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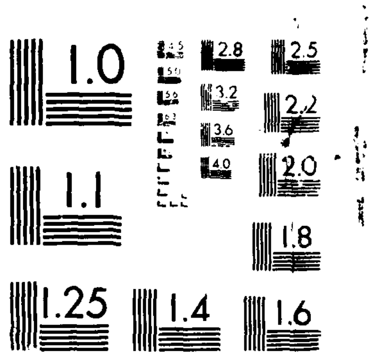

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STUDENT REPORT

FIELDING THE AH-64
LOGISTICS LESSONS LEARNED

Major Robert G. David 88-0670

"insights into tomorrow"

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REPORT NUMBER 88-0670

TITLE FIELDING THE AH-64: LOGISTICS LESSONS LEARNED

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Submitted to the faculty in partial fulfillment of requirements for graduation.

AIR COMMAND AND STAFF COLLEGE
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In fielding the AH-64, the army used contractor and organic logistics support for this program. This study examines the lessons learned from this logistics effort in the areas of supply and maintenance. This study recommends revision of future logistics support based upon these lessons.

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PREFACE

The successful fielding of the Army's advanced attack helicopter, the AH-64, Apache, and *any other weapons system* is directly dependent upon the logistics support provided prior to, during, and after the system is placed in the hands of the user. A key element of this support is an objective review of the processes and procedures used in meeting the logistics support requirement. The results of this review should be used to refine the existing system as well as provide lessons learned for future weapons systems fielding.

To capture a field perspective of the lessons learned in fielding the AH-64, BG William H. Forster, former AH-64 Program Manager, now Program Executive Officer, Combat Aviation, chartered the author to conduct this review. The time period covered in this report is June 1984 through July 1987; the period of the author's assignment to the AH-64 program. The information contained herein was drawn from the author's personal experience, unit reports, program office input, contractor reports, and discussions the author held with participants in the program on both the contractor and the government sides. Due to the immaturity of the AH-64 system, a large logistics data base was not available for comparison of unit and contractor reports. Therefore, while future comparison may show minor variations in supply performance data, the observations outlined here appear relevant to overall system health.

The author would like to thank Chief Warrant Officers Gordon Lester, Joe Privitt, and Kenneth Mitchell, Apache Materiel Fielding Team (MFT), Fort Hood, Texas, for their expert assistance in compiling and verifying information upon which this report is based. Mrs. Sally O'Kelley, Secretary, Apache Fielding Team, deserves special thanks for her expert administrative assistance.

The author would also like to thank Lieutenant Colonel Rodger Tunnell from the faculty of the Air Command and Staff College whose tireless, expert reviewing and guidance have been the foundation of this entire report process.

TABLE OF CONTENTS

ABOUT THE AUTHOR

Major David wrote this paper while a student at the Air Command and Staff College, Maxwell Air Force Base, Alabama. Immediately prior to this assignment, Major David served 37 months as the Deputy Team Chief, Apache Materiel Fielding Team, Fort Hood, Texas where his principle duties were overseeing the day-to-day operations of the military and contractor logistics support to the fielding effort. In addition, he served several months at Fort Hunter-Liggett, California, as the AH-64 Program Manager's Operations and Logistics Supervisor for Apache operations during the Advanced Scout Helicopter OT II and SGT YORK Follow-on-Evaluation.

Major David has extensive field experience in aviation logistics having served as a service platoon leader, battalion aircraft maintenance officer, and an Aviation Intermediate Maintenance Company (AVIM) production control officer. Prior to joining the AH-64 program, he commanded C Company, 34th Support Battalion (AVIM), 6th Cavalry Brigade (Air Combat).

Major David holds a bachelors degree in English and a masters degree in Management. He is a Senior Army Aviator, a graduate of the Army Aviation Maintenance Test Pilot Course, the Armor Basic Course, the Transportation Advanced Course, and the Army Command and General Staff College.

EXECUTIVE SUMMARY

REPORT NUMBER 88-0670

AUTHOR(S) Major Robert G. David, USA

TITLE FIELDING THE AH-64: Logistics Lessons Learned

The purpose of this paper is to provide logistics lessons learned in the early phase of fielding the Apache helicopter to US Army units. While this ambitious program was very successful, there is room for improvement in procedures used to provide logistics support to the fielding effort. Careful consideration of the lessons learned in this program will benefit on-going support efforts for this current weapons system and, more importantly, assist future materiel developers in supporting new weapons systems.

This analysis and subsequent recommendations are based primarily upon the author's first-hand participation in the

fielding process for the first three years of the program. Additionally, observations and recommendations are provided from government and contractor participants from the troop unit level through the entire logistics support chain. While the issues presented here require action at the wholesale logistics level, they also impact the day-to-day operation of the soldier in the field. For this reason, this analysis is conducted from the point of view of the "field soldier" with the ultimate goal of making our weapons systems more user friendly and , thus, more effective in their combat roles.

To achieve this goal, we must learn from previous experiences such as fielding the Apache and incorporate these lessons into future efforts. The problems discussed in this paper still exist today. More importantly, they will continue to exist until someone formalizes practical solutions. While the solutions offered here are general in nature, the author recognizes the complexities involved in implementing these recommendations. The technical skills and authority to act on these recommendations rests with senior leaders in the Army logistics, specifically, Headquarters, Army Materiel Command, and its major subordinate commands. Additionally, Program Executive Officers for developing systems should consider these lessons learned in establishing logistics support for new systems.

SECTION ONE

INTRODUCTION

"Fielding the Apache is not business as usual." This statement from Vice Chief of Staff of the Army, General Maxwell Thurman, in June 1985 was as much prophetic as it was directive. For, unlike past programs, the AH-64 was to be fielded at a single station -- Fort Hood, Texas. Thus, added to the normal difficulties of planning and coordinating were the new dynamics and complexities of accomplishing the program at one location. The sheer magnitude of equipping, training, and deploying 29 Apache battalions on an extremely sensitive time schedule, coupled with the unknown demands of this new single station fielding concept assured the participants that they would come away with a wealth of "lessons learned." This paper captures, for use of those who follow, lessons learned by the author in fielding the AH-64 Apache.

More specifically, this paper examines the question: Can analysis of the logistics support procedures used in fielding the AH-64 provide useful lessons which can be applied to improve fielding of future systems? This analysis and subsequent recommendations are based upon the author's firsthand experiences as a logistician involved in fielding the AH-64 from June 1984 through July 1987.

To arrive at these recommendations, the paper begins by examining the cornerstone of logistics support -- ***the initial provisioning process.*** This critical step, which sets the stage for all future logistics efforts, is the entire basis for supporting units through the first year. As such, this analysis will focus on the benefits of having experienced aviation maintenance officers' input included to lend a "field" flavor to the process and to improve the accuracy of provisioning.

Next, the paper examines ***support procedures (contractor and organic)***. Contractor logistics support is expensive but in this case, very effective. The reasons for this effectiveness and the benefits of incorporating these procedures into the organic support structure are presented in Section 3.

The third subject analyzed is ***the transition from contractor to organic logistics support***. The smooth changeover of management from the contractors to the Army's organic logistics structure is critical to assure uninterrupted support. This examination keys on the steps which should be improved to provide a better transition for future systems.

The final area examined is the ***lead command concept.*** At the wholesale level centralization is essential for a coordinated logistics support effort. When the "lead command" concept is not evident during the initial period of fielding, the resultant confusion makes the support job much more difficult. The analysis here deals with the areas affected by this omission.

The paper concludes by summarizing the lessons learned and providing recommendations for improving future logistics support.

With the preceding background in mind, attention can now be turned to the initial provisioning process.

SECTION TWO

THE INITIAL PROVISIONING PROCESS

We begin this analysis with the process which is the basis for future support. Before any new weapons system can be placed in the hands of the user, it must be logistically supportable. Initial provisioning sets the stage for logistics support during the early life of the system. It is this process that determines which repair parts will be stocked at each level of supply, which will only be purchased on demand, and which repairs will be accomplished at what level of maintenance.

For the purposes of this paper, other aspects of the provisioning process will not be addressed since we are only concerned here with getting the proper parts to the soldiers who maintain the aircraft. However, two other points not normally included in the technical definition of the initial provisioning process will be addressed. They are included in this section because, once again, they are key to getting the equipment into the hands of the soldier. The first is the "total package" program. This program's purpose is to assemble all required unit property and support items for delivery to the unit rather than have the unit order each item individually. The second additional point is the incremental fielding of TPS (test program sets) repair parts, outside the "total package". Is this initial provisioning process, as defined above, worth analysis?

Since the process establishes the logistics support lifeline upon which the system, in this case the AH-64, Apache, must depend, the answer to this question, obviously, is yes. This analysis is especially critical since the items provided in the initial support package are virtually the unit's only on-hand source of supply for one year from the time the system is fielded. Lessons learned from analyzing the Apache fielding, if they are captured and properly documented now, can improve initial provisioning of future systems. Having explained what will be examined and why, the next question to answer is how.

This paper treats the steps of the initial provisioning process in the sequence which they occur. First, it examines procedures used to establish initial repair parts stockage for the Apache. Second, it analyzes the "total package" concept. Finally, it examines the incremental fielding of EETF (Electronic Equipment Test Facility) repair parts, outside the "total package" program. Following the discussion of lessons learned for each step, the author offers specific recommendations for improving future efforts.

It is important to note here that both the lessons learned and their associated recommendations are based primarily on the author's experience in logistics and, more specifically, three years' of direct involvement in fielding the Apache system. Other key sources include both unit and contractor reports. Though these reports are based on fairly small samples, they are, in the author's opinion, an accurate reflection of conditions resulting from initial logistics support efforts for the first Apache units. These sources provide an appropriate data base since the objective of this section is to provide recommendations for improving the initial provisioning of future systems. With the "what, why, and how" answered, let's now focus on the initial provisioning as it was accomplished for the Apache.

To get the correct repair parts into the hands of the field soldier, the provisioners assigned this task must utilize the most accurate information available. In the case of the AH-64, Apache, initial stockage of repair parts and consumables was based upon requirements generated from engineering failure estimates. These data were subjected to the wholesale logistics support analysis process to determine which items and what quantities of each would be stocked in the prescribed load list (PLL), authorized stockage list (ASL), and depot stocks. The repair level authorized to stock the item was determined by where it could be repaired. Experience indicates the overall procedure proved less than accurate in several areas.

The first major problem area deals with initial stockage levels. Records of the first unit equipped, 7th Squadron, 17th Cavalry, indicate that of the repair parts required, only 50 percent, roughly, were provided in the initial support package (3:3). In an effort to validate this unit experience, the author contacted CW4 Joe Shuler, supply technician for the 6th Cavalry Brigade. He confirmed that his supply records indicated the same 50 percent (18:--). While the exclusion of some major repair parts for a new system from unit stockage is understandable, the omission of common items should not have occurred. "Items that were known to be used every 20 flying hours were not supplied in the package--such as APU oil filters and accessory gear box finger screens" (3:3).

On the other hand, 50 percent of the items provided were not needed. The NCOIC of the 7/17 Supply Section stated "approximately 50 percent of the APACHE peculiar items contained in the total package was (sic) not used (i.e. APU, tires, gear boxes)" (3:3). Physical audits of unit records and inventory by the Apache Materiel Fielding Team supply specialists verified that unit figures were indeed correct. These additional parts create a storage burden for the unit and, more importantly, they commit valuable, expensive assets which could be utilized in other areas. While it may be prudent to add extra parts to the support package to allow for provisioning estimate errors and premature failures in a new system, in the author's opinion, 50 percent overage is too much. Given the previously indicated limitations of the process used to make these determinations, how can we improve the accuracy?

In the author's opinion, a rather simple, inexpensive way to improve the initial parts forecasting is to include experienced (field experienced) aviation maintenance officers in the process. These experienced officers should be sent, on a temporary duty basis, to review engineering failure analyses for possible input based upon their general experience in maintaining like systems. Additionally, they should also be allowed to review and recommend changes to proposed repair parts lists and proposed authorized level for repair of items. Granted, this would not assure 100 percent accuracy, but the addition of this "field expertise" from a technician who has spent most of his career maintaining aircraft would add much needed expertise not normally available at the wholesale level. At a minimum, it would preclude the omission of many of the common items he knows from experience are consumed in daily operations. This opinion was also expressed by CW4 Joe Privitt, Apache MFT, and Mr. Craig Breder, Chief, Logistics Management Division, AH-64 PM, during conferences in July 1986 (14:--). Once the correct parts have been identified, the next step is to get them into the hands of the soldier.

The "total package" process, rather than unit submission of requisitions for each item required, was the vehicle selected to field initial support packages to Apache units. Total packaging was selected because incorporation of this new major weapons system into the force structure required a large changeover of major items, support equipment, and repair parts. Pre-packaging of required items at the wholesale level and subsequent handoff of the complete packages precluded a tremendous administrative burden on the units and allowed the wholesale system to retain complete control of critical assets until they were needed. Overall, the "total package" effort was successful, but clear delineation of the package contents was not provided to the recipients.

There are systemic parameters (only items with specified essentiallity codes are eligible for inclusion in total packaging) that dictate which items can be included in the "total package". However, there are discretionary items which may or may not be included. The latter category, commonly called "unit make" items, was the subject of much confusion over which would be included and which would not. Consequently, the required items were sometimes not available when needed. An example of this occurred in March 1986 when the 7/17th did not have a tire cage, a unit make item, required to change a tire. This specific deficiency was corrected when the PM Apache decided to place these items in the total package. Had the unit understood, beforehand, that this item would not be in the total package, they could have taken steps to obtain the item. CW4 Shuler, the 6th Cavalry Brigade principle agent for receiving the total package, expressed continuous concern over a lack of understanding of what would be provided his units in the package. He recommended, and the author concurs, that an experienced aviation maintenance officer be involved in deciding which items are included in the unit make category (15:--). This addition would be a great help in eliminating confusion.

The author's 11 years' experience in the field of aviation logistics, including 20 months as an AVIM company commander, confirm the fact that the experienced aviation maintenance technician possesses detailed knowledge of the tools and other equipment required to perform the required systems maintenance. He can lend valuable expertise to wholesale planners in determining which of these "unit make" items will be needed initially and should be included in the initial support package. This recommendation is supported by Mr. Lloyd Johnson, Supply Branch Chief, PM Apache, who also invited the 6th Cavalry Brigade to send a technician to the package processing point to assist in determining which items should be included in each category of the "total package" (15:--). This step would help to eliminate confusion over the contents of various parts of the package on the part of the receiving unit. The final step examined in this process cannot be enhanced by the addition of experienced soldiers. Once the required items have been identified and properly packaged, they must be delivered into the hands of the persons who will maintain the system. In the case of the EETF, the initial forecast of requirements appeared to be quite accurate, but the items were not delivered as advertised in the fielding agreement (8:--). In accordance with the fielding agreement, no test program sets (TPS) were to be sent to the field until the requisite parts to affect repairs were also available to the field. This did not occur and was the source of frustration for the customer. This problem resulted in non-operational time for the system and caused embarrassment for the wholesale and contractor communities (1:--). A great deal of emphasis was placed on getting the TPS to the field as scheduled, but the same emphasis was lacking in assuring the requisite parts were delivered simultaneously. As a result, as much as 2-3 weeks, was lost while awaiting a part to repair a line replaceable unit (LRU). This part was supposed to have arrived when the TPS arrived at the unit. As LTC Dennis Griggs, Commander, 34th Support Battalion, 6th Cavalry Brigade, explained to the author, "if the parts required to perform the maintenance dictated by the test program set are not available, the TPS should not be fielded" (9:--). This recommendation was also made by CW3 Kenneth Mitchell, Electronics Technician, Apache MFT, when he stated, "the defective parts should be returned to the appropriate depot facility for repair if the required parts are not fielded with the TPS. We don't have time to test LRUs we cannot repair" (9:--). CW3 Mitchell's recommended procedure can be used under both contractor logistics support (CLS) and organic (OLS), the topic of the next section.

SECTION THREE

SUPPORT PROCEDURES: CONTRACTOR vs ORGANIC

Logistics support of US Army weapons systems can be provided by either organic logistics support (OLS) or contractor logistics support (CLS). In the case of the AH-64, contractor logistics support was selected as the support vehicle for initial fielding. With few exceptions, contractor logistics support provided to the Apache fielding effort was outstanding and the incorporation of some contractor procedures would enhance organic logistics support efforts.

Under CLS, the contractors were paid to provide the full range of logistics support efforts. This included supply management (ranging from supplying parts to unit level to managing the efforts of vendor depot repair programs), maintenance assistance, and warranty efforts (designed to replace defective items as well as make system changes to improve reliability and performance). Contractor support was chosen in this case because the warranty and design changes were their responsibility initially and because organic supply and maintenance support was not prepared to assume the role when fielding began. While the warranty and system design change efforts were important, these are highly technical subjects which will not be examined here. Contractor supply management procedures, because they most directly impact support of units in the field, will be examined in this section, by first looking at their responsiveness to supply requests and then examining their processing of unserviceable items. Both of these areas are important because of their potential impacts on the fielding effort.

Members of the OLS structure should take note of the CLS procedures for possible incorporation into their organic system. These streamlined (when compared to OLS) procedures used by the contractors enhanced repair parts availability and allowed the first unit to exceed expected overall aircraft availability. As a result of their streamlined procedures, 91 percent of requisitions for Martin Marietta items were filled the same day requested, and during this same 90 day period, aircraft mission availability in the 7/17th was 76 percent (5:1). This 76 percent availability figure was not expected to be reached until the Apache system had accumulated over 100,000 flight hours which will occur sometime in 1988. Based on these results, the contractor's procedures certainly warrant examination and this is how the examination will be conducted.

In the author's opinion, the supply of repair parts is the most critical aspect of supporting any weapons system. This section will analyze the request processing as well as unserviceable return aspects of CLS as compared to like OLS procedures. From this analysis, the author will provide recommendations for enhancing organic logistics support. With the preceding blueprint for analysis, we begin with contractor procedures for processing repair part requests.

Prior to commencing the fielding effort at Ft. Hood, both prime contractors, Martin Marietta and McDonnell Douglas Helicopter Co., established on-site field supply activities. These activities were linked electronically with their respective central inventory sites for the purpose of coordinating, verifying, and expediting all supply requests. These activities maintained instant visibility of asset posture for all the items which they managed and ,thus, were able to provide immediate feedback to customer inquiries. In addition to visibility, these local supply activities also directed immediate shipment, usually by same day air, on high priority requests. These two key roles were extremely important in allowing the first unit to maintain a sufficient number of aircraft operational to complete its demanding training program. Of equal importance was the CLS supply activity role in the return of unserviceable, reparable items.

With the high cost and limited number of many Apache parts, it was essential that all reparable items be returned for repair as soon as possible, thus, assuring a rejuvenation of the serviceable assets. Both contractors performed admirably in this effort. In virtually every case unserviceable parts were enroute to repair within 24 hours after receipt at the CLS supply activity (7:10) In most cases these shipments were via small package, parcel post or United Parcel Service (UPS) to their respective central inventory sites or, direct, to the repair facility. The contractor supply managers maintained complete visibility of these intransit assets as well as the status of items in the repair cycle, and because of this they were able to direct shipments out of repair direct to customer units. This aspect of the CLS supply effort not only reduced aircraft NMCS time; (2:1) it also reduced the number of expensive repair parts required to fill the "supply pipeline". OLS procedures for handling these same functions are basically the same with the major exception being the requirement for both parts and paperwork to physically pass through several more layers prior to completing the transaction.

With the exception of two organic commodity commands which established telephone procedures for high priority requests, the majority of supply requests were not acted upon until receipt of requisition documentation. This procedure could cause a delay of several days depending upon when the need became known at the unit and when the computer cycles processed the request. The item managers at each OLS inventory control point who are responsible for acting upon the request, in many cases were unable to obtain availability information immediately. In some cases they had erroneous information which further delayed release of the item to the customer. These delays in the organic procedural system resulted in more aircraft operational time lost and in more parts required to fill the "supply pipeline" than was experienced under the contractor system. The return of unserviceable, reparable parts was even less responsive.

Initially, under OLS, all unserviceable parts were required to physically pass through several points at Ft. Hood prior to being shiped to supply depots and, subsequently, placed in the depot repair program. Through some creative efforts on the part of the 13th Support Command at Ft. Hood, return procedures were streamlined to provide one-stop turn-in by units prior to shipment. This reduced the time required to get the part from the unit to the shipping point by as much as two weeks. The required time then was down to 10-14 days, but this was still a far cry from 48 hours averaged by the CLS (7:10). However, the parts were then required to be shipped to the appropriate supply depot for induction into repair rather than directly to the repair depot which would perform the repair as had been done in many cases under CLS. Once again, these procedures required the customer to wait longer for replacement parts and required more parts for the pipeline (6:6). Obviously, we should consider incorporating some or all of the CLS streamlined procedures into OLS?

As already mentioned, the 13th Support Command at Ft. Hood has incorporated new procedures for handling supply transactions based upon lessons learned from CLS.

Additionally, the Ft. Hood Transportation Office has increased its use of small package, premium transportation for returning reparable parts. These examples of positive action on the part of the retail system to incorporate lessons learned from the CLS experience are also worthy of consideration at the wholesale level. In the author's opinion, wholesale logistics managers should also consider incorporating similar procedures into their structure to maximize weapons system operational time and to reduce the quantity of expensive repair parts in the supply pipeline. The next step in the process is that of transition from CLS to OLS.

SECTION FOUR

TRANSITION: CLS to OLS

The transfer of logistics support responsibility from the contractor to the organic logistics support structure emerged as indeed a critical point in the Apache fielding process. Both the contractors and the Army had to ensure this transition occurred smoothly. To accomplish this goal all information had to be transferred regarding the full range of logistics support: from the initial purchase of parts from all sources through the depot repair program and all points between--the entire logistics life cycle. The transfer had to occur with no reduction of support to the units already fielded or to the units in the process of fielding.

The requirement for uninterrupted support of fielded systems made this transition step extremely difficult. Logistics managers for the contractor and for the Army had to ensure that every aspect of logistics metioned above had been properly coordinated and that each army activity was prepared to assume support. Any oversight detected after the transition would adversely affect support to fielded units and could potentially interrupt the entire fielding program. Now that we have discussed the what and why of transition, we will turn our focus to the framework for analysis, the how.

As in preceding sections, this analysis will be directed at those aspects of the transition which most impact the fielding effort and the support of operational units. From the author's viewpoint, the three aspects of the transition step which most impacted the program were the preparation at the wholesale level, the transfer of unit supply requests from the contractor to the organic system, and the updating of supply documentation to reflect changes in source of supply and other critical information. These topics will be examined in the sequence indicated. Recommended changes follow each topic. We begin with the preparation at the wholesale level.

Since the wholesale system is the key actor in this transition process, it is vital that each level within that system is prepared to assume its role at transition. Senior managers who made the final decision to proceed with the transition were convinced that all was in readiness to transition with no interruption in support. This was not the case. A prime example of a lack of total preparation was the aborted attempt to transition some items in August 1986 (11:--). This effort was stopped because some OLS managers were not prepared and the Army Master Data File (AMDF), a subject to be examined later, did not reflect the changes in sources of supply or unserviceable return information (4:--). The author held numerous conversations with item managers and middle managers of various commands concerning the transition issue with mixed responses. Some indicated they were ready, some were unsure, and some stated they were not totally prepared. Given the participants uncertainty concerning their own preparedness, and with the realization that uninterrupted support for the Apache depended upon a smooth transition, why was the decision made to proceed?

There can be, in the author's opinion, only two possible answers to this question. Either the decision was made to proceed despite the uncertainty over preparedness or the decision makers were unaware of the true state of preparedness. The former is quite simply a prerogative of command which can be based on information not known at all levels. The latter is a failure of the system. This paper will not question the prerogative of command but will examine the apparent system breakdown.

The decision at the command level was based, at least partially, on input from the senior logistics managers in the organic support system. The critical question at this point is did these managers not know the true state of their preparedness or were they given bad information? Assuming all levels were providing what they felt to be accurate information, then we must assume management was unaware of their true preparedness. In discussions on transition with logistics representatives at Ft. Hood (LTC Dennis Griggs, LTC Michael Bourque, and CW4 Joe Privitt) in August 1986, LTC Griggs offered the following recommendation to help alleviate this uncertainty. A checklist or matrix of requirements leading to a go or no-go decision should be developed. Since very few, if any complex systems such as this ever attain 100 percent of everything, critical points which must be accomplished prior to transition should be identified in this checklist. One of those critical actions, the author believes, is the transfer of existing supply requests from the contractor to the organic system.

In transferring these supply requests, the goal is to transfer the existing request rather than have a wholesale cancellation which forces the unit to resubmit the request and, thus, lose all the preceding waiting time. This goal was not reached. In some cases, the transfer went smoothly, but in others there was no evidence it was even attempted (19:--). The majority of the failures occurred when requests were lost in the process and simply never appeared after transition. This situation caused the unit to resubmit over 50 requests (19:--). Mr. Don Johnson, Chief, Transportation and Distrubition Division, Director of Materiel Management, AVSCOM, was also concerned over the loss of requisitions during the transition process. He recommended a more comprehensive system of checks and balances at the wholesale level leading up to the transition. Contractor and organic item managers should be afforded a mechanism for positive transfer of these requests. Even if it means a face-to-face meeting for final verification that all documents have been transferred (10:--). This leads us to the final topic in our examination of the transition process: correct documentation of supply requisitioning data.

The Army Master Data File (AMDF), as the primary source document for all unit repair part transactions, must contain accurate information. This document and other related documents, such as the Automatic Return Item List (ARIL), were not as accurate as they needed to be at transition (4:--). The result was misrouted requests, misrouted returns of critical reparable items, and an inordinate amount of intensive management to rectify the situation. The AMDF, in the author's opinion, must "drive the train", especially at transition. Planners should develop a comprehensive system to assure all entries are correct for their items. Once this has been verified, steps must be taken to ensure the correct data is transmitted for publication and finally, as recommended by BG William Forster, PM Apache, a prepublication edit of the document should be completed as a final check (14:--). This procedure would greatly improve what is one of the most troublesome problems to the unit in the field. Now that we have discussed the transition to the organic logistics support structure, we turn our attention to the role of this structure in assuring a coordinated support effort.

SECTION FIVE

LEAD COMMAND

Under the lead command concept, one of the Army Materiel Command's (AMC) materiel readiness commands is designated to be the single voice and coordinator of the overall logistics support effort for a designated system. In the case of Apache, the Aviation Systems Command (AVSCOM) was designated as lead command.

As with many new systems, several AMC commands were involved in the development, production, and subsequent support of the Apache. Since these commands each have somewhat different methods of doing business, the lead command concept was designed to be the principle AMC interface with customer units to simplify their support needs. For this reason, the effectiveness of the lead command concept is worthy of examination. This is how we will proceed.

This analysis will focus on the aspects of the lead command concept which directly impact the support of units in the field. The two major points in this category are supply support and technical maintenance support. First, we examine the aspect of supply support.

While, in general, basic supply procedures are much the same throughout AMC, high priority request handling is a notable exception. In most AMC subordinate commands, units are allowed to make telephone requests for certain high priority items. However, one command, Missile Command (MICOM), refused to provide this expedited, telephone service. Instead, prior to taking any action they insisted upon documentation following the normal flow. Another example of inconsistency in procedures between the AMC commands is the policy within the Communications, Electronics Command (CECOM) of not providing parts availability information until a formal request was received (17:--). This policy caused unnecessary delays for the units in obtaining the necessary parts from other sources, such as controlled substitution, until availability from the responsible command was established. More importantly, these inconsistencies and difference in procedures from one command to the next caused a sense of frustration in the units (18:--).

Another source of frustration with supply procedures was the uncoordinated unilateral actions of some commands, CECOM and AVSCOM for example, to the detriment of the entire weapons system. During an attempt to resolve a problem with the aircraft battery, CECOM froze all aircraft battery assets which it managed; causing considerable difficulty for units in the field. This action was taken without consulting AVSCOM which was investigating the battery problem. As a result, considerable effort was expended to convince CECOM to reverse its decision while the units expended equal energies in attempts to find alternate sources of supply (17:--). From supply procedures, we move to the area of technical maintenance support.

As with virtually every major weapons system, AMC commands provide technical maintenance support to units using either contractor representatives or government logistics representatives (LAR). This aspect of logistical support was conducted on a much more unilateral basis than the supply portion. The first step involved the determination of the number and qualifications of the technical representatives required to support the fielding effort. In virtually every case, separate negotiations had to be conducted with the various commands to answer this critical question. The responsibility for this task fell to LTC Karney, Chief, Apache MFT. He developed the requirements and conducted negotiations to establish the technical representative manning level from each command involved (12:--). These individual negotiations were necessary because the lead command, AVSCOM, did not intervene to establish uniform manning levels for all AMC commands. Additionally, due to the involvement of two commands in developing the TADS/PNVS systems, two logistics assistance representatives (LAR) were required to replace one contractor representative from Martin Marietta who was trained on both the TADS and PNVS. This would not have occurred had one command had the responsibility for both systems. This opinion was expressed by Mr. Robert Michael, site manager for Martin Marietta at

Ft. Hood (13:--). This brings us to the subject of the level of support provided by the logistics assistance representative (LAR).

As mentioned previously, technical maintenance support can be provided by civilian contractor or government LAR. The preferred method of providing technical assistance to units in the field is via the LAR. The primary reason for this approach is cost. The LAR is substantially more cost effective, provided the level of support is equal to that provided by the civilian contractor. According to CW4 Van Kuren, aircraft maintenance officer, 7/17th, 6th Cavalry Brigade, with few exceptions, the level of support provided by the LARs was not equal to the civilian contractor (16.--). Some LARs were excellent and provided the same level of support to fielded units. Others provided inadequate support due primarily to a lack of sufficient training and of willingness to learn more than just their part of a weapons system which has numerous interdependent systems (16:--). The author's experience also supports this view. What can we do, based upon these lessons learned, to improve future efforts in this area?

First, in the author's opinion, we should use a true lead command concept for all aspects of new systems development, production, and, especially, logistics support. The lead command should be given the responsibility and the authority to determine and direct the support efforts. This would standardize supply procedures and materially assist units in their efforts to maintain the weapons systems. Second, if the use of LARs continues to be the preferred method, standardized procedures should be developed and implemented outlining LAR training programs. The primary considerations of such a program (in the opinions of both CW4 Privitt, Apache MFT, and the author) should focus on determining the level of expertise required of the LAR and developing a method for assuring that LARs are adequately trained prior to replacing civilian contractors. These steps will enhance support of current systems as well as the fielding of future systems.

Fielding the AH-64, Apache, has provided valuable lessons for logisticians to consider in improving our support of new weapons systems. The final section of this paper outlines some basic conclusions we can draw from the lessons learned in fielding the Apache.

SECTION SIX

CONCLUSION

Apache fielding has been an unqualified success. The dedicated efforts of the thousands of government employees, contractors and U.S. Army personnel involved in this ambitious effort have been, indeed, commendable. Without their outstanding cooperation and willingness to do all that was necessary to make the program succeed, this single station fielding effort would not have been possible. Although we have reason to be proud of our efforts, we would be remiss if we did not objectively examine our procedures and look for ways to improve our performance. Those who follow us in fielding new weapons systems look to past performance for the foundation of their efforts to place the most modern, sustainable systems into the hands of the soldier. We owe it to our future leaders and soldiers to give them the benefit of our experience.

This paper has provided the forum for the author, as well as other experts in the program, to pass on their experiences to those who will be involved in fielding weapons systems of the future. The most important aspect of this paper is that it is presented from the perspective of the field soldier. This is the person who makes all the plans and programs work in sustaining any weapons system. We owe it to all these young Americans to identify any problems and do all in our power to correct them.

The most important item here is to correct any deficiencies noted. We must take aggressive action to correct problems noted in this process. If no one formalizes solutions to the problems encountered, they will be repeated. The author sincerely hopes that the lessons learned and recommendations presented here will be seriously considered by those who can act on them.

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