



Naval Ordnance Safety and Security Activity

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Weapon Systems Characterization
9 August 2018



Weapon Systems Characterization

Issue: DoD-M 6055.09M Table V3.E3.T3 (NAVSEA OP 5 Table 7-8) – **“Hazardous Fragment Distances for Open Stacks of Selected Hazard Division 1.1 Items”** has not been updated to include many of the major weapon systems currently in use by the Navy.

Weapon Systems Characterization

Table 7-8. Hazardous Fragment Distances for Open Stacks of Selected Hazard Division 1.1 Items¹

NOMENCLATURE ^a	NUMBER OF UNITS									
	1	2	3	4	5	6	7	8	9	10
SPARROW, AIM-7 ^b	280	565	770	955	1120	1245				
Sidewinder, AIM-9	400	400	400	400	400	400	400	400	400	400 ²
Chaparral, MIM-72H	400	400	400	400	400	400	400	400	400	400 ²
Maverick, AGM 65 A/B/D	400	500	500							
Maverick, AGM 65 E/F/G	670	900 ³	1200 ³							
ASROC	500	500	500							
CBU-87*	800	800	910	945	965	982	1000	1020	1035	1055 ⁴
Improved Hawk	900	900	900	900	900	900	900	900	900	900 ²
Penguin*	500	500	500							
Projectile, 105 mm, M1 ^c	340	355	525	660	725	775	810	845	870	890 ⁴
Projectile, 155 mm, M107	415	590	770	955	1035	1095	1145	1195	1235	
Projectile, 5"/54	300	375	475	570	680	790	860	925	1005	1085
Harpoon*	500	600 ⁵	600 ⁵	600 ⁵						
Tomahawk*	500	600 ⁵	600 ⁵	600 ⁵						
Tomahawk Loading on an SSGN ^g	750									
TOMAHAWK Loading on an SSN-774 Class ^h	600									
Bomb, 500-pound, MK 82	670									
Bomb, 1000-pound, MK 83	815									
Bomb, 2000-pound, MK 84	925									
Bomb, BLU-109	880									
Bomb, 750-pound, M117	690									
Torpedo Mk 46	500	500	500	500	500	500	500	500		
Torpedo, MK 48 ^{d, e}	630	775	875	925						
Torpedo, Mk 48 with shield ^{d, f}	500	500	550	600	635	670	700	725	755	780 ⁴

Weapon Systems Characterization

Table 7-7. Class/Division 1.1 Inhabited Building and Public Traffic Route Distance


Net Explosive Weight NEW (lbs)	Distance in Feet to Inhabited Building From:				Distance in Feet to Public Traffic Route From:				
	Earth-Covered Magazine			Other PES	Earth-Covered Magazine			Other PES	
	Front	Side	Rear		Front	Side	Rear		
Col 1	Col 2 ^{1,8,9}	Col 3 ^{1,8}	Col 4 ^{2,8}	Col 5 ³	Col 6 ^{8,10}	Col 7 ^{5,8}	Col 8 ^{6,8}	Col 9 ⁷	
1	500	250	250	↑	300	150	150	↑	
2	500	250	250		300	150	150		
5	500	250	250		300	150	150		
10	500	250	250		300	150	150		
20	500	250	250	SEE	300	150	150	SEE	
30	500	250	250		300	150	150		
40	500	250	250		300	150	150		
50	500	250	250		300	150	150		
100	500	250	250	NOTE	300	150	150	NOTE	
150	500	250	250		300	150	150		
200	700	250	250		420	150	150		
250	700	250	250		420	150	150		
300	700	250	250	3	420	150	150	7	
350	700	250	250		420	150	150		
400	700	250	250		420	150	150		
450	700	250	250		420	150	150		
500	1,250	1,250	1,250	↓	750	750	750	↓	
600	1,250	1,250	1,250		1,250	750	750		750
700	1,250	1,250	1,250		1,250	750	750		750
800	1,250	1,250	1,250		1,250	750	750		750
900	1,250	1,250	1,250		1,250	750	750		750
1,000	1,250	1,250	1,250		1,250	750	750		750
1,500	1,250	1,250	1,250		1,250	750	750		750
2,000	1,250	1,250	1,250		1,250	750	750		750
3,000	1,250	1,250	1,250		1,250	750	750		750
4,000	1,250	1,250	1,250		1,250	750	750		750
5,000	1,250	1,250	1,250		1,250	750	750		750
6,000	1,250	1,250	1,250		1,250	750	750		750
7,000	1,250	1,250	1,250		1,250	750	750		750
8,000	1,250	1,250	1,250		1,250	750	750		750
9,000	1,250	1,250	1,250	1,250	750	750	750		



Weapon Systems Characterization

- Methodology:
 - Conduct analysis of weapon systems test results obtained through required Mil-Std-2105 (series) testing and system performance testing to define reduced hazardous fragment distances and modify Table 7-8 – **will not conduct new testing.**

Weapon Systems Characterization

- Systems currently under evaluation/consideration:
 - **AGM-114 Missile (Hellfire)**
 - *AIM-120 Missile (Advanced Medium-Range Air-to-Air Missile (AMRAAM))*
 - RIM-162 Missile (Evolved Sea Sparrow Missile (ESSM))
 - RIM-67 B, C, D Missile
 - RIM-156 A, B Missile
 - RIM-161 A, B, C, D Missile
 - RIM-174 Missile
 - 76MM Projectile
 - 57MM Projectile
 - Countermeasure Anti-Torpedo
 - *Avenger*
 - *Stinger*
 - **Virginia Class Block V MAC**
 - **RIM-116 Rolling Airframe Missile (RAM)**
 - SeaRAM;
 - Any new Standard Missile variant
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graph LR; A([Standard Missile Variants]) --> B[RIM-67 B, C, D Missile]; A --> C[RIM-156 A, B Missile]; A --> D[RIM-161 A, B, C, D Missile]; A --> E[RIM-174 Missile];
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# Weapon Systems Characterization

- Benefits of conducting Weapon Systems Characterization:
  - Increase in the number of locations for Fleet/NMC to handle weapons;
  - Provide for greater use of unencumbered land at the waterfronts;
  - Reduce the number of deviations at the waterfronts???

# Weapon Systems Characterization

- My Vision:
  - The analysis of weapon systems test results automatically includes a hazard fragment analysis to evaluate the potential for defined/reduced distances;
  - Influence next edit to Mil-Std-2105 to define the requirement to conduct arena testing of weapons systems to gather hazardous fragment and overpressure data;
  - NOSSAs current Weapon Systems Characterization program becomes unnecessary.
    - Simple formatted submission to NOSSA who will coordinate with the DDESB to modify DoDM 6055.09-M V3.E3.T3 & NAVSEA OP 5 Table 7-8.





# Weapon Systems Characterization

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**BUT...**



# Weapon Systems Characterization

- Our current effort addresses but one element of the characterization of risk relative to weapons.
  - The effort primarily assesses the hazardous fragment distances for weapons systems in their transport or logistics configurations.
- However, not all weapons are in this configuration.
  - Many have been de-canned on piers, many are in surface launchers on ships (or land), others in assembly/disassembly status on ships...



# Weapon Systems Characterization

- Where does this lead us (the Navy)?
  - We will be transitioning our site plans to using straight quantity-distance rather than a reliance upon this table;
  - A need for a reassessment of the risk profile for all phases of weapons use relative to the Navy's combatants;
  - And, a reassessment of the Navy's Combatant Exemption.



# Weapon Systems Characterization

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- Questions???