STRATEGY RESEARCH PROJECT

PRIME VENDOR SUPPORT

BY

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ABSTRACT

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This paper takes an in-depth look at Prime Vendor Support (PVS), a contractor unsolicited proposal for the Apache Attack Helicopter fleet, and its contribution to the Army's Revolution in Logistics. This support system would provide nose to tail wholesale supply support and Depot level maintenance for both the AH-64A and AH-64D. The paper is a snap shot in time of the proposed effort which is currently being defined. Consideration is given to cost, inventory ownership, velocity management, modernization of components through spares, enhanced reliability, application of cost savings to fleet modernization, configuration management, impacts on readiness, and contractors on the battlefield. Additionally, impacts on the Commander in the field are considered and the risks to the Government. The requirements for approval of PVS are also reviewed.

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This paper could not have been completed had it not been for the support of Colonel Stephen Kee, Project Manager for the Apache Attack Helicopter, and the personnel assigned to his office. Everyone there, from the Division Chiefs and Product Managers down, always made themselves available to discuss issues or provide documentation on very short notice with a quick turn around time. Everyone was frank and candid with their answers. This is indicative of an outstanding organization with exceptional leaders.

PRIME VENDOR SUPPORT

WHY PRIME VENDOR SUPPORT?

Army Aviation faces great challenges in the near future. Primary among those challenges are development of new systems, modernization of current systems, and sustainment of fielded systems within ever tightening funding constraints. Given the projected flat budgets for the foreseeable future, we must generate investment funds through savings in Operations and Maintenance accounts. The Apache Attack Helicopter (AH-64) Project Manager's Office has undertaken a revolutionary approach to wholesale supply support of the AH-64 fleet. It is called Prime Vendor Support (PVS). PVS is an effort to contract with industry for performance of all functions necessary to operate the wholesale supply system and perform Depot maintenance for the AH-64.

This paper will consider the pros and cons of PVS and its specific applicability to the Apache. Consideration will be given to whether PVS goes too far or not far enough, the ability of the Government to contractually bind the Contractor to an adequate level of performance, and the impact of Contractors on the battlefield.

This may well be the future of Army Aviation supply and maintenance as indicated by the recent quote from LTG Paul J. Kern, Military Deputy to the Army Acquisition Executive:

In general, Department of Defense (DOD) and Department of the Army budgets have declined drastically over the past decade. Support and infrastructure costs have required an ever-increasing share of our resources and have consistently consumed more than half of our budget. Fielded systems continue to age while the cost of ownership escalates. The more money spent on support, the less money is available to fund modernization and preserve combat capability. The challenge then for the military planner of the 21st century is to provide integrated support to the Warfighter while systematically restructuring logistics support using modern technology and management principles to generate significant cost of ownership savings.

Imagine the opportunity to modernize a major Army weapon system while at the same time significantly reduce its cost. Consider though, that in order to accomplish this, civilian and possibly military personnel strength levels would have to be reduced, and soldiers would have to coexist with civilian contractors on the battlefield. The advent of an innovative Contractor Logistics Support (CLS) concept known as Prime Vendor Support (PVS), or Fleet management to some, defines such an opportunity.[1]

Aviation is a dramatic combat multiplier. It provides Commanders with capabilities they can derive from no other source, however, it is at a substantial monetary cost. Therefore, while everyone on the battlefield wants aviation assets at their disposal during times of armed conflict, most want to distance themselves from the cost of it during peacetime. We in Army Aviation must learn to operate at greater efficiency for less cost. In light of this, it is incumbent upon both the User and the Materiel Developer to make informed decisions about the way we do business in the future.

We can no longer afford to do business as we have in the past. To do so would be to continue to mortgage the future of Army Aviation. We must determine efficient and effective ways to develop and procure new systems while reducing Operating and Support (O&S) costs of fielded systems. Cost reductions in the O&S accounts can translate to more of the annual budget being available for use in the investment accounts.

At the time of this writing, PVS is still in the formative stage and is continuing to be defined. Therefore, this paper is a snap shot in time of the definition of PVS as it is known today. The Apache Attack Helicopter is one of two major systems being used as pilot programs to determine the feasibility, cost, and effectiveness of PVS. The other pilot system is the M-109 Family of Vehicles (FOV).

PVS takes advantage of the capabilities and knowledge base of the primary manufacturers of the weapon system. In the case of the Apache, the Prime Vendors are Boeing Helicopter Company (BHC), previously McDonnell Douglas Helicopter Company, and Lockheed Martin Corporation (LMC). BHC built the airframe and integrated the systems, and LMC produced the Target Acquisition and Designation System (TADS) and the Longbow Weapon System (LBWS). These two major defense Contractors have agreed to team as a joint venture to contract with the Army to provide PVS for the Apache. The limited liability company formed under this joint venture is called Team Apache Systems (TAS).

Under the provisions of the PVS contract, TAS will provide wholesale supply support at the Depot and Aviation Intermediate Maintenance (AVIM) levels, repair at the Depot level, and a technical representative at each Apache Battalion. They will provide personnel who will operate a supply point physically located at the AVIM for interface with Army personnel.

This new support effort is effectively being implemented in two phases. The first phase, called Contractor Logistics Support (CLS), started with award of the Apache Modernization contract and the Longbow Fire Control Radar production contract in 1997.[2] The second phase, called PVS, is planned for transition contract award in May 1998 with full contract award in October 1998. A more detailed definition of PVS will be provided later in this paper.

WEAPON SYSTEM BACKGROUND.

To understand the inner workings of PVS and its application to the Apache, it is necessary to have an understanding of the AH-64A Apache, the AH-64D Longbow Apache, and the differences between the aircraft and their sub-systems. The AH-64A is battle proven to be the finest attack helicopter in the world. Its record in Desert Storm was impressive, if not astounding. The AH-64A is a four bladed, twin engine, two pilot helicopter which was first introduced into the inventory in 1986. It is equipped with an integrated TADS and a Pilot's Night Vision Sensor (PNVS)

which enables the crew to conduct precision attack day, night, and in some adverse weather conditions.

The aircraft is self-deployable and highly survivable. Its armament includes a mix of up to 16 Semi Active Laser Hellfire missiles or seventy six 70 millimeter aerial rockets and 1200 rounds of 30 millimeter cannon.[3] Although extremely advanced for its time, the AH-64A is challenged in speed of target acquisition, operations in adverse weather, and in the presence of battlefield obscurants. The systems of the AH-64A are principally analog and do not take advantage of today's digital technologies.

The AH-64A is maintained within the current three level maintenance system made up of Aviation Unit Maintenance (AVUM), AVIM, and Depot maintenance. The AH-64A is currently undergoing a fleet wide modernization program. This program provides two major enhancements for the weapon system. It extends the useful life and modernizes the system. The modernization of the system retains all capabilities of the AH-64A and incorporates the changes necessary to effectively and efficiently integrate the LBWS. The entire AH-64A fleet will eventually be re-manufactured into the new configuration and designated the AH-64D. This modernization effort is scheduled for completion in 2009.[4]

Integration of the LBWS requires major modifications to the aircraft. In order to fully appreciate the need for the modifications, a basic understanding of the LBWS is necessary.

The LBWS consists of the mast mounted Longbow Millimeter Wave Fire Control Radar (FCR) and the fire-and-forget Longbow Hellfire Modular Missile System (LBHMMS). Both components are digital and have been proven to significantly enhance the combat effectiveness of the Apache during Operational Testing in realistic, expected future battlefield conditions.[5] The LBWS provides the capability to rapidly detect, classify, prioritize, and accurately engage targets.[6] This speed of engagement and fire-and-forget capability greatly enhances lethality and survivability.

The modifications to the aircraft consist of several major changes. The navigation system is upgraded to incorporate redundant, ring laser gyro inertial navigation systems (INS) with an embedded global positioning system (GPS) and Doppler navigation system. The generators were upgraded to 45 KVA, the black box count was reduced by nearly 50 units, and the cockpit was digitized. The AH-64D incorporates dual multifunction displays at each crew station.

The aircraft monitors the health of its systems and reports system problems to the crew through electronic prompts on the multifunction displays. This allows the crew members to concentrate on prosecuting the battle and management of systems by exception. The synergy created by the fully integrated systems coupled with a digital data burst communication

capability allows the AH-64D Longbow Apache to be a major player on the digital battlefield of the future.[7]

The AH-64D Longbow Apache will be maintained using the current aviation three level maintenance system described earlier, except for those components which are peculiar to the AH-64D. In other words, those components retained in the AH-64D configuration which were originally incorporated in the AH-64A will continue to be maintained using the three level system. The new components developed as a part of the modernization program will be maintained using a two level maintenance system. The two level system is comprised of AVUM and Depot.

MAINTAINER TRAINING AND RETENTION CHALLENGES.

While it is intuitively apparent that it should be less costly to repair components forward (three level maintenance), there are issues that are driving us to two level maintenance. As the sophistication of our weapon systems increases through technological advancements and modernization, the required knowledge base and skills of the maintainers changes dramatically. Twenty years ago our major helicopter systems were analog and, for the most part, easily maintained by soldiers possessing mechanical skills learned prior to entry into the Army plus a few weeks of Aviation maintenance training. Over the years, that few weeks of training has grown to several months

followed by a significant period of on-the-job training before the soldier becomes an effective unit asset.

There are three significant problems with that scenario. The first is the duration and cost of training involved in producing skilled maintainers. The second is the duration of the enlistment has to be short enough to entice people to enlist, but long enough to get a return on our investment in the soldier. Finally, once the soldiers become significant contributors to the unit, their enlistment has expired and they can easily find much higher paying jobs in the civilian sector. So, we re-enter the cycle at the recruiting point and start all over again.

As a result of these problems, the AH-64D and LBWS were designed in such a manner as to take maximum advantage of technology. The systems are designed to minimize the required skill level of the maintainer. In doing so, we reduce the training and retention problems. While this reduces those specific problems, it introduces challenges of its own. One of the challenges is the ability of the systems to perform accurate built-in-test(BIT)/self diagnostics. If we can produce a weapon system that accurately tells the maintainer which box to remove and replace, we can use a much lower skill level to maintain our systems. The individual would simply need to be trained to follow the instructions provided by the weapon system. This would then allow a two level maintenance system where relatively

unskilled labor removes faulty components and ships them to Depot.

At the Depot a limited number of highly skilled repairmen equipped with special test equipment will rapidly repair faulty components and return them to the supply system. The most costly challenge of this two level maintenance system is our ability to fill the supply pipeline with a sufficient number of spare parts to support the "remove and replace" philosophy of two level maintenance and the inaccuracies of BIT. Therein lies the dichotomy. In order to reduce our training and repair costs, we demand greater agility in our supply system and possibly increase our supply costs dramatically.

CONTRACTOR SUPPLY SYSTEM.

The production contracts for the AH-64D and LBWS provide a specified level of CLS which can be considered the first phase of PVS. The production contracts provide for contractor wholesale supply support and Depot repair of AH-64D peculiar and LBWS components. Under the current contracts, failed legacy components used on both the AH-64A and the AH-64D, are removed and turned in to supply. These common components will be returned through normal Army supply channels for repair at the appropriate level. That can be either AVIM or Depot.

All components peculiar to the AH-64D will be returned to Depot using a three level supply system of which the Contractor

is a part. The AVUM supply system remains unchanged. The supply systems diverge at the AVIM level. In addition to the standard supply system at AVIM, there will be a Contractor operated supply point physically located at the AVIM unit. This supply point is currently referred to as the Contractor's supply window. The supply window will be manned and operated by Contractor personnel. All components peculiar to the AH-64D designed for two level maintenance will be turned in at the Contractor supply window for replacement and shipment to Depot.[8]

PRIME VENDOR SUPPORT REQUIREMENTS.

As the support methodology for the AH-64D peculiar components was being defined in the production contracts, it became apparent that we needed to do more to support the entire weapon system. The cost of ownership is escalating, and only the sub-systems necessary to integrate the LBWS were modernized. Additional modernization of components may be necessary, both military and civilian force structure is being reduced, and funding resources are being further constrained.

Given this state of affairs, TAS accepted the challenge and took the opportunity to provide the Project Manager for Apache an unsolicited proposal to perform contractor systems management and logistics support for the entire AH-64 fleet. A General Officer Steering Committee was convened to consider the proposal and it was decided there is a need to re-engineer the Apache logistics

system function.[9] This re-engineering is intended to improve the quality of support while reducing operating costs which will provide savings that can be used for modernization.

This second phase of the PVS effort, which is currently undergoing definition, will include nose to tail wholesale supply for all components of both the AH-64A and AH-64D. It is intended that TAS will provide the following management and logistics functions in accordance with the Justification and Approval (J&A) for Other Than Full and Open Competition:

> 1. Requirement determination, planning, and management. TAS will implement, manage, and execute the necessary requirements modeling and forecasting for provisioned components to support planning for component repairs and acquisition of new and replenishment spares. TAS will leverage its experience and resources to achieve program objectives while forming an integrated product team (IPT) with the Government to ensure that the proper field performance metrics and asset visibility are met.
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> 2. Spares acquisition, inventory management, and distribution/transportation management. TAS will provide the necessary resources, support and services to acquire, manage, and distribute spare parts to satisfy wholesale supply requirements.
>
> 3. Depot repair support and support services. TAS will perform depot repair support and maintenance support services for all stocked repairable items. TAS will ensure repair, test, configuration control, and configuration update of components returned for depot repair. TAS will have an agreement with Corpus Christi Army Depot (CCAD), which is the Army's only organic facility, for repair and overhaul of rotary wing aircraft. TAS will agree to maintain or increase the current Apache workload at CCAD assuming the Apache fleet is the same or increases.
>
> 4. Configuration Management. TAS will assume full configuration control with the objective of converting to performance based specifications and best

commercial practices or off-the-shelf components, where applicable. TAS will incorporate reliability improvements, operation and support cost reduction changes, and incorporating new technology into the aircraft and support equipment. Modernization and technology insertion are defined as those technology improvements that the contractor makes within his control of the configuration under the system performance specification for this contract. Modernization does not include improvements which expand the performance parameters of the system or are the result of separate Government requirement or Product Improvement Program. The modernization and technology insertion requirement of this action specifically exclude requirements such as the Second Generation Forward Looking Infrared (FLIR) for the Apache system. These actions will be the subject of a separate competition or J&A.

5. Field technical and supply support. On site supply support and technical assistance will be provided by TAS worldwide.

6. Other services necessary to accomplish the performance objectives of PVS.[10]

We are buying "Power by the Hour". This is parts support for a set number of flying hours per year. If we exceed the specified number of flying hours during the year, TAS will be entitled to over and above charges for the excess hours. If, on the other hand, we fail to fly the contract hours, the Contractor will be paid anyway. This does a couple of things. It makes us plan accurately for our requirements, and then it makes sure we take maximum advantage of the hours available in the contract. This will eliminate the flexibility of the Commander to reallocate flying hour resources, but it ensures we have repair parts and flying hours available for readiness and aircrew proficiency.

Commanders will no longer have to pay for parts from the supply system. The parts will be supplied as a free issue to the field. The Project Office for Apache will be provided all types of funding previously authorized to operate the supply and Depot repair system dedicated to the Apache.[11] This includes Reserve Component funding appropriated for Apache support. These funds will be used to pay for PVS. This loss of flexibility is another point of major contention. However, if the funds were appropriated for Apache support they should be dedicated to Apache support. If Apache support funding is being siphoned off to support other efforts, then those efforts should either be unfunded or appropriately budgeted.

PVS is a revolutionary industry initiative. It truly embraces the vision of "Revolution in Military Logistics" and will be a necessary change given the current indicators of future budget constraints. However, there are several varying points of view about PVS.

GOVERNMENT CONCERNS, ISSUES, AND CHALLENGES.

There is the perpetual concern on the part of Government employees that contractors are motivated simply by profit, and we must maintain the current system to ensure future support of the Apache. Some of these people either have constituencies whose continued employment is threatened by this initiative, or their own jobs are threatened by the change. Additionally, there are

those who have had negative experiences with contractors in the past. In any case, we must change the way we have been doing business or we will be overcome by events.

It is a given that our investment accounts will remain flat at best, and it is expected that they will decline. The military and civilian force structures have been decreased to such a level as to require outsourcing in order to continue to support the current supply system.

Base Realignment and Closure (BRAC) issues have directly impacted the Apache program. The Program Executive Office for Aviation moved from St. Louis to Redstone Arsenal, Alabama. The Aviation and Troop Command also moved to Redstone Arsenal and was combined with the Missile Command. The new command was designated the United states Army Aviation and Missile Command (USAAMCOM). This created a great deal of personnel turbulence. A number of people with an in-depth knowledge of the aviation support system were lost. Many of the more senior personnel departed Government service rather than re-locate. This reduces the aviation knowledge base in Government service at AMCOM. Further, additional reductions in civilian force structure are expected at Redstone Arsenal over the next few years[12]. Given the lack of seniority of some of the aviation force that re-located to Redstone, it can be expected that any future reductions will probably have a greater impact on the aviation side of the house than the missile side. However, an adequate

number of sufficiently qualified Government personnel will have to be retained to evaluate the airworthiness of the system. PVS will eliminate these Government personnel issues in the supply system.

There is always a hesitation on the part of leadership to reduce the force as rapidly as possible. This is a normal humanitarian reaction to a very difficult situation. However, the impact to the field is adverse rather than positive. There are additional cost burdens involved in keeping facilities open and personnel on hand that should have been eliminated. This usually results in an adverse impact on Operation and Maintenance (O&M) accounts. A portion of these accounts may be used to support the excess personnel and facilities instead of providing spare and repair parts to the soldiers in the field. This does not appear to be the case at the current time because Apache readiness is at an all time high.[13]

High readiness rates can be dangerously misleading. At the current time there are 88 zero balance line items at AMCOM, and 2616 at the Defense Logistics Agency (DLA).[14] This is a serious situation if there are long-lead items in these numbers. There are pressures on commanders in the field to maintain readiness at the highest rates possible. To overcome parts shortages, field Commanders may be compelled to use controlled substitution to maintain readiness rates. If this is the current case, inflated readiness rates are being maintained through occasionally

damaging, unnecessary labor on the part of the soldiers. While this maintains reported readiness at high levels, it masks the problem and is hard on unit morale.

It is also the case that large programs like Apache are sometimes required to pay more than their fair share of the overhead costs of our Government supply activities. This is simply due to an underfunding of smaller programs or maintaining too robust an infrastructure to support a particular system. In any case, it takes funds away from their intended purpose when appropriated and authorized.

As can be readily ascertained from the above, the loss of a large program like the Apache would have significant ramifications to Government supply activities. Therefore, much resistance to full implementation of PVS can be expected, and it can rightfully be expected that it will be difficult for many to view the effort with anything but a parochial perspective. In fact, it has been determined that if the Apache program pulls out of the Army Working Capital Fund (AWCF) to give free issue of parts to the field, the other programs which use the fund will have to pay an additional 4% to make up for the loss of business. If the other programs don't pay the addition charge, the Apache program will be assessed an annual tax to support the fund. There may be a requirement for the Apache program to use the AWCF in the event military assets are used to transport parts to and around the battlefield.[15]

All the above issues point to a high level of inefficiency on the part of Government Agencies. They may also be motivated by survival instincts rather than unit readiness. This is understandable. The Contractor, on the other hand, is profit oriented and can be motivated through incentives to focus specifically on unit readiness. This becomes his key to survival, and he will take maximum advantage of his flexibility and the best commercial practices to optimize the system. This appears to be one of the great advantages of PVS.

CONTRACTING INITIATIVES.

PVS can have a dramatic positive impact on the soldiers in the field if it works as advertised. It will be the responsibility of TAS to ensure availability of parts at the supply window, and they will be contractually bound to do so. It is expected that at the minimum they will be required to provide the current level of service provided by the Government system at a reduced cost. Additionally, TAS will be incentivized to perform to a higher standard.

The initial contract for PVS will be a single year firm fixed price with award fee. There will also be four follow-on single year options to be exercised at the Government's discretion. It is expected the contract will require a minimum immediate requisition fill rate at the supply window. This minimum will probably be the current immediate fill rate being

experienced by the field with today's supply system. It is also expected that there will be a stipulated fill rate within 24 hours, if not immediately available.

If these fill rate requirements are exceeded on average over a specified period of time, award fee may be paid to the Contractor to incentivize them to continue to excel. Conversely, it is expected that if the Contractor fails to meet the minimum requirements some sort of penalty will be incurred. Two other measures of performance in this area might be number of aircraft Not Mission Capable for Supply (NMCS) and turn-around time for components returned for Depot level repair. These are quantifiable measures of performance which can be clearly defined and contracted.

These are all points of particular interest because the Government and Contractor want to minimize Government oversight and maximize Contractor responsibility. To facilitate this, it is intended the Government will write a performance specification with which the Contractor will be contractually bound to comply. Simply stated, the performance specification will declare what we want the weapon system to do, and how well we want it to do it.

In the past the Government told the contractors what was required and then how to do it. Because the contractors were told how to do their job, the Government was seldom able to hold them responsible for weapon system performance. The Government started changing this with the production contracts and hope to

continue to change it with PVS. The intent is to give TAS the flexibility to take advantage of best practices, and then hold them responsible for performance.

CONTRACTOR OPPORTUNITIES.

The Contractor will be allowed significant latitude to perform under the contract. TAS will have control of the inventory of parts, determine parts stockage levels, exercise management control over the inventory, possess authority to cross level parts at support locations, and determine transportation methods. Additionally, the technical representatives located at the unit will be available to assist in troubleshooting malfunctions. This should be of particular value to TAS in avoiding misdiagnosis of malfunctions.

The AH-64A and AH-64D are both equipped with BIT capability. The AH-64D is much more capable than the AH-64A, but neither is perfect. Misdiagnosis of a failure by BIT would result in removal of a functional component which would then be returned to the supply window for free replacement and shipment to Depot for repair. The transportation, handling, and testing would be at the expense of the Contractor. Therefore, anything they can do to reduce these occurrences would result in greater profit for the company and greater readiness for the unit.

The Contractor will have great insight into the cause of reliability issues. By manning and managing the supply function,

the Contractor will be able to capture failure rates by component and aircraft tail number. This information can be collected and stored in a database for analysis. They will be able to identify failure trends in a particular component or in a particular aircraft. This will allow identification of specific reliability issues for correction. If the reliability issue is specific to a certain component, that component may be identified as a candidate for modification to enhance reliability. This is a win-win situation. The Contractor wins by reducing costs associated with contract performance, and the Government wins through increased readiness and reliability.

This brings up the subject of configuration control. The Government will retain configuration control over all flight safety parts. It is not economically feasible for the Contractor to assume configuration management responsibility for these parts. Insurance for the Contractor would be cost prohibitive. For all other parts, the contractor would be provided configuration management authority to the extent that interchangeability is maintained and aircraft performance is not negatively impacted.

Configuration control is a contentious issue. The Contractor would like to have maximum flexibility to improve parts reliability, reduce manufacturing cost, and improve corporate profitability. The Government, on the other hand, requires the current level of aircraft performance be maintained,

interchangeability of components be maintained, no impact on technical manuals, and no impact on soldier training. This means the Contractor has the authority to make configuration changes that do not impact performance and are transparent to the maintainer.

If the Contractor identifies a component modification which greatly increases its reliability or reduces cost, but is not transparent to the maintainer or negatively impacts performance, Government approval must be obtained for the change. If the change impacts technical manuals and/or training, the Contractor will probably be required to change the manuals and fix the training issue at no cost to the Government. If the Contractor refuses to do so, the change would probably not be approved by the Government.

Definition of impact on aircraft performance is another area of contention. The current aircraft exceeds specification performance requirements in some areas. An example would be vertical rate of climb. Even though the Government required less than the current vertical rate of climb performance, we do not want to give up the current performance in excess of the specification requirements. On the other hand, the Contractor wants the flexibility to adversely impact any area of performance above the specification requirements. TAS does not desire to arbitrarily impact performance. However, when reliability or cost of manufacturing can be enhanced, they believe they should

have configuration control authority until they impact specification performance requirements. In other words, they believe they should be allowed to negatively impact any performance in excess of the written specification performance requirements without obtaining Government approval. This is unacceptable to the Government.

An offshoot of configuration control is modernization through spares. As the fleet continues to age, more and more components are going to become obsolete. This causes the cost of sustainment to increase and fails to take advantage of technological advancements. By allowing TAS to control configuration, they can take advantage of reduced cost and enhanced reliability brought about by technological advancements.

Providing TAS configuration control authority can also help eliminate the issue of "life time buys" which locks us into outdated technology. TAS will have authority to modernize components without Government approval, given they can maintain performance and transparency to the soldier. The Contractor wins by increasing profitability and we win because of increased reliability, availability, and possibly enhanced system performance.

Modernization through spares is an extremely important aspect of the contract because there is little to no funding available for any modernization in future budgets. This lack of funding continually creates challenges for Program Managers and

causes systems to become financially unsustainable. By allowing TAS configuration management, they will be able to offset design, development, and testing costs of component modernization through reduction of future sustainment costs. This is not something easily done within the bureaucracy of the Government. However, it is something that must be done, and this is an outstanding opportunity to provide the Contractor the authority and flexibility to do that which we do so poorly.

PARTS INVENTORY OWNERSHIP.

The current Apache parts inventory is managed, stored, transported, and maintained by the Government. This inventory represents a significant capital investment. In some cases, we have more of a particular component than we require to support the fleet, and in other cases we lack a sufficient quantity to support the fleet. The inventory represents the Government's best management practices given our rigidly regulated and financially constrained environment.

The inventory contains components and end items which vary in condition from new to unrepairable. It is yet to be determined, but expected, that the Government will retain ownership of the inventory. If the Government required the Contractor to purchase this inventory, it would not be feasible for the Contractor to do so. The cost would be prohibitive given the nature of a one year firm fixed price contract.

Additionally, the Government needs to retain the flexibility provided by ownership of the inventory. Should the Contractor fail to perform under the PVS contract, the Government would need the inventory to resume the functions the Contractor was to provide.

Therefore, it is expected that the Government will maintain ownership, but the Contractor will manage, store, maintain, transport, and replenish the inventory as necessary. Yet to be determined is what will be required with respect to the state of the inventory if returned to Government control. This is because the Contractor will require the authority and flexibility to increase, reduce, and eliminate levels of supply as appropriate based on modification of components and usage rates.

CIVILIANS ON THE BATTLEFIELD.

The civilians required to perform PVS on the battlefield are a cause of concern. The concerns range from how command and control procedures will be applied to Contractors, to their exact location (how far forward) on the battlefield, to who has the responsibility for their protection. That is to say, there are concerns about every aspect of their presence on the battlefield.[16] This is not a new situation introduced by PVS. There was a significant number of civilian contractors in Vietnam decades ago. They were there then, they were in Desert Storm, and we can expect to see them on any future battlefield. This

situation has been recognized and is being dealt with appropriately. The new DA PAM 715-XX, Contractor Deployment Guide, has been published and distributed. It provides guidance on everything from preparation for deployment to notification of next of kin.[17] That is not meant to be crass, but to indicate that the requirement for Contractors on the battlefield has been recognized and that positive steps are being taken to address the situation. As with everything else, Contractors on the battlefield will be another responsibility of the Commander. This, however, should turn out to be a welcome additional responsibility because of the positive impact PVS is expected to have on the Apache force.

REQUIREMENTS FOR APPROVAL.

As good as PVS appears on the surface, and as well as it has stood up under intense scrutiny, it is not yet a proven entity. As previously stated, PVS has a number of adversaries within the Government, and appropriately so, it must be proven to work better than the current system or it will not be implemented. Additionally, how much better it works must be measurable and quantifiable.

In order for PVS to be approved, it must not result in any degradation to readiness and it must work in both peace and war. It must meet all applicable statutory requirements, and truly provide a significant savings to the Government. PVS will not be

implemented at the detriment of the competitive industrial base and/or a viable vendor base. It must also be politically sustainable. If any of these requirements are not met, the effort will be disapproved.[18]

CONCLUSION.

PVS is clearly the future of Apache sustainment and Depot maintenance. It will provide substantial savings opportunities for the Army. Given the data available today, the future seems extremely positive for this revolutionary approach to logistics support. It will optimize the parts inventory, take advantage of velocity management, modernize components through spares, create savings which can be used for modernization of the system, enhance component and system reliability, and take advantage of best commercial practices. PVS will facilitate further reduction of the military and civilian work forces, while improving parts availability, and reducing field commanders' management responsibilities. Managerial and engineering responsibility will be placed on the Contractor while reducing Government responsibility to oversight. PVS also takes maximum advantage of the Contractor's extensive knowledge base and incentivizes them to improve the system as much as possible.

The drawbacks to PVS are reduced commander's resource flexibility, reduced job opportunities for Government employees, and the risk of Contractor failure to perform to contractually

required Levels. This risk will be mitigated if the Government maintains ownership of the parts inventory, which is the expected solution. Additionally, the warfighter is concerned that "just in time parts" or "velocity management" will not work in wartime. There will always be concern until the case is proven, but as previously stated, contractors have been there when we needed them in the past and I expect they will be there in the future.

The logical follow-on to this effort is for the Contractor to perform the supply and maintenance functions at the AVUM level. This would allow further reductions in military forces while allowing the Contractor to maximize efficiency, enhance reliability, and increase availability. It would also allow the Government to contract for a specific availability rate at a specified flying hour pace. This would greatly simplify contracting and ensure Contractor responsibility for clearly measurable contract performance.

Given success in this effort, it would be logical for other Aviation systems to follow. This would increase the contractor base, make involvement more financially appealing to other contractors, increase competition, and further improve the Government's position. The issue would then be redundant "stovepipe" systems that require integration and streamlining. This is an issue that can and would be dealt with in its own time. For the time being, Prime Vendor Support is clearly a key component of the Army's Revolution in Logistics.

Word Count 6162.

ENDNOTES

[1]LTG Paul J. Kern, "Prime Vendor Support: Wave of the Future," Army RD&A, January-February 1998, 5-6.

[2]United States Army Aviation and Missile Command, Longbow Fire Control Radar, Multi Year Production Contract, (Redstone Arsenal, AL: Headquarters, United States Army Aviation and Troop Command, 26 November 1997), 5-6.

[3]Department of the Army, Operator's Manual, Helicopter Attack, AH-64A Apache, Technical Manual 1-1520-238-10 (Washington, D.C.: U.S. Department of the Army, 31 August 1994), 2-1, 4-10 thru 4-14.

[4]Project Manager's Office Apache Attack Helicopter, AH-64D Apache Longbow FORSCOM Materiel Fielding Plan, (Redstone Arsenal, AL: Project Manager's Office Apache Attack Helicopter, 30 November 1997), 36.

[5]United States Army Test and Evaluation Command, Test and Evaluation Report for the Longbow Apache AH-64D Weapons System, Test report (Alexandria, VA: Headquarters Operational Test and Evaluation Command, 15 June 1995), 3-1.

[6]United States Army Aviation and Troop Command (ATCOM), Prime Item Development Specification for the Longbow Fire Control Radar, Prime Item Development Specification (St. Louis, MO: Headquarters, United States Army Aviation and Troop Command, 1 May 1997), 29, 38.

[7]United States Army Aviation and Troop Command (ATCOM), System Specification for the AH-64 Longbow Apache Attack Helicopter, System Specification (St. Louis, MO: Headquarters, United States Army Aviation and Troop Command, 28 February 1996), 27-36.

[8]United States Army Aviation and Troop Command, AH-64 Modernization, Multi Year Production Contract (St. Louis, MO: Headquarters, United States Army Aviation and Troop Command, 16 August 1996), 21-36.

[9]Project Manager's Office Apache Attack Helicopter, Justification and Approval for Other Than Full and Open Competition, (Redstone Arsenal, AL: Project Manager's Office Apache Attack Helicopter, 2 October 1997), 1.

[10]Ibid., 2-3.

[11]Gary Nenninger, Deputy Project Manager Apache Attack helicopter, Project Manager's Office for the Apache Attack Helicopter, telephone interview by the author, 12 February 1998.

[12]Skip Vaughn, "1998 Brings challenging Personnel Matters for AMCOM," Redstone Rocket, 14 January 1998, p. 1.

[13]Colonel Stephen Kee, Project Manager for the Apache Attack Helicopter, interviewed by the author, 20 January 1998, Redstone Arsenal, AL.

[14]Ordway; Dick <OrdwayD@PeoAvn.Redstone.Army.Mil>, "Zero Balance Update," electronic mail message to Colonel Stephen Kee <KeeS@PeoAvn.Redstone.Army.Mil>, 4 Mar 1998.

[15]Col Stephen Kee <KeeS@PeoAvn.Redstone.Army.Mil>, "Strategic Research Paper," electronic mail message to the author <brambleh@carlisle-emh2.army.mil>, 2 March 1998.

[16]Deputy Assistant Secretary of the Army (Logistics) OASA(IL&E) Eric A. Orsini, "Subject: Doctrinal Implications for Contractors on the Battlefield," memorandum for the Assistant Deputy Chief of Staff for Operations, Washington, D.C., 30 October 1997.

[17]Department of the Army, Contractor Deployment Guide, Department of the Army Pamphlet 715-XX (Washington, D.C.: Headquarters Department of the Army, Undated).

[18]Assistant Secretary of the Army Robert M. Walker, "Army Aviation--Partnering for Success," Prepared Remarks, Falls Church, VA, AUSA Symposium, 13 January 1998.

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The source of much of the background information used in preparing this paper was derived from nearly seven years experience on the Apache program. The author was first assigned to the program as the Deputy TRADOC System Manager for Longbow. Following that assignment, he served as the Product Manager for the Longbow Fire Control Radar.

A TDY trip was conducted to the Project Manager's Office for the Apache Attack Helicopter for the purpose of conducting interviews. Conversations were held with the Project Manager, his Deputy, Two of his Division Chiefs, his three Product Managers, and several other employees.

A large number of briefing charts and meeting minutes were received and reviewed in preparation for writing this paper.

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