

Precision Fires Rocket and Missile Systems  
(PFRMS) Systems Plan  
Current as of July 18, 2002

The Multiple Launch Rocket System (MLRS) provides the Army an all-weather, indirect, area fire weapon system to attack the enemy deep and strike counter fire, air defense, armored formations, and other high-payoff targets up to 300 kilometers from the launcher. The M270 is the standard U.S. Army platform for firing surface-to-surface artillery rockets and missiles. The M270A1 program includes upgrades to the current M270 launcher to increase combat overmatch. Improvements include the Improved Fire Control System (IFCS), the Improved Launcher Mechanical System (ILMS), and the ability to fire current and future MLRS and Army Tactical Missile System (ATACMS) munitions such as ATACMS Block IA and II missiles and future munitions such as the Guided MLRS.

Currently, the Army is improving the MLRS through a Recapitalization Program and a specific set of initiatives developed under the Section 912 Pilot Program. Section I details the Army Recapitalization program initiatives and Section II relates to the 912 Pilot Program. The current MLRS Recapitalization is a rebuild and selective upgrade program of the M270 to M270A1 configuration involving both rebuild and performance improvements.

The Precision Fires Rocket and Missile System (PFRMS) Office of the Secretary of Defense (OSD) Pilot Program initially included only the High Mobility Artillery Rocket System (HIMARS) variant of the system. The HIMARS is a Wheeled MLRS capable of firing six rockets or one missile employed on a five-ton Family of Medium Tactical Vehicles (FMTV) truck. HIMARS First Unit Equipped (FUE) will occur in Fiscal Year 2005 (FY 05). The initiatives being worked include a Product Support Decision Support System (PSDSS) designed to improve Operation and Sustainment (O&S) cost and maintenance visibility, definition of an Automatic Information Technology (AIT) strategy, evaluation of high cost Line Replaceable Units (LRUs) common to HIMARS and the M270A1, assessment of statutes and regulations affecting Product Support execution, and definition of Product Support strategies.

Each initiative will assist in implementing the Performance Based Logistics (PBL) mandate which includes: Outcome performance goals, incentives for attaining these goals, and facilitating the overall life cycle management of system reliability, supportability, and total ownership costs. Each of the PFRMS products is in the process of defining specific PBL strategies and implementation plans.

The Business Process Improvement Directorate (BPI), in coordination with Project Manager (PM) PFRMS will track the M270A1 performance metrics. A joint team will define the metrics for tracking the progress of each initiative.

## SECTION I. RECAPITALIZATION

The goals of M270A1 Recapitalization are to: Enhance capability, improve readiness, reduce O&S cost, and extend service life. These goals will be attained under one initiative, the rebuild and selective upgrade of the M270 to M270A1. The cost drivers being attacked by each of these efforts have been identified by analysis conducted throughout the history of the M270 and an ongoing study of the aging M270 fleet that is currently not programmed for M270A1 upgrade.

Rebuild and selective upgrade of M270 to M270A1 (Procurement) at Lockheed Martin Corporation and Red River Army Depot (RRAD) consists of the complete rebuild of the M270 engine/suspension/hoist system/track/road wheels, the replacement of all electrical system components and cables, repair/weld chassis and launcher, and a transmission upgrade/rebuild. Performance enhancements include the IFCS, which replaces obsolete, maintenance-intensive hardware and software, provides growth potential for future munitions, and the potential for reduced launcher O&S costs. Additionally, the ILMS is designed to decrease the time required to aim and load the launcher. Select Modification Work Orders (MWOs) and Engineering Change Proposals (ECPs) will be applied during the process.

### MLRS Selective Upgrade Recapitalization

The M270A1 launcher is the result of the application of IFCS and ILMS modifications, remanufacturing of selected components, and the application of select ECPs to the basic M270 launcher. The M270A1 growth will involve the incorporation of future hardware and software changes as required to bring the Fire Control System (FCS) to a higher common configuration to comply with Army directives. The M270A1 modifications include upgrades to the electronics and navigation equipment (IFCS components) and integrating new improved mechanical upgrades (ILMS components). The M270A1 recapitalization enhancements involve both rebuild and selective upgrade of specific components. The objectives and component coverage are summarized below.

## Methods of Performance Measurement

From the start of the development of the IFCS, the objective was to address and mitigate an alarming obsolescence problem. A review of the existing M270 launcher revealed that 92 percent of the microcircuits would no longer be available by 2003. The IFCS modification upgrades the electronic and navigation equipment, provides an embedded onboard Global Positioning System (GPS) capability, and revises the software architecture.

As stated in the Recapitalization Program Baseline, the success of the M270A1 program will be measured with four metrics:

### a. Reduce Average Fleet Age

One of the goals of the Army's Recapitalization plan is to reduce the average age of the Recapitalization systems. Because the M270 to M270A1 conversion produces a near zero-hour/zero-mile vehicle, it will reduce the overall average age of the fleet. Without the Recapitalization program, the average age of the M270 fleet will reach 20 years in 2010. The objective of the program is to reduce the average age of launchers in the fleet to 13 years or less by 2010. Success will be measured by documenting the Material Inspection and Receiving Report (DD250) date of a new M270A1 launcher and determining its age based on that date. The ages of the new launchers will be added to the ages of the existing M270s so that the overall average age of the M270/M270A1 fleet can be determined.

### b. Reduce Average Reload Time

Another goal of the M270 to M270A1 Recapitalization Program is to decrease the average reload time of the launcher by 30 percent. This decrease in reload time is critical to increasing the operational capability of the MLRS system. Success or failure will be determined by tracking data from the Quality Conformance Inspection Procedure (QCIP) for acceptance of an M270A1.

### c. Reduce time from launcher lay to last rocket fired

Decreasing the time from launcher lay to last rocket fired is critical to increasing operational capability of the MLRS system. It is anticipated that there will be a 49 percent decrease in this time when compared to the M270. Success or failure will be determined by tracking data from the QCIP for acceptance of an M270A1.

### d. Increase Launcher Mean Time Between Operational Mission Failure (MTBOMF)

Increasing the MTBOMF is critical to increase readiness and improve reliability. The M270A1 Operational Requirements Document (ORD) requirement for MTBOMF is => 37 hours. A data collection program will

be implemented for the M270A1 system to track improvements in MTBOMF.

e. Increase Mean Time Between Failure (MTBF) of Upgraded Components. Components of the M270A1 were either rebuilt or replaced during Recapitalization. The new, redesigned components present the best opportunity for reliability improvement. Some of the main redesigned components, listed below, will be tracked for specified performance and cost reduction.

Component	NSN	MTBF
1. PNU	1055-01-436-5913	3,400 hours
2. WIU	1055-01-471-3827	2,200 hours
3. LIU	1055-01-475-4351	2,300 hours
4. MSD	1055-01-470-7547	15,000 hours
5. PSU	1055-01-436-0002	10,000 hours
6. Azimuth Drive	1055-01-452-1094	29,667 hours
7. FCP	1055-01-473-3220	3,300 hours
8. Hydraulic Pump	1055-01-452-1092	52,246 hours
9. Swivel	1055-01-457-2966	44,500 hours
10. Angle Drive	1055-01-454-6688	11,348 hours

(MTBF is subject to adjustment following trend analysis.)

All signatories agree to the following:

- a. This is a living document and is current May 28, 2002.
- b. The methods of performance measurement shall be as outlined above.
- c. The BPI, in coordination with all parties, will track results of MLRS M270A1 recapitalization performance metrics established in this agreement.
- d. The BPI will supply tracking results to participating organizations via the Acquisition Information Management (AIM) and Army Recapitalization Tracking System (ARTIS) websites and tailored reports.
- e. The BPI will report tracking results to Army Senior Staff.
- f. The PM PFRMS, in coordination with all parties, will assist with development of metrics to be used in tracking execution.

- g. The PM PFRMS, in coordination with the U.S. Army Materiel Command (AMC) and warfighter (dependent upon who is funding the effort), will supply Field Service Representative (FSR) report data to BPI.
- h. The warfighter will ensure continued emphasis on accurate data reporting.
- i. The warfighter will facilitate/authorize Headquarters, Department of the Army (HQDA) liaison visits when necessary.
- j. End Item/Component serial numbers will be linked prior to fielding.
- k. The PM PFRMS/AMC will provide updates to induction/distribution schedules, performance standards, and baselines to Business Process Improvement whenever necessary.
- l. The HQDA will furnish funding details as requested.
- m. The Deputy Assistant Secretary of the Army for Cost and Economics (DASA (CE)) will validate cost and economic analyses (of recapitalization efforts) that have been reviewed and accepted by the Major Command (MACOM) and Major Subordinate Command (MSC) cost analysis organizations and perform independent evaluations and analyses when applicable.
- n. The AMC will provide independent evaluations and analyses to be conducted by the U.S. Army Material Systems Analysis Activity (AMSAA).

AGREEMENT DATE: July 18, 2002

APPROVED BY:

PFRMS-PM

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## SECTION II. PFRMS PILOT PROGRAM INITIATIVES

In response to Section 912, HIMARS was designated as one of the Army's ten Pilots. The HIMARS Program is a developmental program and as such allowed for proposed initiatives that do not necessarily provide for savings during the objective years of FY 99-05, but provide the opportunity to implement new ways of doing business that will result in future savings. In working the varied initiatives, it became clear that a more effective approach was to take a total systems view, which included all the products managed by the PFRMS Project Office.

In November 2000, the Army Acquisition Executive (AAE) redefined the HIMARS Pilot to a PFRMS System of Systems Pilot. Subsequently, the Army directed the disestablishment of the MLRS and ATACMS-Brilliant Anti-Armor Submunition (BAT) Project Offices and the creation of the PFRMS project office. An Implementation Plan to address this System of Systems Pilot is in development. The PFRMS Pilot will continue to employ the principles of total systems approach, "Cradle to Grave" management, and Partnering while using Total Ownership Cost as the metric.

The PFRMS Pilot is currently working several key initiatives. Two of those are a PSDSS with an embedded Logistics Simulation and the Tactical Proficiency Trainer-Digital Enabler Unit, which are discussed below. Additionally, the Project is evaluating the implementation of PBL, a life-cycle approach to HIMARS Product Support Strategy, high cost LRUs common to HIMARS and the M270A1, an AIT Strategy, and statutes/regulations that affect Product Support execution.

**INITIATIVE 1:** The PSDSS for PFRMS Product Support (logistic simulation tool).

**DESCRIPTION:** The PSDSS for the PFRMS program is a two-part process that develops over time and usage. The process begins with instituting AIT as an enabler for a Data Collection program (reference Department of the Army Pamphlet 700-24). The information and data collected will then be fed into the PFRMS Predictive Analysis and Supportability Simulation (PASS) model (an analytical decision support tool) that will be utilized by the PFRMS logistics community to identify areas needing improvement in order to further reduce Total Ownership Costs and improve the PFRMS readiness posture Army-wide.

**BENEFITS:** The PSDSS will exploit lower life cycle cost alternatives in system configurations by using current technology components and adapting common equipment to multiple requirements

and applications. The PSDSS will improve the productivity, effectiveness, and efficiency of systems managed by PFRMS Program Management Office (PMO). It will support the insertion of new technologies to extend the life of existing weapon systems and improve existing product support and maintenance processes. The PSDSS will improve the ability to recommend maintenance support requirements for deployed PFRMS assets (based on environment, Operations Tempo (OPTEMPO), terrain, reliability, etc.) to include activities that would influence product support strategies.

**RESULTS:** By implementing a fully operational predictive analysis decision support model to drive the PSDSS, PFRMS logistical readiness will be greatly enhanced by ensuring that an adequate number of assets are available when needed. The PSDSS will aid Commanders to stay within annual budgets by more accurately calculating the number of spare parts and maintenance support required for scheduled deployments. The initial version of PSDSS will assist in determining the optimal (reduced) number of high dollar LRU procurements for the HIMARS system. This technology can easily be exported to other weapon systems. Forces in North Atlantic Treaty Organization (NATO) could also adapt the PSDSS to their specific needs to support Foreign Military Sales (FMS) equipment. Utilizing the simulation model will enhance reliability, maintainability, and supportability by assessing sustainment requirements for capabilities, identifying logistical bottlenecks, providing supply logistic support options, and analyzing the effects of tactics, terrain, techniques, and procedures. The PFRMS Project Office believes very strongly that the PSDSS will greatly enhance all areas of logistics readiness and cost control.

#### Methods of Performance Measurement

A major benefit of the PSDSS program is support of reliability, availability, and maintainability decisions by accurately predicting component failures and modeling the impact to Army supply chain management.

Initially the same items as proposed in Section I will be tracked for specified performance:

Component	NSN	MBTF
1. PNU	1055-01-436-5913	3,400 hours
2. WIU	1055-01-471-3827	2,200 hours
3. LIU	1055-01-475-4351	2,300 hours
4. MSD	1055-01-470-7547	15,000 hours
5. PSU	1055-01-436-0002	10,000 hours
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Funding current as of: May 23, 2002-PM PFRMS

Description	FY98	FY99	FY00	FY01	FY02	FY03	FY04	FY05	FY06	FY07
Projected Funding	0	0	\$50K	\$191K	\$353K	0	0	0	0	0

Proposed use of \$700K of Program Budget Decision (PBD) 721 funding is being worked through the Business Process Improvement office.

**INITIATIVE 2: Tactical Proficiency Trainer-Digitization Enabler Unit (TPT-DEU)**

**DESCRIPTION:** Use of the M270 TPT (or the new M270A1/HIMARS Fire Control Panel Trainer (FCPT) is limited to sustainment training of the individual 13M Fire Control Panel (FCP) tasks due to the lack of combat net radio digital interface with organic unit C2 assets. This limitation prevents the leveraging of the TPT/FCPT as an additional resource to support unit level C2 sustainment training. Units can achieve decreased C2 sustainment training costs by using the combination of the TPT-DEU and TPT/FCPT in lieu of tactical launcher(s). The PFRMS PMO expects the MLRS community to benefit from TPT-DEU implementation in a variety of ways. These include:

- a. User ability to integrate the M270 Tactical Proficiency Trainer (TPT) and M270A1/HIMARS FCPT into a training environment involving tactically postured Battery and Platoon operations centers.
- b. Ability to interface digitally with Single Channel Ground and Airborne Radio System (SINCGARS) maximizing C2 training integration.
- c. Ability to maintain and improve C2 Military Occupational Specialty (MOS) skill proficiency of both the 13M (MLRS Crewmember) and 13P (MLRS Field Artillery Tactical Data Specialist).
- d. Improved unit readiness.

**BENEFITS:** The TPT-DEU will enhance the unit sustainment training value of the highly perishable skills associated with launcher Fire Control System (FCS) and the Fire Direction Center (FDC) C2 operations.

The TPT and FCPT fire control system training devices and TPT-DEU combination provides a means to increase C2 training proficiency at current O&S levels by allowing the TPTs/FCPTs to fully emulate MLRS tactical launcher operations. The benefits of the TPT-DEU are focused in two key areas: operations and logistics.

Operations:

- a. Avoid impacting operational readiness while increasing levels of FCS and FDC skills proficiency.
- b. Increase the repetition frequency of trainable C2 related tasks (individual and collective).
- c. Integrate the MLRS fire control system into Fire Support Battlefield Functional Area system training.
- d. Increased flexibility of training scenarios.

Logistics:

- a. Increased efficiency in training.
- b. Increased ability to leverage and integrate supplemental training assets (personnel, time, equipment).

RESULTS:

The following blocks outline the additional annual cost, in thousands of dollars, to attain training proficiency levels without the use of the TPT-DEU.

FY02 = \$0	FY03 = \$0	FY04 = \$2,018	FY05 = \$1,965	FY06 = \$1,913
FY07 = \$1,863	FY08 = \$1,814	FY09 = \$1,766	FY10 = \$1,720	FY11 = \$1,675

Savings will be tracked by:

Developing a plan with III Corps Artillery units to assess the improvements to training facilitated by the integration of TPTs and FCPTs into C2 training with combat net radio.

Funding current as of May 23, 2002-PM PFRMS

Description	FY98	FY99	FY00	FY01	FY02	FY03	FY04	FY05	FY06	FY07
Projected Funding	0	0	\$500K	\$700K	\$700K	\$200K	0	0	0	0

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- e. The BPI will report tracking results to Army Senior Staff.
- f. The PM PFRMS will assist with development of metrics to be used in tracking execution.
- g. The PM PFRMS or the warfighter (dependent upon who is funding the effort) will supply FSR/SDC report data to BPI.
- h. The warfighter will ensure continued emphasis on accurate data reporting.
- i. The warfighter will facilitate/authorize HQDA liaison visits when necessary.
- j. The AMC will provide component/sub-component serial number linkages prior to modification.
- k. The PM PFRMS/AMC will provide updates to induction/distribution schedules, performance standards and baselines to BPI whenever necessary
- .l. The HQDA will furnish funding details as requested.

m. The DASA-CE will perform substantive review of MACOM validated economic analysis for recapitalization and perform independent validation when applicable.

AGREEMENT DATE: July 18, 2002

APPROVED BY:

PFRMS-PM

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