

MAAWS

# DELIBERATE UNIVERSAL NEED STATEMENT (D-UNS)

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## 1. Capability Gap / Shortfall

What can't you do? Describe the nature and the cause of the capability gap or shortfall. Explain how the need was identified (e.g. experimentation, formal study, mission area analysis, observed operational deficiencies, etc.)

### Problem Defined:

During OIF/OEF, common enemy Tactics, Techniques, and Procedures (TTPs) utilized to engage foot mobile ground forces centered on engagement from hardened, covered structures. These were either bunker-type positions or buildings made of concrete/thick mud. Enemy forces in these positions were typically equipped with rockets, medium machine guns, and sniper rifles. Such positions must be engaged with high explosive munitions that are man-portable in order to ensure destruction by a foot mobile unit. These enemy TTPs will likely remain consistent within future operating environments such as the urban littorals as evidenced in current conflicts.

Current man-portable rockets cannot engage these types of positions without Marines coming well within range of enemy weapon systems. This is particularly problematic when the enemy is equipped with RPGs, PKM medium machine guns, and SVDs that possess maximum effective ranges of 700m (utilizing the anti-personnel OG7V rocket), 1000m, and 1300m respectively. The standard US Marine Corps rocket weapon systems; the M72A7 LAW, M136 AT-4 and MK 153 SMAW, have maximum effective ranges of 220m-500m. This is a capability gap of 200m - 1080m in favor of the enemy. This issue is further compounded during low light/night operations. Two of the above mentioned US weapon systems (LAW and AT4) are unable to accept night optics in respect to Marine Corps inventory. While the LAW can be utilized with a target pointer/illuminator, the maximum effective range is subsequently reduced.

Current shoulder fired rockets and munitions are unable to provide obscuration, illumination, or target marking. As all are actions that may be necessary in order to destroy a hardened crew served weapon position, lacking these capabilities results in a critical vulnerability for small infantry units. Two of these weapon systems (LAW, AT-4) consist of a shaped charge warhead which is designed for anti-armor engagements. This is not appropriate for functioning as an anti-material/structure munition against targets such as sand bag bunkers or concrete buildings.

Boresighting is essential for the accuracy of any weapon system. Only the MK 153 SMAW is able to be boresighted to the shooter. However, the process is lengthy, complex, and requires a robust specialized kit. These kits are not available in sufficient quantities within units that possess MK 153 SMAWs. These kits are not man portable under field/tactical conditions due to size and weight. Additional transport limitations exist for the MK 153 SMAW ammunition. Electrostatic discharge packaging is required for transportation aboard rotary air craft. This degrades tactical insertions severely.



Current Capabilities:

The current man-portable rocket weapon systems available to the Marine Corps are the M72A7 LAW, M136 AT-4 and MK 153 SMAW. The characteristics of each weapon system are as follows:

1. The M72A7 LAW is a shoulder launched, close-combat, direct fire weapon. It is issued as an individual round of ammunition consisting of a self-contained, light weight, disposable launcher with pop-up sights and a rocket with a high explosive shaped charge warhead. It is mainly designed to penetrate and destroy light-armored vehicles and damage older model battle tanks (when fired in pairs or in volley).

- Ammunition DODIC: HA29
- Caliber: 66mm
- Weight: 8lbs
- Length: collapsed- 31in / extended- 39in
- Maximum effective range: 220m
- Arming Distance: 25m
- Primary usage: Anti-armor
- Front sight type: plastic 3-prong post
- Rear sight type: plastic range adjustable w/ 2mm and 7mm peephole sight
- Penetration: 5.9in RHA (Rolled Homogeneous Armor), > 7.8in Reinforced

concrete/Earth

- Back blast dimensions: 70 degrees x 70m (total)

- Night capabilities: ATPIALs (Advanced Target Pointer/Illuminator/Aiming Laser)

only. Accepts AN/PEQ 15 or 16. Point of Aim (POA)/Point of Impact (POI) is aligned at 150m. For targets at a distance of 350m, a hold of 38.5ft above the target must be utilized in order to impact it.

2. The M136 AT-4 is a short range, man-portable, shoulder-fired weapon, consisting of a fiberglass reinforced launch tube fitted with a firing mechanism, pop-up sights, protective covers, carrying sling, three safety devices, shoulder stop and bumpers. The weapon is a recoilless rifle design. Issued as one round of ammunition, the AT-4 tactical round is a self-contained, lightweight, disposable weapon consisting of a launcher and cartridge. It is mainly designed to penetrate and destroy light-armored vehicles and damage older model battle tanks (when fired in pairs or in volley).

- Ammunition DODIC: C995
- Caliber: 84mm
- Weight: 15lbs
- Length: 40in
- Maximum effective range: 300m
- Arming Distance: 10m
- Primary usage: Anti-armor
- Front sight type: plastic 3-prong post
- Rear sight type: plastic range adjustable w/ 2mm and 7mm peephole sight
- Penetration: 14in Armor



- Back blast dimensions: 90 degrees x 100m (total)
- Night capabilities: With respect to current Table of Organization and Equipment (T/O & E), none.

3. The MK153 Mod 0 SMAW is a shoulder fired, multi-purpose, assault weapon. The SMAW consists of a launcher, an attached spotting rifle, and sights. Once loaded with an encased rocket, it is a ready to fire weapon. The SMAW is capable of firing both tactical and practice rockets through the launch tube and tracer cartridges ballistically matched to these rockets through the spotting rifle. It is intended for use against buildings, bunkers, field fortifications, armor vehicles, and other hard and soft targets.

- Ammunition DODIC: HX05 High Explosive Dual Mode (HEDM)  
HX06 High Explosive Anti-Armor (HEAA)  
HX07 Common Practice (Inert HEAA)  
HA34 Novel Explosive (NE)

- Caliber: 83mm
- Weight: Approx 29.34lbs (w/ HEDM)  
Approx 30.69lbs (w/ HEAA)  
Approx 34.94lbs (w/ NE)
- Length: 54in (w/ HEDM)
- Maximum effective range: 250m (HEDM/NE)  
500m (HEAA/Common Practice)
- Arming Distance: 17m (HEDM/HEAA/Common Practice)  
8.2m (NE)
- Primary usage: Anti-armor/Bunker
- Sights: Optic: RCO AN/PVQ-31A  
Front sight type: Metal Post  
Rear sight type: Metal Slot
- Penetration: 14in RHA
- Back blast dimensions: 90 degrees x 100m (total)
- Night capabilities: Various night optics/ATPIALS

## 2. Proposed Solution(s)

Recommended solutions will be considered and may be further refined with the Certifying MARFOR. (Consider the following for factors and alternatives: Doctrine, Organization, Training, Materiel, Leadership, Personnel, and Facilities.) Attach graphics or amplifying documents if desired.

### Proposed Solution:

A weapon system that is man-portable, able to effectively engage beyond 1000m, with multi-function round, and is compatible with various night optics. The weapon should possess a magnified optical day sight that is ballistically matched for that weapon system. A Fire Control System (FCS) should interface with the weapon in order to determine range, provide IR marking, and communicate data to the loaded round. This weapon needs to fire multiple

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types of lethal rounds in order to engage personnel, concrete/earthen positions, and steel. It must possess the capability to fire from enclosures in urban environments and confined spaces. It must have the capability to fire training, illumination and obscuration (smoke) rounds. The ammunition should be programmable both manually and through the FCS in reference to height of burst. The entire system should weigh no more than the heaviest current available rocket systems; objective, less than 15lbs, threshold, 17lbs. This weapon system should be currently available/existing within other DOD organizations in order to expedite fielding. It must be compatible for usage aboard USMC installations for training. Training programs should be readily available through other services/organizations and must enable a unit to conduct on the job training.

### Proposed Products:

The M3E1 Multi-role Anti-armor Anti-personnel Weapons System (MAAWS) meets or exceeds all above specified criteria. Currently the US Army, Army National Guard, SOCOM, and Marine Raider Battalions utilize the M3 MAAWS and will transition to the M3E1 in FY 17/FY18. Fielding this weapon system increases the lethality of small units down to the squad/team level and provides versatility in employment.

- Ammunition DODIC: CA21 HEDP = High Explosive Dual Purpose
- CA20 HEAT = High Explosive Anti-Tank
- CA51 MT = Multi Target (Triple Brick, Double Reinforced 8 Concrete
- CA27 HE = High Explosive
- CA36 ILLUM = Illumination
- C385 SMOKE = Smoke
- CA23 ADM/B = Area Defense Munition (A version is Flechette, B version is ball bearing)
- CA41 ASM = Anti Structure Munition
- C386 TP = Target Practice

\* A HE Fire From Enclosure (FFE) round with a range of 450M is currently fielded safety certified and in use with NATO allies.

- Caliber: 84mm
- Weight: 14.6lbs
- Length: 39.4in
- Maximum effective range/Probability of Hit (PH):

HEDP = 1000m/PH .5  
 HEAT = 700m/PH .7  
 MT = 600m/PH .7  
 HE = 1300m/PH .7  
 ILLUM = 2100m  
 SMOKE = 1300m  
 ADM/B = 200m/PH .5  
 ASM = 400m/ PH .5  
 TP = 300m



- Primary usage: Anti-armor/Anti-structure/Anti-personnel/Obscuration/Illumination
- Sights: Optic: 3x magnification/12° field of view mounted on MIL-STD 1913 rail  
Open sights: folding front and rear sights.  
Other: Various optics mounted onto a MIL-STD 1913 rail
- Penetration: 5.9in – 17.7in RHA  
8in Double reinforced concrete  
12in triple brick
- Back blast dimensions: 90 degrees x 100m (total)
- Night capabilities: Various night optics/ATPIALS

### 3. Concept of Employment

Describe the scenario for use of this capability. Who would use the capability, when, where, how, and to what standard? Be as specific as possible. Attach graphics or amplifying documents if desired.

The MAAWS would be utilized in the same manner as the MK 153 SMAW, M136 AT4 or M72A7. It would be used to engage fortified positions, armored/unarmored vehicle, during offensive actions or while breaking contact. During training, the MAAWS would be utilized to conduct the following Training and Readiness (T&R) tasks:

- REC-AMPH-4010: Conduct mounted/dismounted engagements
- REC-GRND-4005: Execute immediate actions upon contact with the enemy
- REC-SHAP-5006: Conduct hunter/killer operations
- REC-SHAP-5007: Conduct an ambush
- INF-ASLT-3001: Provide fires
- INF-ASLT-5001: Provide direct fires
- INF-MAN-4002: Conduct an ambush
- INF-MAN-4001: Conduct a ground attack
- INF-MAN-4004: Clear a fortified position
- INF-MAN-4101: Conduct a defense
- INF-MAN-4204: Support by fire/overwatch
- INF-MAN-5001: Conduct a ground attack
- INF-MAN-5004: Conduct a raid
- INF-MAN-5101: Conduct a position defense
- INF-MAN-5207: Support by fire/overwatch
- LAR-MNVR-5001: Perform armored reconnaissance operations
- LAR-SEC-6001: Conduct armored security operations
- LAR-OFF-6001: Conduct a movement to contact
- LAR-OFF-6002: Conduct a raid
- LAR-OFF-7001: Conduct limited offensive operations
- CEB-MOBL-3003: Conduct an urban breach
- CEB-MOBL-4001: Conduct deliberate breach
- CEB-MOBL-4002: Conduct hasty/ in-stride breach
- CEB-MOBL-4003: Conduct assault breach
- CEB-MOBL-4004: Conduct covert breach
- CEB-MOBL-4006: Conduct security for clearance operations



-CEB-MOBL-4008: Breach obstacles for clearance operations  
-CEB-PINF-5001: Fight as provisional infantry

#### 4. Requested Quantity or Capacity

Identify the total quantities or capacity required, broken down by unit or activity.

(331) Total systems are required for 2D Marine Division:

- (243) systems are required by the (9) Infantry Battalions within the 2d Marine Division. Current force structure places (9) Platoons within an infantry battalion. Each rifle platoon would receive (3) weapons systems (1 per squad).
- (26) systems are required by 2D Light Armored Reconnaissance Battalion (LAR). Current force structure places (13) LAR Platoons within the battalion. Each LAR Platoon would receive two weapon systems.
- (26) systems are required by 2D Reconnaissance Battalion. Current force structure places (13) Reconnaissance Platoons within the battalion. Each Reconnaissance Platoon would receive two weapon systems.
- (36) systems are required by 2D Combat Engineer Battalion. This equates to (9) systems each for A, B, C, and Mobile Assault Companies.

#### 5. Estimates of Supportability

- (a) **Doctrinal Requirements:** Consider any proposed or required changes to doctrine, or tactics, techniques and procedures (TTPs).
- (b) **Organizational Requirements:** Consider any proposed or necessary augmentation or T/O changes.
- (c) **Training Limitations:** Consider any limitations in available training opportunities, types or duration. Identify user limits on training and Field Serve Representative support available.
- (d) **Material Supportability:** Consider any known supportability limitations that should be considered. Describe any known organizational level maintenance limitations. Consider whether logistical support could best be provided by marines, contractors, or a combination of both and explain.
- (e) **Personnel Supportability:** Consider manpower requirements to implement your proposed solution, to include critical contact Field Service Representatives.
- (f) **Leadership Requirement:** Consider leadership requirements to implement your proposed solution, to include T/O changes.
- (g) **Facilities Requirements:** Consider operational training or maintenance facility demands. Are there any requirements or limitations to supportability in a-f to be considered in solution analysis?
- (h) **Cost**

(a) Current rocket TTPs will be utilized as the main methods of employment. Various TTPs extending beyond rocket TTPs would also be employed due to the versatility of the M3E1. As the variety of ammunition includes anti-personnel in the form of ball bearings, smoke, and illumination, an inclusion of M18A1 (claymore) and M224A1 (60mm mortar) TTPs should be considered.

(b) A T/O&E change would be required reflecting an increase of the above specified numbers of MAAWSs along with the associated SL3/maintenance equipment per each unit. Fielding increases should reflect within organizational quantities not within individual quantities on units' T/Es. Schools Of Infantry and Combat Engineer School may also require a T/E increase in order to facilitate formal training.

(c) Initial New Equipment Training (NET) will be required. This training would include employment and maintenance procedures. Training could be supplemented by adopting current MAAWS training programs from other organizations such as Raider Battalions, the US Army, or the Army National Guard. Sustainment and additional training would be administered at the unit level. Range modifications are not required as the Surface Data



Zone and safety considerations for the MAAWS are currently defined within DAPAM 385-63 Range Safety.

(d) As the MAAWS is currently maintained by service members in the US Army, Army National Guard, and Raider Battalions, Marines would conduct unit level maintenance in the same manner. The next model to be fielded by SOCOM and US Army (M3E1) has an extended barrel life over the current system model (M3) and includes a round counter to facilitate tracking of gun record data.

(e) Critical contact field service representatives for the MAAWS exist in support of the US Army and Raider Battalions.

(f) N/A. Current and projected force structure within GCE will support leadership requirements.

(g) Modifications to a receiving unit's armory are possibly required in order to properly store the MAAWS.

(h) Estimated \$35,000 per weapon system. The cost estimate is based on US Army projected fielding of the M3E1 in CY18. The below listed ammunition costs are based on CY16 figures for the US Army and SOCOM purchasing 2501-5000 rounds of each type:

CA21 HEDP- \$2076  
CA20 HEAT- \$2391  
CA51 MT- \$4366  
CA27 HE- \$2121  
CA36 ILLUM- \$1950  
C385 SMOKE- \$1105  
CA23 ADM/B- \$810  
CA41 ASM- \$3874  
C386 TP- \$980

## 6. Related Needs Statements

List any known related Urgent/Deliberate UNS or JUONS. Please include the number, title, and date of the related document.

Unknown

## 7. Gap Identified by Other Services

Has the capability gap been identified by another service?

Yes. US Army, SOCOM, and Marine Raider Battalions have identified gaps in capability the small unit. These gaps include range limitations and versatility of current USMC rocket weapon systems. They currently utilize the MAAWS vice other weapon systems that are fielded to perform similar functions to fill these gaps.



## 8. Lessons Learned

Are there any related "Lessons Learned" documented (e.g. MCCLL Reports etc.)?

- "1st Battalion 8th Marines OEF 10.2 Deployment AAR", MCCLL 06 May 2011
- "Army MCoE 10-2011 Post Combat Survey Rpt App", MCCLL 13 February 2012
- "EWS: A Better High Explosive Option for The Rifle Company of Today", MCCLL 28 January 2013
- "The Soldier Survey No 2013-03 Appendix Data", MCCLL 14 February 2013
- "Shoulder-Launched Munitions", Marine Corps Gazette September 2013
- "6th Marine Regiment: Integrated Training Exercise (ITX) 3-14 AAR", MCCLL 28 April 2014
- "2D Battalion, 1st Marines (BLT 2/1): First 100 Day AAR", MCCLL 27 Nov 2014
- "Lightweight M3A1 (FY14 FCT), RDECOM 29 April 2014
- "Crippled by the SMAW", Marine Corps Gazette October 2015

## 9. MEF POC for Information Coordination

Who are your technical and tactical experts and advisors who may assist in the refining/defining of solution to this D-UNS?

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Comments/Amplifying Information			

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Comments/Amplifying Information			

Name (Last, First, Initial) <b>Knight, John C.</b>	Rank/Grade <b>Marine Gunner/CWO-3</b>	Phone <b>(910) 451-1905</b>	Fax
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Comments/Amplifying Information			

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Comments/Amplifying Information			

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