.1E-05 | 1.7E-05 |
| **Large Fire Threatens STC/DPC (all) (Dry Cavity, Wet Annulus)** | | | | | 2.51E+00 | 0.169 | | | 4.2E-05 | 1.8E-05 |
| **Large Fire Threatens STC/DPC (all) (Wet Cavity, Wet Annulus)** | | | | | 2.51E+00 | 0.169 | | | 3.4E-05 | 1.4E-05 |
| **Large Fire Threatens TC/SNF (Wet Cavity)** | | | | | 2.51E+00 | 0.169 | | | 7.7E-06 | 3.3E-06 |
| **Large Fire Threatens STC/TAD (Wet Cavity, Wet Annulus)** | | | | | 2.51E+00 | 0.169 | | | 4.1E-05 | 1.7E-05 |
| **Large Fire Threatens STC/TAD (Dry Cavity, Wet Annulus)** | | | | | 2.51E+00 | 0.169 | | | 7.0E-05 | 3.0E-05 |
| **Large Fire Threatens STC/TAD (Dry Cavity, Dry Annulus)** | | | | | 2.51E+00 | 0.169 | | | 1.9E-05 | 7.9E-06 |
| **Large Fire Threatens TAD in CTM** | | | | | 2.51E+00 | 0.169 | | | 9.1E-07 | 3.9E-07 |
| **Large Fire Threatens TAD in AO** | | | | | 2.51E+00 | 0.169 | | | 1.3E-05 | 5.3E-06 |

NOTE: AO = aging overpack; CTM = canister transfer machine; DPC = dual-purpose canister; IE = initiating event; SNF = spent nuclear fuel; STC = shielded transfer cask; TAD = transportation, aging, and disposal canister; TC = transportation cask.

Source: Original

Table F5.7-5. Fire Initiating Events Results Summary

| Initiating Event | Equipment | Mean | Median | 97.5% Value | Error Factor | Type |
|---|---|---|---|---|---|---|
| **Localized Fire Threatens TC/SNF or TC/DPC (incl. TTC) on Railcar/Trailer in Receipt Area w/Tractor (Diesel Present)** | **Railcar/Truck** | | | | | |
| Localized Fire Threatens TC/SNF or TC/DPC (incl. TTC) on Railcar/Trailer in Receipt Area w /Tractor (Diesel Present) | | 4.7E-07 | 4.2E-07 | 1.1E-06 | 2.2E+00 | Lognormal |
| **Railcar/Trailer in Receipt Area w/o Tractor/SPM (No Diesel Present)** | **Railcar/Truck** | | | | | |
| Localized Fire Threatens TC/SNF on Truck Trailer in Receipt Area w /o Tractor (No Diesel Present) | | 2.5E-06 | 2.3E-06 | 5.7E-06 | 2.2E+00 | Lognormal |
| Localized Fire Threatens TC/DPC (TTC) on Railcar/Trailer in Receipt Area w /o Tractor/SPM (No Diesel Present) | | 7.6E-06 | 6.8E-06 | 1.7E-05 | 2.2E+00 | Lognormal |
| Localized Fire Threatens TC/DPC on Truck Trailer in Receipt Area w /o Tractor (No Diesel Present) | | 4.0E-06 | 3.6E-06 | 9.0E-06 | 2.2E+00 | Lognormal |
| **Localized Fire Threatens TC/SNF in the Preparation Area** | **Preparation Station** | | | | | |
| Localized Fire Threatens TC/SNF (Dry Cavity) in the Preparation Station in the Preparation Area | | 1.9E-06 | 1.7E-06 | 4.2E-06 | 2.1E+00 | Lognormal |
| Localized Fire Threatens TC/SNF (Wet Cavity) in the Preparation Station in the Preparation Area | | 3.6E-06 | 3.3E-06 | 8.2E-06 | 2.1E+00 | Lognormal |
| **Localized Fire Threatens TC/DPC or STC/DPC on CTT in the Preparation Station** | **Cask Transfer Trolley** | | | | | |
| Localized Fire Threatens TC/DPC (all) on CTT in the Preparation Station in the Preparation Area | | 4.2E-06 | 3.8E-06 | 9.8E-06 | 2.2E+00 | Lognormal |
| Localized Fire Threatens STC/DPC (all) on CTT in the Preparation Station in the Preparation Area | | 5.4E-06 | 4.8E-06 | 1.3E-05 | 2.2E+00 | Lognormal |
| **Localized Fire Threatens Waste Form on CTT in the Unloading Room** | **Cask Transfer Trolley** | | | | | |
| Localized Fire Threatens TC/DPC (all) on CTT in the Unloading Room | | 1.5E-07 | 1.4E-07 | 3.5E-07 | 2.2E+00 | Lognormal |
| Localized Fire Threatens STC/DPC (all) on CTT in the Unloading Room | | 3.9E-07 | 3.5E-07 | 8.9E-07 | 2.2E+00 | Lognormal |
| Localized Fire Threatens STC/TAD on CTT in the Unloading Room | | 3.3E-07 | 3.0E-07 | 7.6E-07 | 2.2E+00 | Lognormal |
| **Localized Fire Threatens DPC or TAD in the Transfer Room** | **Canister Transfer Machine** | | | | | |
| Localized Fire Threatens DPC (all) in the Transfer Room | | 8.3E-08 | 7.4E-08 | 1.9E-07 | 2.2E+00 | Lognormal |
| Localized Fire Threatens TAD in the Transfer Room | | 6.9E-08 | 6.2E-08 | 1.6E-07 | 2.2E+00 | Lognormal |
| **Localized Fire Threatens STC/DPC in DPC Cutting Station in the Preparation Area** | **DPC Cutting Station** | | | | | |
| Localized Fire Threatens STC/DPC (all) in DPC Cutting Station (Dry Cavity, Dry Annulus) in the Preparation Area | | 1.2E-06 | 1.1E-06 | 2.8E-06 | 2.2E+00 | Lognormal |
| Localized Fire Threatens STC/DPC (all) in DPC Cutting Station (Dry Cavity, Wet Annulus) in the Preparation Area | | 8.3E-06 | 7.4E-06 | 1.9E-05 | 2.2E+00 | Lognormal |
| Localized Fire Threatens STC/DPC (all) in DPC Cutting Station (Wet Cavity, Wet Annulus) in the Preparation Area | | 6.8E-06 | 6.0E-06 | 1.5E-05 | 2.2E+00 | Lognormal |
| **Localized Fire Threatens STC/TAD in TAD Closure Station in the Preparation Area** | **TAD Closure Station** | | | | | |
| Localized Fire Threatens STC/TAD in TAD Closure Station (Dry Cavity, Dry Annulus) in the Preparation Area | | 7.5E-06 | 6.8E-06 | 1.7E-05 | 2.1E+00 | Lognormal |
| Localized Fire Threatens STC/TAD in TAD Closure Station (Dry Cavity, Wet Annulus) in the Preparation Area | | 8.6E-06 | 7.6E-06 | 2.0E-05 | 2.2E+00 | Lognormal |
| Localized Fire Threatens STC/TAD in TAD Closure Station (Wet Cavity, Wet Annulus) in the Preparation Area | | 6.8E-06 | 6.1E-06 | 1.6E-05 | 2.2E+00 | Lognormal |
| **Localized Fire Threatens TAD in AO in Loading Room** | **Site Transporter** | | | | | |
| Localized Fire Threatens TAD in AO in Loading Room | | 2.9E-07 | 2.6E-07 | 6.8E-07 | 2.2E+00 | Lognormal |
| **Localized Fire Threatens TAD in AO in Bolting Room** | **Site Transporter** | | | | | |
| Localized Fire Threatens TAD in AO in Bolting Room | | 3.5E-07 | 3.1E-07 | 8.3E-07 | 2.2E+00 | Lognormal |

Table F5.7-5. Fire Initiating Events Results Summary (Continued)

| Initiating Event | Mean | Median | 97.5% Value | Error Factor | Type |
|---|---|---|---|---|---|
| Large Fire Threatens TC/SNF or TC/DPC (all) (Diesel Present) | 7.9E-07 | 7.0E-07 | 1.8E-06 | 2.2E+00 | Lognormal |
| Large Fire Threatens TC/SNF (No Diesel) | 6.7E-06 | 5.9E-06 | 1.6E-05 | 2.2E+00 | Lognormal |
| Large Fire Threatens TC/DPC (TTC) (No Diesel) | 2.6E-05 | 2.3E-05 | 6.1E-05 | 2.2E+00 | Lognormal |
| Large Fire Threatens TC/DPC (No Diesel) | 1.8E-05 | 1.6E-05 | 4.3E-05 | 2.2E+00 | Lognormal |
| Large Fire Threatens DPC (all) in CTM | 5.2E-07 | 4.6E-07 | 1.2E-06 | 2.3E+00 | Lognormal |
| Large Fire Threatens STC/DPC (all) | 1.9E-05 | 1.7E-05 | 4.5E-05 | 2.1E+00 | Lognormal |
| Large Fire Threatens STC/DPC (all) (Dry Cavity, Wet Annulus) | 2.0E-05 | 1.7E-05 | 4.6E-05 | 2.4E+00 | Lognormal |
| Large Fire Threatens STC/DPC (all) (Wet Cavity, Wet Annulus) | 1.6E-05 | 1.4E-05 | 3.7E-05 | 2.3E+00 | Lognormal |
| Large Fire Threatens TC/SNF (Wet Cavity) | 3.6E-06 | 3.2E-06 | 8.4E-06 | 2.2E+00 | Lognormal |
| Large Fire Threatens STC/TAD (Wet Cavity, Wet Annulus) | 1.9E-05 | 1.7E-05 | 4.4E-05 | 2.2E+00 | Lognormal |
| Large Fire Threatens STC/TAD (Dry Cavity, Wet Annulus) | 3.3E-05 | 2.9E-05 | 7.7E-05 | 2.2E+00 | Lognormal |
| Large Fire Threatens STC/TAD (Dry Cavity, Dry Annulus) | 8.8E-06 | 7.8E-06 | 2.1E-05 | 2.2E+00 | Lognormal |
| Large Fire Threatens TAD in CTM | 4.3E-07 | 3.8E-07 | 1.0E-06 | 2.2E+00 | Lognormal |
| Large Fire Threatens TAD in AO | 5.9E-06 | 5.3E-06 | 1.4E-05 | 2.2E+00 | Lognormal |

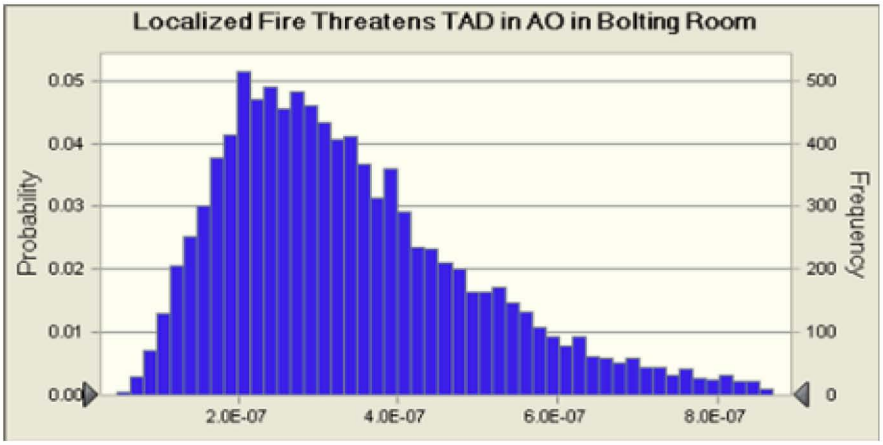
NOTE: AO = aging overpack; CTM = canister transfer machine; CTT = cask transfer trolley; DPC = dual-purpose canister; SNF = spent nuclear fuel; SPM = site prime mover; STC = shielded transfer cask; TAD = transportation, aging, and disposal canister; TC = transportation cask; TTC = a transportation cask that is upended using a tilt frame.

Source: Original

**Forecast: Localized Fire Threatens TAD in AO in Bolting Room** **Cell: K213**

Summary:

Entire range is from 4.8E-08 to 1.7E-06
Base case is 3.1E-07
After 10,000 trials, the std. error of the mean is 1.8E-09




| Statistics: | Forecast values |
|---|---|
| Trials | 10,000 |
| Mean | 3.5E-07 |
| Median | 3.1E-07 |
| Mode | --- |
| Standard Deviation | 1.8E-07 |
| Variance | 3.4E-14 |
| Skewness | 1.57 |
| Kurtosis | 6.98 |
| Coeff. of Variability | 0.5229 |
| Minimum | 4.8E-08 |
| Maximum | 1.7E-06 |
| Range Width | 1.7E-06 |
| Mean Std. Error | 1.8E-09 |

**Forecast: Localized Fire Threatens TAD in AO in Bolting Room (cont'd)** **Cell: K213**

| Percentiles: | Forecast values |
|---|---|
| 0% | 4.8E-08 |
| 10% | 1.7E-07 |
| 20% | 2.1E-07 |
| 30% | 2.4E-07 |
| 40% | 2.8E-07 |
| 50% | 3.1E-07 |
| 60% | 3.5E-07 |
| 70% | 4.0E-07 |
| 80% | 4.7E-07 |
| 90% | 5.8E-07 |
| 100% | 1.7E-06 |

Figure F5.7-1. Example of Crystal Ball Output for a Fire Initiating Event

Source: Original

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# APPENDIX F.I
# DEFINITION OF IGNITION SOURCE CATEGORY

Table F.I-1. Ignition Source Categories

| Ignition Source Category | NFPA Equipment Categories Included |
|---|---|
| Electrical Equipment | **Fixed wiring**; **transformer, associated over current or disconnect equipment**; **meter, meter box**; power switch gear, over current protection devices; switch, receptacle, outlet; lighting fixture, lamp holder, ballast, sign; cord, plug; lamp, light bulb; unclassified or **unknown-type electrical distribution equipment**; electronic equipment; rectifier, charger |
| Mechanical and Electrical HVAC Equipment | **Central heating unit**; water heater; **fixed, stationary local heating unit**; central air conditioning, refrigeration equipment; water cooling device, tower; **fixed, stationary local refrigeration unit**; fixed, stationary local air conditioning unit; chimney, gas vent flue; chimney connector, vent connector; **heat transfer system**; unclassified heating systems; **other HVAC equipment;** and unclassified air conditioning, refrigeration systems |
| Mechanical Equipment | Chemical process equipment; **waste recovery equipment**; **working, shaping machine**; coating machine; painting machine; unclassified process equipment; **separate motor or generator**; separate pump or compressor; conveyor, and **unknown mechanical equipment** |
| Fixed Heat-Generating Process Equipment | **Casting, molding, or forging equipment**; heat treating equipment; **dryers; furnaces; and incinerators**. |
| Torches/Welders | **Torches, welders, and burners** |
| Internal Combustion Engines | **Internal combustion engines** |
| Office and Kitchen Equipment | **Television, radio, stereo; fixed food warming appliance; fixed or stationary oven;** and all other categories |
| Portable and Special Equipment | **Portable local heating unit**; **hand tools**; portable appliance designed to produce controlled heat; **portable appliance designed not to produce heat; unclassified special equipment; unclassified service or maintenance equipment; biomedical equipment or device** |
| No Equipment Involved | **No equipment** |

NOTE: The entries shown in bold in the table were those that had caused fires in the data set. The other entries were included in the data set retrieval, but no fires were attributed to them. Given that there were only a total of 188 fires in the entire data set, the fact that certain items had not been associated with an observed fire cannot be taken to mean that they can be eliminated as potential ignition sources.

Source: Ref. F2.65

# APPENDIX F.II
# DERIVATION OF IGNITION SOURCE DISTRIBUTION AND FIRE PROPAGATION PROBABILITIES

Three independent data sets concerning fires in radioactive material working facilities (Tables F.II-1 through F.II-3) have been analyzed for statistical confidence. The data sets are in the format of a tally; each sample (fire) is placed in the appropriate category (e.g., equipment type, extent of flame damage), and the reported figure for each category is the number of fires that pertained to the category. All of these data sets reflect the operating history of nuclear facilities of non-combustible construction as defined by the NFPA. The NFPA data is taken from *Structure Fires in Radioactive Material Working Facilities and Nuclear Energy Plants of Non-Combustible Construction* (Ref. F2.65).

The first data set provides a distribution of fire ignition as a function of the ignition source category, as defined in Appendix .FI. Table F.II -1 provides a summary of that data.

Table F.II-1 Fires in Radioactive Material Working Facilities by Originating Equipment

| Ignition Source Category | Fires | |
|---|---|---|
| Electrical | 16 | 9% |
| Mechanical/Electrical HVAC | 15 | 8% |
| Mechanical | 26 | 14% |
| Heat Generating | 29 | 16% |
| Torches/Welders | 41 | 22% |
| Internal Combustion | 4 | 2% |
| Offices/Kitchen Equipment | 12 | 6% |
| Portable Equipment | 19 | 10% |
| No Equipment | 25 | 13% |
| | | |
| Total | 187 | 100% |

NOTE: HVAC = heating, ventilation, and air conditioning.

Source: Ref. F2.65

Table F.II-2 Structure Fires in Radioactive Material Working Facilities and Nuclear Energy Plants of Non-Combustible Construction and in which No Automatic Suppression System Was Present or the Automatic Suppression System Failed to Operate

| Extent of Flame Damage | Fires | |
|---|---|---|
| Confined to object of origin | 54 | 63% |
| Confined to part of room/area of origin | 13 | 15% |
| Confined to room of origin | 0 | 0 |
| Confined to fire-rated compartment of origin | 5 | 6% |
| Confined to floor of origin | 0 | 0 |
| Confined to structure of origin | 14 | 16% |
| Extended beyond structure of origin | 0 | 0 |
| | | |
| Total | 86 | 100% |

Source: Ref. F2.65

Table F.II-3 Structure Fires in Radioactive Material Working Facilities and Nuclear Energy Plants of Non-Combustible Construction and in which the Fire Was Too Small to Activate the Automatic Suppression System or the Automatic System Operated Properly

| Extent of Flame Damage | Fires | |
|---|---|---|
| Confined to object of origin | 40 | 56% |
| Confined to part of room/area of origin | 23 | 32% |
| Confined to room of origin | 2 | 3% |
| Confined to fire-rated compartment of origin | 0 | 0% |
| Confined to floor of origin | 5 | 7% |
| Confined to structure of origin | 2 | 3% |
| Extended beyond structure of origin | 0 | 0 |
| | | |
| Total | 72 | 100% |

Source: Ref. F2.65

The method chosen for calculating the confidence interval of the data is the margin of error calculation:

$$ME = \sqrt{\frac{p(1-p)}{n}} \times t \qquad \text{(Eq. F.II-1)}$$

where:

$ME$ = Margin of Error

$p$ = Event Probability

$n$ = Number of Samples

$t$ = $t$-distribution value (see Table F.II-4)