

Appendix G
MSD Calculation Sheets
(DDESB TP 15 and 16 and
HNC-ED-CS-S-98-7
available upon request)

Technical Paper

No. 16
Revision 1

METHODOLOGIES FOR CALCULATING PRIMARY FRAGMENT CHARACTERISTICS



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**Department of Defense Explosives Safety Board
Alexandria, VA
1 December 2003**

Table B-1. High Explosive Bombs And Projectiles (continued)

Munition	Explosive Weight (lbs) (kg)	Diameter (in) (mm)	Maximum Fragment Weight (lbs) (g)	Fragment Initial Velocity (ft/s) (m/s)	Maximum Fragment Range		Hazardous Fragment Distance (ft) (m)
					Horizontal (ft) (m)	Vertical (ft) (m)	
					75 mm Mk I	1.64 0.744	
75 mm M48	1.47 0.667	2.95 75.00	0.1530 69.4109	3,471 1,058.0	1,701 518.5	1,297 395.3	234 71.3
76 mm M352	1.46 0.662	2.99 76.00	0.2295 104.0989	2,507 764.1	1,742 531.0	1,291 393.5	253 77.1
81 mm M43	1.29 0.585	3.19 81.00	0.0573 25.9907	4,933 1,503.6	1,395 425.2	1,097 334.4	230 70.1
90 mm HEAT M371 & M431	1.20 0.544	3.54 90.00	0.1240 56.2452	3,075 937.3	1,546 471.2	1,170 356.6	209 63.7
60 mm M49A5	0.79 0.358	2.36 60.00	0.0166 7.5296	6,290 1,917.2	1,013 308.8	806 245.7	200 61.0
66 mm M72A2 (LAW) Rocket (Case Only)	0.67 0.304	2.60 66.00	0.0008 0.3629	10,015 3,052.6	437 133.2	358 109.1	200 61.0
57 mm M306	0.55 0.249	2.24 57.00	0.0129 5.8540	3,495 1,065.3	1,073 327.1	828 252.4	200 61.0
57 mm Chinese	0.51 0.231	2.24 57.00	0.0194 8.7978	5,500 1,676.4	1,032 314.6	821 250.2	200 61.0
2.36 " Rocket (Case Only)	0.50 0.227	2.36 59.94	0.0010 0.4695	8,888 2,709.1	809 246.6	645 196.6	200 61.0
4 lb Frag Bomb M83	0.50 0.227	3.12 79.25	0.0762 34.5527	3,266 995.5	1,363 415.4	1,040 317.0	209 63.7
60 mm M49A3	0.42 0.191	2.36 60.00	0.0237 10.7387	5,114 1,558.7	1,080 329.2	856 260.9	200 61.0
40 mm MK2	0.187 0.085	1.57 40.00	0.0331 14.9959	3,605 1,098.8	1,095 333.8	847 258.2	200 61.0
3"/50 AP Mk 29	0.14 0.064	3.00 76.20	0.4299 195.0079	1,058 322.5	1,595 486.2	1,117 340.5	200 61.0
25 mm M792	0.096 0.043	0.98 25.00	0.0082 3.7188	4,256 1,297.2	756 230.4	597 182.0	200 61.0
37 mm MK II	0.053 0.024	1.46 37.00	0.0245 11.1130	3,302 1,006.4	980 299	754 230	200 61
20 mm M56A4	0.026 0.012	0.79 20.00	0.0006 0.2642	3,183 970.2	318 96.9	251 76.5	200 61.0