

**120MM High Explosive Guided Mortar  
(HEGM), XM395  
(version 2.0)**

Date: 2014-09-12

MCoE - Infantry & Armor School

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This System Training Plan (STRAP) is preliminary.  
Front end analysis (mission, task, job) is ongoing. MCoE - Infantry & Armor School will amend and update this STRAP as details solidify.

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## 1.0 System Description

Army Brigade Combat Teams (BCTs), and Special Operations Forces (SOF) require accurate, responsive, organic indirect, Non-Line-of-Sight (NLOS), systems capable of providing precise effects to win on the current and future battlefields while reducing the possibility of collateral damage. The High Explosive Guided Mortar (HEGM) XM395 cartridge will provide an organic NLOS capability that currently does not exist at the Maneuver Battalion (BN) and Special Operations levels. Current technology provides the ability to provide the maneuver commander with a low-cost precision capability that is under his direct control. The system will evolve in an incremental manner as technologies mature. Subsequent increments will increase range, system maneuverability, improve lethality, provide more advanced terminal effects, improve reliability and/or reduce the logistical footprint.

The XM395 HEGM cartridge will be a precision mortar munition capable of being drop fired from the current family of US Army 120mm smooth-bore, mortar systems or fired from any current or future mortar platform. Current platforms include the US Army 120mm Battalion Mortar System (120mm BMS) and the Recoil Mortar System 6 - Light (RMS6-L). The 120mm BMS is common to the Infantry Brigade Combat Teams (IBCT) and Armored Brigade Combat Teams (ABCT) and SOF. The RMS6-L is utilized in the Stryker Brigade Combat Teams (SBCT). The intent of this guided precision capability is to provide an organic indirect fire mortar munition that provides beyond line-of-sight precision weaponry for Infantry Battalions that is responsive and able to defeat high payoff targets in support of the Infantry close fight across the required spectrum of the full range of military operations (ROMO) in all terrain and weather conditions. It is a "system of systems approach" to equipping Army Units with an organic state-of-the-art precision capability.

The XM395 will engage targets as close as 500 meters threshold (T) and 1,000 meters objective (O) and as distant as 6,500 meters (T) and 15,000 meters (O). The XM395 will provide commanders additional flexibility by reducing the amount of ammunition needed to defeat High Payoff/Value point targets in support of the close fight. As organic assets, commanders can depend on the XM395 to provide responsive, lethal precision indirect fires to influence the battle and reduce collateral damage.

Initial Operational Capability (IOC) is anticipated IOC will be achieved 2Q FY19 when the First Unit Equipped (FUE) unit demonstrates a combat ready capability to employ the HEGM. It is also anticipated Full Operational Capability (FOC) will be achieved in 2Q FY22. This 120mm cartridge will evolve in an incremental manner as technologies mature. Subsequent increments will increase range, system maneuverability, improve lethality, provide more advanced terminal effects, improve reliability and/or reduce the logistical footprint. Increment II HEGM will provide the same lethality as the Increment I HEGM with the addition of an increase in range

to 12-15 km max range, GPS/SAL guidance and the ability to engage moving targets in order to meet future capability needs.

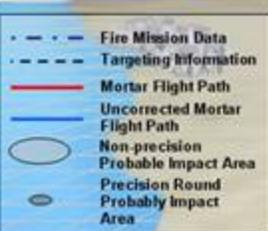
XM395 HEGM fire commands must be transmitted from the Mortar Fire Control System (MFCS) components; M32, Lightweight Handheld Mortar Ballistic Computer (LHMBC); M150/M151, Mortar Fire Control System - Dismounted (MFCS-D); or M95/M96, Mortar Fire Control System - Mounted (MFCS-M). The MFCS component receives the mission from the Forward Observer (FO), calculates the required ballistic trajectory to engage the target, then the HEGM cartridge is set with that data and drop fired in the 120mm BMS or the RMS6-L. The MFCS CPD contains full network architecture as well as the NR-KPP for MFCS.

The mortar platoon or section commander positions the mortars and maintains communications with higher commanders through organic Combat Net Radio (CNR). The Combat Load (CBL) for each 120mm System will be 6 HEGM cartridges. The fire direction computer processes the call for fire utilizing a Fire Control Computer (FCC) or Lightweight, Handheld Mortar Ballistic Computer (LHMBC) to calculate ballistic firing data to engage the target, control fires, and communicate with the observer. The HEGM will accept ballistic fire control data, and the cartridge is then fired in the same manner as any conventional mortar cartridge.

HEGM will be operationally employed in the same manner as conventional mortar munitions that communicate with the Advanced Field Artillery Tactical Data System (AFATDS). A call for fire (CFF) is initiated through a digital fire mission request or voice message from a forward observer calling for fire, a sensor platform, or Warfighter initiating the process. A HEGM mission is selected when it is determined that precision is required: for instance when collateral damage must be avoided or the target requires first round effects. After processing the mission the crew will load the round with fire control data and will fire the round either at the command of the Fire Direction Center (FDC) or when ready.

# Precision Mortar Capability OV-1 HEMC-G

The CFF process is unchanged by use of precision round prior to the target location being loaded by the gun crews

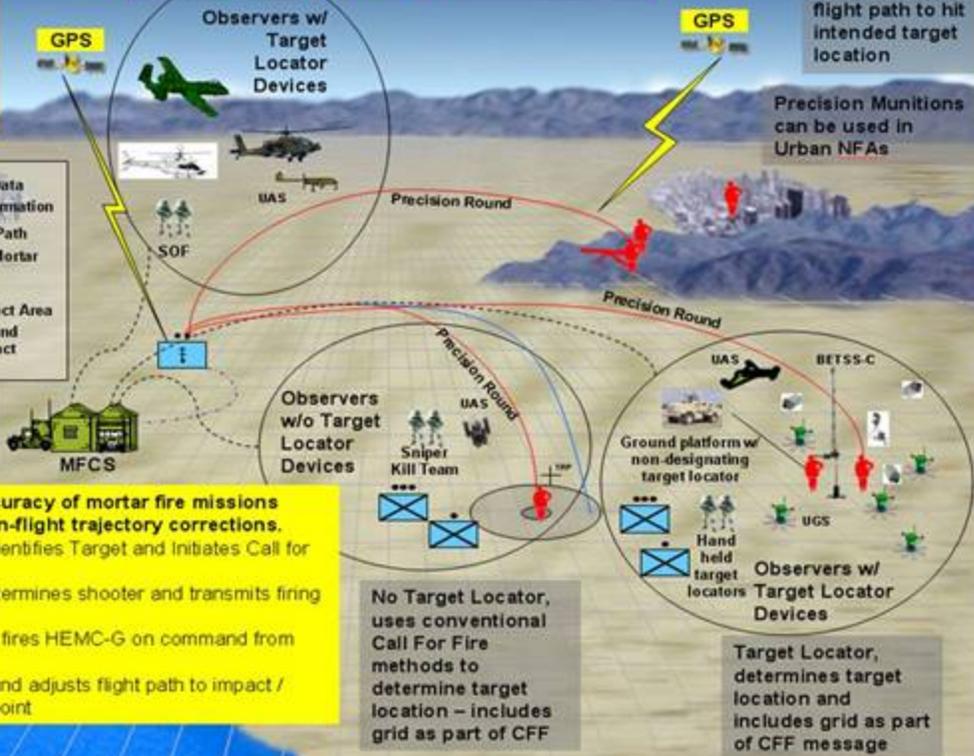


Target location is loaded into round prior to firing

- HEMC-G improve accuracy of mortar fire missions through GPS based in-flight trajectory corrections.
1. Observer / Sensor Identifies Target and initiates Call for Fire to the Network
  2. Network / MFCS determines shooter and transmits firing data to mortar
  3. Crew programs and fires HEMC-G on command from MFCS or Network
  4. Precision mortar round adjusts flight path to impact / detonate at specified point

In-flight GPS guidance allows round to correct flight path to hit intended target location

Precision Munitions can be used in Urban NFAs



No Target Locator, uses conventional Call For Fire methods to determine target location – includes grid as part of CFF

Target Locator, determines target location and includes grid as part of CFF message

## 2.0 Target Audience

The 120MM HEGM will be employed by Active Component and Reserve Component (AC/RC) Soldiers assigned to Infantry Brigade Combat Teams (IBCT), Armored Brigade Combat Teams (ABCT), Stryker Brigade Combat Teams (SBCT), Special Operations units and USMC forces that have 120mm mortar capability. The target audience is the Infantry and Marine units from company through Unit of Action levels who will employ these weapons to influence operations on the battlefield and including forward observers; fire planners, and the ordnance personnel who will be required to receive, store, issue and Explosive Ordnance Disposal (EOD) support for this munition. Initial individual training for operators will be conducted at the TRADOC schools for initial entry Soldiers and by Program Manager (PM) funded for Professional Military Education (PME). PME is handled by TRADOC, not materiel developers, and will train leaders on how to employ the weapons as units are fielded. Specific MOS and Branches are:

### Officer Area of Concentration (AOC)

- 11A Infantry Officer
- 18A Special Forces Officer
- 19B Armor Officer
- 19C Cavalry Officer
- 13A Field Artillery Officer

### Warrant Officer MOSS

- 131A Targeting Warrant Officer
- 890A Ammunition Warrant Officer

### Enlisted MOSS

- 11C Indirect Fire Infantryman
- 13F Fire Support Specialist
- 13D FA Tactical Data Systems Specialist
- 18B Special Forces Weapons Sergeant
- 19D Cavalry Scout
- 19K Armor Crewman
- 89A Ammunition Stock Control and Accounting Specialist
- 89B Ammunition Specialist
- 89D Explosive Ordnance Disposal Specialist

### **3.0 Assumptions**

3.1 The Department of the Army will provide the necessary personnel and facilities required to implement mortar programs of instructions (POI). The quality, aptitude, and skill requirements of the target audience will not be more stringent than the capabilities of the current mortar system target audience.

3.2 The HEGM will not create a need for a new MOS or Additional Skill Identifier (ASI). Fielding of the HEGM will not significantly increase individual and collective training requirements based on the requirements currently existing within institutions and AC/RC units. The XM395 High Explosive Guided Mortar (HEGM) cartridge will be a precision mortar munition capable of being drop fired from the current family of US Army 120mm smooth-bore, mortar systems or fired from any current or future mortar platform resulting in minimal updates to existing institutional or unit training.

3.3 The Material Developer, Product Manager Guided Precision Munitions and Mortars (PdM GPM2S) will develop and fund the HEGM New Equipment Training Team (NETT) requirements to support operational testing, and fielding to the force. Training in support of this program shall be developed in accordance with TRADOC Regulation 350-70, Army Learning Policy and Systems using the Army Learning Model TP 525-8-2 w/C1 06 Jun 11 methods; and all training development products shall be entered into the TRADOC Training Development Capability (TDC) Database, and/or The Army Training Information Architecture (ATIA) as appropriate. Required HEGM Doctrine, Tactics, and Techniques (DTT) if determine required by MCoE will be developed and funded by TRACOC.

3.4 The Materiel Developer will provide any new HEGM specific training materials in the Training Support Package (TSP) format for inclusion in distributed Learning (dL), Computer Based Instruction (CBI), Computer Managed Instruction (CMI), and Interactive Multi-Media Instruction (IMI), New Equipment Training (NET), institutional training, unit sustainment training, collective training, and embedded training. The TRADOC proponent school, Maneuver Center of Excellence (MCoE), training developer will review all HEGM training products for completeness, accurate content, and application to military instruction and training IAW Army Training Network (ATN), Army Learning Model (ALM), TRADOC Regulation 350-70, Army Learning Policy and Systems, and then entered into the Training Development Capability (TDC) database.

3.5 System Training Program. The PdM GPM2S contractor shall develop and maintain a HEGM individual training program to be distributed with the round in order to successfully meet the First Unit Equipped (FUE). As a minimum, representatives from the contractor or subcontractors as appropriate, Project Manager, TRADOC schools

training developers, Army Training Support Center (ATSC), Total Army Personnel Command, Program Executive Office for Simulation, Training and Instrumentation (PEO STRI), Army Safety Center as required and/or appropriate shall assist in the approval of the training material in conjunction with the proponent school training developer. A combination of Soldiers/contractors or all contractor personnel may conduct operator NET.

3.6 Operator and Maintainer Training. The PdM GPM2S contractor will develop HEGM training products, course materials and conduct training to support operational testing, and fielding to the force. Target audiences to be utilized as players for HEGM training and test requirements. The contractor shall update course materials based upon the results of testing, demonstrations, design changes, Developmental Testing (DT), Operational Testing (OT), Logistics Demonstrations, RAM and Live Fire and other feedback to finalize and deliver retainable course materials at the conclusion of this contract. The contractor shall coordinate with the Battle Damage Assessment and Repair (BDAR) team as required for planning and expectations from Ballistic Survivability, Live Fire Tests and Weapon Systems Lethality Tests.

3.7 Instructor and Key Personnel Training (I&KPT). The PdM GPM2S contractor will conduct training for personnel to operate and maintain HEGM and enable I&KP (New Equipment Training Team, TRADOC instructors, and other key personnel designated by the Government) to assist in the development of Institution and NET requirements. The contractor shall conduct training for proponent school instructors and key personnel at their location for any specific variant tasks or roles.

3.8 Instructor Requirements/Qualifications. If required the PdM GPM2S contractor will provide instructors for each training course. Instructors will be US Army Instructor Training Course certified or re-certified by a TRADOC Proponent School Instructor Re-certification Board within the last 3 years. All instructors prior to conducting NET must be approved by the Maneuver Center of Excellence DOTD to verify their ability to conduct the newly developed training.

3.9 Initial Operational Test and Evaluation (IOT&E). The contractor shall provide a training test support package that includes training for operator and maintenance personnel, technical manuals, spare and repair parts and on-site repair capability if required.

3.10 New Equipment Training (NET). The contractor shall provide input to the Government's New Equipment Training plan and shall conduct NET with assistance from military and Government Reps for all operators and other personnel IAW the Requirement Documents, NET Plan and the support concept. The contractor shall successfully meet First Unit Equipped (FUE) and allow for a successful Initial Operational Capability (IOC) when required. All NET instruction designed and

developed by the Contractor shall be in accordance with the Systems Training Plan (STRAP) and NET Plan (NETP). The NETP and schedule shall include use of TESS and the non-system Training Aids, Devices, Simulators, and Simulations (TADSS) such as the Call for Fire Trainer (CFFT). The final training package on a compact disk (CD) will be left at the unit and that CD will be used to support sustainment training. All unit sustainment training shall be Combined Arms Training Strategy (CATS) based.

3.11 Resources. Product Manager Guided Precision Munitions and Mortar Systems (PdM GPM2S) resources will be made available to designated TRADOC activities, schools for development of field manuals (FM) Soldier Training Publications (STP), Common Task Testing (CTT), Army Training and Evaluation Programs (ARTEP). PdM GPM2S will fund the development, validation, verification, and reproduction of computer-based Interactive Multimedia Instruction (IMI) at level III for the HEGM.

3.12 Development: All system-training requirements will be based on equipment data, functional data, and the front-end analysis that establishes tasks, conditions and standards necessary to effectively operate and maintain the HEGM. System training requirements will be provided as input into the Automated Systems Approach to Training (ASAT) database only after MCoE review and approval.

3.13 New Equipment Training (NET) Strategy: The NET approach will be implemented through the materiel developer's requirement to provide an exportable Training Support Package (TSP) that will support NET and unit sustainment training. The TSP will be developed concurrently with the system hardware & software (as applicable), validated during operational testing and evaluation, and will be in place when system fielding begins. The TSP will contain written (or digitized where feasible and cost effective) information pertaining to the system design and intended use, system description, packaging or transport container handling requirements, unpacking instructions, component assembly instructions (if required), functioning and operational characteristics. The commander will conduct collective training (where applicable) following NET using approved training devices. Additional material such as a supplemental information card, or if necessary, a separate packet will provide information pertaining to doctrinal employment, operational capabilities, limitations, and the tactics, techniques and procedures (TTP) associated with the HEGM. The intent of the NET strategy is to employ a cost effective and uncomplicated approach to facilitate fielding of HEGM in a timely manner.

3.14 Combined Arms Training Strategy (CATS) & Individual Training Strategy: Individual training will be conducted by use of the exportable TSP used during NET. Once personnel are familiar with the HEGM, sustainment training will be conducted in accordance with requirements in DA PAM 350-38, Standards in Training Commission (STRAC) providing Commanders with the training strategies for individual, crew, and

collective weapons training, and identifies the resources required to execute that training. The HEGM will be trained where the current 120mm ammunition is being trained. New or revised HEGM material will be incorporated into the appropriate training media during normal course revision and update cycles.

3.15 The TSP for the HEGM will be included with the current 120mm Battalion Mortar System (BMS), STRYKER, Training Support Package (TSP). The HEGM TSP will provide a basis for the development of unit-level individual training.

3.16 Unit sustainment livefire training will initially be conducted in accordance with the STRAC requirements.

3.17 HEGM will be added to the next revision of appropriate Soldiers Training Publications (STPs), Field Manuals (FMs), and Technical Manuals (TMs) as required in order to sustain Soldier proficiency in conducting mission tasks. There is a unique collective training requirement for the Forward Observers (FO) associated with this system.

## **4.0 Training Constraints**

**4.1 Training Hour Availability** . 120MM HEGM training will begin with the NET provided by the Product Manager, Guided Precision Munitions and Mortar Systems (PdM GPM2S) contractor and at the fielding locations. Once AC/RC brigades have been fielded and trained initially, the HEGM NETT will dissolve. The institution (MCoE) will assume the responsibility to train the 120MM HEGM replacement personnel will begin no later than 12 months after First Unit Equipped (FUE), currently anticipated 2Q FY19. Units manned under Life Cycle Management (LCM) will have an annual training requirement of 8-10% of their personnel and non-LCM units or those manned under the Individual Replacement System (IRS) will continue to generate annual training requirements of between 25-33% of their personnel. Training hour availability for new courses or to insert hours in existing courses is required or training replacement personnel for the 120MM HEGM will be adversely impacted. The conduct of the functional courses assists in providing units qualified replacements.

**4.2 Instructor Availability** . Obtaining and training instructors for the institutional 120MM HEGM training program requires no increase in instructor authorizations. Instructor requirements are defined by institutional student loads and resourced by the Structure and Manning Decision Review (SMDR) process. Failure to obtain sufficient instructors will adversely impact the planning, development, and conduct of training.

**4.3 Range Availability** . Familiarization, qualification, and sustainment on weapons systems require live fire. Generally, the ranges currently used by the US Army possess features and characteristics supporting mortar weapons live fire training. The quantity and capabilities of ranges, however, may not be sufficient because of the increase in live fire training mortar weapons qualification and sustainment requires. Each installation Directorate of Plans, Training, Mobilization and Security (DPTMS) receiving the XM395 HEGM will have to perform a throughput analysis with ranges to refine the range requirements.

**4.4 Funding Availability.** Adequate training relies on a baseline of adequate funding to purchase ammunition, and increases in range use. Failure to provide adequate funding will adversely affect training immediately and will have a negative impact on unit readiness.

**4.5 System Availability.** Adequate training relies on sufficient quantities of 120MM HEGM rounds and their ancillary equipment/documentation

(i.e. fire control, software, precision targeting devices, imagery, technical manuals) must be provided to the institution to develop and conduct training and to develop and refine doctrine.

**4.6 Prerequisite Skills.** The Infantry unit employing the 120MM HEGM, operating as a light Infantry, Stryker or Armored BCTs, will have the requisite individual and collective skills to function in decisive action operations. This training is included in the Mortar qualification Programs of Instruction (POI) conducted by the functional courses in the institution, during NET, or by the unit. Failure to develop the required prerequisite skills will require additional unit training time to overcome the shortcomings.

**4.7** The Product Manager, Guided Precision Munitions and Mortar Systems (PdM GPM2S) GPM2S will provide 120MM HEGM New Equipment Training (NET) for both the institutions and fielded units. The NET will be developed and approved in accordance with TRADOC Regulation 350-70, Army Learning Policy and Systems (6 Dec 11), the Army Learning Model TP 525-8-2 w/C1 06 Jun 11, and Army Regulation 350-1 Army Training and Leader Development (Rapid Action Revision (RAR) 4 Aug 11).

**4.8** The HEGM operational capabilities must to be incorporated into an existing individual and collective simulation based training system. Combat Training Center Instrumentation Systems will require new technologies such as TESS to simulate the operation affects of the 120MM HEGM in a force on force environment on a ABCT, SBCT and IBCT.

**4.9** Live fire training will be limited due to round high cost. Inexpensive training rounds must be available to permit required sustainment and proficiency qualifications. DA PAM 350-38, Standards in Weapons Training will be updated to provide Commanders with the HEGM live fire training strategies for required individual, crew, and collective weapons training.

**4.10** TRADOC schools must receive early distribution of all required training materials and Training Aids, Devices, Simulators and Simulation (TADSS) that support the development of institutional programs.

## 5.0 System Training Concept

The Systems training KPP is addressed in the HEGM CDD Capability 6.1.1 (U) System Training. The HEGM will be available to all units equipped with the US Army 120mm mortar system and in order to provide cost efficient, realistic training for those units wishing to employ the HEGM, training systems will be developed and provided as soon as possible.

Training hardware shall be developed to meet training needs, including all aspects of HEGM operation, unpackaging, cartridge handling, fuze setting/resetting/unsetting, loading, and misfire. The HEGM training items shall be incorporated into the Army's standard training procedures, to include: Institutional training; New Equipment Training (NET); and Unit Sustainment Training.

In accordance with (IAW) Army Regulation (AR) 350-1 Army Training and Leader Development, Chapter 5, Rapid Action Revision (RAR) 4 Aug 2011, the Material Developer (MD) leverages and/or update existing Army training systems or develop new hands-on and computer-based training for soldier/ operator, maintenance, and support personnel.

Product Manager, Guided Precision Munitions and Mortar Systems (PdM GPM2S) will provide Instructor and Key Personnel Training (IKPT) prior to the Multi Service Operational Test and Evaluation (MOT&E) and Initial Operational Test and Evaluation (IOT&E) to support the New Equipment Training (NET) during fielding of the system. NET will be conducted IAW the HEGM NET Plan. The PdM GPM2S NETT will develop a Training Support Plan (TSP). The TRADOC proponent (MCoE) TNGDEV will approve and validate the TSP prior to I&KPT and testing of the system. The PDM GPM2S will conduct NET concurrently fielding.

Until incorporated into Institutional POIs, the training materials (NET leave-behind package) will cover the HEGM components, interfaces and operating procedures, and a leader's briefing that identifies a broader overview of characteristics,

capabilities and limitations of the HEGM cartridge. This training shall give HEGM fielded commanders and staffs, specific guidance as to when and how precision munitions can be best incorporated into operations planning.

All HEGM 11C fire control training will be covered in updates of current computer based training (CBT) for the M32 Lightweight Handheld Mortar Ballistic Computer (LHMBC) and Mortar Fire Control System (MFCS), providing post fielding HEGM self development training.

Prior to HEGM institutional fielding (no later than 1 year after first unit equipped (FUE)), training will be analyzed, designed and developed in accordance with (IAW) the Army Learning Policy and Systems (ALPS) process outlined in TRADOC Regulation 350-70. The ALPS refer to the four TRADOC regulations and pamphlets in the 350-70 series and the Army Learning Model (ALM), TP 525-8-2 w/ Ch 1 dated 6 Jun 2011. Training sources include: the Army Training Network (ATN) at link: <https://atn.army.mil> ; the continuous adaptive learning model as described in TP 525-8-2 describes the framework, required capabilities, and on-going actions to implement a learner centric, technology enabled, and career long learning model by 2015. To learn more about the ALM, research the TED-T ALM page on the ATN in the Training and Education developers' toolbox page.

The goal of the HEGM training strategy is to develop units employing HEGM effectively on the battlefield. Operation New Equipment Training (OPNET) will be developed by PdM GPM2S and the MCoE oversight. Field Level Maintenance NET (FLMNET) will also be developed by the PdM GPM2S with MCoE TNGDEV oversight.

Lesson plans for the HEGM will be entered into the Training Development Capability (TDC). The TDC link is: <https://tdc.army.mil>, to establish a TDC account click on the TDC link, a list of domain administrators will appear in CoE/ school sequence.

Contact any of the administrators listed for the CoE/ school area of interest. The administrators will contact the requestor in order to determine access level requirements

TADDS will be assessed to aid unit leaders to achieve and sustain unit proficiency with HEGM employment and fire control after fielding i.e., Virtual Battle Space 2 Fires (VBS2 Fires).

Item	Comments/Contents
NET stay-behind package	Will include printed copies and CDs containing all HEGM operator and maintenance technical manuals, Computer Based Trainer (CBT) HEGM updated CDs for the Mortar Fire Control System (MFCS) and the Lightweight Handheld Mortar Ballistic Computer (LHMBC) all NET POI materials.
Training Publications	Will be accessible through the DTMS ( <a href="https://dtms.army.mil/DTMS">https://dtms.army.mil/DTMS</a> ).
Interactive Electronic Technical Manual (IETM)	Will be embedded in the MFCS and LHMBC software (ultimate solution if available).
POIs, Lesson Plans, and Test Packages.	Will be accessible through the Training Development Capability (TDC) link is: <a href="https://tdc.army.mil">https://tdc.army.mil</a>

**Table 5-1. NET Stay-behind**

**Unit Sustainment Training Material**



## **5.1 New Equipment Training Concept (NET)**

5.1.1 The Product Manager Guided Precision Munitions and Mortars (PdM GPM2S) is responsible for funding and resourcing New Equipment Training (NET) IAW AR 350-1 Army Training and Leader Development, RAR 4 Aug 2011. NET is the initial transfer of knowledge on the operation and maintenance of new and improved equipment from the Materiel Developer (MD) to the tester, trainer, supporter, and user.

5.1.2 NET will be conducted at receiving units as outlined in AR 350-1. NET teams consisting of contractor and government personnel will perform initial training of all critical tasks to standard as well as "Train the Trainer (T3)" and tactical employment training for leaders. The Maneuver Center of Excellence as proponent for HEGM, is responsible for the development, coordination and submission of this STRAP.

5.1.3 NET Training Strategy is conducted in accordance with (IAW) AR 350-1, and will address NET, Doctrine and Tactics Training (DTT) and sustainment training for all levels (AC and RC). Training for maintenance and diagnostic support is required for IOT&E and NET. The MD will conduct NET concurrently with the initial fielding of the 120MM HEGM to Army units. NET is conducted using the crew training method.

Coordination with the supporting Field Artillery unit is required to establish the Fire Support linkage of the Mortar Crew, Fire Direction Center, Forward Observer, and the Fire Support Advanced Field Artillery Tactical Data System (AFATDS).

5.1.4 The NET plan and Materiel Fielding Plan (MFP) must synchronize the arrival of training resources and the 120MM HEGM delivery. NET is conducted in accordance with the 120MM HEGM NET Plan. A NET TSP will be developed by the MD and validated by the MCoE Training Developer during the MOT&E. The NET teams will have total responsibility for training Soldiers on the operation and maintenance of the 120MM HEGM during system HEGM fielding.

5.1.4.1 All NET training products will be developed IAW the Systems Approach to Training (SAT) process, TRADOC Reg. 350-70, Army Learning Policy and Systems, 6 Dec 2011 and Army training support design standards.

5.1.4.2 All NET 11C operator training products must include HEGM's five requirements of accurate predicted fire:

- Target Location: Must be accurately located within 10 meters (including altitude) from the Forward Observer
- Gun Position: Must be located using a military GPS device
- Ammunition & Weapon: Mortar must properly laid using aiming circle (survey), GLPS or MFCS, base-plate seated, accurate propellant temperature
- Must have accurate and most recent Meteorological (MET) data (within four hours)

- Must determine mortar Ballistic Calculation using the LHMBC or MFCS

5.1.4.3 All NET Programs of Instruction (POIs) are provided to the MCoE Training developers for use in developing institutional POIs.

5.1.4.4 NET Verification and Validation will verify and validate all course material, training products and TSPs developed.

5.1.4.5 At the conclusion of NET, a "stay-behind" package is to be provided to the unit to support sustainment training requirements.

5.1.4.6 Likely HEGM Operator Tasks may include:

- HEGM 3: Perform operator level maintenance checks and services (PMCS) and troubleshoot the Precision Lightweight Universal Mortar Setter System (PLUMSS).
- HEGM 4: Set the fuze on a XM395 Precision Guided Munition (HEGM).
- HEGM 17: Perform misfire procedures on ground mounted 120mm mortar with a XM395 HEGM round.
- HEGM 05: Identify differences between LHMBC software versions 3.3, 4.0, 5.0 and MFCS software versions 5.1 and 6.1.
- HEGM 6a: Perform operator level maintenance checks and services (PMCS) on the MFCS - D.
- HEGM 07a: Program the Mortar Fire Control System Dismounted (MFCS-D) for operation with HEGM capability enabled.
- HEGM 08: Compute data for a manual Grid mission using a Lightweight Handheld Mortar Ballistic Computer (LHMBC).
- HEGM 08a: Compute data for a manual Grid mission using a Mortar Fire Control System Dismounted (MFCS-D).
- HEGM 09: Compute data for a manual Shift mission using a Lightweight Handheld Mortar Ballistic Computer (LHMBC).
- HEGM 09a: Compute data for a manual Shift mission using a Mortar Fire Control System Dismounted (MFCS-D).
- HEGM 10. Compute data for a manual Polar mission using a Lightweight Handheld Mortar Ballistic Computer (LHMBC).
- HEGM 10a: Compute data for a manual Polar mission using a Mortar Fire Control System Dismounted (MFCS-D).

- HEGM 11: Compute data for a manual Registration mission using a Lightweight Handheld Mortar Ballistic Computer (LHMBC).
- HEGM12: Perform operator level troubleshooting on the XM395 Precision Guided Munition (HEGM), Precision Lightweight Universal Mortar Setter System (PLUMSS), and Lightweight Handheld Mortar Ballistic Computer (LHMBC).
- HEGM 12a: Perform operator level troubleshooting on the XM395 Precision Guided Munition (HEGM), Precision Lightweight Universal Mortar Setter System (PLUMSS), and Mortar Fire Control System Dismounted (MFCS-D).
- HEGM 13: Compute data for a manual grid mission using a Lightweight Handheld Mortar Ballistic Computer (LHMBC) with Improved Platform Integration Kit (iPIK) enabled.
- HEGM 14: Compute data for a digital Grid Time on Target (TOT) mission using a Lightweight Handheld Mortar Ballistic Computer (LHMBC) with Improved Platform Integration Kit (iPIK) enabled.

5.1.4.7 Likely HEGM 13F Forward Observer (FO) Tasks must focus on organic software and equipment including ( Advanced Field Artillery Tactical Data System (AFATDS), Pocket-sized Forward Entry Device (PFED ), and Forward Observer System (FOS), Precision Strike Suite for Special Operations Forces (PSS-SOF), and Precision Fires Imager ( PFI ) are required for precision HEGM fires.

## **5.2 Displaced Equipment Training (DET)**

5.2 Displaced Equipment Training (DET): There is no requirement for displaced equipment training as the 120mm HEGM rounds will be fired from all current Army 120mm systems.

### **5.3 Doctrine and Tactics Training (DTT)**

Doctrine and Tactics training (DTT) is funded by TRADOC. DTT is formal instruction, training, and guidance for operators through senior commanders on how to employ the new capabilities. DTT provides the principle employment concept, and the "how to" tactics, techniques, and procedures (TTP) presented through battle drills, simulations, and situational training exercises. The doctrinal training strategy provides training when required and feasible prior to NET/Displaced Equipment Training (DET), and it ends before sustainment training.

The US Army Maneuver Center of Excellence is the proponent for the XM395 High Explosive Guided Mortar (HEGM) precision mortar munitions and will be responsible if necessary for the development of Doctrine, Tactics and Techniques training. The MCoE will develop any new DTT through the review of applicable operational concepts and identify the need for such training to the Material Developer and Product Manager, Guided Precision Munitions and Mortar Systems (PdM GPM2S) for inclusion within the NET Plan (NETP). DTT will be presented as part of NET and in conjunction with test events required for development of the HEGM. DTT will be added to applicable doctrinal manuals during the normal document update period. Commanders and other unit leadership receiving DTT if required will be invited to also attend the HEGM livefire as part of operator NET.

#### 5.4 Training Test Support Package (TTSP)

The Maneuver Center of Excellence will provide the TTSP based on the TSP provided by the material developer (PdM GPM2S) in support of First Unit Equipped (FUE). The TSP will be multipurpose and digitized in multimedia format to accomplish all fielding requirements. The MCoE Training Developer (TNGDEV) will develop the draft TTSP.

The respective proponent training developer will develop the TTSP after receiving the NET TSP from the materiel developer. The TTSP for HEGM will be delivered to support Operational Test (OT). The TTSP consists of:

- (1) Latest approved HEGM STRAP.
- (2) Test Training Certification Plan.
- (3) Data collection requirements.
- (4) Daily training schedule for test player personnel.
- (5) POI for each course supporting the test.
- (6) List of TADSS required and embedded (Embedded training solution is the ultimate capability, if available).
- (7) Appropriate Combined Arms Training Strategies (CATS) and Test and Evaluation Packages.
- (8) List of ranges, targets, ammunition, and other items needed to support the training.
- (9) System Technical Manuals (TM) including the Interactive Electronic Technical Manuals (IETMs).
- (10) Draft systems technical bulletins (Errata Sheets).

The MCoE TNGDEV develops and approves, then provides the TTSP to the testing community to use in evaluating new system training. The TTSP outlines the methods and procedures to evaluate and certify individual and collective pretest training (who, where, and how training is to be certified). The MD will support TTSP development by providing contractor training materials (operator, staff planner and maintainer training support packages, and technical publications) no later than (NLT) 120 days prior to the scheduled FUE. In accordance with AR 350-1 and DA Pam 73-1, the MD will also provide funding to support training development for the FUE.

## 6.0 Institutional Training Domain

Institutional Training: The U.S. Army Maneuver Center of Excellence; Ordnance Center and School; the Fires Center of Excellence (FCoE) and other proponent schools as required will provide input to required Institutional training. The current concept for training the HEGM is envisioned to be integrated in a two phased program. Phase I will be class room Interactive Multimedia Instruction (IMI), and virtual simulation. It will focus on development of the complete understanding of the munition necessary for effective engagements while conducting decisive action operations. Phase II will be the live fire of full service HEGM ammunition into the impact areas for system operational readiness verification and total collective training. As the HEGM is in development, this training strategy will be finalized IAW the developing Army learning products to analysis, design, development, implementation, and evaluation (ADDIE) process within the Material Acquisition Development Process IAW TRADOC Regulation 350-70, 6 Dec 2011. Likewise the FCoE will conduct DTT for the employment of precision and near precision munitions, identifying the five critical elements required for accurate and timely predictive fires. The outcome of the training strategy will result in the units' ability to effectively employ HEGM on the battlefield. Key components of the HEGM training strategy are: institutional training, unit training, training support products, training devices, simulations, ranges, targets, and NET will provide initial individual training on system maintenance, operation/functions and day/night engagement decision skills instruction during initial military training (IMT) to designated Soldiers for both the mounted and dismounted positions.

Individual & Crew Training: Using the approved training device for the crew training will train critical tasks to standard, including: operation of the mortar and munitions. It will be taught in the institutional schools IAW a MCoE Program of Instruction (POI) and by MCoE certified instructor. The FCoE FA School will conduct MOS 13F training on automated target refinement in the Advanced Individual Training and NCO courses.

Leader Training Courses: These courses will contain a common core which includes instruction on technical characteristics, engagement skills training, system logistical support, doctrinal employment, and considerations based on the munitions capabilities and contribution to the integrated three (3) dimensional battlefield. Selected Non Commissioned Officer (NCO) and officer courses will include train-the-trainer instruction on the systems integration, development and execution of individual and collective programs. The leader may use a constructive simulation or an approved training device as a desk top trainer to plan and deploy the 120mm mortar with HEGM munitions.

The MCoE will develop Distributed Learning (dL) training package for advance courses

and Reserve and National Guard courses to train unit commanders. The Field Artillery School will include training on precision fires with regard to the requirements for Accurate Predictive Fires, including material on target mensuration and collateral damage considerations in NCO and Officer courses.

The MCoE Fires Cell supports institutional training at the MCoE Branch Schools with informational briefings and instruction on the integration of Fires. The MCoE and FCoE will collaborate on the control of precision guided munition missions. The efforts of the collaboration will be published in the appropriate doctrinal publications."

MOS 89B will receive advanced individual training on the HEGM in accordance with United States Army Ordnance Munitions and Electronics Maintenance School (OMENS) requirements. The changes, which pertain to ammunition handling and storage, will be integrated into the Advanced Individual Training (AIT) 89B and the Ammunition Technician (Warrant Officer) 890A will be provided by OMENS. Soldiers transferring to ammunition units in the field who have not received handling and storage training relating to HEGM will attend a transition course provided by OMENS. This information will be integrated into the existing Program of Instruction for the 89B10, 89B30 and the 890A.

Unit Training AC/RC: Individual and collective sustainment training will be conducted by equipped units on a year round basis. This training sustains and evaluates individual and collective training features such as One TESS Mortars for tactical force on force combat mission proficiency and approved virtual training for section and team mission proficiency. TESS technology will be provided for both the mounted and dismounted configuration to support live force on force training at, home station, local training areas, maneuver Combat Training Centers (CTC), Joint Readiness Training Center (JRTC) and the National Training Center (NTC). DA PAM 350-38, Standards in Weapons Training provides Commanders with the HEGM live fire training strategies for required individual, crew, and collective HEGM weapons training.

## **6.1 Institutional Training Concept and Strategy**

The training strategy for the HEGM is organized into 4 areas. The first area is the training developed and conducted to support System Development Demonstration (SDD). The second is the New Equipment Training including Tactics, Techniques & Procedures (NET/TTP). Third is Institutional and fourth is unit sustainment. When required and scheduled, the NETP will list the location and personnel needed for RC NET team deployment. Reserve Component (RC) training will follow the same training concept and Program of Instruction (POI) as the active army, modified to be given during monthly and annual training cycles. The MOS 11C Total Army Training System (TATS) courses will include the HEGM as it is fielded to the reserve. HEGM training strategies and concepts will be coordinated with the RC schools point of contact within each effected proponent school. The first area addresses all the necessary front-end analysis, design, and development of training programs, identification of prerequisites skills and knowledge required for the HEGM. DOTD Maneuver Center of Excellence, will use the efforts of the HEGM SDD to synthesize the appropriate training approach. The Field Artillery School will train Fire Support and Fire Direction Officers and Soldiers on the skills required to support precision and near precision munitions at resident training courses. The Fires Cell at the MCoE can assist in the training of maneuver Soldiers pending schedule and resource availability. The Ordnance School will update resident training courses to train HEGM handling, misfire and storage tasks.

Changes to the institutional programs will be performed using the Analysis, Design, Development, Implementation, and Evaluation (ADDIE) process IAW TR 350-70, Chapter 6, Section III, TP 525-8-2 w/Ch 1 6 Jun 11 and documented in the TDC database . The training proponent will make appropriate changes in doctrine and TTPs based on HEGM fielding and deployment lessons learned, and will develop necessary institutional training material.

### **6.1.1 Product Lines**

The MD will provide operator and maintainer TSPs to include task summaries, lesson plans, and supporting media no later than (NLT) 120 days prior to the scheduled FUE, using DI-SESS-81522, AR 350-1 Army Training and Leader Development, dated 18 Dec 2009 with Rapid Action Revision (RAR) 4 August 2011 and TRADOC Regulation 350-70 Systems Approach to Training, 6 December 2011 as guidance for content and format. In addition, technical manuals will be provided 180 days prior to the start of FUE.

All new courseware should be provided in electronic format that is compliant with the latest version of the DOD Sharable Content Object Reference Model (SCORM) where appropriate and cost effective in accordance with DOD Instruction 1322.26.

Interactive Multi-Media Instruction (IMI), if available, will be used to the maximum extent possible for Institutional Training. The Virtual training systems like the Virtual Battlespace2 Fires (VBS2 Fires) will be available for use. All other products such as training support packages will be modified to reflect the 120MM HEGM.

All HEGM 11C fire control training will be covered by updates of current computer based training (CBT) for the M32 Lightweight Handheld Mortar Ballistic Computer (LHMBC) and Mortar Fire Control System (MFCS)

The NET Team will provide training material that covers the CONOPS of HEGM, describes in detail the HEGM components, interfaces and operating procedures, and a leader's briefing that identifies a broader overview of characteristics, capabilities and limitations of the HEGM cartridge. This briefing shall give commanders specific guidance as to when and how precision munitions should be incorporated into operations planning and which munitions shall address what targets in a given scenario (CDD para 14.4.5 Reach-Back Training).

#### **6.1.1.1 Training Information Infrastructure**

HEGM TSPs will provide complete, stand alone, exportable training package integrating training products and materials needed to train one or more critical individual task and support critical tasks. The HEGM will have digital TSS products and information capability if required. This capability will be available before the final is complete.

The institutions will provide internet access to existing labs/class rooms to allow for the maximum use of IMI.

#### **6.1.1.1.1 Hardware, Software, and Communications Systems**

Existing class room with desk-top or laptop computer with LAN capability will provide interface for IMI products via Army Training Network (ATN).

#### **6.1.1.1.2 Storage, Retrieval, and Delivery**

The training material will remain in the institution as a CD / DVD. It will also be stored on the Central Army Registry (CAR) via the Army Training Network (ATN) and AKO.

#### **6.1.1.1.3 Management Capabilities**

The CFFT will require Management assistance to operate the virtual training. The IMI products will not require management oversight however the IMI products will be of interest to management.

#### **6.1.1.1.4 Other Enabling Capabilities**

Will not require other enabling capabilities.

#### **6.1.1.2 Training Products**

Develop the required training content and materials for Soldiers and leaders on individual skills and tasks, and crew on collective skills and tasks. The tasks performed by the HEGM institutional training team will require a program of instruction that includes a training task analysis; supporting training support packages (TSP), training test support packages (TTSP), and a call-out of all tactics, techniques, and procedures (TTP) that must be trained and tested to standard.

#### **6.1.1.2.1 Courseware**

The courseware to include the instructional material has been developed. New courseware for developmental improvements to the system will be developed and incorporated into the existing POI upon validation and verification.

#### **6.1.1.2.2 Courses**

No new courses are required for the HEGM. HEGM training will be included in existing training courses within the institution training environment.

#### **6.1.1.2.3 Training Publications**

The following publications will be reviewed for required HEGM updates:

AR 385-63. Range Safety, 30 January 2012.

ATTP 3-21.90. Tactical Employment of Mortars, 4 April 2011.

FM 3-22.90. Mortars, 7 December 2007.

FM 3-22.91. Mortar Fire Direction Center Procedures, 17 July 2008.

STP 7-11C14-SM-TG. Soldier's Manual Indirect Fire Infantryman Mos 11C, Skill Levels 1/2/3/4, 27 June 2012.

TC 3-21.2. Mortar Gunnery, 30 March 2012.

#### **6.1.1.2.4 Training Support Package (TSP)**

The HEGM NET TSP will be developed by the MD and validated by the MCoE Training Developer during the MOT&E. This TSP will include modifications or revisions required as a result of the course validation and operational testing. Operator and maintainer TSPs will include task summaries, lesson plans, and supporting media no later than (NLT) 120 days prior to the scheduled FUE, using DI-SESS-81522, AR 350-1 Army Training and Leader Development, dated 18 Dec 2009 with Rapid Action Revision (RAR) 4 August 2011 and TRADOC Regulation 350-70 Systems Approach to Training, 6 December 2011 as guidance for content and format.

The training IPT will monitor the development and presentation of the training program and provide feedback to the developers. MIL-PRF-29612B will be used as the basis for development of instructional media. An interactive compact disk read only memory (CD-ROM) may be developed for use during group and individual unit-level training, which should also lead to system training certification. Institutional Training will be conducted using the TSP provided by the MD. The TSP will be multipurpose and digitized in multimedia format to accomplish all fielding requirements. The TSP contains the lesson plans and is POI based.

The MCoE TNGDEV develops, approves and then provides the TTSP to the testing community to use in evaluating new system or non-system TADSS training. The contractor will be responsible for providing TM updates and a digitized Interactive Multimedia Instruction (IMI) Training Support Package for developmental 120MM HEGM components to support operator training at the institution and unit. The TSP can include but not limited to the Collective Warfighter TSP, TADSS TSP and Training Test Support Package (TTSP).

#### **6.1.1.3 TADSS**

The Virtual Battlespace 2 (VBS) Fires will be available to the institutions for virtual team training. Mortar One TESS (CDD paragraph 14.4.2 Individual, Unit, and Crew Training) is planned for live force-on-force training engagements. This system uses or will use the current and future instrumentation systems at the combat training centers or future home station systems.

The CFFT is not required for HEGM crew / operator training. All HEGM 11C fire control training will be covered by updates of current computer based training (CBT) for the M32 Lightweight Handheld Mortar Ballistic Computer (LHMBC) and Mortar Fire Control System (MFCS) (CDD para 14.4.5 Reach-Back Training).

#### **6.1.1.3.1 Training Aids**

HEGM training aids will be developed to provide visual understanding as well as manual access for crew drills, and HEGM programming.

Electronic Fuze Setting Simulator (if required): A small electronics device designed to simulate all electronic functions of setting the tactical HEGM cartridge fuze and GPS navigation assembly for the purpose of training. The fire control system, PLUMSS or PLUMSS-M, and fuze setter interact with the fuze simulator to provide the user a means to practice setting a fuze by applying GPS coordinates, fuze function mode, resetting, etc. in place of the tactical HEGM.

Inert Tactical Mass Simulators with Packaging: HEGM cartridge configuration possessing the same projectile shape, size, weight, and center of gravity, but will be marked per MIL-STD-595 as a training round (i.e. gold). Inert Mass Simulator does not contain any electronics or warhead fill. It includes both the inner and outer packaging and inert propulsion components for training purposes. An extractor tool is required to remove the Inert Tactical Mass Simulators from the 120mm cannon.

#### **6.1.1.3.2 Training Devices**

HEGM training devices will be developed by the HEGM contractor for training in the class room and for field training.

The Virtual BattleSpace 2 Fires (VBS2 Fires) and CFFT are classified as a non systems and provides a visual image of the battle area that will assist instructors to train Soldiers in the call for fire procedures.

#### **6.1.1.3.3 Simulators**

One Tactical Engagement Simulation System (One-TESS) is a constructive non system device that will allow the Platoon leaders and Company commanders to learn how to employ the 120MM HEGM as well as see the affects using computer generated forces. A live force on force device will be embedded in the 120MM HEGM that will allow interface to the instrumentation system at CTCs and home station ranges to permit the mortar system to provide simulated and scored fires.

#### **6.1.1.3.4 Simulations**

There are no simulations for the 120MM HEGM required, but 120MM HEGM may be included in future virtual simulations.

#### **6.1.1.3.5 Instrumentation**

Mortar One TESS system will be modified to include HEGM round simulation for Combat Training System (CTC) Force on Force training.

#### **6.1.1.4 Training Facilities and Land**

There is no requirement for any changes in land or facilities.

#### **6.1.1.4.1 Ranges**

There is no requirement for new or additional mortar live fire ranges to support HEGM. Point targets must be established to evaluate live accuracy. Safe areas must be established for FOs to observe targets and direct HEGM fires.

However, each Installation G3/DPTMS receiving HEGM must update existing Surface Danger Zone diagrams for HEGM flight characteristics IAW DA Pam 385-63.

**6.1.1.4.2 Maneuver Training Areas (MTA)**

Not Applicable

#### **6.1.1.4.3 Classrooms**

The current or a modified traditional classroom will meet the requirement.

#### **6.1.1.4.4 CTCs**

The instrumentation for targets will be required to include NTC, JRTC, and CMTC.

#### **6.1.1.4.5 Logistics Support Areas**

There is no new requirement for storage and staging areas for 120MM HEGM training products and systems. Health monitoring devices can be used to gather handling, shock and environmental data of smart munitions.

#### **6.1.1.4.6 Battle Command Training Centers (BCTC)**

There is no additional requirement beyond the standard Mission Training Complex (MTC).

#### **6.1.1.5 Training Services**

The Army Program Manager (PM) is responsible for ensuring that the 120MM HEGM quantities are current within applicable distribution plans, and that program resources are sufficient to support asset distribution.

#### **6.1.1.5.1 Management Support Services**

There is no new support services required.

#### **6.1.1.5.2 Acquisition Support Services**

The MD, through coordination with the respective requirements office, is responsible for identifying equipment displacements and compiling a service specific Priority Distribution Listing. The Priority Distribution Listing will indicate the specific MACOM, priority, and quantity authorized; and the ILSO, within the PM, will further define the unit's name, location, authorization and on-hand quantities to effectively plan, coordinate and execute 120MM HEGM fielding's.

#### **6.1.1.5.3 General Support Services**

There will be distribution and replication of Manuals & Compact Disks as required. TADSS development such as TESS will be developed, procured, & sustained to support the training system.

### **6.1.2 Architectures and Standards Component**

OneTESS will contain the ability to interoperate with CTIA and OneSAF.

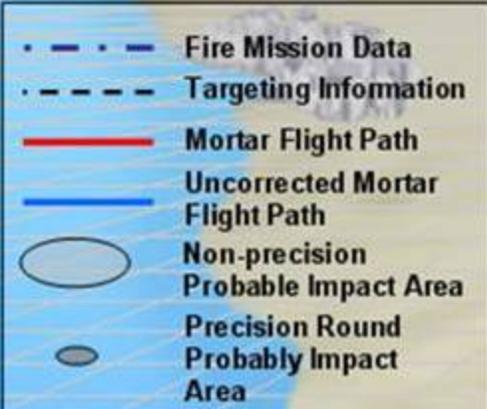
#### **6.1.2.1 Operational View (OV)**

The 120mm Mortar with and without HEGM will maintain the same business practices and will not need any additional resources and will be able to participate in joint training events.

The OV-1 describes the use of a HEGM on the battlefield. For the purposes of this HEGM CDD, this applies directly to the HEGM. The process of requesting fires is unchanged for the units that the mortar crews are supporting. However, the commander can make the decision to fire precision GPS guided rounds if he feels the situation warrants their use. For instance if the commander has high confidence in the accuracy of the target location, such as a situation where there is a technology enhanced target locator in use, or if the commander wishes to reduce the circular probability of error of the rounds impacting, such as in restrictive terrain. If the commander makes the decision to use the HEGM rounds, the mortar gun crews load the target location into the round, set the fuze and then fire the round.

# Precision Mortar Cap HEMC-G

The CFF process is unchanged by use of precision round prior to the target location being loaded by the gun crews



Target location is loaded into round prior to firing



**HEMC-G improve accuracy of mortar fire missions through GPS based in-flight trajectory corrections.**

1. Observer / Sensor Identifies Target and Initiates Call for Fire to the Network
2. Network / MFCs determines shooter and transmits firing data to mortar
3. Crew programs and fires HEMC-G on command from MFCs or Network
4. Precision mortar round adjusts flight path to impact / detonate at specified point

No Target uses conv Call For F methods to determine location – grid as pa

Table 5.7.1. High Level Operational Concept Graphic

Operational View (OV-1)

#### **6.1.2.2 Systems View (SV)**

The 120mm Mortar will maintain its current ability to interoperate with TSS components and Mission Command Systems.

#### **6.1.2.3 Technical View (TV)**

The 120mm Mortar will interface via the Mortar Fire Control to TESS solution (example is OneTESS) and OneTESS is CTIA compliant.

### **6.1.3 Management, Evaluation, and Resource (MER) Processes Component**

There is no additional MER requirements needed.

#### **6.1.3.1 Management**

Where possible the HEGM will use existing facilities and support infrastructure. Training development will focus on producing products that are capable of being used both in the institution and in the operational training domain and focused only on combat critical tasks.

Students and instructors will routinely be asked to evaluate training events and products to determine how best to improve the quality and efficiency of instruction to provide the best quality of training with the least expenditure of resources.

There will likely be increased management of the 120mm Mortar because of the XM395 munition, and training to employ the munition.

#### **6.1.3.1.1 Strategic Planning**

The 120mm Mortar with and without HEGM is aligned with the National Defense strategies, the TSS strategic plan, and the Army Transformation Campaign Plan.

#### **6.1.3.1.2 Concept Development and Experimentation (CD&E)**

There is an effort to provide the 120mm mortar Soldiers an instrumented force on force capability using OneTESS.

#### **6.1.3.1.3 Research and Studies**

An ICD and TTPs are being developed to reflect the new tasks required by the HEGM round.

#### **6.1.3.1.4 Policy and Guidance**

The documents listed below apply to the design, procurement, and use of the

HEGM:

AR 350-1 and AR 350-38

DA PAM 350-38

TRADOC Regulations 350-70 and 71-20

TRADOC Pamphlet 71-20

TP 525-8-2 w/ Ch 1 (6 Jun 2011)

Command Training Guidance

Training Doctrine Manuals (ADP 7-0, ADRP 7-0)

LOGSA Pamphlet 700-3, Total Package Fielding

#### **6.1.3.1.5 Requirements Generation**

This STRAP supports the 120mm HEGM Capabilities Development Document (CDD) to which it is attached.

#### **6.1.3.1.6 Synchronization**

The fielding of the HEGM will be synchronized with the following as applicable:

- Unit Set Fielding
- Army Transformation Campaign Plan (ATCP)
- Implementation Plan for Transforming DoD Training
- TADSS distribution plans
- Sustainment Command (formerly CASCOM) and Ordnance Center and School

#### **6.1.3.1.7 Joint Training Support**

The fielding of the HEGM will be synchronized with the following as applicable:

Joint Knowledge Development and Distribution Capability (JKDDC)

Joint Assessment and Enabling Capability (JAEC)

Joint National Training Capability (JNTC)

Joint Advanced Distributed Learning C0-Labs

Joint Professional Military Education (JPME)

### **6.1.3.2 Evaluation**

The following feedback mechanisms described in the following paragraphs will be used to measure, audit, and analyze the efficiency and effectiveness of programmed training.

The following sections (6.1.3.2.1 thru 6.1.3.2.3) identify and describe the evaluation processes required for the HEGM in the Institutional Training Domain.

#### **6.1.3.2.1 Quality Assurance (QA)**

A 120mm HEGM QA plan will be used IAW each installation's QA plan. Each QA Office (QAO) will use proven techniques to determine the quality of training provided by the institution. External evaluations will focus on the use of tasks trained, the proper application of those tasks, and identification of tasks not trained but needed. Internal evaluations will focus on the presentation of the tasks at the institution, the course content, and the presentation of material by the instructor. QAO will be responsible for conducting any Post Fielding Training Effectiveness Analysis (PFTEA). Observations will be reported to respective DOT for corrective actions.

Maneuver Center of Excellence DOTD, and PdM GPM2S will provide the procedures to ensure the contractors meet the required quality assurance.

#### **6.1.3.2.2 Assessments**

The 120mm Mortar with and without HEGM will have throughout the process defined and addressed Risk assessment. As part of the evaluation phase of other ADDIE process, Post Fielding Training Effectiveness Analysis (PFTEA) will be conducted. The purpose of this PFTEA will be to determine how effectively and efficiently the HEGM is meeting user training requirements. The findings will be used to provide lessons learned information on the training development effort associated with future weapon systems and/or product improvement. Other assessment tools will be used to include:

- Training evaluation and analyses
- Monthly status reports

The Product Manager Guided Precision Munitions and Mortars (PdM GPM2S) will fund a PFTEA approximately one-year following FUE.

#### **6.1.3.2.3 Customer Feedback**

The following tools will be used to measure fielded units feedback:

- Electronic media for surveys, help desks, collaboration
- Interviews
- Questionnaires
- After action reviews

#### **6.1.3.2.4 Lessons Learned/After-Action Reviews (AARs)**

The MCoE will leverage the Center for Army Lessons Learned (CALL) and the Mission Command Knowledge System (MCKS) databases for new HEGM TTPs as well as conducting face to face interviews with units/individuals returning from theater to ensure HEGM training programs and instruction remain current and relevant.

**6.1.3.3 Resource**

See CDD paragraph 16.3.6 Cost Analysis Conducted To Date. All cost analysis to date was developed and used to support POM build resources in order to complete production and update the HEGM program.

\$M, BY12	APPN	APE	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25
RDT&E	RDTE	654802S36	\$24.9	\$31.9	\$22.7								
Procurement (Ammo)	AMMO	E99250				\$28.1	\$61.9	\$55.1	\$50.6				
Procurement (Other -Mission Setter)	OPA	K99300				\$16.1							
Procurement Cost						\$44.2	\$61.9	\$55.1	\$50.6				
Maintenance Funding													
Sustainment Cost	OMA		\$3.3	\$3.3	\$3.3	\$3.3	\$3.5	\$3.5	\$0.4	\$2.8	\$2.8	\$2.6	\$2.2
Total			\$28.2	\$35.2	\$26.0	\$47.5	\$65.4	\$58.6	\$51.0	\$2.8	\$2.8	\$2.6	\$2.2

Item Resourced	Prior	FY14	FY15	FY16	FY17	FY18	FY19
		Yrs or \$K					

<b>Manpower - TD</b>							
Contractor		1.0 MY					
Civilian		1.0 MY					
Enlisted				0.2 MY	0.2 MY	0.2 MY	0.2 MY
Warrant				0.2 MY	0.2 MY	0.2 MY	0.2 MY
Officer				0.2 MY	0.2 MY	0.2 MY	0.2 MY
Contract/Spt		\$200K	\$200K	\$200K	\$200K	\$200K	\$200K
Civ Pay		\$200K	\$200K	\$200K	\$200K	\$200K	\$200K
Trvl/Per Diem		\$40K	\$40K	\$40K	\$45K	\$50K	\$50K
Other							

Rationale: TNGDEVs are needed to develop and maintain the programs of instruction and other outputs of the ALM process. Military will be used in different areas within the training

program. Contact Support is required for training development in order to develop and maintain the programs of instruction, computer based training, and training development support. Travel /Per Diem represents cost to attend training and reviews; and for four (4) instructor/key personnel to evaluate training prior to operational testing.

Item Resourced	Prior	FY14 Yrs or \$K	FY15 Yrs or \$K	FY16 Yrs or \$K	FY17 Yrs or \$K	FY18 Yrs or \$K	FY19 Yrs or \$K
New Equipment Training							
Contractor		1.0 MY					
Contract/Spt		\$200K	\$200K	\$200K	\$200K	\$200K	\$200K
Trvl/Per Diem		\$40K	\$40K	\$40K	\$45K	\$50K	\$50K
Classrooms		\$0.5 K	\$0.5 K				
Equipment		\$0.5 K					
AC/DC Power		\$0.5 K					
Printing		\$0.1K					





Simulators		\$0.1K	\$0.1K	\$0.1K	\$0.1K	\$0.1K	\$0.1K
Simulations		\$0.1K	\$0.1K	\$0.1K	\$0.1K	\$0.1K	\$0.1K
GTA		\$0.1K	\$0.1K	\$0.1K	\$0.1K	\$0.1K	\$0.1K
Software		\$0.1K	\$0.1K	\$0.1K	\$0.1K	\$0.1K	\$0.1K
Trng Equip		\$0.6K	\$0.6K	\$0.9K	\$0.9K	\$0.8K	\$0.7K
Equipment		\$0.1K	\$0.1K	\$0.1K	\$0.1K	\$0.1K	\$0.1K
Printing		\$0.1K	\$0.1K	\$0.1K	\$0.1K	\$0.1K	\$0.1K
Shipment		\$0.1K	\$0.1K	\$0.1K	\$0.1K	\$0.1K	\$0.1K
Sustainment		\$0.5 K					
Other							

Rationale: Cost to procure and sustain TADSS.



Rationale: Costs to modify existing facilities

Item Resourced	Prior	FY14 Yrs or \$K	FY15 Yrs or \$K	FY16 Yrs or \$K	FY17 Yrs or \$K	FY18 Yrs or \$K	FY19 Yrs or \$K
Training Services/TII							
LMS		\$0.1K	\$0.1K	\$0.1K	\$0.1K	\$0.1K	\$0.1K
Services		\$0.1K	\$0.1K	\$0.1K	\$0.1K	\$0.1K	\$0.1K
Servers		\$0.1K	\$0.1K	\$0.1K	\$0.1K	\$0.1K	\$0.1K
Licenses		\$0.1K	\$0.1K	\$0.1K	\$0.1K	\$0.1K	\$0.1K
IT Support	\$0.1K	\$0.1K	\$0.1K	\$0.1K	\$0.1K	\$0.1K	\$0.1K
Other							

Rationale: N/A



Equipment		\$0.1K	\$0.1K	\$0.1K	\$0.1K	\$0.1K	\$0.1K
Printing		\$0.1K	\$0.1K	\$0.1K	\$0.1K	\$0.1K	\$0.1K
TEA		50K	50K	50K	50K	50K	50K
PFTEA		50K	50K	50K	50K	50K	50K
Other							

## **7.0 Operational Training Domain**

The Operational Training Domain is the training activities that organizations undertake while at home station, at maneuver combat training centers (CTCs), during joint training exercises, at mobilization centers, and while operationally deployed. Unit commanders are responsible for proficiency of their Soldiers. This domain equates to assignments in the operational Army and the Army Force Generation (ARFORGEN) process drives the operational force training environment and requirements. The following sections (7.1 thru 7.1.3.3) explain the Operational Training Domain requirements for the HEGM.

### 7.1 Operational Training Concept and Strategy

The HEGM operational training strategy includes a three or four day New Equipment Training (NET) plan. NET will usually be conducted at fielding unit's home station. If required, HEGM NET livefire may require a different range location, if home station ranges are not available.

#### 7.01 Three Day NET PLAN

DAY 1	<u>Description / Evaluation</u>
	Introduction & Demonstration
	Components and Capabilities of the XM395 HEGM
	Components and Capabilities of the XM701 PLUMSS
	XM701 PLUMSS Maintenance
	XM395 Fuze Setting Procedures w/Practical Exercise
	XM395 Misfire Procedures w/Practical Exercise
	V4.0.1 Software Differences & Overview

	LHMBC Maintenance
	Initialize the LHMBC HEGM Enabled
	AAR
<b>DAY 2</b>	<b><u>Description / Evaluation</u></b>
	Manual Grid Mission - LHMBC
	Manual Shift Mission - LHMBC
	Manual Polar Mission - LHMBC
	LHMBC- PLUMSS Troubleshooting
	Manual PGM FFE mission - LHMBC
	Manual PGM TOT mission - LHMBC

	Digital Setup of FOS and LHMBC
	Digital PGM FFE mission - LHMBC
	Digital PGM TOT mission - LHMBC
	Repackage XM395 HEGM and XM701 PLUMSS
	AAR
<b>DAY 3</b>	<b><u>Description / Evaluation</u></b>
	Initialize all Computers PGM capable and FOS equipment with local LFX range data
	Input Safety Fan information from controlling Range Control
	Conducts Pre-Fire Checks with Live Fire Checklist
	Conduct Misfire rehearsal and conduct Safety Brief
	Conduct LFX with all Battalion Mortar System variants (Heavy,

	Stryker, and Dismounted) and their respective Fire Control Systems , and XM395 HEGM
	Missions should include manual and digital operations with FO support
	Initialize all Computers PGM capable and FOS equipment with local LFX range data
	Input Safety Fan information from controlling Range Control
	NETT conducts Pre-Fire Checks with Live Fire Checklist
	Conduct Misfire rehearsal and conduct Safety Brief
	Conduct Live Fire Exercise with all Battalion Mortar System variants (Heavy, Stryker, and Dismounted) and their respective Fire Control Systems , and XM395 HEGM
	Missions should include manual and digital operations with FO support
	AAR

**Table 7-1 Sequence of Three Day NET PLAN Training for HEGM NET**

7.02 Four Day NET PLAN

DAY 1	<u>Description / Evaluation</u>
	Introduction & Demonstration
	Components and Capabilities of the XM395 HEGM
	Components and Capabilities of the XM701 PLUMSS
	XM701 PLUMSS Maintenance
	XM395 Fuze Setting Procedures w/Practical Exercise
	XM395 Misfire Procedures w/Practical Exercise
	V4.0.1 & V6.1.1 Software Differences & Overview
	LHMBC Maintenance

	MFCS-D Maintenance
	Initialize the LHMBC HEGM Enabled
	AAR
<b>DAY 2</b>	<u>Description / Evaluation</u>
	Manual Grid Mission - LHMBC
	Manual Shift Mission - LHMBC
	Manual Polar Mission - LHMBC
	LHMBC- PLUMSS Troubleshooting
	Manual PGM FFE mission -

	LHMBC
	Manual PGM TOT mission - LHMBC
	Assemble MFCS-D with PLUMSS
	Initialize the MFCS-D PGM Enabled
	Manual Grid Mission - MFCS-D
	Manual Shift Mission - MFCS-D
	Manual Polar Mission - MFCS-D
	AAR
<b>DAY 3</b>	<b><u>Description / Evaluation</u></b>

	Manual PGM FFE mission - MFCS - D
	Manual PGM TOT mission - MFCS - D
	Digital Setup of FOS and MFCS-D
	Digital PGM FFE mission - MFCS-D
	Digital PGM TOT mission - MFCS-D
	Digital Setup of FOS and LHMBC
	Digital PGM FFE mission - LHMBC
	Digital PGM TOT mission - LHMBC
	Repackage XM395 HEGM and XM701 PLUMSS
	AAR

DAY 4	<u>Description / Evaluation</u>
	Initialize all Computers PGM capable and FOS equipment with local LFX range data
	Input Safety Fan information from controlling Range Control
	Conducts Pre-Fire Checks with Live Fire Checklist
	Conduct Misfire rehearsal and conduct Safety Brief
	Conduct Live Fire Exercise with all Battalion Mortar System variants (Heavy, Stryker, and Dismounted) and their respective Fire Control Systems , and XM395 HEGM
	Missions should include manual and digital operations with FO support

**Table 7-2 Sequence of Four Day NET PLAN Training for**

**HEGM NET**



### **7.1.1.1 Product Lines**

OneTESS is a live force on force architecture that will be required. Call for Fire Trainer (CFFT) will be required for virtual training capability to allow Forward Observer (FO) to train as well as provide the ability for the FO to locate the target correctly. FO (13F) training on organic software and equipment including ( Advanced Field Artillery Tactical Data System (AFATDS), Pocket-sized Forward Entry Device (PFED ), and Forward Observer System (FOS), Precision Strike Suite for Special Operations Forces (PSS-SOF), and Precision Fires Imager ( PFI ) are required for precision fires.

OneSAF is a constructive model that will allow the Platoon, Company, Battalion, and Brigade commanders display the effects of using the 120mm mortar with and without HEGM. VBS2 Fires is an advanced call-for-fire module for VBS2 that simulates artillery (mortar) to a high level of detail. It allows Offensive Support specialists to construct a Call-For Fire which is then processed and auctioned accordingly with VBS2. With some creative addition of communications the mortar platoons FDC can be trained along with dry firing the mortar gun squads.

#### **7.1.1.1 Training Information Infrastructure**

The 120mm Mortar with the Mortar Fire Control System (MFCS) will interface with a TESS component via the either net port. The TESS configuration will include a radio and processing hardware to interface into the instrumentation system. The actual configuration is currently TBD. OneTESS will provide a connection to CTIA and TENA for system standardization and joint training capability.

#### **7.1.1.1.1 Hardware, Software, and Communications Systems**

The hardware will be developed to meet the OneTESS infrastructure requirements, Software will be provided by OneTESS for interface development, and the communication system will be obtained per Army training doctrine based on the location of the training.

#### **7.1.1.1.2 Storage, Retrieval, and Delivery**

Training products will be stored on the Central Army Repository (CAR) [formerly the Reimer Digital Library (RDL)] and within the Training Development Capabilities (TDC) program. The distributed Learning (DL) repositories and the Army Learning Management Systems (ALMS) will store products for use within the institution, unit sustainment, and self-development domains. Additional access to courseware will be available through the Army Training Network (ATN) and AKO "quick-links".

#### **7.1.1.1.3 Management Capabilities**

Due to the current existence of the 120mm Mortar, there is no new management capability required.

#### **7.1.1.1.4 Other Enabling Capabilities**

There is no other capability required than those previously mentioned.

#### **7.1.1.2 Training Products**

As a leave behind packet from any NET furnished for the 120MM HEGM, compact discs will provide detailed instruction for training and maintenance of the system and any interfacing equipment, TMs and supporting publications needed for operations with special munitions. Because of the prior existence of the 120MM HEGM, Interactive Multimedia Instruction will not be developed for the 120MM HEGM set up and firing procedures unless warranted by a change that affects form, fit or function in a future increment of the 120MM HEGM.

#### **7.1.1.2.1 Courseware**

A HEGM program of instruction will be developed.

**7.1.1.2.2 Courses**

None required

#### **7.1.1.2.3 Training Publications**

The Training Manuals (FM 3-23.90, Mortars and FM 3-22.91, Mortar Fire Direction Procedures) will be updated to reflect any changes or additions to the 120MM HEGM.

#### **7.1.1.2.4 TSP**

A detailed training support package will be developed to instruct the Soldier on the new procedures required for the 120MM HEGM employment techniques in any new configuration to include the new tasks for its FOM and for the Forward Observer.

#### **7.1.1.3 TADSS**

TADSS will be required prior to the envisioned Operational Test (OT) 4Q FY15.

#### **7.1.1.3.1 Training Aids**

Training Aids will be created by the Program Manager that will allow the Soldier to train programming or setting the fuze for new munitions and the Inert Tactical Mass Simulators will have the capability of being dropped into the 120MM cannon. An extraction tool or capability will be also be required to pull the training aid from the mortar tube.

Electronic Fuze Simulator: A small electronics device designed to simulate all electronic functions of the tactical XM395 cartridge fuze and GPS navigation assembly for the purpose of training. The fire control system, PLUMSS or PLUMSS-M, and fuze setter interact with the fuze simulator to provide the User a means to practice setting a fuze by applying GPS coordinates, fuze function mode, resetting, etc. in place of the tactical XM395.

Inert Tactical Mass Simulators with Packaging: APMI cartridge configuration possessing the same projectile shape, size, weight, and center of gravity, but will be marked per MIL-STD-595 as a training round (i.e. gold). Inert Mass Simulator does not contain any electronics or warhead fill. It includes both the inner and outer packaging and inert propulsion components for training purposes.

#### **7.1.1.3.2 Training Devices**

A training device will be needed that interfaces with the current CTC and future OneTESS architectures and provide visible affects of engaging and being engaged by a force or force entity.

#### **7.1.1.3.3 Simulators**

The Call for Fire Training (CFFT) and Virtual Battlespace 2 - Fires (VBS2 - F) simulator will be required to provide collective training for the 11C or mortar crew in conjunction with the Forward Observer. The CFFT will show the effects of the HEGM round to allow the Forward Observers to train in battle damage assessment (BDA). One SAF will provide leaders the ability to display the effects on the enemy through constructive simulation.

#### **7.1.1.3.4 Simulations**

Wireless Instrumented Training System (WITS) can be used to show the effects of the 120MM HEGM in an instrumented range environment.

#### **7.1.1.3.5 Instrumentation**

The M1064 and its replacement AMPV Mortar Vehicle Instrumentation Integration Package (VIIP), and the Stryker Mortar Carrier will establish communications between the TESS instrumentation and each Combat Training Center (CTC), Digital Multi-purpose Range Complex (DMPRC), or other external interface training verification requirement.

#### **7.1.1.4 Training Facilities and Land**

No new facilities or land will be required.

#### **7.1.1.4.1 Ranges**

No new ranges will be required beyond what is currently being developed. Ranges will have to have targets for live fire engagement of the XM395 round in order to assess the fires team precision fire proficiency. Additionally, installations firing HEGM on existing ranges will need to update range Surface Danger Zones (SDZ) to account for high angle flight path.

#### **7.1.1.4.2 Maneuver Training Areas (MTA)**

No new MTA will be required.

#### **7.1.1.4.3 Classrooms**

No new or modified classrooms are required.

#### **7.1.1.4.4 CTCs**

No additional requirements beyond what is being developed for CTC will be needed.

#### **7.1.1.4.5 Logistics Support Areas**

No new additional requirements will be needed beyond the current requirements for the 120mm mortar.

#### **7.1.1.4.6 Battle Command Training Centers (BCTC)**

No new requirements are needed for the BCTC.

#### **7.1.1.5 Training Services**

No new training services required.

#### **7.1.1.5.1 Management Support Services**

No additional management support service required.

#### **7.1.1.5.2 Acquisition Support Services**

PEO STRI will be required to acquire the instrumentation outlined in paragraph 7.1.1.3.5 for the 120mm mortar system.

#### **7.1.1.5.3 General Support Services**

No additional GSS will be required.

### **7.1.2 Architectures and Standards Component**

Both OneTESS and OneSAF will provide interoperability across the LVCG-ITE.

#### **7.1.2.1 Operational View (OV)**

The Soldiers will be required to simulate HEGM live fire in force on force exercises as in Mortar One TESS and the follow on Army TESS.

#### **7.1.2.2 Systems View (SV)**

The system includes the 120MM HEGM as both mounted and dismounted on the M1064 APC configuration for ABCTs, the M1129 MCV for SBCTs, and as a dismounted system for the IBCT, the mission setter, the mortar fire control system, and the Forward Observer. Soldiers need to be trained to ensure that all aspects of the system will work together properly.

### **7.1.2.3 Technical View (TV)**

The MFCS after its modification will be required to interface with the training instrumentation system to allow for geoparing capability in accordance with the oneTESS standard.

### **7.1.3 Management, Evaluation, and Resource (MER) Processes Component**

No new additional MER process required.

#### **7.1.3.1 Management**

No new management process required.

#### **7.1.3.1.1 Strategic Planning**

No new strategic planning is required.

#### **7.1.3.1.2 Concept Development and Experimentation (CD&E)**

The geo pairing training concept was developed to meet the OneTESS standard for training in a force on force exercise.

#### **7.1.3.1.3 Research and Studies**

No additional research and studies are required.

#### **7.1.3.1.4 Policy and Guidance**

No additional policy or guidance is required.

#### **7.1.3.1.5 Requirements Generation**

This STRAP supports the 120mm HEGM Capabilities Development Document (CDD) to which it is attached.

#### **7.1.3.1.6 Synchronization**

The 120MM HEGM with its FOM to include developmental munitions will require the team to train as a cohesive unit. The Forward observers (13F) must train with the Fire Direction Center (FDC) as well as the Mortar Crew (11C) to reliably function as a team in a combat situation IAW Gunnery Tables contained in TC 3-21.2, Mortar Gunnery.

#### **7.1.3.1.7 Joint Training Support**

No new additional requirements will be needed to train in a joint environment.

#### **7.1.3.2 Evaluation**

The TTPs will be developed and the evaluation of execution will be based on following the TTPs associated with the given scenario.

#### **7.1.3.2.1 Quality Assurance (QA)**

Maneuver Center of Excellence, DOTD, and PM Mortar will provide the procedures to ensure the contractors meet the required quality assurance.

#### **7.1.3.2.2 Assessments**

PM Mortar is using contractor to assess the tasks that need to be trained and which LVC type of training would be best to train that task or tasks.

#### **7.1.3.2.3 Customer Feedback**

Product Manager, Guided Precision Munitions and Mortar Systems (PDM GPM2S) will use the following tools to obtain HEGM customer feedback (initial fielding and after first year of usage):

- Electronic media for surveys, help desks, collaboration
- Interviews and After Action Review (AAR) sessions
- Questionnaires

#### **7.1.3.2.4 Lessons Learned/After-Action Reviews (AARs)**

The operational unit commander and trainers will leverage the Center for Army Lessons Learned (CALL) and the Mission Command Knowledge System (MCKS) databases for new TTPs as well as conducting face to face interviews with units/individuals returning from theater to ensure training programs and instruction remain current and relevant. Unit commanders should maintain contact with the respective centers of excellence to insure the latest training POIs and resources are used in the conduct and support of operational unit sustainment and collective training. AARs will be provided by the CTCs using their instrumentation system. A brief outline of the means and methods will be developed used to capture and report HEGM lessons learned during home station training.







ETM		\$200K	\$200K	\$200K	\$200K	\$200K	\$200K
STP		\$200K	\$200K	\$200K	\$200K	\$200K	\$200K
IETM		\$40K	\$40K	\$40K	\$45K	\$50K	\$50K
ARTEP/MTP		1.0 MY					
Printing		\$0.1K	\$0.1K	\$0.1K	\$0.1K	\$0.1K	\$0.1K
Distribution		\$0.1K	\$0.1K	\$0.1K	\$0.1K	\$0.1K	\$0.1K
Other							
Contract/Spt							

Rationale: Cost to develop, revise, maintain, and distribute Training Products. Includes cost to develop TSP that will be used for NET, institutional, operational, and self-development domains.

Item Resourced	Prior	FY14 Yrs or \$K	FY15 Yrs or \$K	FY16 Yrs or \$K	FY17 Yrs or \$K	FY18 Yrs or \$K	FY19 Yrs or \$K
TADSS							
Training		\$0.1K					

Aids			\$0.1K	\$0.1K	\$0.1K	\$0.1K	\$0.1K
Devices		\$0.1K	\$0.1K	\$0.1K	\$0.1K	\$0.1K	\$0.1K
Simulators		\$0.1K	\$0.1K	\$0.1K	\$0.1K	\$0.1K	\$0.1K
Simulations		\$0.1K	\$0.1K	\$0.1K	\$0.1K	\$0.1K	\$0.1K
GTA		\$0.1K	\$0.1K	\$0.1K	\$0.1K	\$0.1K	\$0.1K
Software		\$0.1K	\$0.1K	\$0.1K	\$0.1K	\$0.1K	\$0.1K
Trng Equip		\$0.6K	\$0.6K	\$0.9K	\$0.9K	\$0.8K	\$0.7K
Equipment		\$0.1K	\$0.1K	\$0.1K	\$0.1K	\$0.1K	\$0.1K
Printing		\$0.1K	\$0.1K	\$0.1K	\$0.1K	\$0.1K	\$0.1K
Shipment		\$0.1K	\$0.1K	\$0.1K	\$0.1K	\$0.1K	\$0.1K
Sustainment		\$0.5 K					
Other							



Other							

Rationale: Costs to modify existing facilities

Item Resourced	Prior	FY14 Yrs or \$K	FY15 Yrs or \$K	FY16 Yrs or \$K	FY17 Yrs or \$K	FY18 Yrs or \$K	FY19 Yrs or \$K
Training Services/TII							
LMS		\$0.1K	\$0.1K	\$0.1K	\$0.1K	\$0.1K	\$0.1K
Services		\$0.1K	\$0.1K	\$0.1K	\$0.1K	\$0.1K	\$0.1K
Servers		\$0.1K	\$0.1K	\$0.1K	\$0.1K	\$0.1K	\$0.1K
Licenses		\$0.1K	\$0.1K	\$0.1K	\$0.1K	\$0.1K	\$0.1K
IT Support	\$0.1K	\$0.1K	\$0.1K	\$0.1K	\$0.1K	\$0.1K	\$0.1K
Other							

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Rationale: N/A

Item Resourced	Prior	FY14 Yrs or \$K	FY15 Yrs or \$K	FY16 Yrs or \$K	FY17 Yrs or \$K	FY18 Yrs or \$K	FY19 Yrs or \$K
Eval/QA							
Contractor		1.0 MY					
Civilian		1.0 MY					
Enlisted				0.2 MY	0.2 MY	0.2 MY	0.2 MY
Warrant				0.2 MY	0.2 MY	0.2 MY	0.2 MY
Officer				0.2 MY	0.2 MY	0.2 MY	0.2 MY
Contract/Spt		\$200K	\$200K	\$200K	\$200K	\$200K	\$200K
Civ Pay		\$200K	\$200K	\$200K	\$200K	\$200K	\$200K
Trvl/Per		\$40K	\$40K	\$40K	\$45K	\$50K	\$50K

Diem							
Facilities		\$0.1K	\$0.1K	\$0.1K	\$0.1K	\$0.1K	\$0.1K
Equipment		\$0.1K	\$0.1K	\$0.1K	\$0.1K	\$0.1K	\$0.1K
Printing		\$0.1K	\$0.1K	\$0.1K	\$0.1K	\$0.1K	\$0.1K
TEA		50K	50K	50K	50K	50K	50K
PFTEA		50K	50K	50K	50K	50K	50K
Other							

**8.0 Self-Development Training Domain**

Not Applicable

**A Milestone Annex**

<p align="center"><b>TRAINING DEVELOPMENT MILESTONE SCHEDULE - SHEET A</b></p>		<p align="center">PAGE OF PAGES</p>	<p align="center">REQUIREMENTS CONTROL SYMBOL</p>
SYSTEM HEGM	ACAT	OFFICE SYMBOL	AS OF DATE 14 February 2013
POINTS OF CONTACT	NAME	OFFICE SYMBOL	TELEPHONE
MATERIEL COMMAND	COL Scott Turner	PM, Combat Ammunition Systems	(973) 724-2003
	LTC William McDonough	PdM GPM2S	(973) 724-4209
TRADOC PROPONENT	COL Daniel R. Barnett	TCM Soldier, Dir. Soldier Division	(706) 545-1189
	ARCIC Mr. Chris Pruitt	ARCIC	(757) 788-4280
	CD: Mr. Alexander Wright	MCoE, Soldier's Division, Lethality	(706) 545-3914
	TD: Mr. Peter N. Helmer	MCoE, TDD, Systems Training Br	(706) 545-5306
	ATSC: Mr. Larry Cook	ATSC	(757) 878-0768

SUPPORTING PROPONENTS:				
		Mr. Daniel Etheridge	FCoE	(580) 588-0374
ITEM	DATE	RESPONSIBLE AGENCY/POC		TELEPHONE
MNS:				
SMMP:				
MRD:				
ILSMP:				
TTSP:				
QQPRI:				
BOIP:				
NETP:				
COMMENTS:				





**NOTE:** The following table is optional; however, it is useful for populating SHEET B above and provides greater detail for each milestone. If not used, delete from this section before submitting for staffing.

Individual Training Plan (Per each ITP)	
Milestone:	Date
1. Initial Individual Training Plan (ITP) submitted.	
2. Annotated task list submitted.	
3. Course Administrative Data (CAD) submitted.	
4. Training Program Worksheet (TPW) submitted.	
5. ITP submitted.	

6. POI submitted.	
7. Digitized copy archived.	
8. Resident course start date (NLT 12 months after FUE).	
Army Correspondence Course Program	
(Only as a DL portion of a TATS course)	
Milestone:	Date
1. Requirement identified and submitted for approval.	
2. Requirement approved by HQ TRADOC.	
3. Development initiated.	
4. Advance breakdown sheet submitted.	

5. Digitized camera-ready copy (CRC) submitted.	
6. Subcourse material ready for replication/distribution.	
Field Manuals (FMs)	
Milestone:	Date
1. Requirements identified.	
2. Draft FM changes validated.	
3. FM outlines approved.	
4. FM coordinating draft completed.	
5. Print/digitization request initiated.	

6. Approved digitized CRC submitted.	
7. Replication/distribution completed.	
<p>Army Training Literature</p> <p>Note: Includes the Soldiers' Manual (SM), Trainers' Guide (TG), and Army Training and Evaluation Program (ARTEP) products.</p>	
Milestone:	Date
1. Analysis completed.	
2. Draft SM, ARTEP MTP, and TG.	
3. ATSC staffing.	
4. Digitized/CRC submitted.	
5. Replication/distribution completed.	

Interactive Multimedia Instruction (IMI)/Distance Learning	
Milestone:	Date
1. Requirements identified and submitted for approval.	
2. Requirements approved by ATSC and TRADOC.	
3. Resources identified.	
4. Courseware developed and validated.	
5. Master materials to ATSC for replication and distribution.	
6. Replication/distribution completed.	
Training Effectiveness Analysis (TEA)	

(Conducted in-house, by contract, Training Development and Analysis Activity [TDAA], TRADOC Analysis Center [TRAC], or Program Manager [PM])

Milestone:

Date

1. TEA during capabilities development.

2. TEA updated for Milestone Decision Review A.

3. TEA updated for Milestone Decision Review B.

4. TEA updated for Milestone Decision Review C.

5. Post-Fielding TEA (PFTEA) planned.

Army Visual Information Production and Distribution Program (DAVIPDP)

Milestone:	Date
1. High risk tasks and jobs identified.	
2. Storyboards validated.	
3. DAVIPDP requirements submitted to ATSC.	
4. Requirements approved by DA.	
5. Production initiated.	
6. Replication/distribution completed.	
Training Aids, Devices, Simulators, and Simulations	
(TADSS)	
Milestone:	Date

1. High risk, hard-to-train tasks identified.	
2. Need for TADSS identified.	
3. TADSS concept validated.	
4. TADSS incorporated into the STRAP (part of the CATS).	
5. Analytical justification using the TEA provided.	
6. TSS CDD/ CPD developed, if required.	
7. TADSS effectiveness validated.	
8. TADSS incorporated into the ICD, CDD, CPD, STRAP	
9. MOS-specific milestones/requirements for TADSS developed and incorporated in the integrated	

training strategy (ITS).

Training Facilities and Land

Milestone:

Date

1. Range and facility requirements identified.

2. Identification of construction requirements completed.

3. Construction requirements submitted to MACOM.

4. Requirements validated and updated.

5. Supporting requirements identified and availability coordinated.

6. Installation and other construction requirements submitted to

MACOM.

7. Refined construction requirements and range criteria forwarded to MACOM, IMA, Chief of Engineers

8. Construction initiated.

Training Ammunition

Milestone:

1. Ammunition identified.

2. Initial ammunition requirements validated.

3. Requirements included in the ORD.

4. Ammunition item developed.

5. Validation and test completed.	
6. Ammunition requirements identified in the ITP.	
7. Requirements provided to installation/MACOM manager.	
8. Requirements included in DA Pam 350-38.	
9. Production entered.	
Training Equipment	
Milestone	
1.	
2.	

Training Services	
Milestone	
1. Contractor Logistic Support	
2. Contractor NET Support	
3. Contractor DET Support	

## **B References**

### DOCUMENTS NEEDED:

- Army Regulation 350-1, 19 Dec 2009, with RAR 4 Aug 2011
- Army Regulation 5-11, Management of Army Models and Simulations
- Army Regulation 70-1, Army Acquisition Policy
- Army Regulation 71-9, Materiel Requirements
- Army Regulation 73-1, Test and Evaluation Policy
- Army Regulation 600-2, Manpower and Personnel Integration (MANPRINT)  
in the System Acquisition Process
- Army Regulation 700-127, Integrated Logistics Support
- Army Publication 73-1, Test and Evaluation in Support of System  
Acquisition
- Army Publication 700-127, Integrated Logistics Support Manager's Guide
- TRADOC Reg 350-70, 6 Dec 2011
- STRAP Training Developers Guide

C Coordination Annex

Organization/POC (Date)	Summary of Comments Submitted (A/S/C)			Comments Accepted/ Rejected						Rationale for Non-Acceptance - S, C
				Accepted			Rejected			
	A	S	C	A	S	C	A	S	C	
v1.2.2 Jerry E Niggemann 2013/07/08 - 2013/07/18	Document Accepted As Written			0	0	0	0	0	0	-
v1.2.1 Approvals - Paul J Kizinkiewicz 2013/07/08 - 2013/07/18	Document Accepted As Written			0	0	0	0	0	0	-
v1.2 Army - TCM-SBCT 2013/01/10 - 2013/02/15	2	3	0	2	3	0	0	0	0	
v1.2 Army - TCM-Live 2013/01/10 - 2013/02/15	No Comments Submitted			0	0	0	0	0	0	-
v1.2 Army - SCoE 2013/01/10 - 2013/02/15	No Comments Submitted			0	0	0	0	0	0	-
v1.2 Army - MSCoE - MANSCE 2013/01/10 - 2013/02/15	10	0	0	10	0	0	0	0	0	
v1.2 Army - FCoE - Field Artillery 2013/01/10 -	8	8	0	8	8	0	0	0	0	

2013/02/15										
v1.2 Army - Combined Arms Center 2013/01/10 - 2013/02/15	No Comments Submitted			0	0	0	0	0	0	-
v1.2 Army - CAC-T; Training Management Dir 2013/01/10 - 2013/02/15	2	45	0	2	44	0	0	1	0	
v1.2 Army - Brigade Modernization Cmd (BMC) 2013/01/10 - 2013/02/15	No Comments Submitted			0	0	0	0	0	0	-
v1.2 Army - ATSC Fielded Devices 2013/01/10 - 2013/02/15	Document Accepted As Written			0	0	0	0	0	0	-
v1.2 Army - ATSC 2013/01/10 - 2013/02/15	Document Accepted As Written			0	0	0	0	0	0	-
v1.1 Peer - USASOC 2012/04/11 - 2012/05/11	No Comments Submitted			0	0	0	0	0	0	-
v1.1 Peer - USARC G7 (US Army Reserve Cmd) 2012/04/11 - 2012/05/11	No Comments Submitted			0	0	0	0	0	0	-
v1.1 Peer - USAACE - Aviation School	Document									

2012/04/11 - 2012/05/11	Accepted As Written	0	0	0	0	0	0	0	-
v1.1 Peer - TCM-Virtual (CS/CSS) 2012/04/11 - 2012/05/11	No Comments Submitted	0	0	0	0	0	0	0	-
v1.1 Peer - TCM-SBCT 2012/04/11 - 2012/05/11	No Comments Submitted	0	0	0	0	0	0	0	-
v1.1 Peer - TCM-Live 2012/04/11 - 2012/05/11	No Comments Submitted	0	0	0	0	0	0	0	-
v1.1 Peer - TCM-HBCT 2012/04/11 - 2012/05/11	No Comments Submitted	0	0	0	0	0	0	0	-
v1.1 Peer - TCM dL  2012/04/11 - 2012/05/11	No Comments Submitted	0	0	0	0	0	0	0	-
v1.1 Peer - TCM ATIS 2012/04/11 - 2012/05/11		2	0	0	2	0	0	0	0
v1.1 Peer - PEO-STRI Customer Support Group 2012/04/11 - 2012/05/11	Document Accepted As Written	0	0	0	0	0	0	0	-
v1.1 Peer - MScOE - MANSCEN 2012/04/11 -	Document Accepted As	0	0	0	0	0	0	0	-



v1.1 Peer - ARNG-RMQ-RA 2012/04/11 - 2012/05/11	Document Accepted As Written			0	0	0	0	0	0	-
v1.1 Peer - Army Research Laboratory (ARL) 2012/04/11 - 2012/05/11	0	1	0	0	0	0	0	1	0	
v1.1 Peer - Army National Guard 2012/04/11 - 2012/05/11	No Comments Submitted			0	0	0	0	0	0	-
v1.1 Peer - Army Material Command (AMC), G3 2012/04/11 - 2012/05/11	No Comments Submitted			0	0	0	0	0	0	-

<b>Key</b>
Completed Review with Comments
Completed Review, No Comments
Active Review Occurring

**DEPARTMENT OF THE ARMY**  
**HEADQUARTERS UNITED STATES ARMY MANEUVER CENTER OF EXERCISES**  
**1 KARKER STREET**  
**FORT BENNING, GEORGIA 31905-5000**

**RECORD**

**Heavily Guided Mortar (HEGM) System Training**

**Regulation 350-70, Army Learning Policy and System**

350-1, Army Training and Leader Develop

opment Document (Draft) for the Cartridge,  
ar (HEGM), XM395 Increment 1, 28 Febru

Explosive Guided Mortar (HEGM) System T  
osted to the Central Army Registry within 3

Mr. Peter Helmer, Systems Training Branch,  
Directorate of Training and Doctrine at DSI  
ail [peter.n.helmer.civ@mail.mil](mailto:peter.n.helmer.civ@mail.mil).

A handwritten signature in black ink, appearing to read "H. R. McMaster". The signature is stylized and cursive, with the first letters of each name being prominent.

H. R. MCMASTER  
Major General, USA  
Commanding

PDF File