Appendix G MSD Calculation Sheets

FRAGMENTATION DATA REVIEW FORM

Category:	HE Rounds	DODIC:	B632
Munition:	60 mm M49A3	Date Record Created:	7/30/2004
		Last Date Record Updated:	7/30/2004
Primary Database Category:	mortar	Individual Last Updated Record:	Crull
Secondary Database Category:	60 mm	Date Record Retired:	
Tertiary Database Category:	Comp B		

Munition Information and Fragmentation Characteristics

Explosive Type:	Comp B
Explosive Weight (lb):	0.42000
Diameter (in):	2.3622
Max Fragment Weight (lb):	0.023675
Critical Fragment Velocity (fps):	5114

Theoretical Calculated Fragment Range

Range to No More Than 1 Hazardous Fragment/600 Square FeetA (ft):	200
Vertical Range of Maximum Weight Fragment (ft):	856
Horizontal Range of Maximum Weight Fragment (ft):	1080

Overpressure Distances

Inhabited Building Distance (12 psi), K40 Distance:	34
Inhabited Building Distance (09 psi), K50 Distance:	42
Intentional MSD (0065 psi), K328 Distance:	277

Minimum Thickness to Prevent Perforation

4000 psi Concrete (Prevent Spall):	2.81
Mild Steel:	0.53
Hard Steel:	0.43
Aluminum:	1.14
LEXAN:	3.85
Plexi-glass:	2.43
Bullet Resist Glass:	1.89

Required Sandbag Thickness

Max Fragment Weight (lb)SB:	0.023675
Critical Fragment Velocity (fps)SB:	5114
Kinetic Energy 106 (lb-ft2/s2)SB:	0.3096
Required Wall Roof Sandbag Thickness (in)SB:	12
Expected Maximum Sandbag Throw Distance (ft)SB:	25
Minimum Separation Distance (ft)SB:	200

Water Containment System and Minimum Separation Distance:

Max Fragment Weight (lb)W:	0.023675
Critical Fragment Velocity (fps)W:	5114
Kinetic Energy 106 (lb-ft2/s2)W:	0.3096
Water Containment System:	5 gal carboys/ inflatable pool
Minimum Separation Distance (ft)W:	200/200

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FRAGMENTATION DATA REVIEW FORM

Category:	HE Rounds	DODIC:	C225
Munition:	81 mm M43	Date Record Created:	7/30/2004
		Last Date Record Updated:	7/30/2004
Primary Database Category:	mortar	Individual Last Updated Record:	Crull
Secondary Database Category:	81 mm	Date Record Retired:	
Tertiary Database Category:	Comp B		

Munition Information and Fragmentation Characteristics

Explosive Type:	Comp B
Explosive Weight (lb):	1.29000
Diameter (in):	3.1890
Max Fragment Weight (lb):	0.057300
Critical Fragment Velocity (fps):	4933

Theoretical Calculated Fragment Range

Range to No More Than 1 Hazardous Fragment/600 Square FeetA (ft):	230
Vertical Range of Maximum Weight Fragment (ft):	1097
Horizontal Range of Maximum Weight Fragment (ft):	1395

Overpressure Distances

Inhabited Building Distance (12 psi), K40 Distance:	49
Inhabited Building Distance (09 psi), K50 Distance:	61
Intentional MSD (0065 psi), K328 Distance:	403

Minimum Thickness to Prevent Perforation

4000 psi Concrete (Prevent Spall):	3.62
Mild Steel:	0.68
Hard Steel:	0.56
Aluminum:	1.43
LEXAN:	4.51
Plexi-glass:	3.00
Bullet Resist Glass:	2.40

Required Sandbag Thickness

Max Fragment Weight (lb)SB:	0.057300
Critical Fragment Velocity (fps)SB:	4933
Kinetic Energy 106 (lb-ft2/s2)SB:	0.6972
Required Wall Roof Sandbag Thickness (in)SB:	24
Expected Maximum Sandbag Throw Distance (ft)SB:	125
Minimum Separation Distance (ft)SB:	200

Water Containment System and Minimum Separation Distance:

Max Fragment Weight (lb)W:	0.057300
Critical Fragment Velocity (fps)W:	4933
Kinetic Energy 106 (lb-ft2/s2)W:	0.6972
Water Containment System:	1100 gal tank
Minimum Separation Distance (ft)W:	200

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