



DEPARTMENT OF THE NAVY
HEADQUARTERS UNITED STATES MARINE CORPS
2 NAVY ANNEX
WASHINGTON, DC 20380-1775

IN REPLY REFER TO:
3900
C 445

JUN 02 2004

From: Deputy Commandant, Combat Development, 3300 Russell Road,
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To: Commanding General, Marine Corps Systems Command, 2200
Lester Street, Quantico, VA 22134

Subj: STATEMENT OF NEED FOR LIGHTWEIGHT PRIME MOVER (LWPM)

Ref: (a) 10 U.S.C. §2304(c)(2)
(b) FAR 6.302-2
(c) Lightweight Prime Mover Universal Needs Statement
(CDTS #03125UA)

Encl: (1) Concept of Employment
(2) Attributes of the Lightweight Prime Mover
(3) Acquisition Objective

1. Pursuant to references (a) through (c), there is a compelling need to procure a vehicle capable of being the alternate prime mover for the Advanced Towed Cannon System (ATCAS) Program, also known as the M777E1 Lightweight 155mm Howitzer (M777E1).

2. The Marine Corps is procuring the M777E1 Howitzer that will begin fielding during FY 2005. The LWPM will serve to tow the M777E1 in expeditionary operations involving GCE fire support assets supporting heliborne operations. The increased transportability of a LWPM will enhance the utility of the M777 by increasing its mobility subsequent to a vertical assault. Enclosure (1) provides the LWPM Concept of Employment.

3. In order to support the operating forces, we request that the Commanding General, Marine Corps Systems Command take all necessary actions to ensure the procurement and fielding of vehicles that meet the attributes defined in enclosure (2). Preference should be given to commercially available systems. A LWPM should initially be fielded to the artillery community in quantities sufficient to support the MEU/SOC cycle while retaining a viable capability to support the vertical assault element of a Marine Division. Ensure appropriate maintenance, supply, and training programs are established. The Initial

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Operational Capability (IOC) is required in FY 2006. The IOC is achieved when one artillery regiment is capable of sourcing the MEU (SOC) rotation with LWPM equipped firing batteries, the assigned mechanics and operators have received initial training, and sufficient repair parts are in place to support operations. The Full Operational Capability (FOC) is required in FY 2010. The FOC will be achieved when all LWPM are fielded, and fully supported by the supply system. The acquisition objective is listed in enclosure (3).

4. The MCCDC point of contact is the Combat Service Support Branch, Materiel Capabilities Division at commercial (703) 784-2283.


R. E. SCHMIDLE
By direction

Concept of Employment

1. General. The LWPM and the M777E1 will enhance current fire support systems in the MAGTF by answering the fundamental lack of vertical transportability of the Medium Tactical Vehicle Replacement (MTVR). A LWPM will enable the vertical assault element to maintain the robust fire support capability provided by the M777E1 and the Family of Artillery Munitions. The LWPM will ensure that Marine Corps artillery retains the flexibility for multiple concepts of employment.
2. Operational Profile. Vehicle must be capable of towing the M777E1 Howitzer while transporting a 7-10 man crew of approximately 2076-2960 lbs, and howitzer SL-3 equipment of approximately 600 lbs. When not towing the M777E1 howitzer, the truck should be capable of moving at least two Marines and 24 complete rounds (threshold) to 48 complete rounds (objective) of compatible ammunition.
3. Distribution. LWPMs will be distributed as follows: one LWPM as a prime mover for each howitzer and one LWPM as an ammunition truck per howitzer for a total of 12 LWPMs per a six-howitzer firing battery. Such an arrangement will provide the artillery battery with the required vehicle assets while serving as part of the vertical assault element.
4. Deployment. The firing unit will be deployed by similar means as the supported force aboard amphibious shipping, Naval vessels supporting a sea-basing concept, and commercial shipping. It is envisioned that the firing units will initially be transported between 50 and 110 NM by the MV-22 and/or CH-53E aircraft at air speeds of approximately 150 knots with the supported maneuver force. The flexibility to deploy by conventional methods using shipping and landing craft must exist.
5. Employment. The LWPM will be the primary means of ground transportation for the firing unit. The ability to quickly displace the firing unit in support of the maneuver element is essential. The LWPM with its primary role to serve as the prime mover for the M777E1 will also serve as the resupply truck receiving ammunition and supplies from rotary or tilt-rotor aircraft for delivery to the firing unit. After landing in zone and rapidly debarking, the LWPM and the M777E1 will link together and will proceed to a suitable firing position within range of the supported force to ensure ground based indirect fire support to the maximum depth of the battle space and

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continuous fire support. The LWPM will support the firing units ability to conduct the following missions: suppressing and neutralizing motorized targets; destroying motorized targets; suppressing and neutralizing light armored targets; destroying dismounted personnel targets; and destroying soft command and control targets. Additionally, these firing units shall be capable of conducting illumination, obscuration, target marking, and incendiary missions.

Attributes of the Light-Weight Prime Mover

Attributes	Description
Mission Profile	Primary Roads: 12% Secondary Roads: 68% Cross-country: 20%
Payload not towing LW155 [Note 1]	3856 lbs (T); 7120 lbs (O), includes 2 Marines plus 24 (T); 48 (O) complete 155mm rounds.
Payload towing LW155	2,676 lbs (T); 3,560 (O), includes 7 (T); 10 (O) Marines and 600 lbs of howitzer SL-3 equipment
Towed Load	M777E1 at 10,000 lbs
Curb Weight (CW) [Note 2]	Less than or equal to 10,000 lbs (T)
Speed (On-road)	30 MPH on 3% grade @ GVW [Note 3] 40 MPH on 2% grade @ GVW 50 MPH on 0% grade @ GCVW [Note 4]
Speed (Off-road)	5 MPH @ GCVW
Longitudinal	50% @ GVW 30% @ GCVW
Slide Slope	40% @ GVW 30% @ GCVW
Range (On-road) with onboard fuel	300 miles @ GVW
Fording Depth while towing the M777E1	30" w/o kit 60" with kit
Vertical Step while towing the M777E1	Greater than 12"
Tire Damage	Limp-home (T); CTIS (O)
Recovery Capability	Must be capable to flat-tow a similar vehicle, be flat-towed by MTRV and be recoverable using the MTRV wrecker
Winch	Front winch capable of self recovery
Transportability	Surface: Common rail carrier and commercial tractor-trailer. Air: Internal C-130, C-141, C-17, & C-5 Ship: U. S. Navy amphibious assault shipping, landing craft and Landing Craft Air Cushioned (LCAC), Maritime Prepositioning Force (MPF) and commercial shipping. Helicopter/Tilt Rotor: External CH-53E and MV-22.
Helicopter/Tilt Rotor External Lift [Note 5]	CH-53E for 50 NM (T); 110 NM (O) MV-22 for 50 NM (T); 110 NM (O)
Helicopter/Tilt Rotor Speed	Withstand helicopter/tilt rotor speed of 110 knots (T); 150 knots (O)
TAD Interface	TAD interface with M777E1
Communication/Electronics	Mount organic communication (T) and navigation equipment (O)
External Power Source	Power supply compatible with provide power to the TAD, recharging communication (T) and navigational equipment (O)
Ammunition	Certified for ammunition transport
Receptacles	NATO slave cable receptacles
Fuel Usage	Diesel / JP-8

Attributes	Description
Tool Storage	Sufficient to provide secure, weatherproof storage for all on-vehicle-equipment
Pintle Hitch	Front and rear pintle
Ballistic Protection	Ballistic protection kit
Weapons mount	Weapon mount kit
Vehicle Operators	Operated by incidental drivers
Maintainers	Maintained by MOS 3521
Reliability, Availability, Maintainability (RAM)	Comparable with RAM from similar tactical vehicle weight class.
Environmental Conditions	Operable at standard basic hot and cold temperatures or 125 to -25 degree Fahrenheit
Operational Condition	<ul style="list-style-type: none"> - Operable in NBC contamination environment - Operated & maintained by personnel in MOPP IV - Withstand decontamination - Operated & maintained by personnel in standard cold weather clothing

Notes	
1	Crew weight at 296 lbs per individual and 155mm HE round weight with packaging estimated at 136 lbs for a complete round. Complete round includes fuze, projectile, primer, powder, and packing.
2	Curb Weight (CW) - vehicle with full fuel tank, all vehicle Basic Issue Items (BII), and without payload, crew, or towed load. This supports the MV-22 external load of $\leq 10,000$ lbs for 50 NM mission radius @ approximately 150 knots.
3	Gross Vehicle Weight (GVW) - vehicle with full fuel tank, all vehicle Basic Issue Items (BII), maximum payload, crew, and without towed load.
4	Gross Combine Vehicle Weight (GCVW) - vehicle with full fuel tank, all vehicle Basic Issue Items (BII), maximum payload, crew, and towed load
5	External on CH-53 and MV-22 is threshold. MV-22 lift capacity is smaller than the CH-53, thus the parameters will be set around MV-22 lift.

Acquisition Objective

1. The following is the distribution:

<u>Unit</u>	<u>Quantity</u>
I MEF	48
II MEF	48
III MEF	24
Total	120

2. Concept of Distribution. 10th and 11th Marine Artillery Regiments receive 4 battery sets consisting of (12) LWPMS, a howitzer prime mover, and a dedicated ammo truck per gun for the six-howitzer section of a firing battery. Providing 48 to each 10th and 11th Marines enables them to source the east and west coast MEUs while maintaining battery sets for training and other contingencies. The 12 LWPMS provided to 12th Marines in Okinawa would be the battery set for the 31st MEU. While not supporting a MEU, the 12 LWPMS that go to Hawaii allow 1/12 to train for the capability.