DEPARTMENT OF THE ARMY
OFFICE OF THE DEPUTY CHIEF OF STAFF, G-4
500 ARMY PENTAGON
WASHINGTON, DC 20310-0500

4 MAR 03

DALO-SMM

MEMORANDUM FOR

COMMANDER, U.S. ARMY FORCES COMMAND, ATTN: AFCG, AFLG, FORT MCPHERSON, GA 30330-6000
COMMANDER, U.S. ARMY MATERIEL COMMAND, ATTN: AMCCG-SA, AMCLG, 5001 EISENHOWER AVENUE, ALEXANDRIA, VA 22333-0001
COMMANDER, U.S. ARMY, EUROPE, ATTN: AEACG, AEAGD, APO AE 09014
COMMANDER, U.S. ARMY TRAINING AND DOCTRINE COMMAND, ATTN: ATCS, ATBO, ATRM-ZA, ATTG-ZC, FORT MONROE, VA 23651-5000
COMMANDER, U.S. ARMY COMBINED ARMS SUPPORT COMMAND, ATTN: ATCL-DC, FOR LEE, VA 23801

SUBJECT: Army Maintenance Transformation

1. The Ordnance Center has developed a concept for transformation of the Army's maintenance process from a four level system to a two-level system. (Encl) The Army G4 fully endorses the concept and recognizes the need to transform the Army's maintenance process.

2. I envision this transformation to be implemented using a two-phased approach. First, all new weapon systems must meet the requirements to operate within a two level maintenance environment. Second, current Army units that will be required to utilize current systems for the foreseeable future will need to be examined for transition to the two-level maintenance system.

3. The transition to two levels of maintenance represents a major shift in both logistics planning and maintenance operations within the Army. As a result, there is a significant amount of work that still needs to be done to implement this change successfully. I am depending on each of your organizations to provide the necessary input and analysis to help identify all the possible ramifications of this change. Our initial timeline for implementation is FY 06.

DALO-SMM
SUBJECT: Army Maintenance Transformation

4. My point of contact for Army Maintenance Transformation is COL Hills, commercial (703) 693-1624, DSN 223-1624, or e-mail: john.hills@hqda.army.mil. The Combine Arms Service Command POC is COL Smith, commercial (804) 734-0034, DSN 687-0034, or e-mail: smithc1@lee.army.mil.

Charles S. Mahan Jr.

Encl

CHARLES S. MAHAN, JR.
Lieutenant General, GS
Deputy Chief of Staff, G-4

CF:
CSA
VCSA
DAS
ASA(ALT)

Information Paper

21 February 2003

SUBJECT: Army Maintenance Transformation

1. The Army currently utilizes a four-level maintenance system (above the operator/crew level) for ground materiel. The four levels are:

Unit/Organizational Level - all repair & return to user

Direct Support (DS) - mostly repair & return to user; some repair & return to supply

General Support (GS) - mostly repair & return to supply; some repair & return to user

Depot - repair and return to supply

This four-level maintenance system is characterized by the most simple maintenance tasks being done at the lowest echelon, and then when a task gets beyond the resources of a given echelon (time, tools, test equipment, etc.), the item requiring maintenance is evacuated to a higher level of maintenance. This system was created just prior to WWII, and has served us well for over 60 years; however, because capabilities only exist at certain echelons, each echelon (thru GS) must be deployed to have the full range of capability in an Area of Operations. This echeloned system of maintenance contributes to a large logistics footprint, is reliant on evacuation systems, has a built-in overhead burden at each echelon, and the units that provide the maintenance at each echelon themselves also require maintenance support (e.g. each DS and GS maintenance company also has an organic motor pool to do its own organizational level maintenance).

2. Army Transformation requires that we be able to deploy powerful forces quickly, without a large logistics footprint. In addition, the operating environment of the future will likely be a non-contiguous area of operations, and will have long and often unsecure LOCs. An echeloned maintenance system that relies on evacuation between echelons will have a larger than necessary logistics

footprint, be inefficient, and cause equipment to take longer than necessary to be repaired. Our current four-level system will not work.

3. Our intent is to transition to a two-level maintenance system, that would generally combine the unit and DS levels of maintenance (and be called "field maintenance"), and also combine the GS and depot levels (and be called "sustainment maintenance"). Field maintenance would be characterized by "on-system maintenance" . . . and sustainment maintenance would be "off-system maintenance." Field maintenance would be repair and return to user; sustainment maintenance would be repair and return to supply.

4. Field maintenance actions typically involve replacement of Class IX components, on-system, for repair and return to the user. Field maintenance can be performed at any echelon, and in deployable, TO&E units, will generally be performed by uniformed maintenance personnel, at least thru Corps/JTF-level. Examples of field maintenance include replacement of a starter on an engine assembly, timing of a fuel injection pump, replacement of a temperature sensor, replacement of a head gasket, replacement of an external wiring harness, etc. Determination of exactly what maintenance actions are field maintenance actions will be done during the normal maintenance analysis done between the materiel developer and the combat developer.

5. Sustainment maintenance actions typically involve repair of reparable Class IX components, off-system, for return to the supply system. Sustainment maintenance will be performed at echelons above Brigade, and perhaps eventually at EAD. Sustainment maintenance can be done by either uniformed maintenance personnel, Department of Army civilians, or contractors. The decision as to whether or not to have sustainment maintenance done by contract will be a function of detailed Level-Of-Repair-Analysis (LORA) done by the PM and approved by HQDA. Examples of sustainment maintenance include detailed off-system inside-the-box repair of LRUs thru SRU repair/replacement, and rebuild of engines, transmissions and the like.

6. An example of how maintenance actions/processes can be streamlined, even with a legacy system, is contained at the Attachment. A quick review will reveal the obvious advantage of streamlining the echelons of maintenance.

7. We actually have been evolving to a two-level maintenance system, ever since the Force XXI concepts began emerging in the mid-90s. There have already been many actions taken, and many more are planned, that will get us to a two-level maintenance system, with the necessary reduction in our maintenance footprint in the Area of Operations. For example:

a. As part of the FXXI design, organizational-level and DS-level maintainers from the Mechanized Infantry, Armor and Engineer Battalions were combined into a single unit, called the Forward Support Company. In other words, the FXXI Division already features a merging of organizational-level maintenance and DS-level maintenance into a single unit/echelon.

b. Following in this same manner, in the design of the SBCT, all organizational-level and DS-level maintenance personnel of the IBCT were combined into the Brigade Support Battalion's Forward Maintenance Company - one echelon of maintenance inside the SBCT. Objective Force maintenance will be similarly structured.

c. The creation of the Abrams and Bradley Multi-capable Maintainer (MCM) two years ago moved what had been simple "on-system" tasks, but at the DS-level of maintenance, to the MCM's echelon (i.e. the MCM is a combining of organizational-level turret and hull repair with some selected "on-system" DS tasks). Following in this same model, we plan to create a Paladin MCM by 1 Oct 04, that will similarly combine organizational-level maintenance tasks with selected on-system DS tasks.

d. An MOS merger proposal has been submitted (for implementation on 1 October 04) that will merge the organizational-level tracked vehicle maintainer (MOS 63Y) and DS-level tracked vehicle maintainer (MOS 63H) for all other tracked vehicles (besides the Abrams, Bradley and Paladin) into a single tracked vehicle mechanic, capable of what we know today as organizational and DS maintenance. Similarly, a proposal has been submitted that will merge all organizational-level wheeled vehicle maintainers (MOSs 63B and 63S) and DS-level wheeled vehicle maintainers (MOS 63W) into a single wheeled vehicle mechanic. Course design work is complete, and course length increases have been offset by reductions made in other courses - there will be

no TTHS bill for this merger. Force structure/design work is ongoing now with USAFMSA.

e. The most complex of our weapons systems are becoming more and more modular, with simple to replace components/LRUs, which have Built-In Test and Built-in Test Equipment (BIT/BITE). This is exactly what we should be doing, and complements the move to a two-level maintenance system, which features on-system work at the field level of maintenance, and off-system inside-the-box repair of components/LRUs at the sustainment level of maintenance. However, while embedded diagnostics and prognostics complements our move to a two-level maintenance system, we can still transition to a two-level maintenance system with materiel that does not have it.

f. In a Force Design Update approved last year, we set the stage for the reorganization of our GS maintenance companies (all but four AC GSUs are in the RC) into "Component Repair Companies." These units will be our deployable inside-the-box component repair capability, and will work at the direction of the Army Materiel Command's National Maintenance Program manager (the same as GSUs work today thru the RC national maintenance training center at Camp Dodge). In fact, AMC's assumption of responsibility for management of all component repair done at installation and depot level fits in perfectly with a "sustainment level" of maintenance.

g. An Integrated Concept Team has been formed, with representation from TRADOC, HQDA, the PMs, and the MACOMs to lay out an implementation strategy, and ensure we have the resource implications accounted for, that could put a two-level maintenance system into place by as early as FY06. Much work remains, but our work to date informs us that movement to a two-level maintenance system is feasible, not only for Interim and Objective Force, but also for legacy forces, and that a two-level system will support Army Transformation better than a four-level system would. There is no requirement to redesign or modify existing weapons systems and equipment solely to be able to apply a two-level maintenance system.

8. In summary, the advantages of a two-level maintenance system are:

Reduced logistics footprint in the battle space

Returns equipment back to the fight faster

Lessens equipment evacuation requirements

Increases productivity of maintainers, and therefore increases combat power

Could lead to some force structure savings

9. A simpler, two-level maintenance system is the right way to go for the future -- it will yield the more efficient, rapid maintenance response that the Army of the 21st Century requires.

MG Stevenson/DSN 298-3373

EXAMPLE: What follows is an illustration of the process, both under a four-level maintenance system, and a two-level maintenance system, using a HMMWV that is overheating.

Four-level system:

(1) The operator notifies his/her supervisor that their HMMWV is overheating, based on temperature gage readings.

(2) The supervisor checks the vehicle in accordance with the operator's manual and cannot locate the cause.

(3) The supervisor notifies the unit level maintenance section leader who sends a maintainer (63B Light Wheeled Vehicle Organizational Maintenance Level Mechanic) to fault isolate the cause of the vehicle overheating.

(4) The organizational level maintainer performs 11 tests/checks in accordance with the -20 level technical manual to attempt to locate the cause of the engine overheating.

(5) Upon completion of the fault isolation, the maintainer notifies his/her supervisor that all steps were performed successfully with no cause of the malfunction identified. The technical manual tells the maintainer to notify Direct Support maintenance.

(6) The unit level maintenance supervisor prepares a Work Order and evacuates the HMMWV to Direct Support maintenance using organic recovery capabilities.

(7) The Direct Support unit accepts the HMMWV work order for initial inspection and fault isolation. The Direct Support maintainer (63W DS Wheeled Vehicle Repairer) performs fault isolation in accordance with the -34 level technical manual. The -34 manual tells the maintainer that the troubleshooting procedures are to be used in conjunction with and as a supplement to the procedures found in the -20 level manual.

(8) The Direct Support maintainer performs the 11 steps previously performed by the unit level maintainer and then performs 3 additional steps found in the -34 manual to determine that a defective cylinder head is the cause of the overheating.

(9) The maintainer provides all of the required information and documentation to the Shop Officer who prioritizes the repair of the HMMWV based on parts availability and current workload and backlog.

(10) Once the HMMWV is repaired, the owning unit maintenance section is notified by the Direct Support Shop Office of the completed action.

(11) The owning unit retrieves the repaired HMMWV and returns it to the user.

(12) The unserviceable cylinder head is sent through the supply system by the Direct Support unit to a General Support unit (the lowest level) or possibly a Depot for repair and return to the supply system or disposition if not repairable.

Two-level system:

(1) The operator notifies his/her supervisor that their HMMWV is overheating, based on temperature gage readings.

(2) The supervisor checks the vehicle in accordance with the operator's manual and cannot locate the cause.

(3) The supervisor notifies the field level maintenance section leader who sends a maintainer (63B Wheeled Vehicle Repairer) to fault isolate the cause of the vehicle overheating.

(4) The field level maintainer performs 11 tests/checks in accordance with the -20 level technical manual and the 3 additional steps in the -34 manual to determine that a defective cylinder head is the cause of the engine overheating.

(5) The maintainer notifies his/her supervisor who determines the availability of parts and manpower to perform the repair.

(6) The field level maintenance supervisor obtains the required parts and assigns the repair task to a maintainer. The HMMWV is repaired and returned to the user.

(7) The unserviceable cylinder head is sent through the supply system by the unit to a sustainment maintenance facility for repair and return to the supply system or disposition if not repairable.