WORKBOOK 9.2: EXPLOSIVE CAPACITY AND DISTANCE TABLES

Purpose: To present information about explosive capacity and safe distance tables for various types of bombs, IEDs, and high explosives

Table 1: ATF — Vehicle Bomb Explosion Hazard and Evacuation Distance

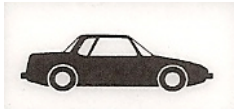
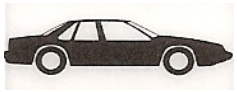
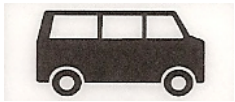
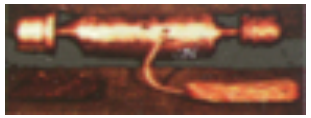
	Vehicle Description	Maximum Explosives Capacity	Lethal Air Blast Range	Minimum Evacuation Distance	Falling Glass Hazard
	Compact Sedan	227 kilograms (In trunk)	30 meters	457 meters	381 meters
	Full Size Sedan	455 kilograms (In trunk)	38 meters	534 meters	534 meters
	Passenger Van or Cargo Van	1,818 kilograms	61 meters	838 meters	838 meters
	Small Box Van (4.3 Meter Box)	4,545 kilograms	91 meters	1,143 meters	1,143 meters
	Box Van or Water/ Fuel Truck	13,636 kilograms	137 meters	1,982 meters	1,982 meters
	Semi-Trailer	27,273 kilograms	183 meters	2,134 meters	2,134 meters

Table 2: DOD—IED Safe Standoff Distance Sheet

	Threat Description	Explosives Mass[1] (TNT equivalent)	Building Evacuation Distance[2]	Outdoor Evacuation Distance[3]
High Explosives (TNT Equivalent)	 Pipe Bomb	2.3 kilograms	21 meters	259 meters
	 Suicide Belt	4.5 kilograms	27 meters	330 meters
	 Suicide Vest	9 kilograms	34 meters	415 meters
	 Briefcase or Suitcase Bomb	23 kilograms	46 meters	564 meters
	 Compact Sedan	227 kilograms	98 meters	457 meters
		454 kilograms	122 meters	534 meters

	Threat Description	Explosives Mass[1] (TNT equivalent)	Building Evacuation Distance[2]	Outdoor Evacuation Distance[3]
	Full Size Sedan			
High Explosives (TNT Equivalent)	 Passenger or Cargo Van	1,814 kilograms	195 meters	838 meters
	 Small Moving Van or Delivery Truck	4,536 kilograms	263 meters	1,143 meters
	 Water Truck	13,608 kilograms	375 meters	1,982 meters
	 Semi-trailer	27,216 kilograms	475 meters	2,134 meters

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Threat Description	LPG Mass (Volume)[1]	Fireball Diameter[4]	Safe Distance[5]
 Small LPG Tank	9 kg/19 liters	12 meters	48 meters
 Large LPG Tank	45 kg/95 liters	21 meters	84 meters
 Commercial or Residential LPG Tank	907 kg/1,893 liters	56 meters	224 meters
 Small LPG Truck	3,630 kg/7,570 liters	89 meters	356 meters
 Semi-tanker LPG	18,144 kg/37,850 liters	152 meters	608 meters

(1) Based on the maximum amount of material that could reasonably fit into a container or vehicle; variations possible.
(2) Governed by the ability of an unreinforced building to withstand severe damage or collapse.
(3) Governed by the greater of fragment throw distance or glass breakage or falling glass hazard distance. These distances can be reduced for personnel wearing ballistic protection. Note that the pipe bomb, suicide belt or vest, and briefcase or suitcase bomb are assumed to have a fragmentation characteristic that requires greater standoff distances than an equal amount of explosives in a vehicle.
(4) Assuming efficient mixing of the flammable gas with ambient air.
(5) Determined by US firefighting practices wherein safe distances are approximately 4 times the flame height. Note that an LPG tank filled with high explosives would require a significantly greater standoff distance than if it were filled with LPG.

Note that Table 1 and Table 2 provide slightly different calculations, based on rounding up or rounding down of numbers. For example, Table 1 shows that the maximum explosives capacity for a full size sedan is 455 kg; Table 2 shows that the maximum explosives capacity for the same vehicle is 454 kg. Emphasize that this slight difference does not affect accuracy of calculations, as they are estimated distances.

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