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### **Acronyms**

GAO  
IG  
PGMM

Government Accountability Office  
Inspector General  
Precision Guided Mortar Munition



INSPECTOR GENERAL  
DEPARTMENT OF DEFENSE  
400 ARMY NAVY DRIVE  
ARLINGTON, VIRGINIA 22202-4704

January 10, 2007

MEMORANDUM FOR AUDITOR GENERAL, DEPARTMENT OF THE ARMY

SUBJECT: Report on Acquisition of the Precision Guided Mortar Mmunition Program  
(Report No. D-2007-045)

(U) We are providing this report for information and use. This report addresses the requirements determination process used in defining the range requirements for the Precision Guided Mortar Mmunition Program. In preparing the final report, we considered comments on the draft report from the U.S. Army Training and Doctrine Command and the Office of the Product Manager for Mortar Systems.

(U) Comments on the draft of this report conformed to the requirements of DoD Directive 7650.3 and left no unresolved issues. Therefore, no additional comments are required.

(U) We appreciate the courtesies extended to the staff. Questions should be directed to Mr. John E. Meling at (703) 604-9091 (DSN 664-9091) or Mr. Jack D. Snider at (703) 604-9087 (DSN 664-9087). See Appendix G for the report distribution. The team members are listed inside the back cover.

By direction of the Deputy Inspector General for Auditing:

A handwritten signature in black ink that reads "Richard B. Jolliffe".

Richard B. Jolliffe  
Assistant Inspector General  
Acquisition and Contract Management

**This special version of the report has been revised to omit For Official Use Only information.**

## Department of Defense Office of Inspector General

Report No. D-2007-045

January 10, 2007

(Project No. D2006-D000AE-0195.000)

### Acquisition of the Precision Guided Mortar Munition Program (U)

#### Executive Summary (U)

**(U) Why You Should Read This Report.** This report discusses internal control issues that combat developers should address when preparing capabilities documents and defining key performance parameters for essential weapon-system requirements.

**(U) Background.** The Precision Guided Mortar Munition (PGMM), an Army Acquisition Category II program, is a laser-guided 120-millimeter mortar designed to launch from standard 120-millimeter mortar tubes on existing platforms. The mortar locks onto a target and maneuvers to hit and destroy that target. The PGMM will defeat personnel under protective cover such as bunkers, buildings, and lightly armored vehicles, causing low collateral damage. The Army is acquiring the PGMM using the evolutionary acquisition process and intends to develop three increments for the program. Increment I of the program will defeat targets at ranges of 7.2 kilometers or greater with precision and lethality when fired from current mortar systems and with at least 90 percent reliability. As of October 2006, Increment I was in the system development and demonstration phase of the acquisition process. For Increment I, the Army plans to acquire \* PGMM mortars totaling as much as \*. Increment II will be as lethal, compatible, and reliable as Increment I at an increased range. Increment III will extend the range of Increment II and will provide the full operational capability needed by the warfighter.

**(U) Results.** The PGMM Program had internal control weaknesses associated with executing key performance parameters for the PGMM Increment I range requirements and with developing Increment II as identified in the operational requirements document. The following two findings discuss those internal control issues.

- The Deputy Product Manager for Mortar Systems did not require the contractor to design PGMM Increment I to meet the 8-kilometer range key performance parameter specified in the operational requirements document. As a result, the Army increased the risk of program reevaluation, reassessment, or termination by not satisfying the warfighter range requirement for Increment I. The U.S. Army Training and Doctrine Command needs to determine whether the 8-kilometer range requirement is needed to support the Future Combat Systems operational requirements and whether that requirement should be a key performance parameter in the requirements document for PGMM Increment I. In addition, the Deputy Product Manager for Mortar Systems needs to update the acquisition strategy, contract statement of work, and testing procedures, as needed, based on the decision made by the U.S. Army Training and Doctrine Command regarding the 8-kilometer range key performance parameter for Increment I (finding A).

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\* For Official Use Only information omitted.

- The U.S. Army Training and Doctrine Command did not adequately justify the warfighter need for PGMM Increment II that would extend the operational range of the PGMM to 10 kilometers. As a result, the Army may incur unnecessarily programmed costs of \$26 million for that incremental range increase and may delay the development of the PGMM full operational capability needed by the warfighter in PGMM Increment III. The U.S. Army Training and Doctrine Command needs to determine whether a warfighter need exists for the PGMM Increment II interim range increase and update the analysis of alternatives, as appropriate, after that determination. In addition, the Deputy Product Manager for Mortar Systems needs to update applicable acquisition documentation for the PGMM Program after the U.S. Army Training and Doctrine Command makes its determination on PGMM Increment II (finding B).

(U) The Army's internal controls for establishing capability requirements for the PGMM Program were not adequate. We identified a material internal control weakness in the process used to develop the range key performance parameter for PGMM Increment I and to establish the need for Increment II as identified in the operational requirements document.

**(U) Management Comments and Audit Response.** We received comments from the Director, Army Capabilities Integration Center, responding for the Commanding General, U.S. Army Training and Doctrine Command, and the Product Manager for Mortar Systems, responding for the Deputy Product Manager for Mortar Systems.

(U) Although the Director nonconcurred with the recommendation to determine whether the 8-kilometer range requirement is needed to support the Future Combat Systems operational requirements and whether that requirement should be a key performance parameter in the requirements document for PGMM Increment I, he suggested corrective action that met the intent of the recommendation. He concurred with the recommendations to determine whether a warfighter need exists for the PGMM Increment II interim range increase and to update the analysis of alternatives, as appropriate, after that determination. In his comments, the Director indicated that PGMM Increment I may provide the Army with a precision guided engagement capability against the majority of required targets and that future PGMM increments, supported by additional analysis, would address the remaining targets, increased range, and non-line of sight mortar capabilities. During our audit follow-up process, we will determine the results of the Army's analysis of future PGMM increments; the need for programmed costs of \$26 million for Increment II; and, if not needed, whether those funds would be put to better use.

(U) The Product Manager concurred with the recommendations to update the acquisition strategy, contract statement of work, and testing procedures, as needed, based on the decision made by the U.S. Army Training and Doctrine Command regarding the 8-kilometer range key performance parameter for Increment I. The Product Manager also concurred with the recommendation to update applicable acquisition documentation for the PGMM Program after the U.S. Army Training and Doctrine Command makes its determination on PGMM Increment II. See the Finding sections of this report for a discussion of the management comments and the Management Comments section of this report for the complete text of the comments.

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## Background (U)

(U) This report addresses the acquisition of the Precision Guided Mortar Munition (PGMM). Specifically, the report findings address the range key performance parameter established for Increment I and the need for Increment II of the PGMM Program. The audit is a continuation of the audit of the “Acquisition of the Precision Guided Mortar Munitions Program,” which was announced on September 16, 2004. The initial audit identified two compliance issues relating to the information support plan and the system security authorization agreement before cancellation of the audit in October 2005. Subsequently, the PGMM Program Office took corrective action on those issues. Appendix B provides a discussion of those issues and corrective actions being taken. Appendix E is a glossary of technical terms used in this report.

(U) **Precision Guided Mortar Munition.** The PGMM, an Army Acquisition Category II program, is a laser-guided 120-millimeter mortar designed to launch from standard 120-millimeter mortar tubes on existing platforms. Using onboard sensors and guidance and control subsystems, the mortar locks onto a target and maneuvers to hit and destroy that target. The PGMM will defeat personnel under protective cover such as bunkers, buildings, and lightly armored vehicles, causing low collateral damage. The following figure shows the PGMM cartridge.









Source: [http://www.atk.com/AdvancedWeaponSystems/advanceweaponsystems\\_pgmm.asp](http://www.atk.com/AdvancedWeaponSystems/advanceweaponsystems_pgmm.asp)

(U) Precision Guided Mortar Munition

(U) **PGMM Acquisition Strategy.** The PGMM concept began in FY 1995 with an advanced technology demonstration effort to fulfill a U.S. Army Infantry Center requirement for a precision mortar round. On December 17, 2001, the Assistant Secretary of the Army (Acquisition, Logistics, and Technology) and the Army Deputy Chief of Staff for Programs [renamed the Army Deputy Chief of Staff (G-8)] directed an incremental development approach as part of an evolutionary acquisition strategy to obtain the PGMM capability. The PGMM incremental development approach has three increments, as shown in the figure on the following page.



Key Performance Parameters	Increment 1	Increment 2	Increment 3
<p><b>Lethality:</b> Defeat in two rounds or less, earth and timber bunkers (collapse) or incapacitate personnel inside; defeat stationary lightly armored vehicles (personnel carriers and weapon platforms) (firepower / mobility kill) or incapacitate personnel inside; and incapacitate personnel in brick over block masonry structures while minimizing collateral damage.</p>	 <ul style="list-style-type: none"> <li>Stationary Lightly Armored Vehicles</li> <li>Earth &amp; Timber Bunkers</li> <li>Masonry Walls</li> </ul>	  <p>Brick/Block</p> <p>Adds</p>	 <ul style="list-style-type: none"> <li>Moving Lightly Armored Vehicles</li> <li>Additional Masonry Walls</li> </ul>   <p>Triple Brick R-Concrete</p>
<p><b>Range:</b> Engage targets at extended ranges .</p>	<ul style="list-style-type: none"> <li>Engage targets at extended ranges: <ul style="list-style-type: none"> <li>Current/Interim: 7.2km (T), 10km (O)</li> <li>FCS: 8km (T), 10km (O)</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Engage targets at extended ranges: 10km (T), 12km (O)</li> </ul>	<ul style="list-style-type: none"> <li>Extended range of 12km (T), 15km (O)</li> <li>Maneuver off Gun Target Line (GTL)</li> </ul>
<p><b>Compatibility:</b> Compatible with the 120mm BMS, Stryker-MC, and FCS NLOS Mortar.</p>	<ul style="list-style-type: none"> <li>120mm BMS, Stryker-MC, and FCS NLOS Mortar.</li> </ul>	<ul style="list-style-type: none"> <li>120mm BMS, Stryker-MC, and FCS NLOS Mortar.</li> </ul>	<ul style="list-style-type: none"> <li>120mm BMS, Stryker-MC, and FCS NLOS Mortar.</li> </ul>
<p><b>Reliability:</b></p>	<ul style="list-style-type: none"> <li>0.90 (T), 0.95 (O)</li> </ul>	<ul style="list-style-type: none"> <li>0.90 (T), 0.95 (O)</li> </ul>	<ul style="list-style-type: none"> <li>0.90 (T), 0.95 (O)</li> </ul>

Source: U.S. Army Infantry Center

Acronyms:

BMS	Battalion Mortar System	FCS	Future Combat Systems
km	Kilometer	mm	Millimeter
NLOS	Non-Line of Sight Vehicle	O	Objective
R-Concrete	Reinforced Concrete	Stryker-MC	Stryker-Mortar Carrier
T	Threshold		

(U) PGMM Increments and Key Performance Parameters

**(U) PGMM Incremental Development and Key Performance**

**Parameters.** Each of the three PGMM increments contains four key performance parameters, as shown in the figure. Those key performance parameters are lethality, range, compatibility, and reliability.

**(U) PGMM Increment I.** The operational requirements document<sup>1</sup> for the PGMM requires Increment I to engage targets and incapacitate personnel located within earth and timber bunkers, standard brick-over-block masonry

<sup>1</sup> DoD Instruction 5000.2, "Operation of the Defense Acquisition System," May 12, 2003, states that, during system development and demonstration, the capabilities development document (previously the operational requirements document) will specify the detailed operational performance parameters. Further, the Instruction states that the capabilities production document instead of the operational requirements document will specify the operational requirements for the performance expected of the production system. In this report, we use the term operational requirements document because the PGMM Program has an operational requirements document.



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structures, and stationary lightly armored vehicles. Those targets are to be defeated at ranges of 7.2 kilometers or greater with precision and lethality when fired from current mortar systems or at ranges of 8 kilometers or greater when fired from a Future Combat Systems Non-Line of Sight Mortar vehicle.<sup>2</sup> Further, the PGMM will be compatible with existing and future 120-millimeter mortar systems and be at least 90 percent reliable. The PGMM Increment I is in the system development and demonstration phase of the acquisition process. For Increment I, the Army plans to acquire \* PGMM mortars totaling as much as \* .

**(U) PGMM Increment II.** Increment II must be as lethal, compatible, and reliable as PGMM Increment I. However, it must be also able to accurately engage and incapacitate high priority targets at ranges of 10 kilometers or greater.

**(U) PGMM Increment III.** Increment III must be as lethal, compatible, and reliable as PGMM Increment II. However, it must also be able to defeat moving lightly armored vehicles and accurately engage and incapacitate high priority targets, including personnel in triple-brick or reinforced concrete masonry structures at ranges of 12 kilometers or greater and have the ability to maneuver off of the gun target line.

**(U) Program Executive Officer for Ammunition Organization.** The Program Executive Officer for Ammunition is the materiel developer for the PGMM Program. He manages the life-cycle acquisition process for ammunition for the Army and other Military Departments as well as the DoD Ammunition Industrial Base. Reporting to the Program Executive Officer for Ammunition is the Project Manager Combat Ammunition Systems–Indirect Fire. He is responsible for equipping the warfighter with all tube-launched, indirect-fire munitions and mortar weapon systems for the Army’s current and future forces. Reporting to the Project Manager Combat Ammunition Systems–Indirect Fire is the Product Manager for Mortar Systems who is the life-cycle manager for the full range of mortar systems including weapons, fire control, and advanced ammunition.

## Objective (U)

(U) The primary audit objective was to evaluate the overall management of the PGMM. Specifically, we determined whether management was cost-effectively readying the PGMM for the production and deployment phase of the acquisition process and implementing acquisition best practices. We also obtained a status update on management efforts to remedy two compliance issues identified during our initial audit. See Appendix A for a discussion of the scope and methodology and prior coverage related to the objectives.

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<sup>2</sup> Future Combat Systems Program is composed of 18 subsystems. The Non-Line of Sight Mortar vehicle is the system that will use the PGMM 120-millimeter mortar munition.

\* For Official Use Only information omitted.

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## Review of Internal Controls (U)

(U) We determined that a material internal control weakness in the Army management of the PGMM Program existed as defined by DoD Instruction 5010.40, "Management Internal Control (MIC) Program Procedures," January 4, 2006. The DoD 5000 "series" of guidance states that the primary objective of Defense acquisition is to acquire quality products that satisfy user needs with measurable improvements to mission capability and operational support, in a timely manner, and at a fair and reasonable price. By the Deputy Product Manager for Mortar Systems not requiring PGMM Increment I to meet the 8-kilometer range key performance parameter in the PGMM operational requirements document and the U.S. Army Training and Doctrine Command not adequately justifying the need for Increment II, those actions were not indicative of effective controls to acquire quality products that satisfy user needs. The implementation of the agreed to recommendations and the corrective action suggested by the Director, Army Capabilities Integration Center, U.S. Army Training and Doctrine Command will improve controls by:

- determining whether the 8-kilometer range requirement should be a key performance parameter for PGMM Increment I;
- determining whether the warfighter has a valid need for the interim extended range requirement to be provided by the PGMM Increment II;
- updating the analysis of alternatives, as appropriate, for the PGMM after the Increment II range requirement determination is made; and
- updating the PGMM acquisition strategy and contract documentation, as needed, based on those determinations.

We will provide a copy of this report to the senior Army official responsible for internal controls in the Department of the Army.

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## A. Increment I Range Requirement (U)

(U) The Deputy Product Manager for Mortar Systems (the PGMM Program Manager) did not require the contractor to design PGMM Increment I to meet the 8-kilometer range key performance parameter specified in the operational requirements document. The PGMM Program Manager did not require the contracting officer to insert the 8-kilometer range requirement into the contract because the mortar launch vehicle for the Future Combat Systems that will be used to test the 8-kilometer range would not be fielded until after the planned Increment I low-rate initial production decision in the third quarter of FY 2008. Another contributing factor was that the U.S. Army Training and Doctrine Command, the user representative, did not ensure that the 8-kilometer range requirement for the PGMM was traceable to the operational requirements document for the Future Combat Systems, which was the stated basis for the PGMM range requirement. As a result, the Army increased the risk of program reevaluation, reassessment, or termination by not satisfying the warfighter range requirement for Increment I.

### Key Performance Parameter Policy (U)

(U) DoD Directive 5000.1, “The Defense Acquisition System,” May 12, 2003; DoD Instruction 5000.2; Chairman of the Joint Chiefs of Staff Instruction 3170.01E, “Joint Capabilities Integration and Development System,” May 11, 2005; Chairman of the Joint Chiefs of Staff Manual 3170.01A, “Operation of the Joint Capabilities Integration and Development System,” March 12, 2004; and Army Regulation 70-1, “Army Acquisition Policy,” December 31, 2003, provide guidance and define responsibilities to ensure that the Army meets Defense acquisition objectives.

(U) **DoD Directive.** DoD Directive 5000.1 states that the program manager is the designated individual with responsibility for and authority to accomplish program objectives for development, production, and sustainment to meet the user’s operational needs. Further, the Directive states that complete and current program information is essential to the acquisition process.

(U) **DoD Instruction.** DoD Instruction 5000.2 provides guidance on key performance parameters and criteria for weapon system entrance into the production and deployment phase of the acquisition process.

(U) **Joint Staff Instruction.** Chairman of the Joint Chiefs of Staff Instruction 3170.01E states that the performance attributes of a system provide the desired capability required by the warfighter and that those attributes must be verified by testing and evaluation. The Instruction requires combat developers to designate key characteristics that are considered essential to the development of an effective military capability as key performance parameters in the capability documents.

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(U) **Joint Staff Manual.** Chairman of the Joint Chiefs of Staff Manual 3170.01A states that key performance parameters are those system attributes considered most essential for an effective military capability. Inability to meet a key performance parameter may result in program reevaluation, reassessment, or termination.

(U) **Army Regulation.** Army Regulation 70-1 states that the U.S. Army Training and Doctrine Command is the principal Army combat developer responsible for formulating concepts and identifying requirements. As the Army combat developer, U.S. Army Training and Doctrine Command represents the soldier in the acquisition process and is responsible for developing and updating capability documents.

## **Future Combat Systems Range Requirement (U)**

(U) The PGMM Program Manager did not update the January 2003 combined acquisition strategy and acquisition plan to include the 8-kilometer range key performance parameter requirement specified in the March 2004 operational requirements document for PGMM Increment I. Further, the PGMM Program Manager did not include that requirement in the system development and demonstration contract for PGMM Increment I, awarded in December 2004. Conversely, the U.S. Army Infantry Center component of the U.S. Army Training and Doctrine Command did include the 8-kilometer range key performance parameter in the operational requirements document for Increment I. In addition, the PGMM Program Manager cannot test for the 8-kilometer range requirement in the test and evaluation master plan for Increment I because the test vehicle will not be fielded until 2014. However, the validity of the 8-kilometer range requirement in the PGMM operational requirements document was questionable because the requirement was not traceable to the operational requirements document for the Future Combat Systems Program, which was the basis for the PGMM range requirement.

(U) **PGMM Acquisition Strategy and Acquisition Plan.** Army Regulation 70-1 states that the acquisition strategy for an evolutionary acquisition approach will describe Increment I (the initial deployment capability); how it will be funded, developed, tested, produced, and supported; and the approach to treatment of subsequent blocks. The January 2003 Acquisition Strategy and Acquisition Plan for the PGMM describes the contractual and management approach to develop and produce the PGMM. The document states that the PGMM is a required capability in the operational requirements document for the Future Combat Systems Program and that the Future Combat Systems Block 1 requires an 8-kilometer range for conventional ammunition and the PGMM. The Acquisition Strategy and Acquisition Plan did not specify the 8-kilometer range as a key performance parameter for PGMM Increment I.

(U) **System Development and Demonstration Contract for the PGMM.** On December 1, 2004, the Picatinny Center for Contracting and Commerce awarded contract W15QKN-05-C-1171 to Alliant Techsystems Ordnance and Ground Systems, LLC, the prime contractor. The contract, with a target cost of about \$80.8 million, was for system development and demonstration and low-rate initial

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production of PGMM Increment I. In the contract, neither the statement of work nor the performance specification for Increment I required the contractor to meet the 8-kilometer range key performance parameter for Increment I.

**(U) Statement of Work.** The statement of work defines contractor tasks to be performed during system development and demonstration and low-rate initial production for PGMM Increment I. The statement of work required the contractor to develop, manufacture, test, and document a production-ready PGMM cartridge and associated accessories, but did not require the contractor to meet the 8-kilometer range key performance parameter. Further, the statement of work referred to the PGMM performance specification for the PGMM requirements.

**(U) Performance Specification.** The performance specification provides the system development and demonstration and low-rate initial production performance requirements and quality assurance provisions for the PGMM Increment I. The performance specification required the PGMM Increment I mortar to engage targets at 7.2 kilometers (threshold) or as far as 10 kilometers (objective) and did not require Increment I to attain the 8-kilometer range key performance parameter requirement.

**(U) PGMM Operational Requirements Document.** The March 2004 Operational Requirements Document for PGMM Increment I identified two range requirements. Specifically, the PGMM Increment I must achieve:

- 7.2 kilometers (threshold) to 10 kilometers (objective) when launched from existing 120-millimeter mortar systems, and
- 8 kilometers (threshold) to 10 kilometers (objective) when launched from the Future Combat Systems Non-Line of Sight Mortar vehicle.

**(U) Future Combat Systems Operational Requirements Document.** The April 14, 2003; the January 31, 2005; and the July 11, 2006, operational requirements documents for the Future Combat Systems Program did not specify an 8-kilometer range requirement for the developmental PGMM when fired from the Future Combat Systems Non-Line of Sight Mortar vehicle. Those three versions of the operational requirements document for the Future Combat Systems Program all state that:

\* \* \* \*

\* \* \* \*

\* \* \* \*

\* \* \* \* . After discussing the lack

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\* For Official Use Only information omitted.



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of an 8-kilometer range requirement for the PGMM in the operational requirements document for the Future Combat Systems with representatives from the U.S. Army Infantry Center, they stated that they did not know why the 8-kilometer range requirement was in the operational requirements document for PGMM Increment I. Further, they stated that they would review whether the requirement was needed by the warfighter. However, even without the requirement in the operational requirements document for the Future Combat Systems Program, they believed that the PGMM would meet the 8-kilometer range requirement because of the configuration of the Future Combat Systems Non-Line of Sight Mortar barrel. Specifically, the barrel is longer and capable of projecting the PGMM mortar to at least 8 kilometers.

**(U) PGMM Test and Evaluation Master Plan.** The June 21, 2005, Test and Evaluation Master Plan (the Plan) for the PGMM documents the overall structure and objectives for the test and evaluation of PGMM Increment I requirements. The Plan requires Increment I to be able to engage targets at ranges out to 7.2 kilometers and 8 kilometers when fired from existing systems and the Future Combat Systems, respectively. Those requirements are measures of effectiveness and suitability, and critical operational issues for Increment I. The Plan requires the PGMM to meet both range requirements as criteria to proceed to the full-rate production decision review in the second quarter of FY 2010. However, Army testers cannot test to the 8-kilometer range key performance parameter without the existence of the Future Combat Systems Non-Line of Sight Mortar vehicle. As of October 2006, the U.S. Army Infantry Center stated that the Army did not plan to field the Non-Line of Sight Mortar vehicle until 2014.

## **Effect on Meeting Increment I Range Requirement (U)**

(U) By not contracting for PGMM Increment I to meet the 8-kilometer range key performance parameter, PGMM Increment I may not meet the threshold value of performance to demonstrate that it is operationally effective and suitable and able to meet warfighter requirements. Consequently, the Army increased the risk of program reevaluation, reassessment, or termination by not satisfying the warfighter range requirement for Increment I.

## **Conclusion (U)**

(U) The U.S. Army Infantry Center component of the U.S. Army Training and Doctrine Command needs to determine whether the warfighter has a need for the 8-kilometer range requirement when firing a PGMM round from the Future Combat Systems Non-Line of Sight Mortar vehicle. If the U.S. Army Infantry Center determines that the 8-kilometer range is a valid requirement, then it should include the requirement in a revised version of the requirements document for the Future Combat Systems Program. If a validated requirement, the PGMM Program Office would need to update its acquisition strategy and contract

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statement of work to meet the 8-kilometer range and select an alternative test vehicle until the Army fields the Future Combat Systems Non-Line of Sight Mortar vehicle.

(U) If the U.S. Army Infantry Center determines that the 8-kilometer range is not a valid requirement, then it should revise the PGMM Increment I requirements document accordingly. Consequently, the PGMM Program Office would need to update its acquisition strategy for PGMM Increment I to reflect the change in the warfighter requirements.

## **Management Comments on the Finding and Audit Response (U)**

(U) Summaries of management comments on the finding and audit responses are in Appendix F.

## **Recommendations, Management Comments, and Audit Response (U)**

**(U) A.1. We recommend that the Commanding General, U.S. Army Training and Doctrine Command determine whether the 8-kilometer range requirement in the operational requirements document for Increment I of the Precision Guided Mortar Munition Program is a valid Future Combat Systems requirement. If valid, the requirements document for the Future Combat Systems Program should be revised, as required by Chairman of the Joint Chiefs of Staff Instruction 3170.01E, "Joint Capabilities Integration and Development System," May 11, 2005.**

**(U) Management Comments.** The Director, Army Capabilities Integration Center, responding for the Commanding General, U.S. Army Training and Doctrine Command, nonconcurred with the recommendation. He stated that U.S. Army Training and Doctrine Command did not intend to revise the approved operational requirements documents for the Future Combat Systems and PGMM Increment I. The Director stated that when the operational requirements document for PGMM Increment I was approved, the document was linked with the requirements for the Future Combat Systems. However, because of changes in the program schedule for the Future Combat Systems, the Army will not be able to validate revised Future Combat Systems requirements before the low-rate initial production milestone decision for PGMM Increment I.

(U) Instead of the recommended action, the Director stated that the PGMM capabilities required to support Future Combat Systems capabilities would be addressed in future incremental capability documents. Accordingly, he stated that all capabilities in the operational requirements document for PGMM Increment I to support current systems would be addressed in the capability production document for PGMM Increment I. In addition, the Director stated that the capability production document for PGMM Increment I would be completed in time to support the low-rate initial production milestone decision for PGMM

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Increment I in the fourth quarter of FY 2008. For the complete text of the Director's comments, see the Management Comments section of this report.

**(U) Audit Response.** Although the Director, Army Capabilities Integration Center nonconcurred with the recommended action, the Director's planned action satisfied the intent of the recommendation. Specifically, the Director plans to address the PGMM capabilities required to support Future Combat Systems capabilities in the capability production document for PGMM Increment I before the PGMM Increment I low-rate initial production decision. Consequently, at the low-rate initial production milestone decision, the milestone decision authority will know whether the warfighter has a valid need for the 8-kilometer range requirement when firing a PGMM round from the Future Combat Systems Non-Line of Sight Mortar vehicle.

**(U) A.2. We recommend that the Deputy Product Manager for Mortar Systems:**

**a. Update, as necessary, the acquisition strategy and statement of work included in the contract based on the decision made by the U.S. Army Training and Doctrine Command regarding the 8-kilometer range requirement, in accordance with DoD Directive 5000.1, "The Defense Acquisition System," May 12, 2003; and Army Regulation 70-1, "Army Acquisition Policy," December 31, 2003.**

**(U) Management Comments.** The Product Manager for Mortar Systems, responding for the Deputy Product Manager for Mortar Systems, concurred with the recommendation. For the complete text of the Product Manager's comments, see the Management Comments section of this report.

**b. Establish another means of testing, other than the Future Combat Systems Non-Line of Sight Mortar vehicle, for the Precision Guided Mortar Munition Program Increment I range requirement if the U.S. Army Training and Doctrine Command decides to retain the 8-kilometer range requirement in the requirements document for Increment I, in accordance with DoD Instruction 5000.2, "Operation of the Defense Acquisition System," May 12, 2003.**

**(U) Management Comments.** The Product Manager for Mortar Systems concurred with the recommendation if the U.S. Army Training and Doctrine Command retains the 8-kilometer range requirement. He stated that, if the 8-kilometer range requirement remains, the range requirement would be validated through ballistic modeling of the PGMM in a Future Combat Systems non-line of sight mortar gun environment. The Product Manager also stated that the ballistic modeling would be completed before the low-rate initial production milestone decision. Further, he stated that the ballistic modeling would be used because the non-line of sight mortar gun system would not be available until August 2009.

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## B. Warfighter Need for Increment II (U)

(U) The U.S. Army Training and Doctrine Command did not adequately justify the warfighter need for PGMM Increment II to extend the operational range of the PGMM to 10 kilometers in Increment II. This condition occurred because the U.S. Army Training and Doctrine Command had not adequately:

- determined whether the warfighter had a validated need for another interim increase in the PGMM range capability before obtaining full-range operational capability, and
- considered the results of the analysis of alternatives when including Increment II as a required increment in the operational requirements document as part of the evolutionary development of the PGMM.

As a result, the Army may incur unnecessarily programmed costs of at least \$26 million for the Increment II range increase while delaying the development of the PGMM full-range operational capability needed by the warfighter for Increment III.

## Evolutionary Acquisition, Analysis of Alternatives, and Key Performance Parameters Guidance (U)

(U) DoD Directive 5000.1, DoD Instruction 5000.2, and Chairman of the Joint Chiefs of Staff Instruction 3170.01E provide guidance on evolutionary acquisition, analysis of alternatives, and key performance parameters.

**(U) DoD Directive.** DoD Directive 5000.1 states that the primary objective of Defense acquisition is to acquire quality products that satisfy user needs with measurable improvements to mission capability and operational support, in a timely manner, and at a fair and reasonable price. The Directive designates the responsibility and authority to the program manager to accomplish program objectives to meet the user's operational needs. Further, the Directive states that complete and current program information is essential to the acquisition process.

**(U) DoD Instruction.** DoD Instruction 5000.2 states that when an evolutionary strategy is used, the initial capability represents only partial fulfillment of the overall capability, and successive technology development efforts continue until all capabilities have been satisfied. Further, the Instruction states that before the system demonstration and development phase, the warfighter should identify a minimum set of key performance parameters and the program manager should prepare an acquisition strategy to guide the development activity. Those key performance parameters may be refined as conditions warrant.

**(U) Joint Staff Policy.** Chairman of the Joint Chiefs of Staff Instruction 3170.01E states that an analysis of alternatives should be reviewed for

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its relevance for each program increment requiring a system development and demonstration milestone decision. If necessary, the analysis of alternatives should be updated or a new one initiated. The results of the analysis of alternatives should ensure that the refined concept or approach meet the warfighter's capability needs and that the appropriate attributes are designated as key performance parameters.

## **Warfighter Need for the Increment II Extended Range Capability (U)**

**(U) Increment II Requirements.** According to a representative from the Office of the Assistant Secretary of the Army (Acquisition, Logistics, Technology), the Army plans to spend at least \$26 million to develop Increment II. The PGMM Increment II requirements are defined in the PGMM Increment I operational requirements document and the PGMM acquisition strategy. Increment II consisted of the same four attributes as PGMM Increment I: lethality, range, compatibility, and reliability. The only difference in capability between Increment I and Increment II was the value of the range key performance parameters. PGMM Increment II was to provide an interim extended range of 10 kilometers (threshold) to 12 kilometers (objective). The interim extended range would increase the threshold range of Increment I by 2.8 kilometers (the difference between 7.2 kilometers and 10 kilometers). However, the Increment II range increase may not improve warfighter capabilities.

**(U) Improve Warfighter Capability.** When asked about the need for PGMM Increment II, representatives from the Offices of the Army Deputy Chief of Staff (G-8), the U.S. Army Infantry Center component of the U.S. Army Training and Doctrine Command, and the PGMM Program Manager were not able to support how the increased Increment II range significantly improved warfighter capabilities. The Army Deputy Chief of Staff (G-8) representative stated that his office provided the direction to pursue the full operational capability of the PGMM in increments, but did not direct how the increments should be defined. The U.S. Army Infantry Center representative stated that he was not sure whether the warfighter had a need for Increment II and that such a determination would be made after the completion of Increment I. He believed that the expected range capabilities provided by Increment I may overcome the need to pursue Increment II because the Increment II extended range requirement would provide indirect fire support similar to Increment I. The PGMM Program Manager believed that Increment II would provide the maneuver commander with an extended range precision munition to meet his expanded battlespace requirements and would reduce the risk of not achieving the Increment III requirements. However, if the warfighter does not have a need for Increment II, the unnecessary development of Increment II would delay fielding Increment III.

**(U) Analysis of Alternatives.** The U.S. Army Analysis Center prepared an analysis of alternatives to determine and compare the system performance, force effectiveness, and logistics impact of the PGMM increments with existing field artillery munitions. The analysis of alternatives determined that PGMM Increments I and II had the same warhead and semi-active laser. The only difference between the two increments was the increased range requirement.



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According to the analysis of alternatives, the increased range of Increment II did not provide any additional effectiveness to the warfighter over Increment I. Specifically,

- the simulated performance of Increment II effectiveness showed little improvement over Increment I, and
- the number of threat systems destroyed by Increment II showed no significant difference over Increment I.

In addition, PGMM Increment II required a higher quantity of PGMM rounds fired when compared to the combat basic loads of Increment I and Increment III. Accordingly, the analysis of alternatives did not support acquiring PGMM Increment II because Increment II did not provide the warfighter with a significant improvement in warfighting capabilities.

## **Effect of Developing Increment II (U)**

(U) By developing and acquiring PGMM Increment II, the Army may incur unnecessarily programmed costs of at least \$26 million for the Increment II range increase if the warfighter does not have a need for that capability. Further, without a need for Increment II, the unnecessary development of Increment II would delay the development of the PGMM full-range operational capability needed by the warfighter in PGMM Increment III.

## **Conclusion (U)**

(U) When preparing PGMM requirements documents, the U.S. Army Infantry Center component of the U.S. Army Training and Doctrine Command should determine whether the Army has a valid need to develop and acquire PGMM Increment II. If the U.S. Army Training and Doctrine Command determines that a valid need exists, it should update the analysis of alternatives for the PGMM to determine whether an alternate solution, other than Increment II, is feasible for satisfying the warfighter need. After that determination and the update to the analysis of alternatives, the PGMM Program Manager should update applicable acquisition documentation for the PGMM to reflect the Army determination concerning the continued need to develop and acquire Increment II.

## **Recommendations and Management Comments (U)**

**(U) B.1. We recommend that the Commanding General, U.S. Army Training and Doctrine Command:**

**a. When preparing the Precision Guided Mortar Munition requirements documents, determine whether the warfighter has a valid need for Increment II, in accordance with Chairman of the Joint Chiefs of Staff Instruction 3170.01E, “Joint Capabilities Integration and Development System,” May 11, 2005.**

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**b. Update the analysis of alternatives for the Precision Guided Mortar Munition Program if a valid warfighter need exists for Increment II, in accordance with DoD Instruction 5000.2, "Operation of the Defense Acquisition System," May 12, 2003.**

**(U) Management Comments.** The Director, Army Capabilities Integration Center, responding for the Commanding General, U.S. Army Training and Doctrine Command, concurred with Recommendations B.1.a. and B.1.b. He stated that the analysis of requirements conducted in March 2002 supported the full-range of PGMM capabilities. Those capabilities included the engagement of targets at extended ranges of 12 to 15 kilometers; and incapacitation of personnel in earth and timber bunkers, fortified masonry structures, and moving lightly armored vehicles. Further, the Director stated that those PGMM capabilities would be incrementally addressed under the Joint Capabilities Integration and Development System process.

(U) The Director stated that a positive low-rate initial production milestone decision for PGMM Increment I in FY 2008 would provide the Army with a precision guided engagement capability against the majority of required targets. He also stated that future PGMM increments would address the remaining targets, increased range, and non-line of sight mortar capabilities. The Director stated that additional analysis would likely be conducted to support those future PGMM increments. For the complete text of the Director's comments, see the Management Comments section of this report.

**Audit Response.** In his comments, the Director indicated that PGMM Increment I may provide the Army with a precision guided engagement capability against the majority of required targets and that future PGMM increments, supported by additional analysis, would address the remaining targets, increased range, and non-line of sight mortar capabilities. During our audit follow-up process, we will determine the results of the Army's analysis of future PGMM increments; the need for programmed costs of \$26 million for Increment II; and, if not, whether those funds were put to better use.

**(U) B.2. We recommend that the Deputy Product Manager for Mortar Systems update applicable acquisition documentation for the Precision Guided Mortar Munition Program if the U.S. Army Training and Doctrine Command decides that the warfighter does not have a valid need for Increment II, in accordance with DoD Instruction 5000.2, "Operation of the Defense Acquisition System," May 12, 2003.**

**(U) Management Comments.** The Product Manager for Mortar Systems, responding for the Deputy Product Manager for Mortar Systems, concurred with the recommendation. He stated that any follow-on increment of PGMM would require a system development and demonstration milestone decision with required supporting documentation. Further, the Product Manager stated that the supporting documentation would include an updated capabilities development document and an updated requirements analysis. He also stated that his office always planned to follow the DoD 5000 "series" of guidance that details the

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requirements for the start of an acquisition program. For the complete text of the Product Manager's comments, see the Management Comments section of this report.

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## Appendix A. Scope and Methodology (U)

**(U) Documentation and Information Reviewed.** We determined whether management was cost-effectively readying the PGMM for the production and deployment phase of the acquisition process. In addition, we followed up on corrective actions taken by management to resolve the issues identified earlier that related to preparing the information support plan and the system security authorization agreement for the PGMM Program. To accomplish those objectives, we reviewed the documentation and information dated from July 1976 through January 2006.

**(U) PGMM Documentation.** We reviewed the requirements operational capability document for the Battalion Mortar System, February 9, 1996; PGMM system threat assessment reports, March 2002 and July 2005; PGMM Acquisition Strategy and Acquisition Plan, January 31, 2003; PGMM test and evaluation master plans, June 13, 2003, and June 21, 2005; PGMM Increment I Operational Requirements Document, March 2004; PGMM Analysis of Requirements, March 1, 2002; PGMM Analysis of Alternatives, March 2004; and contract W15QKN-05-C-1171 for PGMM Increment I. We also reviewed the operational requirements documents for the Future Combat Systems Program dated April 14, 2003; January 31, 2005; and July 11, 2006.

**(U) Policy and Principles.** We reviewed key policy and principles that govern the DoD acquisition process. The mandatory policies and management principles reviewed were DoD Directive 5000.1, DoD Instruction 5000.2, and Chairman of the Joint Chiefs of Staff Instruction 3170.01E.

**(U) Staff Contacted.** We contacted the staffs of the Offices of the Assistant Secretary of the Army (Acquisition, Logistics, and Technology); the Army Deputy Chief of Staff (G-3/5/7); the Army Deputy Chief of Staff (G-8); the U.S. Army Training and Doctrine Command; the U.S. Army Infantry Center; and the Product Manager for Mortar Systems to determine the basis for defining the key performance parameters for the PGMM incremental acquisition approach.

**(U) Deputy Product Manager for Mortar Systems Memorandum.** We reviewed the Deputy Product Manager for Mortar Systems memorandum, "Status Update for Precision Guided Mortar Munition (PGMM) Developing Systems Security Accreditation Agreement (SSAA) and Information Support Plan (ISP) for Program (Project No. D2005AE-0020)," May 11, 2006, that discussed the PGMM Program Office's progress in developing the information support plan and the systems security accreditation agreement for the PGMM Program.

**(U) Audit Performance Period.** We performed this audit from April 2006 through October 2006 in accordance with generally accepted government auditing standards. This audit project also included data gathered between September 2004 through March 2005 as part of DoD Inspector General (IG) Project No. D2005-D000AE-0020.000, "Acquisition of the Precision Guided Mortar Munitions Program," September 16, 2004.

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(U) **Use of Computer-Processed Data.** We did not use computer-processed data to perform this audit.

(U) **Government Accountability Office High-Risk Area.** The Government Accountability Office (GAO) has identified several high-risk areas in DoD. This report provides coverage of the DoD Weapon Systems Acquisition high-risk area.

## **Prior Coverage**

(U) During the last 5 years, the GAO has issued two reports and one memorandum and the DoD IG has issued one memorandum that discussed the PGMM Program. Unrestricted GAO reports can be accessed over the Internet at <http://www.gao.gov>. Unrestricted DoD IG reports can be accessed at <http://www.dodig.mil/audit/reports>.

## **GAO**

(U) GAO Report No. GAO-06-367, “Improved Business Case Is Needed for Future Combat System’s Successful Outcome,” March 14, 2006

(U) GAO Report GAO-03-17, “Munitions Requirements and Combatant Commanders’ Needs Require Linkage,” October 15, 2002

(U) GAO Memorandum, “Defense Management: Munitions Requirements and Combatant Commander’s Needs Still Require Linkage,” August 12, 2005

## **DoD IG**

(U) DoD IG Memorandum, “Audit of the Precision Guided Mortar Munition (Project No. D2005AE-0020),” March 11, 2005



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## Appendix B. Information Assurance Compliance Issues (U)

(U) Before the initial audit of the PGMM Program was suspended on February 19, 2005, and subsequently cancelled in October 2005, the audit identified compliance issues with the preparation of the information support plan and the system security authorization agreement. DoD Office of Inspector General Memorandum, "Audit of the Precision Guided Mortar Munition (Project No. D2005AE-0020)," March 11, 2005, reported those compliance issues to the Deputy Product Manager for Mortar Systems (the PGMM Program Manager) so that he could prepare the information support plan and the system security authorization agreement before the milestone decision review for the production and deployment phase of the acquisition process (see Appendix C). On May 11, 2006, in a memorandum, "Status Update for Precision Guided Mortar Munition (PGMM) Developing Systems Security Accreditation Agreement (SSAA) and Information Support Plan (ISP) for Program (Project No. D2005AE-0020)," the PGMM Program Manager discussed progress in developing the information support plan and the systems security accreditation agreement for the PGMM Program (see Appendix D).

### Information Support Plan (U)

(U) **Information Support Plan Compliance.** In our March 11, 2005, memorandum, we stated that the PGMM Program Office did not document its interoperability, supportability, and net-centric requirements in an information support plan as required by DoD Instruction 4630.8, "Procedures for Interoperability and Supportability of Information Technology (IT) and National Security Systems," June 30, 2004, and Chairman of the Joint Chiefs of Staff Instruction 6212.01C, "Interoperability and Supportability of Information Technology and National Security Systems," November 20, 2003. The guidance requires program offices to prepare an information support plan after completing the program's capability development document. The capability development document specifies the key performance parameters needed to analyze, identify, and describe information technology and national security system interoperability in the information support plan. PGMM Program Office representatives were not aware of the requirement to prepare an information support plan. As a result, the Program Office was not fully aware of the system's dependencies and interface requirements that needed to be identified before testing and verifying interoperability, supportability, and net-centric requirements. Accordingly, we recommended that the PGMM Program Office complete an information support plan before the production and deployment milestone decision review, as required.

(U) **Actions Taken.** In his May 11, 2006, memorandum, the PGMM Program Manager stated that the PGMM Information Support Plan was being developed from the operational requirements document for the PGMM Program. In addition, he stated that the development of the PGMM Information Support Plan was being coordinated with other Program Executive Office for Ammunition

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programs to provide consistent interoperability, supportability, and net-centric operations for the Army and the Army Chief Information Officer (G-6). He also stated that the development of the Mortar Fire Control System for Software Block 3 would augment the information support plan to assure interoperability, supportability, and net-centric operations. Further, he stated that an internal and external review would be started in June 2006 to complete a Stage I review by the time of the Program's critical design review in November 2006. He also stated that a Stage II review would be completed before Government developmental testing to ensure complete staffing and approval by the production and deployment milestone decision review in the third quarter of FY 2008.

## **System Security Authorization Agreement (U)**

**(U) System Security Authorization Agreement Compliance.** In our March 11, 2005, memorandum, we stated that the PGMM Program Office did not prepare a system security authorization agreement to document the DoD Information Technology Security Certification Accreditation Process, as required by DoD Instruction 5200.40, "DoD Information Technology Security Certification Accreditation Process (DITSCAP)," December 30, 1997. The guidance requires all DoD acquisition systems that collect, store, transmit, or process information to comply with the DoD Information Technology Security Certification and Accreditation Process. The Program Office did not prepare a system security authorization agreement because it believed that the requirement applied only to systems that connected with the PGMM system. As a result, the Program Office was not able to fully identify specific information technology security requirements for the PGMM. Accordingly, we recommended that the PGMM Program Manager complete a system security authorization agreement before the production and deployment milestone decision review, as required.

**(U) Actions Taken.** In his May 11, 2006, memorandum, the PGMM Program Manager, stated that the completion of Phase I of the system security authorization agreement for PGMM was in its final staffing for approval. He also stated that final approval by the Program Executive Officer for Ammunition, the Designated Approval Authority, was scheduled to be completed by the end of June 2006. On June 21, 2006, Program Executive Officer for Ammunition approved the system security authorization agreement (Phase I) for PGMM.

## **Management Comments on the Appendix and Audit Response (U)**

(U) Summaries of management comments on the appendix and audit responses are in Appendix F.

# Appendix C. DoD Office of Inspector General Memorandum Concerning Compliance Issues (U)



INSPECTOR GENERAL  
DEPARTMENT OF DEFENSE  
400 ARMY NAVY DRIVE  
ARLINGTON, VIRGINIA 22202-4704

March 11, 2005

MEMORANDUM FOR DEPUTY PRODUCT MANAGER OF PROJECT MANAGER  
MORTARS

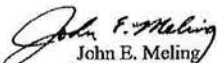
SUBJECT: Audit of the Precision Guided Mortar Munition (Project No. D2005AE-0020)

The subject audit was suspended on February 19, 2005, after we identified compliance issues with the preparation of an Information Support Plan and a System Security Authorization Agreement. We are notifying you of these issues so that you have time to prepare the Information Support Plan and the System Security Authorization Agreement before the Milestone C (production) decision review.

**Information Support Plan.** The Precision Guided Mortar Munition Program Office did not document its interoperability, supportability, and net-centric requirements in an Information Support Plan as required by DoD Instruction 4630.8, "Procedures for Interoperability and Supportability of Information Technology (IT) and National Security Systems," June 30, 2004, and Chairman of the Joint Chiefs of Staff Instruction 6212.01C, "Interoperability and Supportability of Information Technology and National Security Systems," November 19, 2004. Program offices must prepare Information Support Plans when they complete the program's Capability Development Document. The Capability Development Document details all the key performance parameters needed to analyze, identify, and describe information technology and National Security System interoperability in the Information Support Plan. Officials in the program office were not aware that they were required to prepare an Information Support Plan and, as a result, they were not fully aware of their system's dependencies and interface requirements that needed to be identified before testing and verification of interoperability, supportability, and net-centric requirements. Accordingly, we encourage you to complete an Information Support Plan before the Milestone C decision review, as required.

**System Security Authorization Agreement.** All DoD acquisition systems that collect, store, transmit, or process information are must comply with the DoD Information Technology Security Certification and Accreditation Process (DITSCAP). The Precision Guided Mortar Munition Program Office did not prepare a System Security Authorization Agreement to document the DITSCAP as required by DoD Instruction 5200.40, "DoD Information Technology Security Certification Accreditation Process (DITSCAP)," December 30, 1997, because it believed that the System Security Authorization Agreement requirement applied only to systems that connected with the Precision Guided Mortar Munition. As a result, the Program Office did not identify specific information technology security requirements for the Precision Guided Mortar Munition. Accordingly, we encourage you to complete a System Security Authorization Agreement before the Milestone C production review, as required.

We will resume our review of the Precision Guided Mortar Munition when staff becomes available. Please provide comments to Ms. Tracey Dismukes at (703-604-9086, [tdismukes@dodig.osd.mil](mailto:tdismukes@dodig.osd.mil)) by the close of business on March 24, 2005.

  
John E. Meling  
Program Director  
Acquisition and Technology Management

# Appendix D. Deputy Product Manager for Mortar Systems Response to DoD Office of Inspector General Memorandum (U)



REPLY TO  
ATTENTION OF:

DEPARTMENT OF THE ARMY  
OFFICE OF THE PRODUCT MANAGER, MORTAR SYSTEMS  
PICATINNY ARSENAL, NEW JERSEY 07806-5000

MAY 23 2006

SFAB-AMO-CAS-MS

11 May 2006

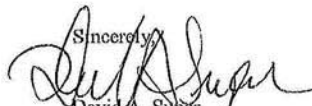
## MEMORANDUM FOR RECORD

REFERENCE MEMORANDUM: Memorandum for Inspector General, Department of Defense, 400 Army Navy Drive, Arlington, VA 22202-4704 from OPM Mortar Systems, dated 24 March 2005

Subject: Status update for Precision Guided Mortar Munition (PGMM) developing Systems Security Accreditation Agreement (SSAA) and Information Support Plan (ISP) for program (Project No. D2005AE-0020)

1. Based on the findings from the last Inspector General audit of the PGMM program (11 March 2005), development of the SSAA and ISP have proceeded in accordance with DoD and CJCS instructions and program milestones. Information based on the program's recent Preliminary Design Review (completed December 2005) was verified prior to staffing these documents.
2. Completion of SSAA (Phase I) is in its final staffing for approval. This document has been approved up to the Certification Authority and is awaiting signature. Final approval by the Designated Approval Authority, PEO Ammunition, is scheduled to be completed by the end of June 2006.
3. The PGMM ISP is being developed from the program's Operational Requirements Document. This document is being developed in coordination with other PEO Ammunition programs to provide a consistent interoperability, supportability and net-centric operations for CIO/G-6 and the Army. Internal and external review will be initiated in June 2006 so that a completed Stage I review will be accomplished by the program's Critical Design Review in November 2006. This ISP is being augmented by the development of the Mortar Fire Control System for Software Block 3 in order to assure interoperability, supportability and net-centric operations. Stage II will be completed prior to Government Developmental Testing to assure complete staffing and approval by Milestone C in 3QFY08.
4. Point of contact for this action is Mr. Peter Burke (973-724-5802) or Mr. Glenn Miner (973-724-2226).

Sincerely,

  
David A. Super  
Deputy Product Manager  
Mortar Systems

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## Appendix E. Glossary (U)

**(U) Acquisition.** Acquisition is the conceptualization, initiation, design, development, test, contracting, production, deployment, logistics support, modification, and disposal of weapons and other systems, supplies, or services, including construction, intended for use in or in support of military missions.

**(U) Acquisition Category II.** An Acquisition Category II program is defined as an acquisition program that does not meet the criteria for an Acquisition Category I program, but does meet the criteria for a major system. A major system is defined as a program estimated by the DoD Component Head to require an eventual expenditure of research, development, test, and evaluation funds of more than \$140 million in FY 2000 constant dollars, or of procurement funds of more than \$660 million in FY 2000 constant dollars, or those designated by the DoD Component head to be an Acquisition Category II program.

**(U) Acquisition Strategy.** An acquisition strategy is a business and technical management approach designed to achieve program objectives within the resource constraints imposed. It is the framework for planning, directing, contracting for, and managing a program. It provides a master schedule for research, development, test, production, fielding, modification, post-production management, and other activities essential for program success. The acquisition strategy is the basis for formulating functional plans and strategies.

**(U) Advanced Technology Demonstration.** An advanced technology demonstration is used to demonstrate the maturity and potential of advanced technologies for enhanced military operational capability or cost effectiveness, and reduce technical risks and uncertainties at the relatively low costs of informal processes.

**(U) Analysis of Alternatives.** The analysis of alternatives is the evaluation of the operational effectiveness, operational suitability, and estimated costs of alternative systems to meet a mission capability. The analysis assesses the advantages and disadvantages of alternatives being considered to satisfy capabilities, including the sensitivity of each alternative to possible changes in key assumptions or variables.

**(U) Capability Development Document.** A capability development document contains the information necessary to develop a proposed program, normally using an evolutionary acquisition strategy. The capability development document outlines an affordable increment of militarily useful, logistically supportable, and technically mature capability. The capability development document should be approved before the system development and demonstration decision review.

**(U) Capability Production Document.** A capability production document is a document that addresses the production elements specific to a single increment of an acquisition program. The refinement of performance attributes and key performance parameters is the most significant difference between the capability development



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document and the capability production document. The capability production document must be validated and approved before a low-rate initial production milestone decision review.

**(U) Cartridge.** A cartridge is composed of a shell and propellant package that is fired from a mortar.

**(U) Collateral Damage.** Collateral damage is unintentional damage or incidental damage affecting facilities, equipment, or personnel, occurring as a result of military actions directed against targeted enemy forces or facilities. Such damage can occur to friendly, neutral, and even enemy forces.

**(U) Critical Design Review.** A critical design review is conducted to determine whether the detailed design satisfies the performance and engineering requirements of the development specification; to establish the detailed design compatibility among the item and other items of equipment, facilities, computer programs and algorithms, and personnel; to assess producibility and risk areas; and to review the preliminary product baseline specifications. A critical design review is normally conducted during the system development and demonstration phase.

**(U) Critical Operational Issue.** A critical operational issue is an operational effectiveness or operational suitability matter (not parameters, objectives, or thresholds), or both, that must be examined in operational test and evaluation to determine the system's capability to perform its mission. A critical operational issue is normally phrased as a question that must be answered to properly evaluate operational effectiveness or operational suitability.

**(U) DoD Information Technology Security Certification and Accreditation Process.** The DoD Information Technology Security Certification and Accreditation Process is the standard DoD process for identifying information security requirements, providing security solutions, and managing information system security activities.

**(U) Evolutionary Acquisition.** An evolutionary acquisition delivers capability in increments, recognizing up front the need for future capability improvements. There are two approaches to achieving an evolution acquisition: spiral development and incremental development.

**Spiral Development.** A desired capability is identified, but the end-state requirements are not known at program initiation. Requirements are refined through demonstration, risk management, and continuous user feedback. Each increment provides the best possible capability, but the requirements for future increments depend on user feedback and technology maturation.

**Incremental Development.** A desired capability is identified and an end-state requirement is known. The requirement is met over time by developing several increments, each dependent on available mature technology.

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(U) **Full Operational Capability.** Full operational capability is the complete attainment of the capability to employ effectively a weapon, item of equipment, or system of approved specific characteristics, which is manned and operated by a trained, equipped, and supported military unit or force.

(U) **Gun Target Line.** A gun target line is an imaginary straight line from gun to target.

(U) **Information Assurance.** Information assurance means information operations that protect and defend information and information systems by ensuring their availability, integrity, confidentiality, authentication, and nonrepudiation. Information assurance provides for the restoration of information systems by incorporating protection, detection, and reaction capabilities.

(U) **Information Support Plan.** An information support plan describes system dependencies and interface requirements in sufficient detail to enable testing and verification of information technology and national security system interoperability and supportability requirements. The information support plan includes information technology and national security system interface descriptions, infrastructure and support requirements, standards profiles, measures of performance, and interoperability shortfalls.

(U) **Information Technology.** Information technology is the hardware, firmware, and software used as part of the information system to perform DoD information functions. Information technology includes computers, telecommunications, automated information systems, automatic data processing equipment, and any assembly of computer hardware, software, and firmware configured to collect, create, communicate, compute, disseminate, process, store, and control data or information.

(U) **Interoperability.** Interoperability is the ability of systems, units, or forces to provide services to or accept services from other systems, units, or forces and to use the services so exchanged to operate effectively together.

(U) **Joint Capabilities Integration and Development System.** The Joint Capabilities Integration and Development System supports the Chairman, Joint Chiefs of Staff and the Joint Requirements Oversight Council in identifying, assessing, and prioritizing joint military capability needs as required by law.

(U) **Joint Requirements Oversight Council.** The Joint Requirements Oversight Council validates and approves the Joint Capabilities Integration and Development System documents for programs of interest to the Joint Requirements Oversight Council.

(U) **Key Performance Parameters.** Key performance parameters are a critical subset of the performance parameters in operational requirements documents and capability development documents. Each key performance parameter has a threshold and an objective value. Key performance parameters represent those capabilities or characteristics so significant that inability to meet the threshold value of performance can be cause for the concept or system selected to be reevaluated or the program to be reassessed or terminated.

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(U) **Matériel Developer.** A matériel developer is a command or agency responsible for research and development and production validation of an item.

(U) **Measures of Effectiveness and Suitability.** Measures of effectiveness and suitability are limited to the critical metrics that apply to the capabilities essential to mission accomplishment.

(U) **National Security System.** A national security system is any telecommunication or information system operated by the U.S. Government that involves intelligence activities, cryptologic activities related to national security, command and control of military forces, equipment that is an integral part of a weapon system, or is critical to the direct fulfillment of military or intelligence missions.

(U) **Net-Centric.** Net-centric means information-based operations that use service-oriented information processing, networks, and data from the following perspectives: user functionality (capability to adaptively perform assigned operational roles with increasing use of system-provided intelligence/cognitive processes), interoperability (shared information and loosely coupled services), and enterprise management (net operations).

(U) **Objective.** The objective is the performance value that is desired by the user and which the program manager is attempting to obtain. The objective represents an operationally meaningful, time-critical, and cost-effective increment above the performance threshold for each program parameter.

(U) **Operational Effectiveness.** Operational effectiveness is the overall degree of mission accomplishment of a system when representative personnel use the system in the environment planned or expected for operational employment of the system, considering organization, doctrine, tactics, survivability, vulnerability, and threat.

(U) **Operational Requirements Document.** The operational requirements document states the user's objectives and minimum acceptable requirements for the operational performance of a proposed concept or system.

(U) **Operational Test and Evaluation.** Operational test and evaluation is field testing, under realistic conditions, of any item or component of weapons, equipment, or munitions to determine its effectiveness and suitability for use in combat by typical military users and the evaluation of the results of such tests.

(U) **Program.** A program is a weapon system acquisition funded by research, development, test, and evaluation; or procurement appropriations; or both; with the express objective of providing a new or improved capability in response to a stated mission need or deficiency.

(U) **Program Manager.** Program manager refers to the acquisition program manager during the system acquisition, the system manager during the operation of the system, or the maintenance organization's program manager when a system is undergoing a major change.

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(U) **Reliability.** Reliability is the ability of a system and its parts to perform its mission without failure, degradation, or demand on the support system.

(U) **Research, Development, Test, and Evaluation Budget.** Research, development, test, and evaluation funds are those appropriated for basic research; applied research; advanced technology development; system development and demonstration; research, development, test, and evaluation management support; and operational systems development.

(U) **System.** A system is the organization of hardware, software, materiel, facilities, personnel, data, and services needed to perform a designated function with specified results, such as the gathering of specific data, its processing, and delivery to users.

(U) **System Development and Demonstration.** The system development and demonstration phase of the DoD systems acquisition process begins after the milestone decision to enter this phase. This phase consists of system integration and system demonstration and contains a design readiness review at the conclusion of the system integration effort.

(U) **System Security Authorization Agreement.** The system security authorization agreement is a formal agreement among the designated approving authority, the certification authority, the information technology system user representative, and the program manager. The agreement is used throughout the entire DoD Information Technology Security Certification Accreditation Process to guide actions, document decisions, specify information technology security requirements, document certification tailoring and level-of-effort, identify potential solutions, and maintain operational systems security.

(U) **Test and Evaluation Master Plan.** A test and evaluation master plan documents the overall structure and objectives of the test and evaluation program. It provides a framework within which to generate detailed test and evaluation plans, and it documents the schedule and resources for the test and evaluation program. The test and evaluation master plan identifies the necessary activities for developmental test and evaluation, operational test and evaluation, and live-fire test and evaluation. Further, the test and evaluation master plan links program schedule, test management strategy and structure, and required resources with critical operational issues, critical technical parameters, and objectives and thresholds in the operational requirements document.

(U) **Threshold.** Threshold is the minimum acceptable value that, in the user's judgment, is necessary to satisfy the need. If threshold values are not achieved, program performance is seriously degraded, the program may be too costly, or the program may no longer be timely.

(U) **User Representative.** The user representative is the liaison for the user or the user community, particularly during the initial development of a system. The user representative is the individual or organization that represents the user community in the specification, acquisition, and maintenance of a system. The user representative defines the system mission and functionality and is responsible for ensuring that the user's interests are maintained throughout system development, modification, integration, acquisition, and deployment.

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## Appendix F. Management Comments on Finding A and Appendix B and Audit Response (U)

(U) Our detailed response to the comments from the Product Manager for Mortar Systems (Product Manager) on statements in Finding A and Appendix B of a draft of this report follow. The complete text of those comments is in the Management Comments section of this report.

### Management Comments on Finding A and Audit Response (U)

**(U) Comments on PGMM Increment I Range Requirement.** The Product Manager commented on the Finding A statement in the draft report that:

The April 14, 2003; the January 31, 2005; and the July 11, 2006, operational requirements documents for the Future Combat Systems Program did not specify an 8-kilometer range requirement for the developmental PGMM when fired from the Future Combat Systems Non-Line of Sight Mortar vehicle.

The Product Manager stated that the operational requirements document for the Future Combat Systems states that:

\* \* \* \*

He also stated that the operational requirements document further stated that the

\* \* \* \*

\* \* \* .” Further, the Product Manager stated that PGMM Increment I was properly focused on meeting the 8-kilometer range requirement threshold for the Future Combat Systems because the time between the system development and demonstration phase of the acquisition process and fielding the Future Combat Systems non-line of sight mortar and that system development and demonstration schedules are not the same.

**(U) Audit Response.** The April 14, 2003; the January 31, 2005; and the July 11, 2006, versions of the operational requirements document for the Future Combat Systems Program all state that:

\* \* \* \*

\* \* \* \*

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\* For Official Use Only information omitted.

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\* \* \* \*

\* \* \* \*

\* \* \* \* \* \* \* \*

\* \* \* \* \* \* \* \* . As

stated in Finding A, the operational requirements documents for the Future Combat Systems Program did not specify an 8-kilometer range requirement for the developmental PGMM when fired from the Future Combat Systems Non-Line of Sight Mortar vehicle.

## Management Comments on Appendix B and Audit Response

**(U) Comments on Information Assurance Compliance Issues.** The Product Manager commented on the Appendix B statement in the draft report that:

Before the initial audit of the PGMM Program was suspended on February 19, 2005, and subsequently cancelled in October 2005, the audit identified compliance issues with the preparation of the information support plan and the system security authorization agreement.

The Product Manager stated that in preparing for the PGMM system development and demonstration milestone decision, the information support plan and the system security authorization agreement were not included in the document support package. He also stated that those documents were not included in the package because:

- the PGMM was not considered an information technology system;
- the material solution for processing and transferring information between the Mortar Fire Control System and the PGMM had not been selected; and
- without that material solution, the details of a system security authorization agreement were unknown.

Therefore, the Product Manager for Mortar Systems concluded that most of the Clinger-Cohen documentation, including the information support plan and the system security authorization agreement, were not applicable to the PGMM Program.

(U) The Product Manager stated that, after the system development and demonstration milestone decision, he received guidance stating that an information support plan and a system security authorization agreement was required because the PGMM was connected to an information system.

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\* For Official Use Only information omitted.

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Consequently, the Office of the Product Manager for Mortar Systems will include those documents in the document support package for the low-rate initial production milestone decision.

**(U) Audit Response.** As stated in our DoD IG Memorandum, “Audit of the Precision Guided Mortar Munition (Project No. D2005AE-0020),” March 11, 2005 (see Appendix C), the Deputy Product Manager for Mortar System did not prepare an information support plan and a system security authorization agreement before the PGMM system development and demonstration decision, as required. In response, the Deputy Product Manager for Mortar Systems took action to develop those documents. In his May 11, 2006, memorandum, “Status Update for Precision Guided Mortar Munition (PGMM) Developing Systems Security Accreditation Agreement (SSAA) and Information Support Plan (ISP) for Program (Project No. D2005AE-0020),” the Deputy Product Manager discussed progress in developing the information support plan and the systems security accreditation agreement for the PGMM Program (see Appendix D).

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## **Appendix G. Report Distribution**

### **Office of the Secretary of Defense**

Under Secretary of Defense for Acquisition, Technology, and Logistics  
  Director, Acquisition Resources and Analysis  
Under Secretary of Defense (Comptroller)/Chief Financial Officer  
  Deputy Chief Financial Officer  
  Deputy Comptroller (Program/Budget)  
Director, Operational Test and Evaluation  
Director, Program Analysis and Evaluation  
Director, Defense Procurement and Acquisition Policy

### **Joint Staff**

Director, Joint Staff  
  Director for Force Structure, Resources, and Assessment (J-8)

### **Department of the Army**

Commander, Army Training and Doctrine Command  
  Commander, Army Infantry Center  
Assistant Secretary of the Army (Acquisition, Logistics, and Technology)  
  Program Executive Officer for Ammunition  
    Project Manager Combat Ammunition Systems–Indirect Fire  
    Product Manager for Mortar Systems  
  Program Manager for Future Combat Systems  
    Project Manager for Manned Systems Integration  
    Product Manager for Non-Line of Sight Cannon and Mortar  
Assistant Secretary of the Army (Financial Management and Comptroller)  
Deputy Chief of Staff (G-3/5/7)  
Deputy Chief of Staff (G-8)  
Auditor General, Department of the Army

### **Department of the Navy**

Naval Inspector General  
Auditor General, Department of the Navy

### **Department of the Air Force**

Auditor General, Department of the Air Force

### **Combatant Command**

Commander, U.S. Special Operations Command  
Inspector General, U.S. Joint Forces Command



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## **Non-Defense Federal Organization**

Office of Management and Budget

## **Congressional Committees and Subcommittees, Chairman and Ranking Minority Member**

Senate Committee on Appropriations  
Senate Subcommittee on Defense, Committee on Appropriations  
Senate Committee on Armed Services  
Senate Committee on Homeland Security and Governmental Affairs  
House Committee on Appropriations  
House Subcommittee on Defense, Committee on Appropriations  
House Committee on Armed Services  
House Committee on Government Reform



# U.S. Army Training and Doctrine Command Comments (U)



DEPARTMENT OF THE ARMY  
HEADQUARTERS UNITED STATES ARMY TRAINING AND DOCTRINE COMMAND  
102 McHale Drive  
FORT MONROE VIRGINIA 23051-1047

REPLY TO  
ATTENTION OF  
ATFC-DF

8 DEC 2008

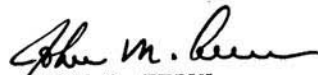
MEMORANDUM FOR Principal Director for Acquisition, Acquisition and Contract Management Directorate, Office of the Inspector General, Department of Defense, 400 Army Navy Drive, Arlington, VA 22202-4704

SUBJECT: Response to the Draft Report on Acquisition of the Precision Guided Mortar Mmunition Program, Project No. D2006-D000AE-0195.000

1. Thank you for the opportunity to address your draft report regarding the acquisition of the Precision Guided Mortar Mmunition Program.
2. Reply to subject report is enclosed and provides detailed response to the recommendations.
3. Point of contact is Chris Pruitt, DSN 680-4280.

FOR THE COMMANDER:

Encl

  
JOHN M. CURRAN  
Lieutenant General, U.S. Army  
Director, Army Capabilities  
Integration Center

**U.S. Army Training and Doctrine Command  
Response to Proposed Report  
Audit of Acquisition of the Precision  
Guided Mortar Munition Program  
Project D2006-D000AE-0195**

**Finding A: Increment I Range Requirement**

**Summary**

The Deputy Product Manager for Mortar Systems (the PGMM Program Manager) did not require the contractor to design PGMM Increment I to meet the 8-kilometer range key performance parameter specified in the operational requirements document. The PGMM Program Manager did not require the contracting officer to insert the 8-kilometer range requirement into the contract because the mortar launch vehicle for the Future Combat Systems that will be used to test the 8-kilometer range would not be fielded until after the planned Increment I low-rate initial production decision in the third quarter of FY 2008. Another contributing factor was that the U.S. Army Training and Doctrine Command, the user representative, did not ensure that the 8-kilometer range requirement for the PGMM was traceable to the operational requirements document for the Future Combat Systems, which was the stated basis for the PGMM range requirement. As a result, the Army increased the risk of program reevaluation, reassessment, or termination by not satisfying the warfighter range requirement for Increment I.

**Recommendation A.1.** We recommend that the Commanding General, U.S. Army Training and Doctrine Command determine whether the 8-kilometer range requirement in the operational requirements document for Increment I of the Precision Guided Mortar Munition Program is a valid Future Combat Systems requirement. If valid, the requirement document for the Future Combat Systems Program should be revised, as required by Chairman of the Joint Chiefs of Staff Instruction 3170.01E, "Joint capabilities Integration and Development System," May 11, 2005.

**TRADOC Comments:** Non-concur. TRADOC does not intend to revise the approved FCS and PGMM Increment I ORDs. The PGMM requirements are based on the PGMM Analysis of Requirements (AoR) conducted by the USAIC in March 2001. This analysis determined that a need existed for an organic precision capability that could reach extended ranges (12-15km) incapacitate personnel inside Earth and Timber Bunkers, Masonry Structures (Triple Brick, Reinforced Concrete), and moving Lightly Armored Vehicles. This analysis along with supporting data from the PGMM Analysis of Alternatives (June 2002) was the basis for the initial PGMM Operational Requirement Document (ORD). In the FCS ORD it states that the

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FCS NLOS Mortar "provides destructive fires that complement the maneuver and destroys targets of opportunity with precision guided fires". PGMM is scheduled to be fielded in FY 10 to support current systems. At the time when PGMM Increment I ORD was written and approved, it was also directed to be linked with FCS systems scheduled to be fielded in FY 10. However, due to changes in the FCS program schedule, it will not be possible to validate FCS requirements prior to the next PGMM Increment I program milestone. Therefore, all capabilities required in the PGMM Increment I ORD to support current systems will be addressed in the PGMM Increment I program Capability Production Document (CPD) to support a PGMM Increment I milestone C decision in 4QFY08. Capabilities required to support FCS capabilities will be addressed in future incremental capability documents.

**U.S. Army Training and Doctrine Command  
Response to Proposed Report  
Audit of Acquisition of the Precision  
Guided Mortar Munition Program  
Project D2006-D000AE-0195**

**Finding B: Warfighter Need for Increment II**

**Summary**

The U.S. Army Training and Doctrine Command did not adequately justify the warfighter need for PGMM Increment II to extend the operational range of the PGMM to 10 Kilometers in Increment II. This condition occurred because the U.S. Army Training and Doctrine Command had not adequately:

- determined whether the warfighter had a validated need for another interim increase in the PGMM range capability before obtaining full-range operational capability, and
- considered the results of the analysis of alternatives when including Increment II as required increment in the operational requirements document as apart of the evolutionary development of the PGMM.

As a result, the Army may incur unnecessarily programmed costs of at least \$26 million for the Increment II range increase while delaying the development of the PGMM full-range operational capability needed by the warfighter for Increment III.

**Recommendation B.1.** We recommend that the Commanding General, U.S. Army training and Doctrine Command:

a. When preparing the Precision Guided Mortar Munition requirements documents, determine whether the warfighter has a valid need for Increment II, in accordance with Chairman of the Joint Chiefs of Staff Instruction 3170.01E, Joint capabilities Integration and Development System," May 11, 2005.

b. Update the analysis of alternatives of the Precision Guided Mortar Munition Program if a valid warfighter need exists for Increment II, in accordance with DOD Instruction 5000.2, "Operation of the defense Acquisition System," May 12, 2003.

**TRADOC Comments:** Concur. The PGMM full range capabilities are supported by the Analysis of Requirements (AoR) that identified the need for an Organic capability to engage targets at extended ranges (12-15Km), Incapacitate personnel in Earth and Timber Bunkers, Masonry Structures (triple brick, reinforced concrete), and moving Lightly Armored Vehicles. The PGMM full capabilities

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will be incrementally addressed under the JCIDS process. The Increment I MS C decision in FY08 will provide a precision guided engagement capability against the majority of the complete target set. Future increments will address the remaining targets in the target set, increased range and NLOS-M capabilities. Additional analysis will likely be conducted to support these future PGMM increments.

# Product Manager for Mortar Systems Comments (U)



REPLY TO  
ATTENTION OF:

**DEPARTMENT OF THE ARMY  
OFFICE OF THE PRODUCT MANAGER, MORTAR SYSTEMS  
PICATINNY ARSENAL, NEW JERSEY 07806-5000**

SFAE-AMO-CAS-MS

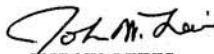
22 November 2006

MEMORANDUM FOR Department of Defense (Inspector General), 400 Army Navy Drive,  
Arlington, VA 22202-4704

SUBJECT: Response to Draft Report of DODIG Audit of the Acquisition of the Precision  
Guided Mortar Munition Program, Project No. D2006-D000AE-0195.000

1. On 3 November 2006, the DoD Office of the Inspector General issued a Draft Report on the Acquisition of the Precision Guided Mortar Munition, Project No. D2006-D000AE-0195.000.
2. The report made specific recommendations to be addressed by the Commanding General, TRADOC, and the Deputy Product Manager for Mortar Systems.
3. Concur with recommendations directed to PM Mortars. PM Mortars comments for A2a, A2b and B2 are enclosed and will be forwarded to the Deputy for Acquisition and Systems Management for transmission to the Army Audit Agency for release to the Inspector General.
4. Point of contact is Deputy Product Manger David Super, DSN 880-6059, dsuper@pica.army.m<sup>1</sup>

Encl

  
JOHN W. LEWIS  
LTC, FA  
Product Manager for  
Mortar Systems





REPLY TO  
ATTENTION OF:

**DEPARTMENT OF THE ARMY  
OFFICE OF THE PRODUCT MANAGER, MORTAR SYSTEMS  
PICATINNY ARSENAL, NEW JERSEY 07806-5000**

SFAE-AMO-CAS-MS

**SUBJECT:** Response to Draft Report of DODIG Audit of the Acquisition of the Precision Guided Mortar Munition Program, Project No. D2006-D000AE-0195.000

PM Mortars response to the DODIG's audit of the Precision Guided Mortar Munition program is divided into two parts. Part 1 specifically addresses the two major findings in the DODIG report. Part 2 addresses comments made in the body of the report that we believe are either incorrect or require additional details to clarify the report findings.

**Part 1 – Response to Audit Recommendations**

**Recommendation A2.a.** We recommend that the Deputy Product Manager for Mortar Systems update, as necessary, the acquisition strategy and statement of work included in the contract based on the decision made by the U.S. Army Training and Doctrine Command regarding the 8-kilometer range requirement, in accordance with DoD Directive 5000.1, "The Defense Acquisition System," May 12, 2003; and Army Regulation 70-1, "Army Acquisition Policy," December 31, 2003.

**PM Mortars Comments:** Concur with the recommendation to update the current acquisition strategy and statement of work as necessary based on the TRADOC decision regarding the 8km requirement.

**Recommendation A2.b.** We recommend that the Deputy Product Manager for Mortar Systems establish another means of testing, other than the Future Combat Systems Non-Line of Sight Mortar vehicle, for the Precision Guided Mortar Munition Program Increment I range requirement if the U.S. Army Training and Doctrine Command decides to retain the 8-kilometer range requirement in the requirements document for Increment I, in accordance with DoD Instruction 5000.2, "Operation of the Defense Acquisition System," May 12, 2003.

**PM Mortars Comments:** Concur with recommendation to establish another means of testing the integration of PGMM with the Future Combat Systems Non-Line of Sight Mortar (NLOS-M) vehicle if the 8km requirement is retained. The requirement would be validated through ballistic modeling of PGMM in the known NLOS M gun environment prior to Milestone C. Verification through actual firing could not be accomplished because the initial weapon test stand of the NLOS-M gun system will not be available until August 2009, which is approximately one year after Milestone C of the PGMM Increment 1, and two years after PGMM will begin the Government Development and Limited User Test.

SFAE-AMO-CAS-MS

SUBJECT: Response to Draft Report of DODIG Audit of the Acquisition of the Precision Guided Mortar Munition Program, Project No. D2006-D000AE-0195.000

When funded by the PM responsible for the NLOS-M, the PGMM production contract will be modified to deliver PGMM rounds for qualification in the NLOS-M. Coordination for the quantities required, and cartridge types, has already been accomplished with all principle agencies. The PGMM TEMP includes a section on qualifying the PGMM in the NLOS-M, and now specifies 443 rounds of various types to be used to ensure compatibility and performance requirements are met.

**Recommendation B.2.** We recommend that the Deputy Product Manager for Mortar Systems update applicable acquisition documentation for the Precision Guided Mortar Munition Program if the U.S. Army Training and Doctrine Command decides that the warfighter does not have a valid need for Increment II, in accordance with DoD Instruction 5000.2, "Operation of the Defense Acquisition System," May 12, 2003.

**PM Mortars Comments:** Concur with this recommendation. It is recognized and understood that any follow-on increment of PGMM will require its own Milestone B supported by all required documentation to include an updated Capabilities Development Document (CDD). The CDD would be supported by updated requirements analysis. PM Mortars has always planned on following the guidelines within DoD 5000 that detail the requirements for the start of an acquisition program.

#### Part 2: Comments on the Audit Report

**Report Statement:** The April 14, 2003; the January 31, 2005; and the July 11, 2006 operational requirements document for the Future Combat Systems Program did not specify an 8-kilometer range requirement for the development PGMM when fired from the Future Combat Systems Non-Line of Sight Mortar vehicle

**PM Mortars Comment:** The FCS ORD states that:

\* \* \* \* \*  
\* \* \* \* \* The ORD further  
\* \* \* \* \*  
\* \* \* \* \* stated that the

\* \* \* \* \* . Because of the delayed time associated with SD&D and fielding the NLOS-M, and the fact that SDD schedules do not match up, PGMM Increment I was properly focused on meeting the FCS 8km Threshold requirement.

\* For Official Use Only information omitted.

SFAE-AMO-CAS-MS

**SUBJECT:** Response to Draft Report of DODIG Audit of the Acquisition of the Precision Guided Mortar Munition Program, Project No. D2006-D000AE-0195.000

**Report Statement:** Appendix B identified compliance issues found during an earlier, previously suspended audit regarding the preparation of an Information Support Plan (ISP) and System Security Authorization Agreement (SSAA).

**PM Mortars Comment:** During the Milestone B preparation for PGMM, these two documents were not included in the Document Support Package (DSP). PM Mortars followed guidance for developing the Milestone B package for presentation to the MDA. The DoD 5000 allows the MDA to tailor the milestone documentation to only the minimum amount necessary for milestone review purposes. Only those mandatory formats called out by DoD 5000.2-R were required. PGMM was not considered an "Information Technology (IT)" system; therefore PM Mortars recommended that most of the Clinger-Cohen documentation normally associated with IT Systems should not be applicable, to include the ISP and the SSAA. In addition, it was unclear how information was going to be processed and transferred between the Mortar Fire Control System (MFCS) and the PGMM because a material solution had not been selected. Similarly, the details of an SSAA would be unknown without the identification of a design specific material solution. Since Milestone B, subsequent guidance has been received stating that because the PGMM is connected to the information system (receives information only, and does not transmit), it still requires an ISP and SSAA. Therefore, PM Mortars has taken positive action to make sure that both of these requirements will be met prior to Milestone C. The SSAA and ISP will both be included in the PGMM MS C DSP.

## **Team Members**

The Department of Defense Office of the Deputy Inspector General for Auditing, Acquisition and Contract Management prepared this report. Personnel of the Department of Defense Office of Inspector General who contributed to the report are listed below.

Richard B. Jolliffe  
John E. Meling  
Jack D. Snider  
Suellen R. Brittingham  
Joyce Tseng  
Meredith H. Johnson



Inspector General  
Department of Defense

