

## Abrams System Performance Plan and Agreement

The Army has continued to enhance and upgrade the Abrams fleet since fielding began in the 1980s. These improvements will allow the continued success of the M1 Family into the future, and target Operations and Support (O&S) cost drivers.

Currently, Army is improving the M1 by Recapitalization Programs and a specific set of initiatives developed under the Section 912/816 Pilot Program directives issued by Office of the Secretary of Defense (OSD) in 1998.

Section I details the Army Recapitalization program initiatives and Section II relates to the 912/816 mandate. Initiatives, such as Abrams Integrated Management (AIM), can appear as both Recapitalization and Pilot program initiatives.

Each initiative contains performance-based measurements that will be used to track the success of each initiative, and will form the basis for high-level tracking. As an example, the M1 Automotive Gas Turbine (AGT) 1500 engine is the highest cost driver within the M1 system, and has been singled out by U.S. Forces Command (FORSCOM) for assistance. The Abrams Integrated Management (AIM) Program brings the engine to a higher level of life expectancy after depot rebuild, and measurement is needed to ensure that the planned life expectancy and the actual outcome are within expected bounds.

Each initiative is a unique element of this performance-based agreement. All signatories attest to what is expected from each organization to meet the intended outcome of the agreement.

The metrics established in this agreement will allow Army to gauge the benefits of Recapitalization and Pilot programs within a select portion of the fleet, and to show how this would affect the entire fleet performance if enacted.

### SECTION I. ABRAMS RECAPITALIZATION PLAN

The Abrams Recapitalization program includes two initiatives: The AIM Program and the M1A2 System Enhancement Package (SEP) Retrofit Program.

The AIM Program overhauls M1A1 tanks to depot rebuild standard (near zero miles/zero hours), applies technology insertions

(not block upgrades), and makes the M1A1 compatible for future upgrade to the digitized M1A1D.

The M1A2 SEP Retrofit Program improves the M1A2 to the most current and digitally responsive SEP model, capturing changes based on field-testing the M1A2. Enhancements include an additional Auxiliary Power Unit (APU), Automotive Gas Turbine (AGT), 1500 engine overhauled to an Original Equipment Manufacturer standard (OEM) (formerly called PROSE), and electronics upgrades.

Success of the Abrams Recapitalization program will be evaluated by the Business Process Improvement Directorate (BPI) using specifically designated tracking metrics. All reports to Senior Army Leadership will come from the BPI Directorate and will be available to participating organizations (i.e., signatories to this agreement) on the web.

Success of the Abrams Recapitalization program will be evaluated by the BPI Directorate using the specific tracking metrics identified in the Performance Plan Agreement (PPA). Individual components and systems will be tracked to determine if they are performing to expectations and tracked using existing data sources and Automatic Identification Technology (AIT). Data gathered during the collection process will be input to the Army Recapitalization Tracking Information System (ARTIS), funded by the Army G-8.

INITIATIVE 1: AIM Program (also part of the OSD 912/816 Abrams Pilot Program)

The AIM program overhauls select M1A1 tanks in the Active and Reserve Components and applies all applicable Modification Work Orders (MWOs). The AIM tank uses the standard AGT-1500 Gas Turbine engine. AIM uses a partnership arrangement between the Abrams Project Management Office, the U. S. Army Materiel Command (AMC) and the Abrams contractor, General Dynamics. The expected benefits from AIM are improved system readiness and lowered system O&S costs. A true measure of the benefit of AIM requires a baseline to be established with non-AIM tanks for comparison.

Method of Performance Measurement

Benefits of the AIM overhaul/rebuild program are an extended useful life, increased system Reliability and Readiness, and lowered O&S costs. Metrics for tracking are established at both the system level and component level. The system level cost metric is based on Fiscal Year 2000 Operating and Support Management Information System data.

(Mean Time Between Replacement is subject to adjustment following trend analysis)

The following will be tracked for specified performance:

System Level:

- a. AIM Tank Operational Readiness Rate = 90 percent
- b. AIM Tank cost per mile (Class IX Operation and Maintenance, Army (OMA) = \$138.00

Component Level:

Component	NSN	Mean Time/Replacement
Engine, Gas Turbine	2835-01-408-7048	600
Engine Forward Module	2835-01-269-1234	896
Engine Rear Module	2835-01-178-7245	2,222
Accessory Gear Box	2835-01-197-8325	8,955
Transmission	2520-01-325-9834	1,900

#### INITIATIVE 2: The Abrams M1A2 SEP

The M1A2 retrofit program improves the M1A2 to the most current and digitally responsive SEP model. More than 600 tanks will be included in the retrofit program.

The M1A2 SEP tank uses an AGT 1500 engine overhauled to an OEM. M1A2 SEP uses a partnership arrangement between the Abrams Project Management Office, AMC, and the Abrams contractor, General Dynamics. The expected benefits of SEP Retrofit include an improvement in combat overmatch and improved readiness. Incorporation of the new LV-100 turbine engine in FY04 will be the catalyst for a significant reduction in O&S costs.

#### Method of Performance Measurement

Benefits of the SEP program are extended useful life for the components common to the M1A1 and an increased system availability and reliability. Parts unique to the M1A2 will have dramatically increased system lethality. The system is under warranty for the first year after fielding. Usage rates Mean Miles Between Replacement (MMBR) will be assessed during the warranty period for future tracking standards. Metrics for tracking are established at both the system level and component level. The system level cost metric is based on FY00 Operating and Support Management Information System (OSMIS) data.

The following will be tracked for specified performance:

(MTBR is subject to adjustment following trend analysis)

System Level:

- a. M1A2 SEP Tank Operational Readiness Rate = 90 percent
- b. M1A2 SEP Tank cost per mile (Class IX/OMA) = \$179.00

Component Level:

Component	NSN	Mean Hours/Replacement
Engine, Gas Turbine	2835-01 408-7048	800
Engine, Forward Module	2835-01-269-1234	1,195
Engine, Rear Module	2835-01-178-7245	2,962
Accessory Gear Box	2835-01-197-8325	11,940
Transmission, Hydra	2520-01-325-9834	1,900

All signatories agree to the following:

- a. This is a living document and is current as of: December 16, 2002.
- b. The Methods of Performance Measurements outlined above.
- c. The BPI Directorate in coordination with all parties will track results of Abrams Recapitalization performance metrics established in this agreement.
- d. The BPI Directorate will supply tracking results to participating organizations via the BPI website and tailored reports.
- e. The BPI Directorate will report tracking results to Army senior staff.
- f. The PM Abrams in coordination with all parties will assist with metric development to be used in tracking execution.
- g. The PM Abrams in coordination with AMC and warfighter (dependent upon who is funding the effort) will supply Field Service Representative (FSR) report data to the BPI Directorate.
- 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. Component/sub-component serial numbers will be linked prior to fielding.
- k. The PM Abrams/AMC will provide performance standards and baseline updates whenever necessary to the BPI Directorate.
- l. The HQDA will furnish funding details as requested.
- m. 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. Forces Command units are responsible for the performance of maintenance on the system and components In Accordance With (IAW) established policies and procedures. This includes the performance of pre and post operational checks, routine Preventative Maintenance Checks and Services (PMCS), and semi-annual and annual services.
- o. The FORSCOM units will implement responsible supply requisitioning practices, and follow proper maintenance procedures during the troubleshooting, repair and replacement of suspect or defective parts.
- p. The AMC is responsible for ensuring that requirements are valid, prudent management of wholesale repair parts for the Abrams Tank System IAW established procedures, and adequate funding.
- q. The AMSAA will provide independent evaluations and broader analyses of metrics and trends using all data sources including Field Exercise Data Collection and Sample Data Collection (FEDC/SDC).

AGREEMENT DATE: December 5, 2001

APPROVED BY:

AMC Ms. Linda A. Nordstrom/s-August 8, 2000

FORSCOM Mr. James P. DeMartini/s-August 5, 2002  
(Representing Warfighters)

TRADOC System COL James Nunn/s-May 20, 2002  
Management

Abrams PM COL Donald Kotchman/s-May 20, 2002

PEO GCS MG Joseph L. Yakovac Jr./s-May 20, 2002

USACEAC Mr. Robert Conley/s-August 15, 2002

  
ASA(ALT)

  
March 11, 2003

## SECTION II ABRAMS OSD 916-812 PILOT PLAN

Section 912/816, OSD designated Abrams a Pilot Program in 1998 and under this program, PM Abrams has developed four initiatives to improve system performance, reduce O&S cost and increase readiness. They are: The AIM (Rebuild M1A1), Engine Redesign, Technical Support Built-in-Test/Fault Isolation Testing (BIT/FIT) diagnostic upgrade and Performance Based Field Logistics Support (Team Armor Partnership--TAP) management for M1A2 unique components.

The AIM Program overhauls M1A1 tanks to depot rebuild standard (near zero miles/zero hours), applies technology insertions (not block upgrades), and makes the M1A1 compatible for future upgrade to the digitized M1A1D.

The PM Abrams will procure a newly designed engine, designated the LV-100, and set to be fielded in Fiscal Year 2005. The LV-100 is expected to have a longer life, be easier to maintain, and less costly to sustain than the existing AGT-1500 engine.

The Technical Support initiative is used to resolve production and sustainment problems. Selected high cost Line Replacement Units (LRUs) will be updated from analog to digital, with (BIT/FIT), reducing the logistics burden/time associated with incorrect LRU fault diagnosis, and ultimately saving lives and money.

Abrams Performance Based Field Logistics Support-M1A2 Unique Program (TAP), provides unique components through a partnership with the PM, U.S. Army Tank-automotive and Armanents Command (TACOM), and contractor. This initiative is expected to reduce surcharge fees, and .lower turn-around times for repair.

Success of the Abrams Pilot program will be evaluated by the BPI Directorate using the specific tracking metrics identified in the PPA. Individual components and systems will be tracked to determine if they are performing to expectations and tracked using existing data sources and Automated Information Technology (AIT). Data gathered during the collection process will be input to the Army Recapitalization Tracking Information System (ARTIS), funded by the Army G-8.

Pilot Programs are required to report status (through the BPI Directoarate) to OSD quarterly. All reports to Senior Army Leadership will come from the BPI Directorate and will be available to participating

organizations (i.e., signatories to this agreement) on the web.

#### ABRAMS OSD 916-812 PILOT PERFORMANCE PLAN

INITIATIVE 1: The AIM Program (also part of the OSD 912/816 Abrams Pilot Program)

The AIM program overhauls select M1A1 tanks in the Active and Reserve Components and applies all applicable Modification Work Orders (MWOs). The AIM tank uses the standard AGT 1500 Gas Turbine engine. The AIM program uses a partnership arrangement between the Abrams Project Management Office, AMC, and the Abrams contractor, General Dynamics. The expected benefits from AIM are improved system readiness and lowered system O&S costs. A true measure of the benefit of AIM requires a baseline to be established with non-AIM tanks for comparison.

#### Method of Performance Measurement

Benefits of the AIM overhaul/rebuild program are an extended useful life, increased system Reliability and Readiness, and lowered O&S costs. Metrics for tracking are established at both the system level and component level. The system level cost metric is based on FY00 OSMIS data.

The following will be tracked for specified performance:

(MTBR is subject to adjustment following trend analysis)

#### System Level:

- a. AIM Tank Operational Readiness Rate = 90 percent
- b. AIM Tank cost per mile (Class IX OMA) = \$138.00

#### Component Level:

Component	NSN	Mean Hours/ Replacement
Engine, Gas Turbine	2835-01-408-7048	600
Engine Forward Module	2835-01-269-1234	896
Engine Rear Module	2835-01-178-7245	2,222
Accessory Gear Box	2835-01-197-8325	8,955
Transmission	2520-01-325-9834	1,900

INITIATIVE 2: Abrams Engine Program

The first new Abrams engines (LV 100) will be delivered/installed in FY05. The LV-100 will be procured using a partnership arrangement between the Abrams Project Management Office, the AMC, and the Abrams engine contractor, Honeywell/GE.

#### Method of Performance Measurement

The LV-100 Abrams engine is expected to result in a four to five fold increase in reliability, a significant increase in engine life. Based upon the increase in engine life, an expected benefit will be reduced maintenance manhours for scheduled and unscheduled maintenance.

The following will be tracked for specified performance (when fielded):

Component	NSN	MHBR (Replacement)
a. Engine	(TBD)	(TBD)
b. FADEC (electronic control)	(TBD)	(TBD)
c. Starter	(TBD)	(TBD)
d. Oil Pump	(TBD)	(TBD)
e. Fuel Control	(TBD)	(TBD)

#### INITIATIVE 3: Abrams Technical Support

The Abrams tank has over 100 obsolescence issues. Most LRUs in the M1A2 and M1A2 SEP Tanks have digital technology, while most M1A1 LRUs have analog technology. The redesign of selected high cost LRUs from analog to digital LRUs with BIT/FIT will reduce intrusive testing and reduce the logistics burden associated with incorrect LRU fault diagnosis. In addition, the improved internal diagnostics will reduce the No Evidence of Failure (NEOF) rate.

#### Method of Performance Measurement

The technical support initiatives for the selected high cost LRUs is expected to result in increased readiness, reliability, and reduced O&S costs.

The following will be tracked for specified performance (when fielded):

Component	NSN	NEOF Rate*
a. Redesigned Hull Networks Box	P/N 12993404(no NSN)	10 percent
b. Redesigned Turret Networks Box	P/N 12993405(no NSN)	10 percent

c. Hull Power Distribution Box	6110-01-469-6133	10 percent
d. Driver's Instrument Panel	2510-01-463-1438	10 percent

\*No more than 10 percent of hardware failing BIT will show NEOF

#### INITIATIVE 4: Abrams Performance Based Field Logistics Support-M1A2 Unique (TAP)

This initiative provides unique M1A2 spares and repairs through a partnership with the PM, TACOM, and contractor. This will reduce surcharge fees, and lower turn-around times for repair.

#### Method of Performance Measurement

By optimizing the TAP process for M1A2 unique spare parts, there will be a reduction in the Army Master Data File (AMDF) price for the cost of unique spare parts supported by TAP. In addition, there will be a reduction in turn-around time for repairs.

Component	NSN	Order/Ship Time
a. AIM (Analog Input Module)	5988-01-465-7017	1 day
b. CDU (Commander's Display Unit)	1290-01-472-1851	1 day
c. DID (Drivers Integrated Display)	5980-01-471-6068	1 day
d. FCEU (Fire Control Electronics Unit)	220-01-455-2119	1 day
e. The HPDU (Hull Power Distribution Unit)	6110-01-469-6133	1 day

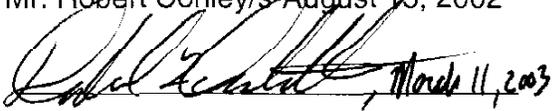
All signatories agree to the following:

- a. This is a living document and is current as of: December 3, 2001
- b. The Methods of Performance Measurements outlined above.
- c. The BPI Directorate in coordination with all parties will track results of Abrams pilot program performance metrics established in this agreement.
- d. The BPI Directorate will supply tracking results to participating organizations via the Acquisition Information Management (AIM) website and tailored reports.
- e. The BPI Directorate will report tracking results to Army Senior Staff.

- f. The PM Abrams in coordination with all parties will assist with metric development to be used in tracking execution.
- g. The PM Abrams in coordination with AMC and warfighter (dependent upon who is funding the effort) will supply FSR report data to BPI Directorate.
- h. The Warfighter will ensure continued emphasis on accurate data reporting.
- i. The Warfighter will facilitate/authorize HQDA liaison visits when necessary.
- j. Component/sub-component serial numbers will be linked prior to fielding.
- k. The PM Abrams/AMC will provide updates to induction/distribution schedules, performance standards and baseline updates whenever necessary to BPI Directorate.
- l. The HQDA will furnish funding details as requested, but at least monthly.
  - m. The DASA (CE) will validate cost and economic analyses of pilot program efforts that have been reviewed and accepted by the MACOM and MSC cost analysis organizations and perform independent evaluations and analyses when applicable.
- n. The FORSCOM units are responsible for the performance of maintenance on the system and components IAW established policies and procedures. This includes the performance of pre and post operational checks, routine PMCS, and semi-annual and annual services.
- o. The FORSCOM units will implement responsible supply requisitioning practices, and follow proper maintenance procedures during the troubleshooting, repair and replacement of suspect or defective parts.
- p. The AMC is responsible for ensuring that requirements are valid, prudent management of wholesale repair parts for the Abrams Tank System IAW established procedures, and adequate funding.
- q. The AMC (AMSAA) will provide independent evaluations and broader analyses of metrics and trends using all data sources including FEDC/SDC.

AGREEMENT DATE: December 5, 2001

APPROVED BY:

AMC	Ms. Linda A. Nordstrom/s-August 8, 2002
FORSCOM (Representing Warfighters)	Mr. James P. DeMartini/s-August 5, 2002
TRADOC System Management	COL James Nunn/s-May 20, 2002
Abrams-PM	COL Donald Kotchman/s-May 20, 2002
PEO GCS	MG Joseph L. Yakovac Jr./s-May 20, 2002
USACEAC	Mr. Robert Conley/s-August 15, 2002
<i>for</i> ASA(ALT)	 <i>November 11, 2003</i>