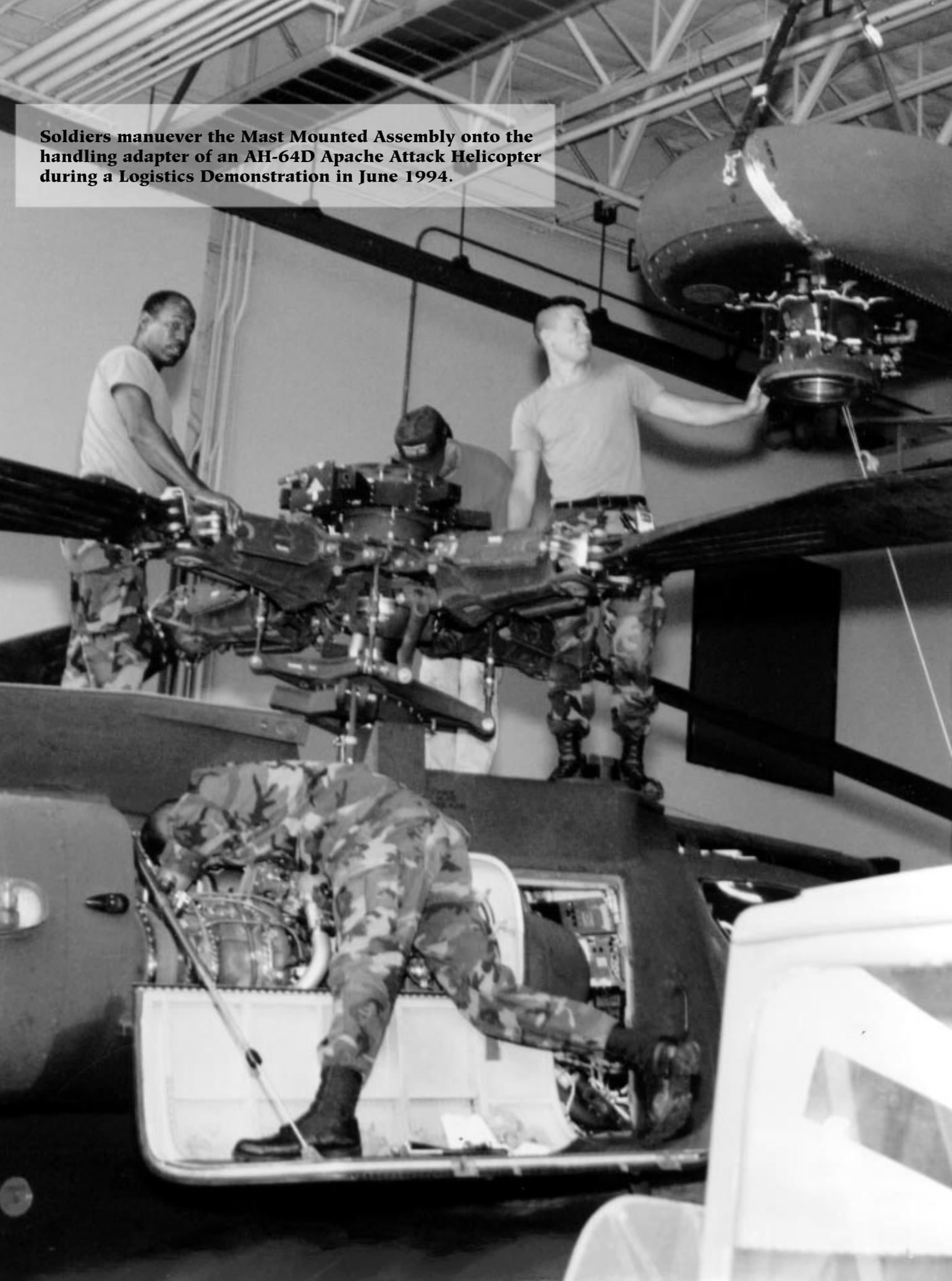


Soldiers maneuver the Mast Mounted Assembly onto the handling adapter of an AH-64D Apache Attack Helicopter during a Logistics Demonstration in June 1994.



WHEN “UNCOMMON” COMMON SENSE PAYS OFF

Integrating the Logistics Assistance Representative into a Project Management Office

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Most aviation logisticians, at some point in their careers, have probably questioned why obvious problems are not corrected before a system reaches the field. Indeed, probably all logisticians would prefer to correct deficiencies at the source, before symptoms ever appear. Preventing errors from ever reaching the field is precisely the approach the AH-64D Apache Attack Helicopter (AAH) Project Management Office (PMO) is pursuing.

Collocation of Logistics Assistance Representatives

An integral part of this philosophy is the collocation of Logistics Assistance Representatives (LAR) within the PMO during Engineering and Manufacturing Development (EMD). This innovative, proactive and mutually beneficial initiative between the Program Executive Officer-Aviation (PEO-AV) and Aviation and Troop Command (ATCOM) is designed to

reduce our current reliance on Contractor Field Service Representatives (CFSR). On average, the estimated annual cost of a CFSR is \$209,000 versus \$77,000 for a LAR. By breaking the paradigm of “business as usual,” we will compress any “CFSR to LAR” transition time on the AH-64D and save the government the cost differential, much earlier than we have on other programs.

In 1991, LAR assignment within PMOs was jointly proposed by the PEO-AV and the Commander, Aviation Systems Command (AVSCOM) — now ATCOM. After a worldwide search for the top candidates, ATCOM assigned two “best-qualified” AH-64A Apache LARs to the AAH PMO in July 1992. The intent was to have experienced maintenance practitioners influence design early in development to prevent errors from ever reaching the field. This would also build the expertise to reduce the use of CFSRs when the AH-64D is fielded.

Longbow — A Complex Weapon System

The AH-64D Longbow Apache is a complex weapon system. Specifically, the AH-64D Longbow Apache Helicopter, the Fire Control Radar (FCR), and the Longbow HELLFIRE Modular Missile System (LBHMMS) comprise the integrated weapon system

designated the Longbow Weapon System (see figure). The Longbow System represents a systematic effort to improve the warfighting capabilities of the AH-64A Apache Helicopter, which was upgraded to yield the AH-64D. Further improvements were made to the AH-64D with the application of the FCR Mission Kit and T700-GE-701C engines. These changes result in a more effective aircraft with increased survivability under current and projected battlefield conditions.

Full-Time vs. Temporary

In 1991, recognizing the complexity of the Longbow System, Maj. Gen. Irby (PEO-AV) and Maj. Gen. Williamson (Commander, AVSCOM) proposed full-time assignment of LARs to the AAH PMO. Currently under the command of Maj. Gen. Cowings, ATCOM recognized its need for full-time versus temporary LAR assignments to fully achieve the intent of the original initiative. Specifically, ATCOM needed significant involvement during EMD for two reasons: to master the intricacies of a new system like the AH-64D with the new FCR; and to obtain the long-term training needed to accomplish the intended goals. Brief periods of assignment would not allow sufficient time for LARs to master the complexities, become totally effective, and participate

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Photos courtesy, McDonnell Douglas

bers by participating as part of a total “Team Apache Modernization” effort. This team includes —

- Training and Doctrine Command (TRADOC) user representatives: U.S. Army Aviation Logistics School; U.S. Army Aviation Center (USAAVNC); TRADOC System Manager-Longbow.
- Army Materiel Command materiel developers: ATCOM; Communications and Electronics Command; Missile Command; Armament and Chemical Acquisition Logistics Agency.
- Operational Test and Evaluation Command: Test and Experimentation Command; Operational Evaluation Command.
- Independent Logistician: Army Material Systems Analysis Activity.
- Contractors: McDonnell Douglas Helicopter Systems (MDHS) — AH-64D Aircraft System Integrator; the Joint Venture (JV) between Martin Marietta Technologies, Inc., and Westinghouse Electric Corporation, the makers of the FCR; the JV and Rockwell, Intl., the makers of the missile.

The concept of early design influence is working. The two LARs (Mr. Steve Retherford and Mr. Elmar Cotti) who were assigned in 1992 rapidly assimilated vast amounts of acquisition, logistics and technical data associated with the AH-64D Longbow Apache. Applying their knowledge of and experience on the current AH-64A Apache (and their personal encounters with known maintenance headaches), they turned to high-pay-off areas where their abilities could be tested.

Early in their assignment, they toured the JV’s facilities and prepared a trip report suggesting several maintainability improvements for the FCR. The JV adopted many of their ideas over the last 2 years, including a light environmental cover for the Mast Mounted Assembly and the develop-

AH-64D Longbow Apache fires a HELLFIRE missile downrange.

in technical interchange meetings to influence design.

Design Influence

Design influence is not always easy and is usually not achieved by “preaching to the choir.” Logisticians in a room talking to one another may be in “sympathetic vibration,” but until they get in a room with engineers and “duke it out,” design influence will probably not be accomplished. By actively participating with “techies” in their forums and fighting for feedback on suggestions, “loggies” can achieve a subtle but pronounced design influence. Also, LARs bring with them a lot of influence with user representatives, who team up with “loggies” to lean on engineering and management.

LARs — A Brief History

Establishing credibility with any group before an advocate will be heard is essential, but may take considerable time. However, LARs have a unique history that allows them to quickly validate their credibility. First established during the 1940s through Technical Services, the Army hired civilian master mechanics. Once assigned, they assisted organizational units by performing actual aircraft repairs, thereby teaching operational

maintenance and repair procedures to less experienced soldier operators and mechanics. From the 1950s to today, the master mechanics evolved into mechanical or equipment advisors, field maintenance technicians, and finally, LARs. Likewise, their duties evolved from teaching by actually turning wrenches, to teaching new skills, advising in maintenance management and logistics operations, and resolving the ever increasing complex sustainment issues posed by today’s technically advanced weapons systems.

In the traditional sense, however, LARs have provided commanders with technical and logistics assistance after weapons systems are fielded. This is an area where PEO-AV and ATCOM are breaking new ground; LARs are becoming involved during the initial stages of design. It certainly makes sense to evoke the LAR’s unique readiness perspective early in the development of a system, but *how* and *when* are the materiel developer’s challenges.

“Team Apache Modernization”

In the AAH PMO, the LARs have established themselves as exceptionally valuable development team mem-

ment of specific serviceability criteria for FCR components.

They also participated in a major review of AH-64A Engineering Change Proposals (ECP) to help define the input configuration for the modification program. They became totally familiar with the ECPs, which will eventually migrate directly to the AH-64D and, by doing so, were trained on the configuration of the new aircraft. This knowledge is directly applied to current preparation of a Memorandum of Agreement (MOA) and Materiel Fielding Plan (MFP). The MOA defines PMO and unit responsibilities for inducting aircraft for conversion; the MFP defines responsibilities for fielding the AH-64D Longbow Apache.

Technical Manuals — An Important Contribution

The LARs contributed the most in the area of Technical Manuals (TM). Because mechanics must live with TMs every day, over the course of several months, LARs spent time at the manufacturer's plant reviewing draft TMs for use during EMD tests. They pored over the material and insured the manufacturer removed inconsistencies and the books tracked with the technical data they previously reviewed. Since the Longbow program intends to go to Interactive Electronic Technical Manuals, they closely examined the proposed Fault Isolation Procedures. Finally, they drafted a new, scheduled maintenance Phase Book for the AH-64D, incorporating task sequence efficiencies and eliminating duplicate efforts. As this Phase Book continues to be refined and validated, soldiers are simultaneously using it to conduct maintenance inspections on the six prototype aircraft flying in the test program.

Verification of TMs was a key aspect of the Logistics Demonstration (LD) conducted from November 1993 through June 1994. Soldiers performed/verified Longbow-unique tasks using the procedures that the

The potential exists for other cooperative programs between PEOs and supporting Major Subordinate Commands (MSC) to solve problems before they occur, or at least before the field has to live with them.

LARs had reviewed in depth. The culmination of the LD was the timed conversion of an AH-64D without the FCR mission kit to an AH-64D with the kit installed. This conversion took place on June 17, 1994, at MDHS in Mesa, Arizona, and was performed by a 10-man team of trained soldiers. The conversion took a little over 4 hours, including the Maintenance Test Flight (MTF). The Operational Requirements Document requirement for the conversion is 8 hours.

By far, the bulk of the conversion time involved the removal and installation of the two T700-GE-701 and 701C engines. Standardization of the engine fleet-wide would reduce the time of conversion by more than half and reduce the MTF to a "traffic pattern" flight versus the more extensive engine installation test flight. The length of this recorded time was a direct reflection of the quality of soldiers today, their attention to the training they received, their dedication to the task at hand, and the extraordinary effort of "Team Apache Modernization," including the LARs.

The Payoff

The payoff came in a comment made by a Sergeant First Class at the conclusion of the AH-64D conversion. The soldier stated that he could accept the hard-copy manuals, *immediately*, for EMD tests. Only those who experienced the growing pains associated with the AH-64A manuals can fully appreciate this soldier's statement. He wasn't saying that the TMs were ready to be fielded nor that all the problems had been removed. He was acknowledging the total effort expended to develop thorough and technically correct TMs—as "squeaky clean" as possible for this stage of the program. The LARs played a big part in making this happen.

The same soldiers who participated in the LD participated in Force Development Test and Experimentation from October — November 1994 and Initial Operational Test and Evaluation from January — March 1995. They were supported by Mr. Cotti, who collocated within the PMO in July 1992, and Mr. Jeff Cinader, a recent LAR addition to the program. In this way, they proved the validity of the PEO-AV/ATCOM initiative during operational tests. After operational testing, LARs followed inducted aircraft through the conversion process at the contractor's plant. We plan to train future LARs concurrently with transitioning battalions and to "field" a fully qualified LAR along with converting battalions.

The potential exists for other cooperative programs between PEOs and supporting Major Subordinate Commands (MSC) to solve problems before they occur, or at least before the field has to live with them. This article describes only a piece of the job that still must be accomplished with the other MSCs. The Apache Attack Helicopter PMO is counting on other MSCs to follow suit on this program and, as they recognize the enormous potential, to adopt the initiative in other commodity areas. Why? Because "uncommon" common sense pays off.