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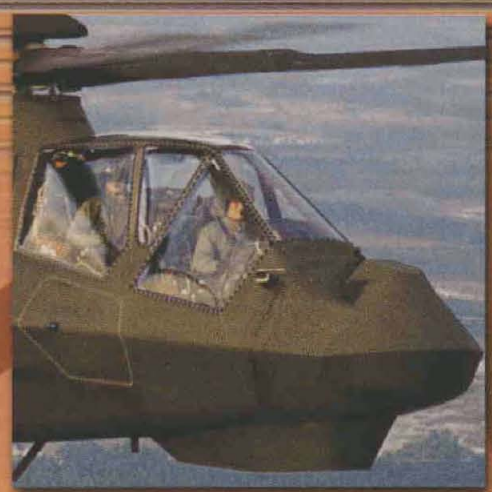
ARMY AL&T

AVIATION MODERNIZATION



FROM THE ARMY ACQUISITION EXECUTIVE

Aviation's Pivotal Role In The Army's Transformation

In our lifetime, aviation has removed the barriers of space and time. We are no longer limited to two-dimensional mobility or restricted by the speed of our legs, horses, wheels, or tracks. Aviation provides us with remarkable capabilities across the full spectrum of operations. That is why it is at the heart of the Army's transformation process—increasing lethality and survivability of the total force, providing unrestricted mobility into and within the theater of operations, and providing unprecedented situational awareness and battlespace integration.

As the Army transforms into the objective force, aviation's inherent qualities of responsiveness, deployability, agility, versatility, survivability, and sustainability will become even more important. Vertical maneuver and envelopment will enable the future combined-arms organization to negate the effects of terrain and to conduct simultaneous operations at multiple locations, maneuver rapidly, and mass precision direct fires on enemy positions. These are critical capabilities on nonlinear battlefields and in urban and complex operational environments.

As part of our full-spectrum force, Army aviation will exploit emerging technologies to enhance its existing overmatch capabilities. Its principal and enduring missions—armed reconnaissance and attack, vertical lift, and support—will be executed by a restructured organization operating both legacy platforms and newly developed systems.

Space-based and aviation assets will contribute enormously to situational awareness. We will know where the enemy is, and we will make contact on our own terms. For example, with unmanned aerial vehicles (UAVs) patrolling an area, our attack aircraft can remain in a hidden position out of harm's way. Once a target is identified, the information will pass via datalink from our UAV to the aircraft. The pilot then either engages the target or passes the information to another platform. The enemy won't know what hit him.

The RAH-66 Comanche will be the Army's future armed reconnaissance and attack aircraft. It will provide aerial reconnaissance with improved onboard sensors and connectivity to other sensors. It will possess enhanced digital connectivity for situational awareness, meet the operational range requirements for deep operations, and perform the attack mission for the objective force.

The AH-64D Apache Longbow remains the world's premier attack helicopter and guarantees the Army's ability to maintain combat overmatch in the interim force. The increased capabilities of Longbow provide early detection, target engagement, and precision kill at standoff ranges. The Apache's lineage, evident in the "A" model, is well established, with impressive performances in Desert Storm and Bosnia. The Apache Longbow continues that legacy by demonstrating overwhelming dominance in initial operational test and evaluation, as well as in Task Force XXI exercises where the after action report stated it was "employed

with devastating effect," and was "the most lethal killer in the exercise." Two recent demonstrations verified Longbow's expanded role.

This past summer, Apache participated in a demonstration with the Hunter UAV at Fort Huachuca, AZ. The Apache co-pilot controlled the Hunter system while performing his normal duties. Using the Hunter as an early-warning system, a route was cleared for the Apache to an observation point. The Apache was able to locate and identify targets up to 30 kilometers away in concert with the Hunter.

In September, a Longbow participated in the Joint Expeditionary Force Experiment, demonstrating warfighting capabilities with the Joint Surveillance Target Attack Radar System (JSTARS) aircraft. The Apache was able to transmit priority fire zones with key targeting information, with the JSTARS targeting cell able to reassign targets with near-real-time accuracy. Communication was through digital link while achieving frequency-hopping security. Full situational awareness relative to mission graphics and threat arrays was also achieved. When coupled with the reconnaissance capabilities of the Comanche in the objective force, this combined reconnaissance and attack capability will be impressive.

The UH-60 BLACK HAWK continues to fulfill the Army's utility requirements for air assault and air movement, command and control, and combat service support. As the primary air vehicle to move ground forces throughout the area of influence, it underscores the tactical agility required by the commander to shift forces rapidly throughout the battlespace.

The CH-47F heavy lift cargo helicopter will extend the capability of the interim force for air movement, mass casualty evacuation, aerial recovery, and aerial resupply. As a force multiplier, it will provide the commander with the ability to project air and dismounted ground forces to difficult terrain while deploying over greater distances.

The Future Transport Rotorcraft will be developed to fulfill the heavy lift requirement for the objective force, capable of significantly greater range and payloads than the CH-47F. It will meet the transport needs of the Future Combat Systems and provide the means to accomplish future operational and tactical deep missions.

Army aviation will undergo an organizational modernization to meet its future mission requirements. Current legacy organizations will be restructured into multifunctional aviation battalions (MFBs). Each MFB will contain a balanced blend of reconnaissance, attack, and lift assets. This multifunctional force structure emphasizes organizational flexibility through rapid task organizing.

In assessing the Army's transformation to a strategically responsive and dominant force, it is evident that aviation's exploitation of the third dimension of operations will give our commanders options and advantages for overwhelming dominance within the future battlespace. Clearly, Army aviation will play a central role in the Army's future.

Paul J. Hoeper

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FEATURES

DEPARTMENTS

COVER

Army aviation modernization efforts are expected to yield substantive improvements in reliability, maintainability, and lethality.

COMANCHE: LEADING THE ARMY'S TRANSFORMATION

MG Joseph L. Bergantz

Introduction

On April 4, 2000, the RAH-66 Comanche Program completed a successful Milestone II review that accelerated it into the engineering and manufacturing development phase of procurement. Key to this was the realization that the Comanche is on the cutting edge of the Army's transformation to a more responsive, deployable, agile, versatile, lethal, survivable, and sustainable force capable of responding to missions across the full spectrum of conflict.

Comanche designers got it right this time. By factoring in evolving threats, the need for deployability, multimissions, multiroles, and ease of upgrade, they designed Comanche for the future. Comanche will be Army aviation's bridge to a transformed force, and will fit the aviation community's new multifunctional battalions much more than a reconnaissance and attack helicopter. Comanche's integrated communications systems, multispectral sensors, mobility, low observability, and high operational tempo (OPTEMPO) combine to provide the ground commander unprecedented information dominance in multiple environments and across the spectrum of conflict. Studies show that when the Comanche is teamed with the Longbow Apache, total force effectiveness is exponentially increased.

Comanche's digital, open-system architecture is designed to facilitate future growth and integration of commercially developed processors and other rapidly evolving technologies. Provisions for growth and changes were planned from the initial design; therefore, Comanche will evolve as technology and the threat evolve.

Comanche was designed as a system, not as a group of individual attributes. Its mission equipment package and airframe combine to form a new tool for the ground commander—one that is ready to support the evolving force.

Onboard Sensors

Comanche's primary target acquisition system is the Second Generation Forward Looking Infrared (FLIR), which increases target acquisition range by 50 percent compared to FLIR systems fielded today. Comanche's futuristic mission equipment package will reduce extended unmasking of the aircraft to evaluate large numbers of false targets. The Aided Target Detection/Classification (ATD/C) System receives sensor inputs, performs a set of pattern-matching operations, and presents targets to the crew for identification. Detected targets can then be shared with other combat assets or be used onboard for an engagement cycle.

The location and symbolic electronic map overlay data, as well as target images or sensor video, can be transmitted to other users. Other Comanche sensors include the advanced solid-state day TV, a radar warning receiver, a laser warning receiver, and the radio frequency (RF) interferometer. Information from these sensors can be fused with fire control data provided by predictive fire control software to convey extremely accurate data.

Part of the Comanche fleet will be equipped with the Comanche radar. Comanche radar has the capability to look at the environment in the millimeter-wave frequency in addition to the infrared (IR) and visible spectrums. The fusing of these two independent ATD/C systems (radar and IR) results in near-zero false alarms. Comanche also has an automated search-on-the-move capability and an automated air search capability that significantly enhances counter reconnaissance and the detection of threat unmanned aerial vehicles.

Comanche's sensors, coupled with the man-in-the-cockpit, allow it to establish a recognition and identification level of situational awareness (SA) that other surveillance assets can't always provide. The Comanche system and its crew identify targets and generate and maintain track files for all identified targets. Comanche will reduce fratricide and provide commanders with unparalleled knowledge of the battlefield. Additionally, Comanche will have provisions for an integrated chemical sensor that automatically detects, classifies, and determines the concentration of chemical agents. Provisions are also provided for airborne radiological survey sensors, and the cockpit is overpressurized with filtered air to allow the crew to operate in chemical-biological environments without being in a full MOPP IV (mission-oriented protective posture).

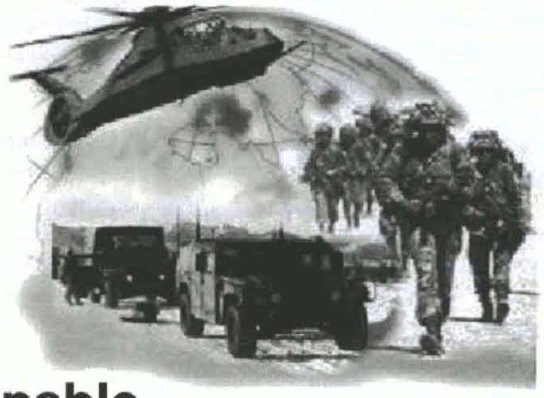
Communications Package

The modern digital battlefield is characterized by Joint Contingency Force (JCF) Operations. These include a combination of Army, Air Force, Navy, Marine Corps, NATO, and/or allied country combat forces. Our national military strategy implies that battlefield geography will vary for most combat scenarios. Consequently, the JCF commander will tailor supporting assets based on mission objectives, intelligence information, and enemy order of battle. The accuracy and timeliness of information distribution will dramatically influence operational success.

Comanche provides a systems approach to ensure the integration of battle command functions. Data exchange and communication protocols are designed for integration with other Services and allies. Shared data will provide a common operating picture up and down the chain of command.

RAH-66 Comanche

Comanche is....



- **Rapidly Deployable**
- **Lethal**
- **Survivable**
- **Sustainable**
- **Versatile**
- **Agile**
- **Responsive**

It Embodies the Army's Vision

Integrated Communication Navigation Identification Avionics (ICNIA) is the term used to describe this system jointly developed with the U.S. Air Force F-22 Program. ICNIA has the ability to dynamically reconfigure and time-share common transmitters, receivers, RF front-end antenna interface filters, integrated microwave assemblies, and other components. Existing and growth capacity will allow the Comanche to meet simultaneity and latency requirements of multiband, multimode Communication Navigation Identification (CNI) signals across the entire CNI spectrum. Comanche is designed to operate with radios and protocols for the digital messages needed to communicate with any joint assets within the theater. Encryption is provided for secure voice and digital information. The aircraft communication system is normally configured for a particular mission, thereby allowing Comanche to receive and provide information to specified operational assets based on a predetermined need. It then has the capability to adapt, in real time, to the changing mix of players, providing relevant sorted critical information to each combat element.

One of the many Comanche mission equipment packages is called Tactics Expert Function (TEF). TEF supports mission planning, cockpit information management, survivability, weapon selection, flight profile management, mission effectiveness, and SA. SA of the digital battlefield is the ability to receive and correctly correlate information depicting the status of friendly and enemy forces. SA takes data from diverse sensors, then correlates and processes the data to enhance the relative common battlefield picture.

Comanche's extensive processing power and algorithms can combine acquired information and data generated by multispectral, onboard sensors to reduce predictive errors and provide an accurate correlated picture. ICNIA can then share the Comanche target data, including images or video, with other battlefield combat assets. Target data accuracy eliminates target ambiguity and uncertainty, thus reducing artillery or other external ordnance expenditure. ICNIA also allows tactical aircraft to use RF fire-and-forget missiles in place of line-of-sight laser-guided missiles, providing a new operational capability when the ground is obscured by weather conditions such as those experienced in Kosovo.

Airframe And Armament

Designed with advanced, low-observable technologies, Comanche can conduct deep operations undetected, providing a level of survivability unmatched by any other aircraft. Low-observable technology has significantly reduced IR, radar, and acoustic signatures. Comanche will have an

embedded air-to-air capability, which requires extreme agility and maneuverability including sideward and rearward flight in excess of 80 knots. It has a self-deploy capability of 1,206 nautical miles and is designed and hardened for shipboard operations and for transportability on U.S. Air Force C-130 and larger aircraft. Comanche provides an inter-/intratheater independence not afforded by current helicopters, freeing up valuable strategic and theater airlift assets. At distances up to 700 nautical miles, Comanche can be on-station in less than 5 hours, ready to fight for the joint commander. Its flexible, lethal armament and fuel options allow Comanche to rapidly reconfigure to meet changing threat or self-deployment requirements.

Sustainability In The Field

The all-composite airframe design provides numerous panels that allow easy access to line-replaceable parts. Other features are integrated onboard diagnostics and prognostics with unprecedented maintainability characteristics. An entire level of traditional maintenance, the intermediate level, has been eliminated, resulting in Comanche sustainment with dramatically fewer personnel and significantly less support equipment than any other comparable helicopter in the world. Comanche requires only 2.6 maintenance man-hours per flight hour, compared to 4.5 for the Kiowa Warrior. Operationally, Comanche provides a greatly reduced in-theater logistics footprint.

Supportability was key in initial contractor selection and continues to be a significant factor in all design trade-off studies. This two-level maintenance system allows Comanche to operate at a higher OPTEMPO in more austere environments. The other key feature Comanche provides is improved reliability. This is because of the embedded fault detection and fault isolation system, which clearly identifies faults and helps maintenance personnel quickly repair or replace faulty items.

Other Comanche Features

A discussion of numerous other integrated Comanche features could fill volumes. Some of the more significant ones follow.

• Comanche is designed for continuous operations in a nuclear, biological, and chemical environment. It is equipped with a molecular sieve, regenerative filter that removes biological and chemical agents from the air. This filter also removes water content from the air so it can be refrigerated to cool the mission equipment package, the cockpit area, and various sensors.

• A helmet-mounted display system provides pilots the capability to perform heads-up flight while enhancing SA. All information needed to maintain aircraft control, operate mission-equipment packages, and use aircraft weapons is provided in the helmet-mounted display.

• The crew stations are functionally identical and are designed to support single-pilot operation from either station.

• Cockpit displays provide imagery and aircraft situation data in a spatially relevant manner. Controls and displays are designed to provide multiple paths for presentation of information and control of subsystems.

• Color digital maps with customized tactical, navigational, and cultural symbology overlays allow crewmembers to selectively arrange and update their map according to the mission.

• An automated aviation mission-planning system with cartridge-portable update and download capability facilitates mission planning, rehearsals, and debriefs, as well as rapid data transfer to the aircraft.

Information Dominance

Fully integrated within the reconnaissance system of systems, Comanche's capabilities provide an overwhelming synergy with members of the joint reconnaissance community. The mission equipment package includes fire control capabilities, integrated FLIR, millimeter wave-length radar, and a suite of processors and communications equipment. This equipment provides capabilities that allow the Comanche to acquire, store, correlate, and present, in a "commander-ready" format, the "must-have" information needed to attain situational dominance. It is a combat system that far surpasses existing platforms in survivability, versatility, maneuverability, lethality, reliability, and cost of ownership.

Comanche's low-observable characteristics protect the element of surprise. When combined with the advanced sensor suite, they provide "effective standoff," allowing the Comanche to remain covert while still operating within the onboard armament system range. This capability also allows the Comanche crew to correctly *identify* targets and reduce fratricide during nonlinear operations.

Delivered Performance

Comanche will have the sensor payload, weapons suite, and data ports to link the elements of the joint or coalition warfight. It can acquire and target mobile launchers or concealed deep threats for U.S. Air Force attack aircraft. It can also assist in maintenance of sea lines of communication or conduct show-of-force operations with the U.S. Navy, and can provide deep reconnaissance, counterbattery, and anti-tank capabilities for the Army's Light Division/Brigade Combat Teams. Comanche delivers dominant maneuver, precision engagement, and full-dimensional protection resulting in full-spectrum dominance.

Conclusion

The U.S. Army must have a credible air armed-reconnaissance capability for operating over the extended distances envisioned in Army XXI warfighting concepts. Comanche, with its system-of-systems mission equipment package, provides a multirole, multimission capability that complements current helicopters, while dominating all operational spectrums of warfare well into this century.

MG JOSEPH L. BERGANTZ is the Program Executive Officer for Aviation. He is a graduate of the U.S. Military Academy and holds master's degrees in aerospace engineering from Georgia Tech and in engineering management from the University of Missouri (Rolla). Bergantz has also attended the Armed Forces Staff College, the Army War College, and completed the Program Management Course at the Defense Systems Management College.

THE AVIATION FORCE MODERNIZATION PLAN

John Johns

Author's Note: The following article contains excerpts and paraphrased portions from the March 2000 Aviation Force Modernization Plan (AFMP) and is only intended to provide an overview. Key objectives of the AFMP, which are consistent with those of the Army modernization strategy, are as follows:

- *Transform to meet future warfighting requirements;*
- *Maintain legacy warfighting capabilities through overmatch, digitization, and recapitalization; and*
- *Focus science and technology (S&T) efforts to enable timely fielding of the objective force.*

Introduction

The AFMP supports the Army transformation by establishing objectives and conditions for continued modernization. Simultaneously, the AFMP emphasizes reduced operations and sustainment costs, recapitalization, improved safety, interoperability, survivability, and refines the aviation force structure. The AFMP addresses the "total Army" to include the Active and Reserve components, and sets forth a sound modernization approach supporting national military strategy, Joint Vision 2010, and the Army vision.

The resulting aviation force structure and capabilities will provide the interim and objective force with the lift, maneuverability, situational awareness, and firepower required to win on any battlefield.

Force Structure

The AFMP defines an objective force structure to meet the Army's goals for strategic responsiveness. Army aviation will move to a four-helicopter fleet: RAH-66 (Comanche), AH-64D (Apache Longbow), UH-60 (BLACK HAWK) variants, and CH-47F (Chinook). Representing a significant departure from the current "pure-fleet" battalions, the aviation multifunctional battalion (MFB) will be the basic warfighting unit under the objective force structure. MFBs and divisional aviation support battalions will have the capability to detach a company-sized task force to conduct autonomous operations while the parent unit operates in a split-based manner from a distant location. In short, MFBs will allow offensive operations to be conducted while providing an asymmetric capability for mobile strike and air maneuver operations.

Transition To Objective Force

The plan identifies a strategy to achieve the objective force. Unlike the Army's ground force, aviation does not have an "interim aircraft." Thus, aviation must transform directly from a legacy fleet to an objective fleet along with modifying the associated force structure. In the near term, the transitional force will begin taking shape in FY02 by establishing authorization levels at 80 percent of the Table of Organizations and Equipment requirement and by using AH-64As and OH-58Ds to fill reconnaissance slots in the aviation brigades until fielding of the Comanche. According to the strategy, all AH-1s will be retired by the end of FY01, and both OH-58Cs and UH-1s will be retired by FY04. Retirement of AH-1s is enabled by providing OH-58Cs to the Army National Guard divisional attack and cavalry units to maintain aviator proficiency until fielded with AH-64s by FY04.

In the midterm, as the Army continues to divest legacy systems, Flight School XXI must be fully implemented, and the Army must continue to convert to MFBs. Flight School XXI will realign flight training to meet warfighting requirements by producing aviators who arrive at their initial duty station basic-mission qualified, proficient in their "go-to-war" aircraft, and ready to begin unit training. To accelerate aircraft retirement, the Army will supply Active components at 80 percent of attack/reconnaissance and utility aircraft requirements. The Reserve component will be provided with UH-60s and AH-64s, but will be resourced at approximately 80 percent of utility and 23 percent of attack/reconnaissance requirements until Comanche is fielded.

In the far term, the Army will complete the transition to the MFB and fielding of the objective force structure requirements. The attack/reconnaissance force in the Corps and the Active component divisional aviation brigades will be at 100 percent of the objective force

Command and control platforms and avionics programs must meet combined arms and joint requirements for command and information interchange and target handover and be compatible, interoperable, and supportable.

requirement by FY15; the Reserve component by FY18.

The AFMP addresses modernization requirements in each key mission area of the objective force: reconnaissance and security, attack, utility and medical evacuation (MEDEVAC), and cargo.

Reconnaissance Fleet

The current fleet of reconnaissance aircraft consists of the OH-58D Kiowa Warrior—a remanufactured OH-58C with target acquisition, avionics, and weapon system upgrades. The OH-58D was designed to bridge the gap until Comanche is fielded. The first of the 387 OH-58Ds in the fleet turn 20 years old in FY06. The Kiowa Warrior safety enhancement program provides minimum improvements to keep the aircraft viable on the battlefield until it is retired. OH-58Ds will be completely replaced by Comanche by FY13. Comanche is an armed-reconnaissance, light-attack helicopter that can perform missions throughout the spectrum of conflict. It provides enhanced survivability, maintainability, lethality, and unprecedented situational awareness. Comanche will also provide tactical targeting, prioritization, and threat information to commanders at all levels. The expected objective Comanche procurement is 1,213 aircraft.

Attack Fleet

The attack fleet today consists of Apache AH-64As and AH-64Ds, which provide unprecedented survivability, firepower, and capability to fight worldwide, day or night, in adverse weather, and on obscured battlefields. The AH-64D Longbow's millimeter-wave fire control radar, radar frequency interferometer, fire-and-forget radar-guided HELLFIRE missile, and cockpit management and digitization enhancements give the Army attack helicopter technological superiority well into the 21st century. Program Objective Memorandum (POM) 01-05 limited funding provides for 530 Longbow production units, leaving more than 200 AH-64As in the fleet. The objective force design and transition plan retains 743 AH-64s and moves toward a full conversion of the AH-64As to the AH-64D configuration. Recapitalization assessments to ensure reliability are ongoing, as are required priority upgrades to the AH-64D fleet, including second generation forward looking infrared radar, advanced rotor and drive systems, modern aircraft survivability equipment, and digitization. In the far term, the 600 AH-64Ds remaining in the fleet reach their replacement point in FY20. Alternatives are a new-start attack aircraft, an upgraded RAH-66, or remanufacture of the AH-64D.

Utility Fleet

The utility/MEDEVAC fleet consists of various models of the UH-60. The UH-60L, a UH-60A upgraded with modern avionics and medical equipment, is programmed to begin in FY02 and continue through FY07. This aircraft will provide "first-to-fight" units with the world's most advanced battlefield MEDEVAC helicopter. (The MEDEVAC mission equipment package will be applied to the UH-60M when the "M" version is available.) The foremost priority in the UH-60 fleet is the UH-60M recapitalization program.

FY03 marks the culmination of the research, development, test, and evaluation efforts and the beginning of UH-60M production. The program will extend the service life of UH-60As and UH-60Ls through the FY25 timeframe and address cockpit improvements necessary to achieve interoperability with ground forces. The Army objective is conversion of 60 UH-60As per year by FY06, the minimum rate required to offset additional fleet aging. The objective number of UH-60 aircraft is 1,437. The UH-60X modernization program will satisfy the objective force range and 10,000-pound lift requirement with a new propulsion and drive system. The UH-60X will also incorporate mission equipment upgrades to include modern aircraft survivability equipment and crashworthy auxiliary fuel tanks.

Cargo Helicopter

The Army's cargo helicopter, the CH-47, is currently being revamped via a recapitalization program that includes an engine upgrade and partial rebuild of the CH-47D to the CH-47F improved cargo helicopter. These efforts buy back CH-47D lift capabilities, insert digital

capabilities, and extend aircraft life by approximately 20 years until the future transport rotorcraft is developed and fielded. The engine upgrade will be applied fleetwide to restore lift capabilities lost through years of aircraft weight gain from modifications and engineering change proposals. The CH-47F modifications are planned for 300 of the 431 aircraft fleet. Another priority CH-47 upgrade requirement is the insertion of modern aircraft survivability equipment.

Interoperability

Command and control platforms and avionics programs must meet combined arms and joint requirements for command and information interchange and target handover and be compatible, interoperable, and supportable. The Army has defined specific milestones, outlined in the Army Digitization Master Schedule (ADMS), to achieve digital capabilities. The first division (4th Infantry Division) was digitized in FY00, the second division (1st Cavalry Division) will be in FY03, and the first corps (III Corps) by FY04. Most aviation digitization programs were initiated prior to ADMS, and their schedules are subject to funding and production constraints. Army aviation has critical communication needs and has approved procurement of systems such as the Improved Data Modem, the Joint Tactical Radio System, and ARC-220 High Frequency Radio to address these deficiencies. Additionally, as early as 2003, Army aircraft will be mandated to comply with global air traffic management (GATM) requirements in Europe followed by other geographical regions. Funding is in place to meet 2003 GATM requirements.

The requirements in the battlespace for seamless sensor-to-shooter connectivity and the Tactical Internet demand compatibility between a maneuverable airborne command vehicle and the Tactical Internet. This will ensure full exploitation of aviation resources.

The objective plan for Army aviation logistics focuses on transitional force recapitalization and modernization and provides the roadmap to full-spectrum logistical versatility.

Weapon System Modernization

Also addressed in the plan is weapon system modernization, which is essential to maintain or improve system capabilities against an emerging threat and to provide for aircraft self-protection. Major weapon system modernization programs include the Longbow HELLFIRE missile, the modernized HELLFIRE, improvements to the Air-to-Air Stinger missile, and the Advanced Precision Kill Weapon System.

Logistics

The objective plan for Army aviation logistics focuses on transitional force recapitalization and modernization and provides the roadmap to full-spectrum logistical versatility. Future aviation logistics will incorporate total automation, strategic modularity, multifunctionality, and a reduced footprint. The plan for aviation logistics will capitalize on the efficiencies, effectiveness, and advancements in equipment, training, and logistical technologies.

Technology Insertion

Also addressed in the AFMP are S&T programs that are needed to develop new aircraft to meet the evolving mission requirements imposed by a changing world situation. Future Army missions will require aircraft capable of flying farther, flying longer, carrying more, surviving more robust and dispersed threats, defeating a wider spectrum of targets in a more varied environmental and topographical setting, and imposing less logistical demands on supply and maintenance resources. To meet these goals in a timely and cost-efficient manner requires an adequate and well-managed S&T effort.

Summary

The AFMP aligns the aviation strategy with the Army vision. Force structure requirements are modified to ensure MFBs meet the needs of Army division requirements and allow divestiture of legacy aircraft. An overall reduction in the number of rotary-wing aircraft, a corresponding reduction in subsystem requirements, and the accelerated retirement of legacy aircraft will allow realignment of aviation funding to help support aviation modernization objectives. While the strategy to achieve the objective force requires significant resourcing commitments, the transition strategy provides an executable interim plan to move aviation toward this goal.

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THE REVIVAL OF ARMY AVIATION

Dr. Thomas C. Pieplow
and Mike Boyd

Introduction

The Army aviation fleet continues to be the most mobile and destructive collection of weapon systems in the Army's inventory. In fact, mission demands for Army aviation weapon systems have never been greater. These systems not only continue to be a vital part of our global defense strategy, but are also a growing component of peacekeeping and humanitarian efforts, domestically and internationally.

From a strategic perspective, more than half of the Army's Active component Apache helicopter battalions were deployed outside CONUS in 2000. Regardless, the Army is accepting and executing this continuing challenge despite four troubling trends:

- Many of the individual aircraft that make up the aviation fleet are reaching the outer edges of their intended service life.
- The fleet is experiencing a continuing upward trend in downtime because of maintenance and component reliability and obsolescence problems.
- Because of the problems associated with aging, the aircraft are often more costly to maintain.
- Virtually every aviation platform needs some degree of recapitalization or modernization.

These problems are not new, nor are they unique to Army aviation. Similar trends can be found in most post-Vietnam War systems, before the development of service-life extension programs. Because of funding constraints and other equally significant considerations, current solutions are often developed in piecemeal fashion, fixing problems as they occur rather than employing a total systems methodology. The Army's challenge today is to develop solutions that are complementary, consistent, and effective. As such, the Army has identified an initiative to craft a comprehensive roadmap to address all readiness and system sustainment issues described above. This initiative is "The Recapitalization of Army Weapons Systems," and applies to 21 specifically selected Army weapon systems. Although the recapitalization initiative is still in its formative stages, it has drawn the attention of the Army Aviation and Missile Command (AMCOM) and the Program Executive Office for Aviation (PEO, Aviation) at Redstone Arsenal, AL. In particular, AMCOM and PEO, Aviation are developing systematic and programmatic processes that define how the Army aviation community will apply recapitalization theory to enhance combat readiness and sustainability of the aviation fleet.

Distinguishing Initiatives

Because terms are sometimes used synonymously for various weapon systems, which results in confusion, it is important to have a common understanding and definition of recapitalization so it is not confused with other efforts. Thus, the Army has identified the following three distinct initiatives:

- **Modernization.** The *development and/or procurement of new systems* with improved warfighting capabilities.
- **Maintenance.** The *repair or replacement* of end items, parts, assemblies, and subassemblies that wear or break.
- **Recapitalization.** The *rebuild and selected upgrade of currently fielded systems* to ensure operational readiness and a "zero-time/zero-mile" system.

There are two distinct facets of recapitalization. First, it includes *rebuild*, which restores a system to a like-new condition in appearance, performance, and life expectancy *as well as* inserting new technology to improve the system's reliability and maintainability. Second, recapitalization encompasses the application of *selected upgrades*. These upgrades are done during the rebuild of a system and add warfighting capabilities.

Why Recapitalization?

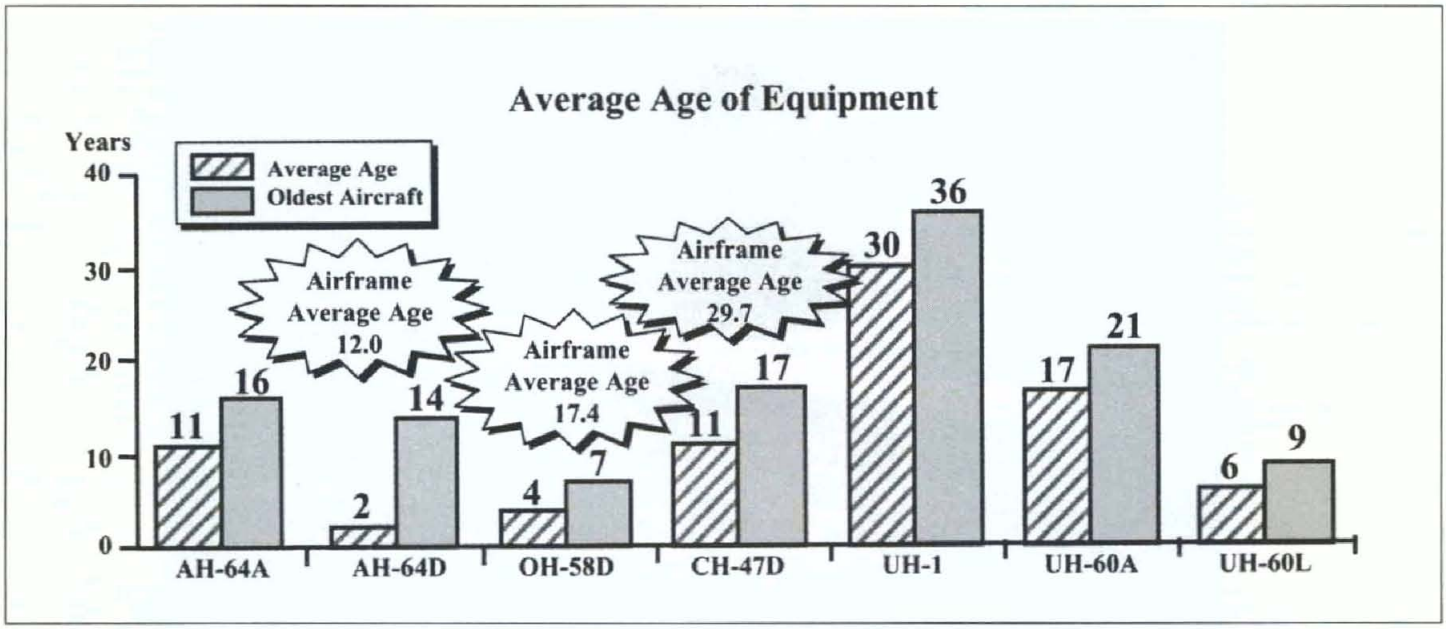
Is there conclusive proof that recapitalization is necessary? Where are the data that support the need for such a significant effort? The message contained in the chart on Page 9 is important to note because it shows the average age of some of the Army's current aircraft. Although the average age of the CH-47D model is 11 years and the oldest CH-47D aircraft is 17 years, the average age of the *actual airframe* is more than 29 years. In other words, the Army has been applying upgrades and improvements to the original Chinook, but must again address the system's airframe and its dynamic components.

Directly related to the aging issue is cost per flight hour—another indicator of troubling trends. Depot level repairable (DLR) costs to field units have generally declined since 1996, but the amount of aviation maintenance support required from civilian contractors has risen dramatically during the past 10 years. Some analyses have shown that almost $200 million is being spent annually on contract maintenance support. A good deal of that support is focused on local special DLR authorizations for selected major components. Such costs can add as much as $1,000 per flight hour to the Apache.

Aviation safety of flight (SOF) messages for Army systems are also increasing. (SOF messages are advisories issued to alert the aviation community of potential problems on particular aircraft.) There were nine SOF messages in 1995. Thirty-four SOF messages have been issued so far in FY00 (at the time this article was written), an increase of 89 percent since FY99.

Component-related SOF restrictions can be costly to the Army in areas other than system readiness. During the past 9 months, Corpus Christi Army Depot (CCAD) expended more than 110,000 man-hours rectifying SOF problems associated with the Apache and Chinook. SOFs place an unprogrammed workload on soldiers and remove operational aircraft from the tactical fleet at a time when the Army can least afford it.

The Army's ability to sustain the aviation fleet has slowly but steadily declined during the past 9 years. Additionally, AMCOM's responsiveness to field requisitions for



components has steadily declined during the past 8 years. AMCOM's goal is to fill parts requisitions within 24 hours, 85 percent of the time, the first time. Presently, this goal is simply not being achieved.

Recapitalization of the total end item and its components will address those safety, readiness, and sustainment issues and, if structured correctly, will maximize the limited fiscal resources. The key issue that system managers face today is creating a recapitalization strategy that complements investment in new technology with equal consideration given to sustainment needs.

Service Half-Life

A goal of the Army and the aviation recapitalization effort is to identify specific maintenance tasks necessary to achieve the service half-life metric of all weapon systems by 2010. The maximum service life of the Apache, BLACK HAWK, and Chinook helicopters is 20 years, making their half-life 10 years. Therefore, the goal of aviation recapitalization is to achieve an average age for the entire fleet that never exceeds 10 years.

How will this be accomplished? When aircraft are inducted into depot maintenance programs at CCAD or assigned to commercial sources, rebuild programs will be designed to ensure each airframe operates safely and reliably for another 20 years. Dynamic and finite life components (those that are in constant motion during aircraft operation, such as engines, gear boxes, rotor blades, and hydraulic pumps) will be replaced with zero-time-since-overhaul components or new components. New technical standards will require a full overhaul. The "inspect and repair only as necessary" standard will not exist. Once an aircraft is rebuilt to the recapitalization standard, it will be equal to a new production item in terms of reliability, performance, and sustainability.

The half-life metric recognizes a positive correlation between the cost to sustain an aviation system and its age. Without recapitalization, three out of four aviation systems will exceed the half-life metric in 5 years. By 2017, more than 60 percent of the fleet will be beyond intended service life. With recapitalization, the curve shifts in a positive direction, with all systems ultimately achieving an average age at or below their half-life.

Disciplined Approach

Recapitalization is not a quick design fix; it must be a disciplined approach consisting of data collection and analysis, testing solutions, and implementing corrective actions—particularly with respect to component overhaul and replacement. All three aviation systems selected for recapitalization are in the early stages of a recapitalization program. The BLACK HAWK UH-60A and Chinook CH-47D are now in a data collection stage to define component changes that must be incorporated into depot maintenance programs performed by CCAD. Beginning in FY02, units will receive UH-60A and CH-47D aircraft with a zero-time life and new technology.

Users will also begin seeing the same recapitalization benefits for the UH-60L, UH-60M, CH-47F, and Apache AH-64A and AH-64D. In addition, these platforms will have greater lethality.

Conclusion

Aviation recapitalization is an initiative designed to improve system reliability, maintainability, and lethality. To accomplish this, a true partnership is being forged among the sustainment community, the science and technology sector, the program management community, and the industrial base comprised of both commercial and organic (government-owned and operated) sources. All are sharing the common objective of ensuring that the Army's aviation fleet continues to be the best in the world.

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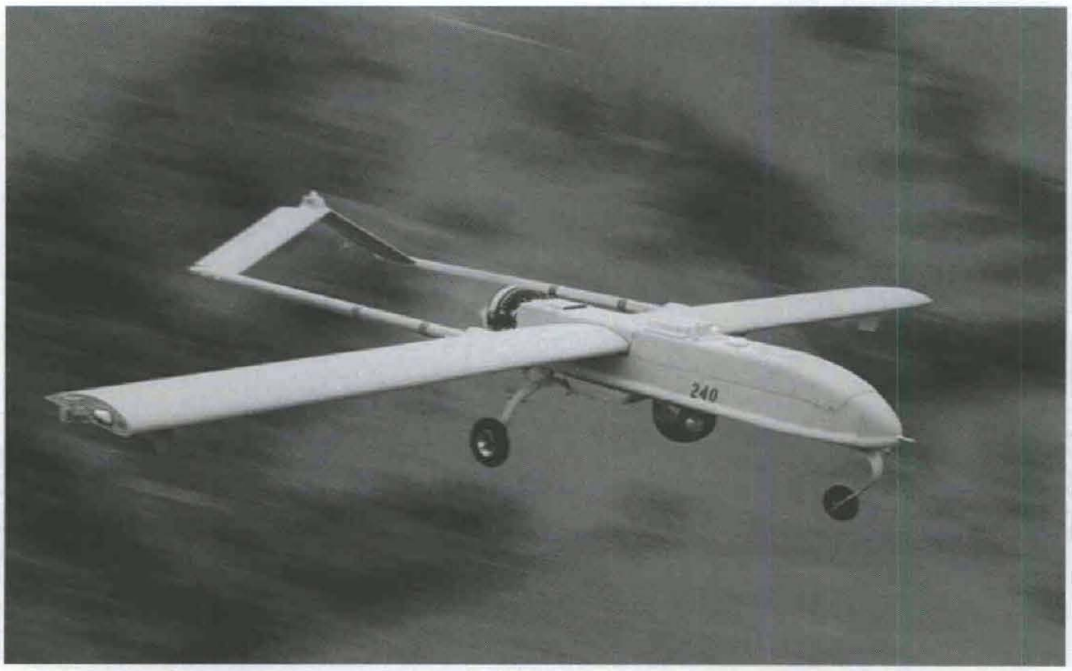


The brigade TUAV system will be the commander's "eye in the sky" to provide continuous, responsive, timely, and detailed situational awareness.

BRIGADE TACTICAL UNMANNED AERIAL VEHICLE SYSTEM

Michael C. Padden

Introduction

The Army is continually working on identifying opportunities associated with new and improved technologies. The Army's vision of the future battlefield indicates that conflicts will be enabled and driven by improvements in friendly and threat situational awareness (SA), command and control (C2), and targeting technologies. Clearly, the foundation capability to fight and win on the future battlefield will be substantially improved by expanding SA through use of redundant systems that provide near-real-time and relevant images. Studies and battlefield experience have demonstrated that this capability will be optimized if it includes space, air, and ground systems. Tactical unmanned aerial vehicles (TUAVs) are a critical part of the triad's air leg.

The brigade TUAV system is being developed as an acquisition category (ACAT) II program under the cognizance of the Project Manager (PM), TUAVs, Redstone Arsenal, AL. This ground maneuver brigade unmanned aerial vehicle (UAV) will allow commanders to see and understand their battlespace and gain dominant SA by providing a near-real-time, highly accurate, sustainable capability for reconnaissance, surveillance, target acquisition, and battle damage assessment. The images and telemetry data from air vehicles (AVs) can be used by brigade commanders and their staffs in the tactical operations center, the brigade's subordinate maneuver battalions, direct support artillery, or supporting aviation assets.

Acquisition Strategy

The Army's requirement to field a capable ground maneuver brigade commander's UAV system as quickly as possible required acquisition reform and streamlining initiatives to be implemented, including cost as an independent variable and trading performance against total ownership cost. Specifically, the acquisition strategy is based on a full and open competition that required offerors

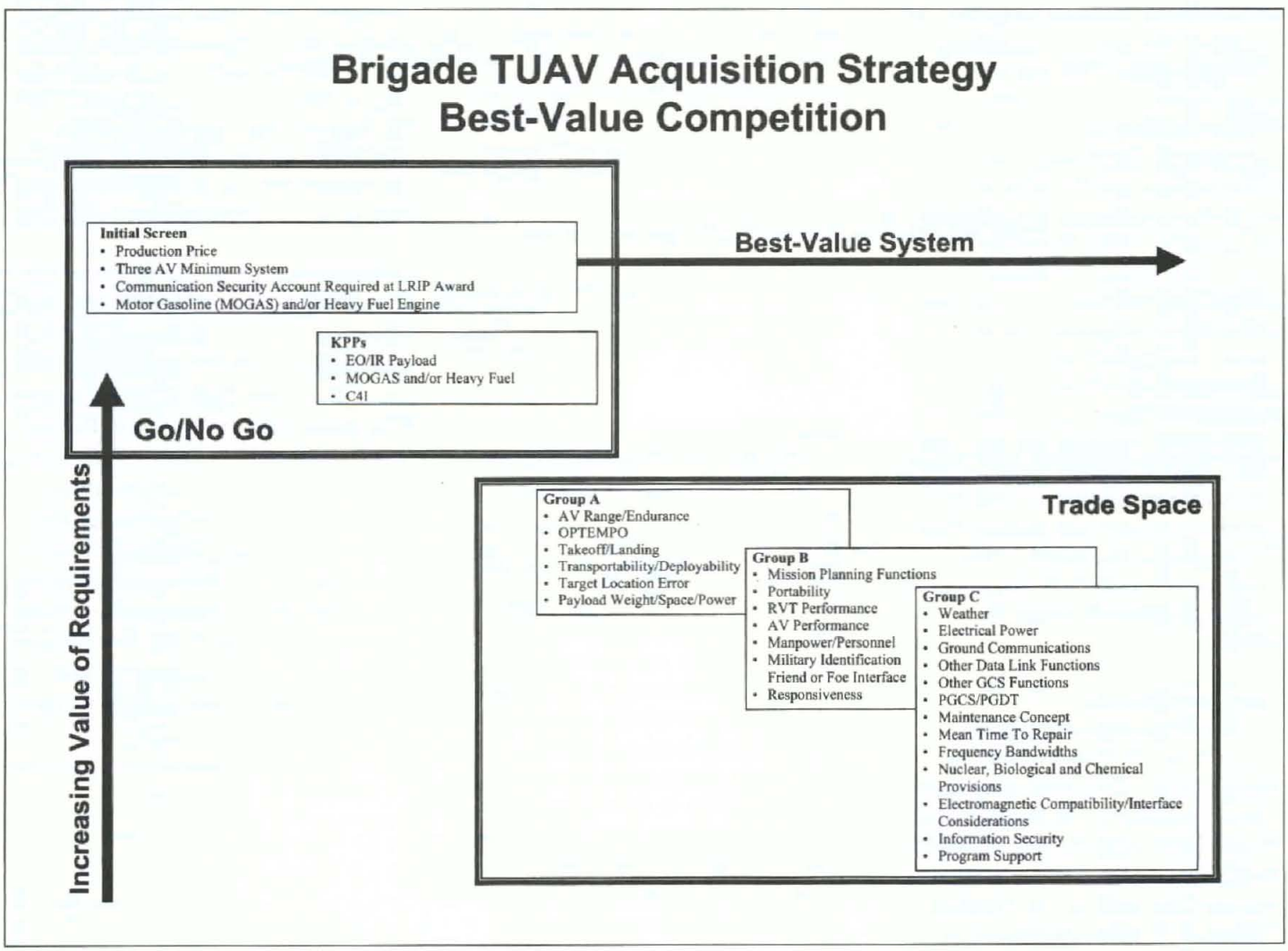
to submit as part of their proposals a performance-based specification and statement of work based on a government-defined statement of objectives.The acquisition strategy included a detailed requirements analysis phase that assessed and categorized all requirements and grouped them into trade space. (Trade space is a technique to prioritize requirements against cost. As shown in the accompanying chart, Group A is a higher priority than Group B, and Group B is a higher priority than Group C.)

During the requirements analysis phase, the PM and combat developer worked together to identify key performance parameters (KPPs) and prioritize the threshold requirements into trade space and group them as depicted in the accompanying chart. The primary ground rule for the prioritization effort was that initial production system configuration would maximize the use of mature, commercial off-the-shelf hardware to provide a "no-bells-and-whistles" system. It was understood that the system configuration would not meet all threshold requirements, and the system would be modified in production through a block-upgrade approach to achieve a time-phased incorporation of objective and growth capabilities.

Source-Selection Approach

A formal source-selection process was used that included a two-phase evaluation. The first phase began with an evaluation to determine whether the offerors' proposals met the minimum-entry requirements. Specifically, the proposals were evaluated based on the full-rate production price, system configuration, communication security, and air vehicle fuel requirement. For those offerors who met the initial screening criteria, a follow-on evaluation of each offeror's oral presentation and supporting documentation was conducted. The first phase concluded with the four best-qualified vendors being awarded firm-fixed-price contracts to conduct a flight system capability demonstration, with options to begin engineering and manufacturing development (EMD) and low-rate initial production (LRIP).

The second phase of the source-selection process evaluated each vendor's system against mission-representative flight scenarios during a system capability demonstration. Vendor performance was evaluated to determine the extent each system met the KPPs and trade space requirements. The demonstration was conducted at Fort Huachuca, AZ, and allowed each vendor a 3-week period to demonstrate performance during operational tempo (OPTEMPO) exercises and technical tests. The demonstration was an invaluable tool in establishing a baseline for assessing the suitability and operational



effectiveness of each system on a directly comparable basis. The results were then used in the technical evaluation of proposals and assessed against cost data to determine best value. Based on this determination, the government exercised the option with the AAI Corp. to enter into EMD and LRIP on a fixed-price incentive basis for its Shadow 200 System to fulfill the Army's brigade TUAV requirement. (Shadow 200 is the contractor's name for the brigade TUAV system.)

System Description

The basic brigade TUAV platoon is comprised of three air vehicles, two ground control stations integrated on High Mobility Multipurpose Wheeled Vehicles (HMMWVs), four remote video terminals (RVTs) and antennas, one portable ground control station (PGCS) and portable ground data terminal (PGDT), one HMMWV AV transport and launcher trailer, one HMMWV personnel and equipment transport and trailer, and associated maintenance equipment.

The brigade TUAV air vehicle has a wingspan of 13 feet, can carry a payload of 60 pounds, has a gross takeoff weight of more than 300 pounds, and can loiter above a target area 50 kilometers distant for more than 4 hours. The ceiling for the air vehicle is 15,000 feet. It is equipped with a basic electro-optic/infrared (EO/IR) payload that will be upgraded as part of a block-upgrade program. The system is compliant with the Joint Technical Architecture-Army and Defense Information Infrastructure Common Operating Environment and has command, control, communication, computers and intelligence (C4I) connectivity to the Joint Surveillance Target Attack Radar System Common Ground System, Advanced Field Artillery Tactical Data System, and the All Source Analysis System.

Program Status

The brigade TUAV Program is in Acquisition Life Cycle Phase II, EMD. The program is scheduled to begin Initial Operational Test and Evaluation (IOT&E) in April 2001, then undergo its Milestone III review with the Army Acquisition Executive for approval to begin production, fielding, deployment, and operational support in September 2001. To accelerate the production and fielding schedule, the acquisition strategy includes a second LRIP decision in February 2001. Based on approval of the second LRIP procurement, the prime contractor will be able to further refine and improve manufacturing and production processes and build up to full-rate production. Additionally, an approximate 7-month gap in the production process between the first LRIP and full-rate production will be eliminated. Another benefit of the LRIP procurement is that it permits the Army to field a brigade TUAV platoon 10 months earlier than originally planned. Based on the accelerated acquisition strategy, the initial operational capability of the brigade TUAV is planned for the second quarter of FY02.

UAVs, with their many payloads, will be the "dominant eye" for the future force commander and a significant force multiplier.

Block Upgrades

The brigade TUAV program will employ a block-upgrade approach throughout the system's life cycle. This approach is a key element of the acquisition strategy that will allow the PM to optimize the use of program resources to enhance system configuration. Block 0 is the configuration shown during the system capability demonstration. The Block I configuration will be delivered as LRIP and be compliant with the KPPs and the trade space requirements proposed by the prime contractor in its best-value system. The Block II configuration will be delivered in full-rate production, will consist of the Block I configuration, and will incorporate modifications identified during IOT&E and other improvements to meet the Operational Requirements Document threshold and objective requirements. Further upgrades beyond Block II will be incorporated based on future user requirements and the availability of horizontal technology integration insertion opportunities.

Conclusion

As the Army transforms into a rapidly deployable objective force, the role of UAVs will become even more significant. The objective force will combine the lethality and survivability of a heavy unit with the deployability of a light unit. To accomplish this, a significant portion of the objective force will consist of scouts and military intelligence units equipped with UAVs. The brigade TUAV will be the first step toward this capability and will be the basis of a single Army UAV system comprised of common C2 elements and mission-specific AVs and payloads. Clearly, the future is bright for Army UAVs. UAVs intended for brigade and higher headquarters in the near term will be joined by micro- and mini-UAVs for the small unit commander. UAVs, with their many payloads, will be the "dominant eye" for the future force commander and a significant force multiplier.

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MAKING IT ALL HAPPEN: THE COMBINED TEST TEAM CONCEPT

Courtland C. Bivens III and
MAJ David R. Arterburn

Introduction

The U.S. Army aviation community's mission is to ensure that the most technologically advanced equipment is available for use by the U.S. Armed Forces. The U.S. Army Aviation Technical Test Center (ATTC) at Fort Rucker, AL, focuses its test and evaluation (T&E) mission on planning, conducting, analyzing, and reporting on airworthiness qualification and developmental tests of most aviation equipment (e.g., aircraft, aviation systems and subsystems, and related equipment). The purpose of this T&E effort is to ensure that all equipment used in the field is safe and of the highest quality for the men and women who use it.

Various DOD organizations test equipment to determine whether the manufacturers' operational limits are accurate and whether established requirements are realistic and achievable. These DOD organizations conduct performance, compatibility, and effectiveness tests on equipment, asking questions such as "Do all parts taken together work as a whole?" Alterations and additions to the equipment are monitored and tracked throughout their life cycle.

As one of six test centers assigned to the U.S. Army Developmental Test Command at Aberdeen Proving Ground, MD, ATTC performs aircraft-related testing that includes initial envelope expansion and hardware and software changes. ATTC also monitors contractor and government qualifications.

To increase efficiency, ATTC has begun implementing the Combined Test Team (CTT) concept. The CTT concept consolidates all contractor, subcontractor, and government development and test personnel (and assets) to monitor all test and data requirements associated with fielding weapon systems. For aircraft-related testing, this includes all initial envelope expansion, hardware and software changes, and both contractor and government qualifications. DoD Regulation 5000.2-R states that integrated product teams be used to the fullest extent possible for product acquisition to allow for early identification and resolution of problems when the cost to implement changes are low and to decrease overall program risks.

CTTs are designed to eliminate redundant government and contractor testing, thereby mandating that traditional independent verification and validation be abandoned in favor of a joint approach. CTTs also allow early government systems evaluation, resulting in earlier feedback to the contractor and sponsor. Finally, CTTs establish a government capability for organic support (i.e., establish expertise and methods for testing from within as opposed to testing from the outside). "Piggybacking" off other organizations greatly reduces the duplication of flight test efforts. As long as the data are accurate, independent reporting can still be accomplished because these data can be used universally for identical conditions.

The CTT concept will produce a thoroughly researched product well within the budget constraints of the past 10 years. It is essential to reduce costs and yet still provide the finest equipment. By conserving resources, the Army aviation community has succeeded. The following example illustrates the effectiveness of the CTT approach.

Wide Chord Blade

The wide chord blade (WCB) (accompanying photo) was designed to increase the hover payload, level flight, and maneuvering performance of the UH-60 family of helicopters, especially at high gross weight and high-density altitudes. The WCB was also designed for use on the S-92 currently undergoing flight testing for civilian certification. From November 1993 to October 1995, Sikorsky Aircraft Corp. conducted initial developmental flight testing of the WCB under Sikorsky independent research and development funding. Six configurations of the WCB were flown on a single UH-60A/L test aircraft, and two

UH-60 wide cord blade modification

configurations were flown on production UH-60L aircraft. The production WCB is made from the same mold as the S-92 rotor blade and incorporates a wider chord; advanced airfoils; and a swept, tapered, anhedral blade tip.

In September 1998, the Defense Advanced Research Projects Agency, under the DOD Commercial Operations and Support Savings initiative, funded the Dual-Use Application Program (DUAP) for the WCB to reduce the time and cost associated with qualifying commercial off-the-shelf equipment for use on military hardware. The DUAP resulted in a 2-year agreement between Sikorsky and the U.S. Army to share costs associated with qualifying the WCB. A natural extension of the cooperative aspects of this agreement involved implementing an integrated process team (IPT) to develop an airworthiness qualification specification (AQS) and a combined test team for executing the flight test program.

In April 1999, the Program Manager's Office, Utility Helicopter (PMO-UH) formed an IPT to develop an AQS for the wide chord blade. The IPT included personnel from ATTC, the U.S. Army Aviation and Missile Command (AMCOM) Aviation Engineering Directorate, and Sikorsky. The government and Sikorsky approved the AQS in May 1999. As part of the AQS, the IPT recommended that the government and Sikorsky form a CTT to flight test the wide chord blade. The wide chord blade combined test team consisted of personnel from the AMCOM Aviation Engineering Directorate, flight test personnel from ATTC and Sikorsky, and management personnel from PMO-UH. The CTT was responsible for developing and executing a flight test plan for the qualification of the WCB installed on UH-60L and MH-60K helicopters. All recommendations made by the WCB CTT required approval by the Sikorsky Quality Assurance Board (QAB). This board included senior Sikorsky engineers and managers as well as a government representative from the AMCOM Aviation Engineering Directorate. The CTT finalized the flight test plan in January 1999, and the QAB approved the flight test in March 1999. The first flight of the WCB occurred March 25, 1999. Flight testing of the WCB on the UH-60L was completed in the third quarter of FY99 and on the MH-60K during the fourth quarter of FY99.

One of the challenges of implementing the CTT was overcoming the institutional practices of both government and contractor engineers. The government and contractor test communities have typically conducted separate flight tests on the UH-60 and have established flight test techniques and data collection procedures to support qualification.

The CTT's challenge was to review the test techniques, data collection requirements, and aircraft configurations required by both test communities to find ways of combining tests to minimize the time required to complete the flight test. The CTT eliminated many of the cost and schedule implications of redundant flight testing typically required by the contractor and government test organizations prior to qualification. Furthermore, the flight test was conducted under a contractor flight release (CFR) approved by the AMCOM Aviation Engineering Directorate, whose engineers were directly involved in developing the flight test plan. This integrated approval process made information required for the CFR readily available and minimized the time required for CFR approval.

Conclusion

In the current environment of shrinking Defense acquisition dollars and fewer technical personnel to accomplish aviation testing and evaluation, innovative test strategies are a requirement, not a luxury. Emphasis has been placed on decreasing procurement times, increasing performance, and reducing test and evaluation costs at all levels of the Army acquisition process. The CTT approach with joint contractor-government testing represents the evolution of testing methodology and has benefited both the government and industry. The WCB is an example of the successful application of the CTT concept in developmental testing.

For the CTT concept to work, chosen personnel must provide a balance of experience, expertise, and training. A CTT's development and continued success depend on trust and confidence. All CTT members must also hold preliminary data in confidence. In early developmental flight testing, the contractor must have an opportunity to adjust to the design without fear of scrutiny. This ensures that no invalid or inaccurate information passes through government channels to decisionmakers. Aircraft modification is a normal step in development, and interim aircraft configurations may not resemble the final fielded configuration. The old adage "The only thing you have is your reputation" is sound advice in the CTT.

While the CTT concept can be extremely positive and successful in all quantifiable regards, several significant personnel issues must be examined carefully prior to and continually throughout CTT formation. A team must be structured to succeed without violating the contractor's responsibility for the product. A Memorandum of Agreement can be established stipulating the contractor's ultimate responsibility and identifying the team leadership. Another key factor that must be addressed is the establishment of parallel supporting organizations, facilities, and equipment. In the future, the CTT concept will be the cost-effective way to conduct tests and evaluations and will become even more essential to materiel development within the U.S. military.

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Preparing For Recapitalization . . .

CORPUS CHRISTI ARMY DEPOT PARTNERS WITH INDUSTRY

Kresten Cook and
Carol Bullington

Introduction

Depot-level maintenance is a dynamic mix of changing priorities and stringent workloads. With more than 30 percent of the Corpus Christi Army Depot (CCAD) workload coming from cross-Service customers, this makes depot-level maintenance more complex. Like the workforce at most DOD depots, a good portion of the CCAD workforce is eligible to retire during the next few years, potentially adversely impacting CCAD operations. One approach to deal with this is to establish partnering efforts with industry. Effective partnering will ensure that the CCAD workforce is provided with the right tools at the right place at the right time.

It makes good business sense to complement our depot-critical skills through partnerships. We expect to improve capacity utilization at CCAD and, ultimately, improve readiness by having more systems ready for flight than in the logistics pipeline. We have core capabilities at CCAD, which when leveraged with private industry capabilities, will improve our ability to meet the needs of the Army's recapitalization strategy.

Recapitalization Strategy

CCAD Commander COL Mitch Dockens is leading the CCAD/industry partnering effort. CCAD's leaders see a methodical, strategic approach to partnering as a definite asset to modernize the Army's aging fleet. It will take smooth work integration at CCAD and smart partnering to move from the current inspection-based depot repair approach to the robust rebuilding effort envisioned in the recapitalization strategy.

In preparation for these partnering efforts, CCAD's leaders have been implementing the depot's strategic plan. Initiated in 1998, the 5-year plan targets large cycle time reductions, increased workforce flexibility and responsiveness, and reduced maintenance costs through re-engineering depot processes.

Within the constraints of limited funding, successful CCAD/industry partnering efforts will be judged in terms of definitive cycle time and inventory reductions. That's a tall order. It's taking focus and commitment, but CCAD is up to that challenge. The depot's new Business Development Office is focusing on partnering to build a strong foundation to support all weapon systems and subsystems overhauled and maintained at CCAD.

Preparation Tactics

Now to the specifics of our preparation. The CCAD Business Development Office is developing partnerships based on the regulatory statutes governing public-private partnerships. Four sections of U.S.C. Title 10 cover about 70 percent of current partnerships in depot maintenance. Partnering tools include workshare agreements, virtual prime vendor support agreements, direct vendor deliveries, and Memorandums Of Understanding (MOUs). The tools that are used by the Business Development Office in each case will be based on what is ethical, legal, and safe, and that which makes good mutual business sense for CCAD and its potential partners. For example, workshare through MOUs allows CCAD to perform a specific portion of an entire work package. In workshare, each partner contributes technical, practical, or equipment capabilities to increase efficiency through the complementary use of resources. Capital investments such as one-of-a-kind airframe fixtures and expensive test cells will serve as decision points for entering such partnering arrangements.

Development of sound partnerships includes learning from those installations currently working effective public-private partnerships. It has meant research, study, and asking questions of mentors such as Leslie Mason, Anniston Chief Legal Counsel, and Gilda Knighton, Anniston Army Depot Business Office. The September 1999 publication *Public-Private Partnerships for Depot-Level Maintenance*, prepared by the Office of the Deputy Under Secretary of Defense (Logistics), is a good information source and has helped us understand the positive impact that

current DOD partnering efforts have had on DOD capacity, depot-level maintenance rates, and readiness impacts.

Applying Partnerships

CCAD leaders have entered into MOUs with four major manufacturers: Sikorsky Aircraft Corp., Honeywell, the Boeing Co., and General Electric (GE) Aircraft Engines. The goal is to combine the unique attributes of both the depot and the private sector to integrate Defense production, engineering, and logistics capabilities; and to eliminate duplication of Defense resources. While these MOUs are not contractually binding, they have been entered into in the spirit of cooperation and exploration. We expect to continue building upon these MOUs with industry partners to maximize cross-pollination of ideas, best practices, and technological advances.

We're intending to use an integrated approach so that T700 engine parts can be forecasted, purchased, and shipped to an onsite staging warehouse where they will be put into kits to support the Apache and BLACK HAWK helicopters. As a tenant organization at the Naval Air Station, Corpus Christi, TX, CCAD is working with Navy Public Works to acquire an operations warehouse for UH-60 major structure repair kits as well as the T700 engine kits. The goal is to mesh CCAD's overhaul experience with the technical experience provided by a private-sector partner, which yields direct delivery for CCAD workstations. For example, the current method is to put an aircraft into the depot work process, inspect it, identify major structural components needing replacement, order them from original equipment manufacturers, and receive the parts within 18 months. Under the virtual prime vendor approach, CCAD will have a "virtual kit" of long lead time major structural components available onsite from the original equipment manufacturer (OEM) within 1 day. Depot artisans deserve just-in-time material management—the right materials at the right place at the right time—thereby reducing the need to have surplus inventory.

Key to our planning will be the need to balance our process lines to return overhauled systems to depot customers—field units to whom readiness "rates" equate to training opportunities and flyable hours.

We must refine the partnering strategies we undertake while maintaining stringent quality standards for our aviation customers. We expect future alliances to allow CCAD to be the focused overhaul process provider and maintenance integrator to our customers. We'll integrate the core competencies of OEMs and other commercial sources to squeeze time for our aviation customers and, together, improve the field reliability and maintainability of overhauled systems.

Admittedly, it's a paradigm shift. We at CCAD, as a workload integrator, must understand core competencies. Only then can we take full advantage of leveraging our competencies (once termed competitive advantages) with those that potential industry partners offer. Together, we have an extremely important opportunity and responsibility to achieve greater efficiencies as well as to compress repair and maintenance timeframes for the fleet. It ultimately reduces the logistics footprint where we can combine our strengths in achieving these goals. It becomes a matter of understanding that leveraging and synergy are the innovations to achieve the zero-time/zero-mile platform that is the Army's strategy for the helicopter fleet.

These MOUs have Sikorsky, GE, Honeywell, Boeing, and CCAD working together to develop partnering and recapitalization efforts. The language that is evolving is new, based on that middle ground between the public and private sector. It's a new perspective in which we shift from win-lose to working together to achieve common repair-cycle reduction and recapitalization goals.

Summary

Partnerships have their risks and rewards. Together, we'll become much more attuned to accurate forecasting data. We'll work together with the understanding that forecasting the need for specific quantities of materials represents risk to our partners, while low inventories mean extreme risk to depot production and Army readiness. Partnering will mean maintaining solid production data from OEMs—a must for reliability centered maintenance, a cornerstone of recapitalization.

Finally, the historical nonprofit and profit dividing lines between public and private organizations must be addressed. With the funding issues it faces, CCAD will leverage the value of fair and reasonable compensation for unique competencies with its capability to minimize cycle times and inventory investment. As a public entity, CCAD will concentrate on a best-value approach for the long term, using business and operations analysis to build partnerships for mutual benefit, and to make sound, ethical, legal, and financial decisions. Ultimately, our goal is to achieve the near-zero-time standard of recapitalization and to improve the helicopter fleet for our customers—the soldier, airman, Marine, and sailor.

For more information about CCAD, access our Web page at **http://www.ccad.army.mil**. An online tour is available by double-clicking CCAD's brochure on the left margin of the home page.

Postscript: In September 2000, just prior to this magazine going to press, the Army's Aviation and Missile Command, CCAD, and GE signed a $46 million technical support/parts logistics agreement to reduce T700 engine depot repair turnaround time by 50 percent and increase T700 time on-wing by 100 percent.

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APACHE PRIME VENDOR SUPPORT

Lessons Learned

Gary S. Nenninger

Introduction

More than 6 years have passed since the Clinton administration and Congress directed DOD imperatives for acquisition and logistics reform.

Two pilot programs—the M109A6 Paladin self-propelled Howitzer and the AH-64 Apache—were designated by the Army in spring 1998 for implementation of these imperatives. Following this action, in June 1998, an agreement was reached for Apache using a novel approach called the Apache Prime Vendor Support (PVS) contract. All of the directed imperatives were met by this contract. However, this firm-fixed-price agreement was returned without action by the Army 15 months later because of the potential financial management impact to the Army Working Capital Fund (AWCF).

On Aug. 8, 2000, Dr. Jaques S. Gansler, the Under Secretary of Defense for Acquisition, Technology and Logistics, sent a memorandum to the Army recommending implementation of PVS with proposed changes to the negotiated agreement regarding sale of AWCF-owned stock. While Army evaluation of Apache PVS Program options within the AWCF continues, I wish to focus my comments on the benefits of the proposed contract and how we may proceed with this and similar programs in the future.

Background

There has been much policy discussion and rhetoric about acquisition and logistics reform, but little tangible progress. Numerous high-level panels, including the Defense Science Board and the DOD Panel on Commercialization, have strongly recommended the adoption of commercial best practices and competitive outsourcing of both major logistics functions and life-cycle support of individual weapon systems. Review of major commercial operations by these panels indicates the potential for 25-30 percent savings in DOD's $62 billion annual support expenditure.

Congress has consistently supported acquisition and logistics reform with formal legislative requests. For example, in Section 912 of the National Defense Authorization Act for Fiscal Year 1998, Congress directed the Secretary of Defense to submit an implementation plan for streamlining DOD's acquisition organizations, workforce, and infrastructure. As part of the plan, the Secretary of Defense directed each military department to ensure entire life-cycle product support for at least 10 designated significant programs. Responsibility for this rested with the program manager. Section 816 of the National Defense Authorization Act for Fiscal Year 1999 directed the Secretary of Defense to designate 10 "Pilot Programs for Testing Program Manager Performance of Product Support Oversight Responsibilities for Life Cycle Acquisition Programs." In February 1999, the Apache PVS was designated as an approach to help fulfill this requirement. This was based on the fact that the Apache contract guaranteed significant reductions in operations and sustainment costs and improvements in parts availability and aircraft readiness. In addition, the contract provided substantial funding for reinvestments in modernization.

Underlying all of this emphasis on acquisition and logistics reform is the critical need for fundamental changes in product support of systems that must be deployed on short notice. Rapid deployment of military forces demands an agile, almost just-in-time pipeline of munitions, fuel, repair parts, and technical expertise with a small "footprint." This effort responds to Army Chief of Staff GEN Eric K. Shinseki's initiatives regarding the future Army and force structure.

Apache PVS Meets Army Needs

Apache PVS is a total systems approach that ties the contractor's economic success to the operational profile and readiness of the soldier in the field. The PVS firm-fixed-price-per-flying-hour

Apache PVS is a total systems approach that ties the contractor's economic success to the operational profile and readiness of the soldier in the field.

contract includes shared savings provisions. The contract also calls for both a 16-percent reduction in flying hour costs and a 20-percent increase in the annual flying hour program to support contingency operations and increased training requirements. A reinvestment of more-than $320 million (20 percent of the contract value) is required to achieve reliability improvements and modernization. In addition, there are contract incentives for additional cost reductions and reinvestments for any potential follow-on contract.

Performance-based guarantees for requisition fill time and nonmission capable supply response time ensure reduced soldier workload and improved readiness. These benefits are enhanced by the addition of more than 60 technical and supply support workers at the unit level to issue material and assist in troubleshooting, repair, fault diagnosis, and personnel training. We believe that Apache PVS still contains many beneficial features that support the vision of a leaner, more responsive Army in the future.

Why Was The Initial PVS Contract Returned?

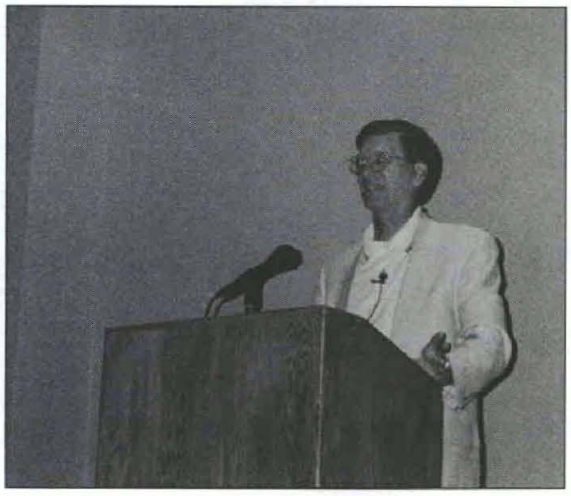
Team Apache Systems, a Boeing-Lockheed team, was notified Oct. 4, 1999, that the June 1998 negotiated contract could not be executed because of a DOD policy decision stating that funding for PVS could not be removed from the Army Working Capital Fund. Apache represents almost 20 percent of the AWCF activity. There was also concern that if the Apache inventory was decapitalized or removed from the AWCF, remaining systems would realize a significant increase in recoverable costs or surcharge. A United States Army Audit Agency (USAAA) review in April 1999 concluded that while Apache did represent a substantial portion of the AWCF and some short-term impact may occur, there would not be an appreciable long-term impact on the AWCF if appropriate infrastructure adjustments were made. The USAAA also certified an enterprise analysis directed by the Assistant Secretary of the Army for Acquisition, Logistics and Technology that substantiated significant savings to the Army during a 20-year period even without any reduction in the fixed overhead costs borne by the AWCF surcharge.

It is disconcerting that industry may be sent the wrong message, particularly after investing considerable financial and personnel resources in the Army decision process. I believe that the real problem with PVS was much deeper and broader. For several significant reasons, the PVS initiative eventually died under its own weight.

Conclusion

The lessons learned from both the aborted Paladin program and the Apache PVS initiative are many and varied. Apache PVS, with its guaranteed cost savings, performance, and readiness benefits to the soldier, seems to have suffered death by analysis. Millions of dollars in savings have already been lost and critically needed modernization efforts such as target acquisition designation system and pilot night vision system reliability improvements must now be tracked separately under individual efforts. The question facing us today is: *Is there a real commitment to reform or are we mired in the bureaucracy of "Business as Usual"?* Clearly, the need to reform is far ahead of either our willingness or ability to reform.

GARY S. NENNINGER is the Apache Deputy Program Manager. He was previously assigned as the Chief, Logistics Management Division, Apache Program Management Office. Nenninger holds a B.A. from the University of Missouri and has attended the Defense Systems Management College Program Manager's Course at Fort Belvoir, VA.



Paul J. Hoeper, ASAALT and AAE

Annual Army Acquisition Workshop . . .

REVISITING THE ARMY TRANSFORMATION

Sandra R. Marks

Introduction

One year ago, in presenting his vision of the Army of the 21st century, Army Chief of Staff GEN Eric K. Shinseki called for the transformation of the Army into a force that is strategically responsive and dominant across the full spectrum of operations.

The response to this call was clearly evident at the annual Army Acquisition Workshop in Orlando, FL, Aug. 23-25, 2000, where more than 200 conferees convened to examine key initiatives related to "Transforming The Force." Attendees included program executive officers (PEOs); deputies for systems acquisition (DSAs); acquisition commanders; and product, project, and program managers (PMs).

MG William Bond, Commanding General, U.S. Army Simulation, Training and Instrumentation Command (STRICOM), welcomed participants and introduced Paul J. Hoeper, Assistant Secretary of the Army for Acquisition, Logistics and Technology (ASAALT) and Army Acquisition Executive (AAE). Hoeper opened the workshop by acknowledging the pivotal role the acquisition, technology, and logistics community will play in the transformation effort. Hoeper noted the importance of Army recapitalization efforts to ensure soldiers have what they need on the battlefield. Recapitalization, he said, is key to both readiness and the transformation. Hoeper also noted that logistics reviews are essential and that logistics issues must be addressed at the outset of the acquisition process. In looking beyond interim brigade combat teams (IBCTs)—the first step in the Army's transformation—Hoeper said aviation and missile defense will be essential despite the emphasis on land vehicles. Throughout the transformation, Hoeper concluded, the soldier will be the focus of attention.

Offering Perspectives

Following Hoeper's address, a number of updates on various ongoing transformation initiatives were presented. Many shared some of the challenges ahead.

MG Joseph M. Cosumano Jr., Assistant Deputy Chief of Staff for Operations and Plans for Force Development, HQDA, outlined some of the operational and acquisition challenges that must be addressed during the transformation process, including the deployment of forces; executing various warfighting scenarios; and redirecting research, development, and acquisition resources.

LTC Marion H. Van Fosson, Product Manager, Future Combat Systems (FCS), opened his remarks by stating that U.S. Forces face complex environments and missions. His office, he said, is leveraging all available technological opportunities to get the best ideas included in the design of FCS. The ultimate goal is to provide soldiers with the best combat-fighting system possible.

COL William Bransford, Deputy Chief of Staff for Combat Developments, Army Training and Doctrine Command (TRADOC), stressed that the Army cannot afford to take a "timeout" during the transformation. He called for tough, realistic training programs, strong leadership, and outstanding technology and soldiers to help the Army gain the lethality, mobility, and survivability overmatch it needs to defeat the enemy. All of this is even more important because today's Army faces an operational environment where new enemy

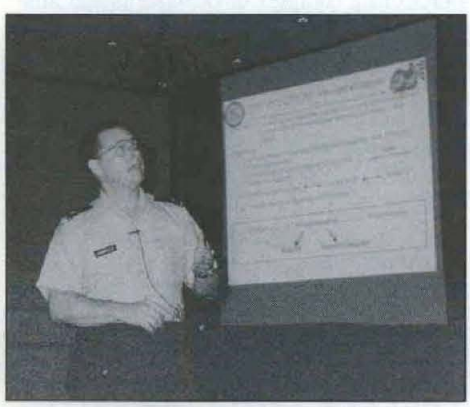
forces, weapons, and tactics have fundamentally changed the nature of combat.

COL William Ehly, Director, Systems Integration Directorate, OASAALT, acknowledged that the OASAALT perspective is in sync with TRADOC, the Office of the Deputy Chief of Staff for Operations and Plans, and the Office of the Deputy Chief of Staff for Logistics. The OASAALT and the Army Acquisition Corps, he added, fully support the Army Chief of Staff's transformation goals.

Frank Apicella, Technical Director, Army Evaluation Center, Army Test and Evaluation Command (ATEC), presented an ATEC perspective. Two of the key actions ATEC performs for the transformation effort are refinement of the Army's initial operational test and evaluation strategy and supporting TRADOC in assessing transformation training of the first battallion of the IBCT.

Speaking from the warfighter's perspective, COL Charles Guta, Principal Assistant Responsible for Contracting, U.S. Forces Command (FORSCOM), said FORSCOM also is in sync with the Army Chief of Staff's transformation goals. Challenges to achieve these goals include equipping IBCTs with an initial operational capability and acquiring the equipment and systems necessary to maintain ongoing readiness and operational tempo.

MG Charles Cannon Jr., Acting DCSLOG, praised the acquisition and logistics communities for establishing one of the Army's "best-ever" partnerships. This partnership, he said, presents a great challenge while at the same time offers the potential to achieve great things for the Army. Cannon also emphasized the importance of the legacy force, the interim force, and the objective force in the Army's transformation. Ultimately, Cannon concluded, the focus will be on the warfighter's needs.



COL Glenn J. Harrold, Assistant Deputy for Readiness, Office of the Deputy Assistant Secretary of the Army (Logistics)

COL Glenn J. Harrold, Assistant Deputy for Readiness, Office of the Deputy Assistant Secretary of the Army (Logistics), focused on recapitalization as a method to deal with the impact of aging fleets on our current forces. Recapitalization, he said, will allow the Army to restore systems to a like-new condition, thus improving their appearance, performance, and life expectancy. The insertion of new technology will also be used to improve reliability and maintainability. Harrold concluded that the concept of recapitalization is very simple, but execution is very challenging.

Keith Charles, Acting Director, Acquisition Education, Training, and Career Development, Office of the Deputy Under Secretary of Defense for Acquisition Reform, departed from the general workshop theme to present a personnel management overview on "Shaping The Workforce for the 21st Century." Charles directs a special task force to determine future personnel requirements for the Acquisition Workforce. His riveting address, supplemented by "hard-hitting" statistics, provided some of the initial findings of his task force. The impetus for examining future recruitment and hiring practices, Charles said, is the fact that 50 percent of the Acquisition Workforce will be eligible to retire by 2005. Changes in workforce demographics, in workforce education and skill requirements, and in workforce values will require different employment approaches, he added. Charles noted that new employees will have different employment options, different career expectations, and will be expected to lead and be multifunctional. Among the strategies suggested by the task force to deal with these changes is development of a human resources strategic management plan. That plan will identify what needs to be done and who is needed to do it. In the area of recruiting, the task force suggests establishing recruiting programs, strategic partnering efforts with universities and the private sector, and marketing DOD as an attractive place to work. Charles concluded by stressing the urgency of addressing the challenges unveiled by his task force.

Charles' presentation was followed by an awards ceremony honoring PMs and Acquisition Commanders of the Year. (See article on Pages 22-23 of this magazine.)

MG David Gust, Army Materiel Command Deputy Chief of Staff for Research, Development and Acquisition, concluded the opening day's briefings with an amusing historical perspective on the establishment and sustainment of PEOs.

MG Joseph M. Cosumano Jr., Assistant Deputy Chief of Staff for Operations and Plans for Force Development, HQDA

Dinner Speaker

Gil Decker, Executive Vice President, Engineering and Production, Walt Disney Imagineering, and former Assistant Secretary of the Army for Research, Development and Acquisition (ASARDA) and AAE, was the guest speaker at a dinner hosted by Hoeper. In his presentation, "The Science of Making Magic: Engineering, Project Management and Technology," Decker used slides of actual "show-and-ride" systems to demonstrate Disney's project management and technological achievements. He pointed out many similarities between Disney and the Army in product development and fundamental project structure. Both the Army and Disney face highly economically driven deadlines with pre-defined budgets, he said. The difference, he stated, is in program stability where, unlike the Army, industry knows how much time they have to complete a project and how much money they have to do it.

Additional Presentations

MG Bond opened the second day of the workshop with an update on STRICOM's role in the Army's transformation, emphasizing that this role is more challenging than ever in view of the Army's efforts to modernize, digitize, and transform its forces. As the Army's materiel training developer, STRICOM provides cradle-to-grave modeling and simulation (M&S) support to PEOs and PMs. STRICOM also provides instrumentation, targets, and threat simulator systems to training and instrumentation sites.

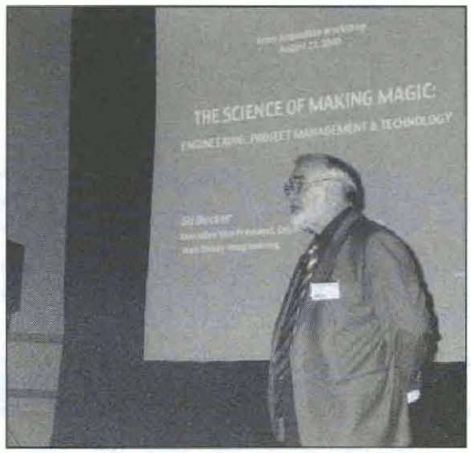
One of STRICOM's initiatives is teaming with industry to find information technology applications for Army training systems.

Karen Walker, Army Acquisition Executive Support Agency Director, reviewed the design and development of a decision template that will be used in reviewing acquisition programs to transition them from science and technology to centralized management, from centralized management to PEOs and DSAs and between PEOs and DSAs, and from centralized management to functional staff management. The template, Walker said, resulted from a memorandum signed by Hoeper and Army Vice Chief of Staff GEN John M. Keane directing that program transitions occur at initial operational capability and be approved by the AAE.

MG Bruce K. Scott, Commanding General, U.S. Army Security Assistance Command, presented a tutorial on the impact of worldwide foreign military sales (FMS) and how his command serves as the executive agent for the management, administration, and implementation of all Army FMS programs.

Dr. Hank Dubin, Director for Assessment and Evaluation, OASAALT, examined the pros and cons of managing programs to exit criteria. He suggested that programs could be managed by focusing on exit criteria if it is a good indicator of delivering what is needed to the customer. Dubin noted that exit criteria ensure that progress is made and that we're ready to transition to the next phase.

COL James R. Moran, Program Manager, Abrams Tank System, talked about the operations and sustainment costs involved with aging tank fleets. Unlike Army systems of the past that were declared obsolete and replaced, today's Army systems must remain in the inventory for at least another 20 years. Moran called for joint efforts to address



Gil Decker, Executive Vice President, Engineering and Production, Walt Disney Imagineering, and former ASARDA and AAE

funding issues and to ensure the Army is improving the reliability and sustainability of obsolete systems.

COL Bryon Young, Commander, Defense Contract Management Agency (DCMA)-Raytheon, Burlington, MA, spoke on behalf of many DCMA commanders in addressing current acquisition issues, including the difficulty in finding cost savings at the program level; diminished competition (government view) versus more intense competition (industry view); varying "prime-to-sub" relationships; the challenge of government process re-engineering; and enduring a reduced government workforce.

Frank J. Lalumiere, Executive Director, Program Integration, DCMA HQ, Fort Belvoir, VA, provided a programmatic overview of DCMA. He noted that DCMA is a service-oriented organization with one focus—providing contracting assistance to program managers and procuring contracting officers to help the warfighter.

The Army's newly established partnership with the University of Southern California's Institute for Creative Technologies (ICT) was the subject of a luncheon briefing by Dr. Jim Blake, Senior Research Scientist, STRICOM; and Richard Lindheim, ICT. They discussed ICT's ability to leverage the entertainment industry's M&S and training expertise that will ultimately benefit Army transformation efforts. Although the partnership is just over a year old, Lindheim termed it "a success."

Elective Sessions

This year's workshop featured the following elective sessions, which allowed a more comprehensive examination of transformation issues: *New Direction For Defense Acquisition Policy, Force XXI Initiatives WRAP/Benefits of Army Warfigher Experiments, OUSD(AT&L) Tri-Service Program Assessment Initiative, Modeling and Simulation, How to Request Dollars in the Pentagon, Acquisition Lessons Learned, Army Life Cycle Cost Tools, INSCOM Technology Protection Integration Model*, and *New Testing Technology Embedded in Weapon System Platforms.*

Closing Remarks

LTG Paul J. Kern, Director, Army Acquisition Corps, and Military Deputy to the ASAALT, referenced several of the workshop's general sessions in his concluding remarks. He said he was pleased to learn that the message of the transformation had been received throughout the Army. Additionally, Kern said, the lines of communication must be kept open to ensure the Army's transformation and recapitalization goals are successful and to ensure that the Army is able to hire the quality of people it needs.

As the closing speaker, Hoeper called the workshop "extraordinarily successful." Referencing Kern's appeal for open communication, he praised recent Army partnerships with ICT and NASA as meaningful ventures to propel advanced M&S efforts. He also praised the partnership between the acquisition and logistics communities, adding that it should be expanded with the inclusion of the testing community.

More than 200 attendees tackled transformation issues at the annual Army Acquisition Workshop.

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PMs AND ACQUISITION COMMANDERS OF THE YEAR HONORED

Krystal M. Hall and
Sandra R. Marks

The Army's Project Manager of the Year Award, Product Manager of the Year Award, and two Acquisition Commander of the Year Awards were presented in recognition of outstanding achievements during a special ceremony at the annual Army Acquisition Workshop, Aug. 23, 2000, in Orlando, FL. Paul J. Hoeper, Assistant Secretary of the Army for Acquisition, Logistics and Technology (ASAALT) and Army Acquisition Executive, presented the awards.

Project Manager Of The Year

COL Stephen V. Reeves, Project Manager, Nuclear, Biological and Chemical Defense Systems (PM, NBC), received the Project Manager of the Year Award for FY99. He was cited for executing all assigned programs within budget, cost, and schedule variance, and for exceeding all DOD and HQDA goals for obligations and disbursements. During the past year, Reeves was credited with leading NBC defense teams in fielding more than 150,000 items of NBC defense equipment valued at approximately $200 million. By adopting a full life-cycle management approach, Reeves effectively established multiple operations and sustainment cost reduction efforts across multiple product lines. This effort is expected to result in savings of more than $40 million during the next 7 years.

Product Manager Of The Year

LTC Charles H. Driessnack, Product Manager, National Missile Defense (NMD) In-Flight Interceptor Communication System (IFICS)/Communications, received the Product Manager of the Year Award for FY99. He was cited for carefully restructuring the IFICS Program and establishing an aggressive prototype development program to minimize cost, schedule, and technical risks, and to improve performance. He is also responsible for restructuring the NMD communications architecture and acquisition strategy resulting in a cost-as-an-independent-variable savings to the government of $2 billion. Additionally, Driessnack lead a highly effective joint-Service team that ensured the NMD IFICS would successfully communicate weapons task plans to the NMD interceptor and ensure target impact.

Acquisition Commanders Of The Year

COL Andrew G. Ellis and LTC William N. Patterson were each recipients of an Acquisition Commander of the Year Award for FY99.

Ellis was recognized for his achievements as Commander, U.S. Army Aberdeen Test Center (ATC), responsible for the planning, research and development, test and evaluation design, engineering, production, and surveillance tests for DOD agencies and contractors for military systems and equipment. Ellis was cited for developing a concept of forming a limited liability company to include ATC staff and industrial and academic partners who would reduce the normal acquisition testing lead time while saving millions of dollars. Under Ellis' leadership, ATC became the Department of the Army's only pilot test and evaluation center for DOD's FYs 99 and 00 pilot programs. He is credited with championing a closeout of an A76 Study, resulting in immediate savings of $2 million with sustained annual savings of $3 million. He was also cited for his commitment to providing the soldier the safest and best equipment available.

Patterson was recognized for his contributions as the Commander, Defense Contract Management Agency-Manassas, the largest contract management office in the Defense Contract Management Agency. He is responsible for 118 acquisition professionals who administer more than 32,000 contracts valued at $28 billion. Patterson was also cited for initiating a single process initiative calling for use of commercial practices in the purchase of desktop computer contracts and other commercial off-the-shelf items. This effort will eliminate the need for contract administration and will result in faster

COL Steven V. Reeves (right), PM, NBC, accepts the FY99 Project Manager of the Year Award from Paul J. Hoeper, ASAALT.

LTC Charles H. Driessnack (right), Product Manager, NMD IFICS/ Communications, accepts the FY99 Product Manager of the Year Award from Paul J. Hoeper, ASAALT.

COL Andrew G. Ellis (right), Commander, ATC, receives an Acquisition Commander of the Year Award from Paul J. Hoeper, ASAALT.

LTC William N. Patterson (right), Commander, Defense Contract Management Agency-Manassas, receives an Acquisition Commander of the Year Award from Paul J. Hoeper, ASAALT.

delivery of items to the warfighter at a reduced cost. Patterson saved customers more than $55 billion (saved the Army $8 million alone) in expiring funds during FY99.

Charter Presentations

At the conclusion of the formal awards ceremony, Hoeper presented revised program executive office (PEO) and deputy for systems acquisition (DSA) charters to program executive officers from the PEOs for Aviation; Ground Combat and Support Systems; Command, Control and Communications Systems; Air and Missile Defense; Tactical Missiles; Intelligence, Electronic Warfare and Sensors; Standard Army Management Information Systems; and to the DSA, Tank-automotive and Armaments Command; the DSA, Communications-Electronics Command; and the DSA, Aviation and Missile Command. Hoeper noted that the revised charters reflect some of the ongoing initiatives within the acquisition community. Most likely to draw attention, Hoeper said, is the addition of supportability as a co-equal with cost, schedule, and performance in the program decision process and the responsibility to plan and execute the transition of programs and systems when appropriate.

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SANDRA R. MARKS, an employee of SAIC, provides contract support to the staff of Army AL&T magazine. She has a B.S. in journalism from the University of Maryland, College Park, MD.

DOES THE ARMY NEED A CONTINGENCY CONTRACTING MOS FOR NCOs?

MAJ Mel M. Metts and MAJ Nick Castrinos

Editor's Note: This is the second of a two-part article that discusses whether establishing a military occupational specialty (MOS) for noncommissioned officers (NCOs) within the Army contracting structure will benefit the Army and its enlisted contracting personnel. The first part appeared in the September-October 2000 issue of Army AL&T and discussed background information and current issues faced by the Army and contracting NCOs.

This final article discusses benefits and associated challenges involved in establishing a contracting MOS and presents recommendations.

Introduction

What are the perceived benefits of establishing a new career field for contracting NCOs with the Additional Skill Identifier (ASI) G1 (contracting agent)?

A new MOS will provide stability, continuity, and greater institutional knowledge in contingency contracting commands. Like NCOs in other branches of the Army, NCOs are the backbone of a contracting organization. Contingency contracting officers (CCOs) are required to have a broad range of skills in contingency and administrative contracting as well as contract and program management. Additionally, CCOs are required to rotate through various job positions to remain competitive for promotion. The continual exodus of NCOs and CCOs is making it difficult for contingency contracting organizations to maintain qualified officers and NCOs for contingency operations. Thus, if NCOs could remain in a contracting organization and provide continuity and stability, their contracting skills and knowledge would continue to grow and benefit commanders on the ground and entire contracting organizations. More important though, this retained knowledge base would be beneficial to deployed troops in the field.

Additionally, a new MOS will improve an NCO's professional development, allow NCOs to single track, and create greater promotion opportunities (mirroring those of officers in the acquisition field). NCOs would compete against other NCOs with similar jobs, preventing the biased nature of the current promotion boards. NCOs would continue to gain experience and take the necessary Defense Acquisition University courses to become highly competent and warranted contracting officers and combat multipliers (when deployed).

Further, a new MOS would reduce the current deployment workload of the CCO and allow for a larger pool of qualified contracting specialists available for mobilization. The current operations tempo requires two 6-month deployments every 2 years for CCOs. Deployable NCOs would reduce back-to-back deployments for many of the officers. In addition, if both were deployed on a contingency mission, the contracting NCO could handle the routine acquisition tasks, leaving the CCO free to work on more complex issues. Furthermore, NCOs and CCOs would be interchangeable, depending on proficiency levels. This also allows the officer to become more involved in planning and leadership.

Implementation Issues

How does the Army build an MOS? To establish a new MOS, the Army first must overcome the Average Grade Distribution Matrix (AGDM), the structure-of-grades model in the Army. The AGDM model shows the average percentages necessary per grade to ensure successful distribution. This matrix gives the percentages required within an MOS pyramid to achieve optimal career progression. Because the AGDM dictates the percentages per grades, the matrix is also a baseline for allocating money per grade within each career management field (CMF). The AGDM is the base model commanders use as a guideline for the percent limits in each MOS; however, commanders can redistribute within the model to fix shortages and surpluses. Currently, there is a limited quantity of personnel with whom to build an MOS within the contracting field.

There are only 42 positions available Armywide for ASI G1. These positions range from sergeant to master sergeant, with no advancement to sergeant major. To build an MOS, the aggregate total percentages would need to follow the AGDM for the optimum career growth, which also allows for the best competitive advantages. The AGDM must be overlaid with the operational requirements to determine percentages of personnel within the MOS. The AGDM is based on multiples of 100, but it does not reflect the required number of personnel necessary to establish an MOS.

There are several issues associated with small percentages of personnel within a given MOS. One concern is having enough people to allow opportunities for promotion within the MOS. Career progression in a small MOS is slow, which means longer duration times at lower ranks.

Other Concerns

Establishing An MOS. Recent revisions in the organizational structure of the Theater Support Commands (TSCs) and Force XXI requirements have increased the need for additional ASI G1 personnel. The TSC revision now calls for an additional 16 CMF 92 ASI G1 positions. This requirement includes four sergeant major positions for Senior Logistics Services Supervisors (ASI G1) within each of the TSCs. The TSC revisions also allow for complete vertical movement to the sergeant major level if a decision was made to establish a contracting MOS.

Requirements for the new Force XXI Division, which 4th Division at Fort Hood, TX, is currently transitioning, requires an additional four sergeant first class positions (92Y40 ASI G1) to fulfill the requirements document system. Three positions are located in the Forward Support Battalion and one position is located in the Division Aviation Support Battalion. In the long term, every heavy division in the Army will transition into this configuration, adding a total of 24 positions available for NCOs with the ASI G1. The changes in these organizational structures will allow the Army to meet AR 211-601.

Professional Development. Another concern is how to designate a training path for the NCOs. Professional development must be in accordance with AR 600-3, *The Army Personnel Proponent System (APPS).* Personnel proponents are responsible for the eight life-cycle management functions of their respective career fields. As such, they take the lead in defining developmental needs, refining requirements in the field, and providing assistance to improve all aspects of the Army's personnel management system. The personnel proponent would recommend or determine appropriate accession criteria for enlisted personnel, identify training criteria by career field, and ensure that training for career development is in concert with all aspects of professional development. Because there is no schoolhouse or branch that currently supports the schooling requirements (i.e., Basic or Advanced NCO Course (BNCOC/ANCOC)), where would contracting NCOs go to receive the required training, and who would support the training?

The final concern is how to develop the institutional training within the operational assignments and the development of a career progression within the assignments. Currently, the Army Acquisition Corps (AAC) is just a proponent with no soldiers, and the ASI G1 function falls under the personnel proponent of the Quartermaster (QM) General. Further, because the QM is not a branch proponent for the AAC, there is an ownership challenge.

Summary

Clearly, the current enlisted force structure of contingency contracting is not as effective as it could be. The career development model for NCOs in the contracting field requires major restructuring.

Establishing a new MOS would benefit combat commanders, contracting NCOs, and contingency contracting commands. The contracting skills and knowledge accrued by NCOs would continue to multiply and benefit warfighters as combat multipliers along with the entire contracting community. With the establishment of the MOS, NCOs would be allowed to single track, thus, creating greater promotion opportunities.

All MOSs that are not critically short should be considered Armywide for accession into the contracting field. A yearly accession board for NCOs should be established that coincides with the officer board. Preferably, the majority of accessions should come from CMF 92 because of the similarities in job descriptions. NCOs should be accessed into the contracting field at the grades of sergeant through sergeant first class, but all sergeants first class should be carefully screened to ensure the Army receives full return on their investment.

Another recommendation is for the AAC to become the functional proponent and for the QM Corps to handle the normal MOS personnel proponent. Currently, the AAC is a proponent with no schoolhouse or branch that supports professional developmental requirements. The AAC can develop the training requirements but must rely on CMFs for support of the schoolhouse courses (i.e., BNCOC and ANCOC). The advantage to this recommendation is that the QM has the schoolhouse and necessary developmental courses already established for the CMF 92 MOS.

The Army must develop a separate functional area MOS for contracting NCOs that includes a designated career progression and training path comparable to basic branch MOS schools. Contracting NCOs are the combat multipliers for the warfighting commanders who will ensure mission success in any given tactical environment.

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MAJ NICK CASTRINOS is assigned to the Defense Logistics Agency at the Defense Supply Center, Richmond, VA. He has participated in numerous contingency-contracting operations throughout the Middle East and the Balkans. Castrinos holds a bachelor's degree from Evergreen State College in Washington and a master's degree in international relations from Troy State University in Alabama.

PRECISION ARTILLERY ROUND TESTING REACHES A CRESCENDO

Chuck Wullenjohn

The jagged peaks and lonely desert landscape of U.S. Army Yuma Proving Ground's Kofa Firing Range echoed to the booming sound of massive artillery barrages throughout April and early May of this year. The 1st Battalion of the 17th Field Artillery, which traveled to Yuma, AZ, from Fort Sill, OK, had come to the proving ground to use the Sense and Destroy Armor (SADARM) precision artillery projectile in a realistic combat environment. And what the unit came for was exactly what it got.

The 208 members of the battalion, which is part of the 3rd Armored Corps Artillery, constructed an administrative and support base camp near the proving ground's airfield, where they stayed on weekends. They also formed a support training and tactical operations area 60 miles away on the firing range. They brought along eight M109A6 Paladin self-propelled Howitzers, eight M992A2 Field Artillery Ammunition Supply Vehicles, five command-post vehicles, one M88 recovery vehicle, and dozens of other support vehicles. Most of the equipment was transported by rail, while the bulk of the soldiers traveled to and from Yuma by air.

The main purpose of the battalion's Arizona visit was to participate in a 6-week limited user test (LUT) of the 155mm SADARM precision artillery projectile, which has undergone testing at Yuma Proving Ground since the late 1980s. Unlike earlier stages of testing, which were research and development oriented, the LUT required firing the projectiles in strict accordance with current Army doctrine used in battlefield environments. Four fire missions consisting of 24 rounds apiece, each conducted at a different time of day, were fired during the LUT.

"During the test, there were no strict firing positions for the howitzers. The unit was given a 49-square-kilometer area to maneuver in, with fire mission information transmitted from a simulated brigade headquarters through the operational chain down to each individual gun. The objective was to evaluate the projectile as it would be used in an operational environment," explained Ron Jackson, Yuma Proving Ground test director.

A realistic threat target area was constructed on an existing proving ground impact area, located approximately 12 miles from the Paladins. Self-propelled howitzers and a command and control vehicle manufactured in the former Soviet Union were concealed behind protective earthen berms and under camouflage netting in the target area, just as they would be in actual combat. Each of the target howitzers was maintained in operating condition during the test. Specially designed heaters were installed in the tube of each howitzer to generate the heat appropriate to a recently fired weapon. It was important to operate the engines and the tube heaters to generate realistic heat signatures used for targeting by the incoming SADARM projectiles.

The highly sophisticated SADARM projectile is an outgrowth of smart weapons research that began in the early 1960s. However, unlike smart bombs used during the Persian Gulf War and in the NATO campaign in Kosovo, SADARM is a true "fire-and-forget" weapon that senses and destroys enemy-armored targets. SADARM was primarily designed as a counterbattery weapon to destroy or disable enemy artillery pieces.

Designed to be fired from the 155mm howitzer, SADARM projectiles look and fire like conventional projectiles. However, each SADARM projectile contains two submunitions that are expelled over the target area to independently acquire and destroy enemy weapons. At several hundred feet above the ground, each submunition fires an explosively formed penetrator that attacks enemy artillery from its most vulnerable direction—above the target. Program officials say SADARM will be a potent and reliable way to suppress enemy counterbattery fire on the future battlefield.

Besides firing the SADARM projectiles for testing, the soldiers of the field artillery battalion used the opportunity to conduct a great deal of intensive training in a variety of areas. They fired more than 1,500 high-explosive rounds during their 6-week stay, which is equivalent to what the battalion normally would fire in an 8-month period.

"We fired combinations of projectiles and charges normally reserved only for wartime, so this was a unique opportunity," said MAJ John Gillette, Operations Officer for the 1st Battalion of the 17th Field Artillery. Gillette added that at Yuma, the

The rugged, pristine terrain of the Yuma Proving Ground desert proved an ideal location to conduct SADARM testing under realistic field conditions.

M109A6 Paladin self-propelled Howitzers, belonging to the 1st Battalion of the 17th Field Artillery, get ready for movement to firing positions on the Kofa Firing Range.

battalion could do things it usually could not do. "Under supervision of a Yuma Proving Ground expert, we loaded and air dropped a load of ammunition from a C-17 aircraft and direct fired our howitzers against scrap vehicles. We used our MK 19 and M203 grenade launchers and fired the .50-caliber machine guns mounted on each vehicle. Since we usually fire only in the indirect fire mode, our gunners don't observe rounds impacting the target. Direct fire training gave our people the chance to see the results of what they do—which were dramatically impressive. It was a real morale booster," said Gillette.

The soldiers loudly cheered, gave each other high fives, and happily jumped up and down as they saw what their rounds did to the targets.

Gillette feels the battalion's participation in the test proved to be an excellent overall training opportunity. The unit was able to train in all its mission-essential tasks, including deployment to a remote location, delivering accurate fire support, and sustaining and protecting the force.

"Given the constraints of our current budget," explained Gillette, "we wouldn't have had a superb training opportunity like this otherwise. The soldiers of the unit are used to training at Fort Sill—they intimately know the firing positions and the terrain. Our deployment to Yuma Proving Ground was like deploying to a combat zone. It was a great learning experience."

SFC Samuel Martinez, Battalion Master Gunner, says his own biggest challenge was coordinating the flow of information among the various organizations involved in the test. The Fire Support Test Directorate of the Operational Test Command, the SADARM Project Manager, our own command group, and, of course, Yuma Proving Ground, all needed to be on the same sheet of music. This was a problem at first, for sometimes we got input from everyone at once. But we got it all worked out in fairly short order," he said.

The unfamiliarity of the desert terrain and the climate proved to be a challenge to everyone in the unit, said Martinez. He said the high temperature during the day, which climbed to over 100 degrees Fahrenheit, and the chilly evenings made it rough. Also, the tactical operations area, located a great distance from civilization, required a long logistics tail.

"The only thing we didn't have was an enemy firing at us. For a realistic training situation, it just couldn't be beat. But I also want to acknowledge the outstanding support of the local community. Everyone went out of their way to help us, from the people at the post bowling alley who changed their schedule to accommodate our needs, to the travel folks who helped us arrange a weekend trip to San Diego," said Gillette.

Cyndi Ford, Yuma Proving Ground Assistant Readiness Officer, said the support offered to the unit was typical of what is done for other units visiting the proving ground throughout the year. Her office coordinates all unit requirements from on-site support and services to local purchases and even the rental of necessary equipment. The purpose is to allow the visiting unit to concentrate on its mission rather than administrative requirements.

For the 1st Battalion of the 17th Field Artillery, she says her office ensured evaporative coolers were installed in the battalion's food preparation and dining areas to provide air circulation, lower the temperature, and keep bugs away. Ice and drinking water were provided each day, as well as any other type of required logistical support. "We were on the phone coordinating things on a daily basis," she said.

Although the chief mission of Yuma Proving Ground centers on the developmental testing of weapon systems and munitions, desert training has assumed more prominence in recent years. Almost an exact match in terms of terrain and temperature to that found near the borders of Saudi Arabia, Kuwait, and Iraq, Yuma Proving Ground has seen the number of military organizations conducting training activities at the proving ground dramatically climb from 4 in 1989 to 52 in the first 6 months of FY00. And because of the installation's diverse facilities, sophisticated range instrumentation, and vast firing areas that allow for numerous scenario possibilities, units come to the proving ground on a year-round basis. By the end of FY00, the number of units trained is expected to increase to more than 80.

"The SADARM limited user test demonstrated that Yuma Proving Ground is well equipped to perform combined operational and developmental testing, which will become more common in the future. No other facility has the unspoiled terrain and excellent test facilities we have. We're a real national defense asset, especially as the military moves into the new century," said Jackson.

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OUTSOURCING ARMY MODERNIZATION RUNS COUNTER TO THE PUBLIC INTEREST

James H. Ward

Author's Note: This article presents the academic argument that should our Nation outsource its information infrastructure, it runs the risk of becoming hostage to commercial interests. Further, as the Nation goes forward with the Global Information Grid and the objective force, it needs to ensure that inherently military communication functions on which this strategy relies remain a part of the internal command and control of our soldiers and their leaders.

Introduction

Nowhere does the battle for or against outsourcing rage more fiercely than in the halls of the Pentagon, seat of the most powerful military leaders in the world. This bastion against tyranny and oppression finds itself in the throes of a debate that might, over time, cede its hegemony to commercial forces and cause it to lose forever the tools it will need to fight on distant battlefields.

Let us frame the debate. In the April 2000 issue of *Government Executive*, Management Consultant Paul Kuzniar writes that there are stark differences between the role of the private sector and a government that must provide for the common defense. Both business and government have many goals, Kuzniar explains. However, the foremost goal for business is making money, while the government's goal is to spend money to ensure the well-being of its citizens.

As outlined in Kuzniar's article, five basic principles must be considered in comparing business and government: purpose, people, time, money, and hierarchy. In each case, the interests of business and government are at significant odds. This article applies these principals to case studies to demonstrate that outsourcing of information technology (IT) may lead to national security perils from which the Nation may not recover.

Background

Contracting, or outsourcing, is not a new phenomenon in America. There were contractors on battlefields as far back as the Revolutionary War. More recently, the Eisenhower administration made it a part of U.S. policy not to impede business. President Eisenhower vowed that the federal government would not start or carry out any commercial activity to provide a service or product for its own use if such a product or service could be procured from private enterprise through ordinary business channels. Government's work, he added, must be confined to those tasks that it alone must perform.

In 1966, the Office of Management and Budget (OMB) issued OMB Circular A-76, *Performance of Commercial Activities*, which spelled out the processes needed to divest government of all but its "core competencies." Since 1966, the Pentagon has engaged in a robust contracting-out program. According to a *Business Executives for National Security* special report, nearly every support function in DOD has been outsourced in some way. Figures indicate, for example, that nearly 47 percent of data processing has been outsourced.

Case Studies

The outsourcing process at White Sands Missile Range (WSMR), NM, provides an excellent case in point. According to its former Commander, BG Harry D. Gatanas, WSMR "survived" 22 A-76 studies. This occurred because mission posture and a streamlined, better-resourced workforce led arbitrators to conclude that the government could perform the functions more effectively.

Let's examine the case at WSMR in context with the five principals. The primary purpose of WSMR is to conduct missile tests. A-76 studies concluded that the in-house workforce possessed the requisite skill necessary to perform this function. In addition, it found that WSMR met the "people principle" test in that its workforce understood how to run a complex process like missile testing. Furthermore, once they were provided the necessary tools (faster computers, a flattened organizational structure, and capital equipment) to improve their efficiency, the workforce clearly demonstrated they were up to the task. In fact, the A-76 studies might have done the existing workforce a favor by forcing the organization to modernize its operation! Finally, the A-76 study team found that in the area of missile testing, having a long-term view of the mission of the range was far preferable to contracting the function out. White Sands presents a classic public good-over-money case and should be held up as a model for others undergoing A-76 studies.

John Thorpe, the Deputy Chief of Information Management for U.S. Army Pacific, points out that mission and location are also factors in weighing outsourcing decisions. In Hawaii, all Army telephone services operate on the Hawaii Island Telephone System. This end-to-end system was outsourced several years ago and, according to Thorpe, the cost of this

"imminently affordable" system keeps going up by as much as 30 percent a year!

Okinawa and Japan offer us a glimpse at another issue critical to our discussion. In these locations, where the Army's 516th Signal Brigade has two battalions, the Japanese workforce plays an important role. In fact, under what is called the Master Labor Contract, all Japanese salaries are paid by the Japanese government. To outsource these operations would increase the cost of doing business.

Still, one might postulate that on the U.S. mainland, with so many available IT firms, why not simply conduct A-76 studies on all installations with an eye toward outsourcing the information technology business area? This would, on the surface, appear to be a good idea. However, under provisions found in the Federal Activities Reform Act of 1998, for a federal function to be outsourced, it must be considered nongovernmental. This provision should offer specific relief to DOD.

For example, a DOD agency's IT communications functions may not be considered inherently governmental, but using those functions to conduct command and control activities in a combat situation would.

Described in a slightly different way in a recent General Services Administration (GSA) white paper, "In general, inherently governmental functions are those tasks that are so intimately related to public interest that they need to be performed by government employees."

In the area of IT infrastructure modernization, the issue of command and control has never been more important. To be sure, many of the information management tools can and are being purchased through commercial off-the-shelf means. This does not, however, mean that the people engineering, installing, and operating them should also be outsourced. Experience at the Huntsville, AL, Directorate of Information Management (DOIM) is another case in point. According to DOIM officials, the entire information management function was contracted out several years ago. Now, efforts to reverse their earlier decision are underway through the A-76 process. These officials cite cost and loss of control as the reasons for their decision.

Other Concerns

Reversibility is a concern. Critics of outsourcing express concern that once IT functions have been turned over to a contractor, it will be too costly to reverse the situation and return them in-house. While it's possible to reverse outsourcing arrangements, it is important to note that the objective force will require end-to-end systems command and control, and the advent of hostilities is no time to attempt to revert back to in-house management of these end-to-end systems.

As DOD reviews its information management requirements for the next 25 years, interoperability between soldiers on the battlefield and their sustaining bases will become paramount. Simply put, information management is a core military function, now more than ever.

Unfortunately, these purely strategic (and tactical) concerns have not slowed down the A-76 study process. In the May 1999 issue of *Government Executive*, Associate Editor Katherine McIntire Peters writes that the Pentagon expects to deliver $11 billion in savings by 2005 and achieve recurring annual savings of $3 billion thereafter. Peters asserts that DOD will conduct competition studies involving approximately 229,000 positions, which is three times the number of positions it looked at from 1979 through 1996. She points out that these studies form the basis for the Pentagon's rosy estimate.

The Army as an institution exists as a servant of the national good. IT will provide the strategic and tactical backbone of the Army in the years to come. In fact, IT will be as much a part of the Army as the warfighter it supports, and as such cannot be separated out because of a shortsighted need to show cost savings. According to a GSA report, the decision process for outsourcing must be directly interrelated with the long-range, strategic planning process.

The Outsourcing Institute, referenced in the same GSA report, suggests that overemphasis on short-term benefits is a clear sign of an outsourcing project that will prove unsuccessful. When the strategic reasons for outsourcing are overshadowed by short-term business concerns, companies are often disappointed.

Further, it remains critical to retain an in-house workforce because this is the only way the Army can look into the future and define the evolving information infrastructure it will need to support the revolution in business and military affairs. Agreed, contracting out specific, short-term projects as part of a step-by-step process will be a critical component, but an in-house workforce will operate according to its constitutionally mandated "best interests of the Nation."

One must also consider the inherent differences between the operating styles of the contractor and the Army. As noted by Kuzniar, the business of government revolves around politics, or doing the peoples' work. This is antithetical to the way the business community goes about things. Nowhere is this more true than in the area of IT modernization.

The structure of program managers, cross-functional commands, evolving guidance from higher-ups, and the nature of providing national Defense make whole-systems outsourcing undesirable. This process, which leads to a consensus, has and will continue to serve the public interest because it affords all stakeholders a chance to provide input. It also allows for long-term structural changes on installations as new missions or changes in new missions are developed. Simply put, making such changes in a contractor-owned, contractor-operated world would run counter to the public interest at best, and reduce responsiveness to changing world events at worst. This would lead to reduced combat effectiveness, regardless of the efficiency it might temporarily create.

Conclusion

As the Army moves toward realizing the promise of Joint Vision 2020 and the knowledge-centric Global Information Grid, it must ensure that the right outsourcing decisions are made. The Army cannot base its modernization decisions solely on savings because to do so might undermine its ability to provide end-to-end connectivity.

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TESTING AND TEST INSTRUMENTATION IN THE FUTURE

COL Andrew G. Ellis and Mark P. Simon

Introduction

"Speed is life" is a phrase that is increasingly being used to describe the Army's transformation for the future. This phrase applies in describing how our Armed Forces must operate on the battlefield, in describing the mental agility of our future leaders, and in describing how the materiel acquisition process must be streamlined.

In October 1999, Army Chief of Staff GEN Eric K. Shinseki unveiled a vision to make the Army a rapidly deployable, lethal, agile, survivable, and sustainable force. Although the Army is presently capable of full-spectrum dominance, its organization and force structure are not optimized for strategic responsiveness. To address this deficiency, Shinseki launched a major Army transformation effort that initially requires organizing Brigade Combat Teams (BCTs). These teams will function as full-spectrum combat forces capable of deploying to any trouble spot in the world within 96 hours. The BCTs will provide an effective force capable of neutralizing trouble before it escalates into all-out war.

The operational requirements of the BCTs require changes in Army organization, equipment, tactics, techniques, and procedures. The Army thrust is on fielding a BCT capability, not just individual weapon platforms. The Army will field the Interim Armored Vehicle (IAV) as a common baseline capability for each BCT. With slight modification, several families of current medium-based platforms could meet the IAV requirement. Therefore, the Army hopes to select off-the-shelf IAVs from private industry to support an aggressive program schedule. The first Initial Brigade Combat Team is scheduled to achieve initial operating capability by the end of December 2001, supported by the streamlined acquisition of the IAV. This type of accelerated strategy represents the Army's future process for acquiring warfighting capabilities.

Because speed is life, the traditional 10- to 20-year acquisition process for major Defense systems will no longer support the warfighter's ever-changing needs. In concert with these needs, the Army must streamline test and evaluation (T&E) whenever possible to accelerate the materiel acquisition process. Testers must learn to adapt their role and leverage technology to support the accelerated acquisition process.

Is Testing Still Needed?

The need for a significant amount of testing may seem diminished when procuring a nondevelopmental item (NDI) like the IAV. In fact, extensive testing of an NDI might be perceived as an impediment to acquisition streamlining. The vehicles currently under consideration are already mature systems, so why is there a need for much testing? During testing at Aberdeen Test Center (ATC), Aberdeen Proving Ground, MD, less sophisticated, commercially available systems, such as shotguns, forklifts, and dump trucks, have experienced catastrophic failures including ruptured gun barrels, bent axles, and broken wheels. However, in all of these cases, the systems were tested to requirements or conditions above and beyond their original intended capabilities. Testing provided the information needed to identify and correct these performance shortfalls early enough to avoid costly recalls and upgrades of fielded systems.

Testing still plays a critical role in developing high-tech systems as well. One example is the Boeing 777 aircraft, the world's largest twin-engined jet, recognized as the top aeronautical achievement of 1995. During the aircraft's development, customer representatives and component suppliers teamed with Boeing designers and testers. The airplane's various systems were tested together in simulated flight conditions before the first 777 ever flew. Standard certification flight tests were supplemented with 1,000 flight cycles on each airframe-engine combination (for the initial 777-200 models) to demonstrate reliability in simulated operational environments. In addition, engine makers and parts suppliers tested their products extensively to ensure they met airline requirements. This thorough test program was so successful in demonstrating the aircraft's design features that the 777 became the first airplane in history to earn the Federal Aviation Administration's approval to fly extended-range, twin-engined operations at service entry. Obviously, a significant amount of testing was paramount to the 777's success. We can conclude that testing must remain an important component of future system acquisition.

Role Of Tester

To advance streamlined acquisition, the T&E community must support shortened developmental phases, yet continue to adequately assess system performance. To achieve this, testers must leverage their expertise and expand their role as experimenters to become "knowledge brokers." Future testers must become integral parts of the entire acquisition process. They must be involved from concept to combat. The tester's job will no longer be limited to instrumenting systems and conducting experiments. The tester will provide knowledge to the buyer, the user, and the manufacturer throughout the system life cycle. If testers perform their duties correctly, they may actually reduce the number of experiments required to sufficiently evaluate system performance.

The Tester's Tool Kit

By leveraging available technology, the tester can ensure that testing provides meaningful information and is performed correctly the first time. Testers can also determine which parameters must be evaluated through live testing and which parameters can be evaluated by other innovative approaches. For example, the tester can use models to understand the system's physics and use this knowledge to tailor testing. Testers and modelers accomplished this in 1997 at ATC and the U.S. Army Tank-automotive and Armaments Command's Tank Automotive Research, Development and Engineering Center during vulnerability testing of the Wolverine Heavy Assault Bridge. A photograph of the Wolverine under test is shown in

Figure 1. Through the use of finite element analysis modeling, the testers identified the Wolverine's weakest structural locations and targeted vulnerability testing specifically to those areas. Successful results of these tests were used to justify eliminating shots planned on more robust areas of the structure, resulting in significant program cost savings.

Simulation is another tool available to the tester. Testers can use a variety of simulations to reduce the need for live testing. For example, ATC's Firing Impulse Simulator (Figure 2) can be used to test the mechanical and hydraulic components of weapon systems without firing a shot (after the recoil profile of the applicable ammunition is characterized). This simulator allows testers to significantly reduce costs and minimize environmental impact. The money saved on ammunition can be used to increase the number of experiments, which increases confidence in the results.

To minimize cost and schedule duration yet maximize information, future testers must effectively merge simulation and live testing to provide meaningful knowledge.

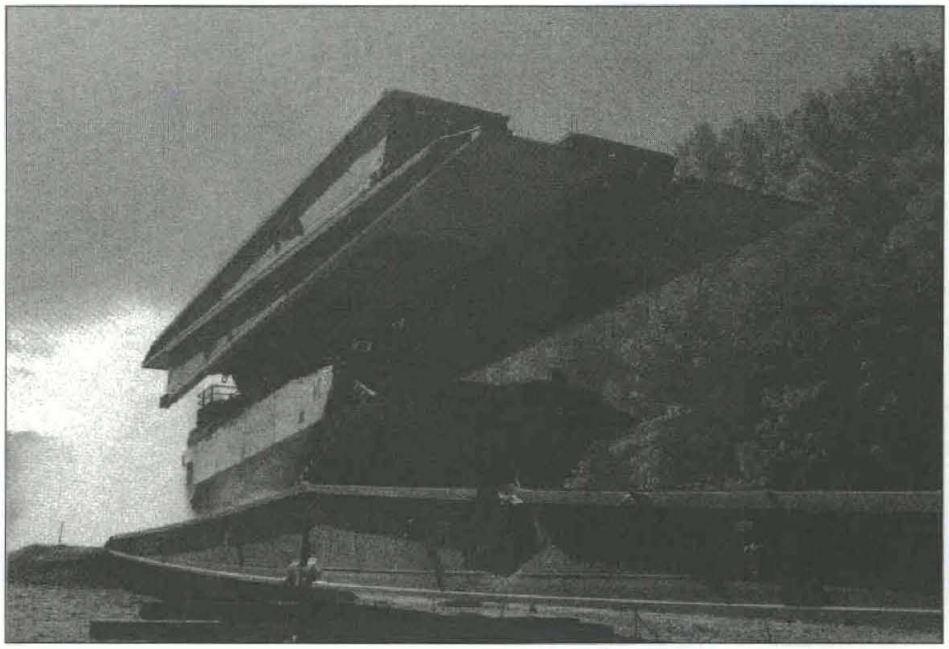

Figure 1.
Wolverine Heavy Assault Bridge undergoing vulnerability testing

Embedded Instrumentation

Other powerful tools that future testers will use include innovative types of data acquisition platforms. Automotive instrumentation will be built-in or embedded into the vehicle system, supporting data collection capability throughout the vehicle's life cycle. When coupled with global wireless transmission, this capability will facilitate real-time data collection, processing, and archiving. These data can be made available to decisionmakers and analysts via the Internet for data mining and manipulation. This concept is illustrated in Figure 3 on Page 32.

Embedded instrumentation can be used to ascertain any fielded vehicle's operational status at any time. System performance can be monitored and recorded not only during developmental testing activities, but also during training missions, operational tests, maintenance activities, and field maneuvers. This valuable information, combined with a high-powered computing capability, supports the ability to make trend predictions based on past performance. Once trends are adequately defined, real-time data collection and transmission on equipment usage and component wear can support just-in-time logistics. For example, the status of an

Figure 2.
155mm self-propelled Howitzer undergoing testing using Firing Impulse Simulator

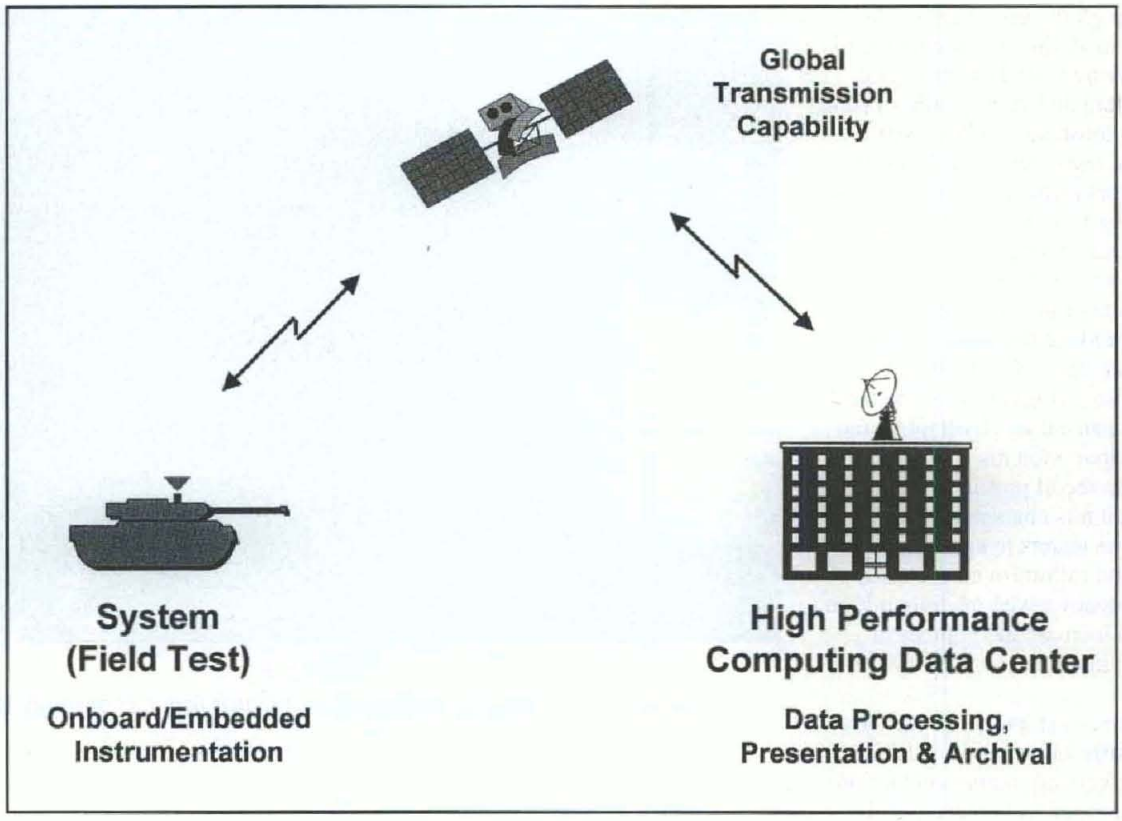

Figure 3.
Data acquisition of the future

individual part can be monitored, and a replacement part can be ordered and transported to the proper unit, thereby facilitating replacement just prior to part failure. This type of maintenance strategy significantly reduces the logistical footprint required to support our in-theater forces. The bottom line is that embedded instrumentation provides total asset visibility throughout a system's life cycle.

Future Test Technologies

Future testing and data acquisition will require pioneering efforts in a broad variety of technology areas. These include modeling and simulation, information technology, high-speed networking and data storage, wireless communications, artificial intelligence, and data security. Advances in instrumentation design are also needed to minimize the size, weight, and power consumption of embedded data acquisition systems.

Space and weight are always precious commodities in a combat vehicle system. Additionally, these same concepts will be applied to man-machine systems like Soldier 2025. Therefore, designers must strive to make instrumentation as close to weightless and invisible as possible. Furthermore, energy needs and operator intervention must be negligible. These challenges make the tester's job exciting and demanding for the next few decades.

Conclusion

The constantly changing needs of the warfighter and the proliferation of accelerated acquisition strategies such as the IAV will require future testers to be flexible and responsive. Testers must provide useful knowledge to the buyer, manufacturer, and warfighter, but must leverage technology to effectively test with less time and money. Developers and testers must continue to ensure that our warfighters have systems that are suitable, effective, and safe but accomplish this at a much faster pace than with earlier systems. While speed is indeed life, the challenge for testers is to keep pace with the velocity of change.

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NEW MEMBERS INDUCTED INTO COMPETITIVE DEVELOPMENT GROUP PROGRAM

YG97 Graduates Also Honored

Sandra R. Marks

Introduction

The annual Competitive Development Group (CDG) Orientation, hosted by the Acquisition Career Management Office (ACMO), was held Aug. 8-9, 2000, in Springfield, VA. The orientation provided a forum for members of CDG Year Groups (YGs) 97, 98, 00, and 01 to interact with their colleagues, gain information on Army Acquisition Corps (AAC) initiatives, familiarize themselves with the policies and procedures of the program, and seek guidance in their development as future AAC leaders from staff members of the ACMO and the Army Acquisition Executive Support Agency (AAESA). The orientation culminated with the first-ever commencement ceremony honoring the initial CDG graduates, YG97.

The following 25 individuals in YG01 were inaugurated into the 3-year career development program: Henry Alexander, Daniel Belk, Hari Bezwada, Deborah Chambers, Brian Churchman, David Duda, Eric Edwards, William Ellis Jr., Bernard Gajkowski, Duane Gotvald, Ross Guckert, Clarence Hamilton, Timothy Hughes, Robert Jamison, Angela Kielsmeier, Mike Lawrence, Allen Poole, Deborah Schumann, Dennis Simpson, Cassandra Smith, Robert Thomas, Stephen Tkac, Beverly Wasniewski, Diane Williams, and Kenneth Wright.

In addition, the following six military officers were inducted into the CDG Program under the newly created AAC CDG Military Cohort Program: MAJ Cris Boyd, MAJ Jeannette Jones, MAJ Steven Noe, MAJ Kenneth Payne, MAJ Matthew Riordan, and MAJ Frank Steinbugl. (For more information on this program, see the sidebar on Page 35.)

Program Overview

The orientation began with a series of sessions geared to providing an overview of the CDG Program and relating its importance to the AAC vision as a whole. COL Roger Carter, then both Acting Deputy Director for Acquisition Career Management (DDACM) and ACMO Director, formally welcomed YG01 to the orientation. (Carter retired from the Army this past September.) As a whole, Carter said, the CDG Program is the epitome of what the acquisition leadership preaches in broadening and producing flexible leaders for the future. There's no greater proof of the worth of a program, he added, than by the leadership wanting you, identifying positions where you can serve, and then promoting you into positions of higher responsibility.

Laverne Kidd, ACM for the southern and western regions

Mary Thomas, then ACMO Deputy Director, dissected components of the AAC vision as they relate to building future leaders. As the ambassadors of the Acquisition Corps, Thomas said, the CDG is the best example of how the AAC vision works. The development of leadership attributes underpins the foresight of the AAC, she added, and leadership capabilities enhance the AAC's contribution to our most important customer—the warfighter. On the topic of leadership competencies, Thomas switched her focus to the Acquisition Career Development Plan (ACDP) and career development models. Thomas called the ACDP an easy method for structuring one's career. It provides a framework to create a career progression map that guides Army Acquisition Workforce (AAW) members from a level of functional expertise to being able to apply the leadership competencies required for leadership positions. It also provides the information and tools necessary to assist AAW members in achieving success at all levels, a key initiative in the CDG Program.

Karen Walker, AAESA Director, briefly reviewed how AAESA operates as the Army Acquisition Executive's agent for military supremacy and life-cycle management of weapons and information systems. Walker also discussed how AAESA was formed, its missions, its organizational structure, and what it does for the people assigned to it. In outlining future initiatives, Walker said AAESA is committed to continued input to the Total Army Analysis process, transferring maintenance of the Acquisition Position Lists from ACMO to AAESA, handling position management, and developing a strategic plan to plot AAESA's course during the next 10 years.

Training Sessions

The next series of sessions focused on identifying the players and procedures that CDG members will encounter in the CDG Program. Carolyn Creamer, Civilian Personnel Management Specialist in AAESA's Personnel Management Division, presented an overview on the three regional acquisition offices, a new initiative that will simplify transitioning CDGs onto the AAESA Table of Distribution and Allowances. (The regional offices work closely with Acquisition Career Managers (ACMs) and Acquisition Career Management Advocates and are responsible for career development and regional workforce management.) Under this new initiative, each CDG member will be assigned an acquisition regional office, and the Civilian Personnel Advisory Center serving that office will take care of all personnel actions. Another new initiative Creamer discussed was "locator cards,"

Sandy Long, National Capital Regional Director

a method that allows CDG members to routinely update their location so they continue receiving vital information by e-mail.

Junius Wright, Budget Officer in AAESA's Resource Management (RM) Division, described his division's role as ACMO's accountant and financial advisor. The RM Division, he said, provides necessary funding information to ACMO management. Wright explained the procedures for processing fund certifications for travel orders and training and how to prepare permanent change of station (PCS) orders. He added that maintaining updated individual development plans (IDPs) will help expedite the approval process for training requests.

CDG members are centrally managed by the ACMs in the Acquisition Management Branch (AMB) of the U.S. Total Army Personnel Command. Gail Dinicolantonio, then ACM for the northeast and central regions, and Laverne Kidd, ACM for the southern and western regions, summarized the role of AMB in supporting AAC members, CDG members, and those who occupy critical acquisition positions. ACMs at AMB provide career management counseling, update Acquisition Career Record Briefs, maintain the Career Management Information File, perform AAC membership reviews, and oversee the processing of certifications. Additionally, for CDGs specifically, they offer slating and placement assistance, assist in IDP development, provide training registration and prioritization, and act as the liaison between the AAESA RM Division and the ACMO. Disseminating information on job and training opportunities and new AAC programs is one of AMB's most important responsibilities. To ensure this AMB benefit, Kidd encouraged CDG members to maintain frequent contact with their ACM, keep their locator cards and Acquisition Career Record Briefs current, and provide AMB feedback on assignments and programs.

For many YG01 members, entering the CDG Program meant their first exposure to the Civilian Acquisition Workforce Personnel Demonstration Project. A training session on the Contribution-based Compensation and Appraisal System (CCAS), the evaluation system used in the demo project, was presented by Jerry Lee, a Senior Analyst with Science Applications International

The initial CDG graduates, YG97, are shown with LTG Paul J. Kern, AAC Director, who is on the far left, and COL Roger Carter, then Acting DDACM and ACMO Director, who is on the far right.

YG01 CDG inductees

Corp. (SAIC), who supports the ACMO relative to implementation of the demo project. Lee began by describing the career paths and broadband levels, evaluation standards, and the scoring system, and demonstrated the formula for converting a GS grade to a demo salary and broadband level. Lee also covered various pay range concepts, the pay pool compensation process, and CCAS evaluation forms.

Sandy Long, National Capital Regional Director (now also Acting ACMO Director), supplemented Lee's presentation with a luncheon briefing that further described the forms used in the CCAS process, the personnel involved in the review process, and the tasks required to complete the evaluation process itself.

"Growing Leaders For The 21st Century" was the title of an interactive training session that focused on leadership competencies and preparations for career advancement. Sharon Senecal, a Management Training Consultant with 32 years of federal government service experience, engaged the audience in numerous exercises designed to assess one's strengths and weaknesses, identify personal career goals, raise external awareness to current issues and themes, and to recognize the importance of mentors.

At the conclusion of training sessions and at varying intervals throughout the orientation, time was allocated for updating IDPs and receiving career management guidance and counseling from the ACMs.

LTG Paul J. Kern, Director, Army Acquisition Corps

Recognition Dinners

YG01 members were recognized during a Tuesday evening dinner honoring their selection for the program. Guest speaker Keith Charles, Acting Director, Acquisition Education, Training, and Career Development, Office of the Deputy Under Secretary of Defense for Acquisition Reform, focused on the topics of the changing workforce and leadership. Charles addressed changes in federal workforce demographics, in workforce education and skill requirements, and in the basic federal workforce culture. New employees, he added, will have different employment options, different career expectations, and will be expected to lead and be multifunctional. Charles urged CDG members to choose an organization that has a mission they believe in and seek challenging assignments. Ultimately, he concluded, employees are responsible for their own career development. Following Charles' speech, YG01 members were presented a citation, an AAC coin, and a CDG pin signifying their accesssion into the program.

The CDG orientation culminated with a ceremonious commencement dinner Wednesday evening to honor YG97 on its completion of the 3-year program. Guest speaker LTG Paul J. Kern, Army Acquisition Corps Director, gave a spirited address outlining some of the challenges facing the CDG graduates as future leaders of the Acquisition Workforce. The CDG Program, Kern said, is about developing the people who are going to be able to take the Army into the future. YG97 in particular, he said, exemplifies what our future leaders should be, adding that the other CDG groups can look to them for inspiration. Kern cautioned that leading complex programs often places demands on a person's technical and contracting expertise, operational experience, and one's ability to deal with people. However, he encouraged the group to always "keep their eye on the objective," to equip, train, and prepare the soldiers of the future.

Conclusion

The CDG Program orientation once again proved to be a great success both for YG01 members transitioning into the program and for YGs seeking further guidance to develop their leadership competencies.

SANDRA R. MARKS, an employee of SAIC, provides contract support to the Army AL&T magazine staff. She has a B.S. in journalism from the University of Maryland, College Park, MD.

CDG MILITARY COHORT PROGRAM

The Competitive Development Group (CDG) Military Cohort Program, which was established by the Deputy Director for Acquisition Career Management (DDACM), gives eligible military officers, grade O-4, an opportunity to train concurrently with AAC civilian CDG members, thus strengthening the relationship between civilian and military AAC professionals. Military personnel will have the same benefits and responsibilities as their civilian counterparts; however, they will not participate in rotational assignments.

The selection process begins with the Total Army Personnel Command's Acquisition Management Branch (AMB), which identifies no more than 10 officers, grade O-4, to participate in the program based on nominations from the field. (Please note, this process will begin with the selection of YG02 CDG Military Cohort Program participants.) AMB selection criteria include successful completion of staff and acquisition assignments and high academic achievement in advanced civil schooling. The DDACM, who has program oversight, has final approval authority on AMB recommendations. The program is managed by the Acquisition Career Management Office (ACMO) Director, who provides guidance on Individual Development Plans, defines program requirements, and develops and manages budget and training allocations.

For more information on the program, contact Maria Holmes in the ACMO at (703) 604-7113, DSN 664-7113, e-mail **maria.holmes@sarda.army.mil**.

PROFIT: A MISUSED AND MISUNDERSTOOD TERM

Kenneth B. Connolly

Many people often confuse, misunderstand, or misuse the term "profit." To some in DOD, the word has a single meaning. To them, profit is a percentage of the manufacturing cost that is passed on to the customer and included in the final agreed-to price that appears in the contract. In other words, profit is what the firm keeps after payment.

Ask those in business for their firm's profit rate and you might get the following response: Do you mean gross or net profit, net income, or increase or decrease in stockholder equity?

Another consideration is the difference between profit margin and profitability. Bear in mind that in the long term, a firm's profitability benefits the Army because it contributes to a stable Defense industrial base. Profit margins are based on total operating revenue and exclude investments in assets or equity investments made by a firm. However, when assessing a firm's profitability, investments in assets or equity investments are included. Besides, assessing a firm's short-term profit margin does not necessarily indicate its long-term financial health or profitability. Over the short term, a firm may forgo a profit margin to achieve a long-term goal. However, a commercial enterprise's long-term financial goal should always be to increase stockholder equity.

A firm's profit margins and profitability can be increased in various ways. Some believe that the quickest way to increase profit margin is to sell off fixed assets. The proceeds can be converted immediately into stockholder equity. However, the positive results of this action are short-lived. Without fixed assets, most firms would lose the revenue they require for long-term profitability.

Some believe that a firm's profitability increases when its sales increase. However, increasing sales can involve commensurate or greater increases in liabilities as a firm borrows money to increase its assets to meet increased product demand. Also, investing to increase sales does not guarantee an increase in sales, which further exacerbates a firm's profitability.

Others believe that profitability increases when a product's price increases. In this particular case, net profit margins could increase, but profitability could decrease because the consumer may decide to purchase fewer products. In addition, increasing prices may bring more industry competition and thereby decrease a firm's market share, all of which act to reduce firm's profitability.

The only way to ensure profitability is to obtain returns commensurate with investment risks and use assets prudently; to carefully manage liabilities, stockholder equity, and risk; and to bring the right products to market on time and at the right price.

The only way to ensure profitability is to obtain returns commensurate with investment risks and use assets prudently; to carefully manage liabilities, stockholder equity, and risk; and to bring the right products to market on time and at the right price. A little luck is also helpful. Competitive industries ensure these types of actions by managers or their businesses will perish. Even monopolistic industries should follow these standards or risk regulation, competition, or both. However, the silent hand of economic forces weakens when controlling a market; in other words, when a market is monopsonistic (a single consumer with multiple sellers), especially if that consumer is the federal government.

Before the federal government pays an excessive profit (which could be defined as a higher price), it needs to assess whether profit returns as defined by industry are reasonable. The government should not just fuel inefficient and ineffective management by the industries from which it purchases products. For example, articles in business journals occasionally describe managers boasting that their firms earn a gross profit margin (GPM) of 25 percent or more. Does the federal government ever pay a firm a 25 percent GPM? Yes, and perhaps routinely. Remember that GPM exists when revenues are greater than cost of goods sold (COGS).

With this understanding of GPM, selling to the government could be a profitable venture. In other words, with the way that the government currently views profit, a firm has the potential to realize an acceptable rate of return on investment, especially when considering the investment risks. Experience has shown that the government routinely allows for general and administrative (G&A) expenses ranging from 5 to 35 percent, a net income/profit of 5 to 15 percent, and facilities capital cost of money (FCCM) between 1 and 5 percent. If each of the given variables is totaled, DOD routinely allows GPM of between 11 and 55 percent. GPM is even greater in cost-type contracts because even though the fee is fixed, the G&A (a major portion of the GPM) and FCCM increase with each increase of COGS. So, if a firm's manager boasts of a 25 percent GPM, could you imagine what investors would think if that same person could boast that his firm earned a GPM of 55 percent? Add the fact that the government will finance its own contracts, and the profitability picture gets even rosier.

The Army must address the following four factors if it does not want to pay an excessive price for the products it purchases and if it expects to help a firm's profitability.

- The Army should not view partnering with the supplier as a panacea to improve its position with its supplier or the industry at large. The reality is that operating in the market is like an economic war. If either the supplier or consumer does not understand the rules of engagement, one of the parties could covertly or accidentally lose a lot of money. Because of its limited view of profit and profitability, the Army is at a serious disadvantage in the marketplace. Partnering does not remedy this situation.
- The Army should not focus on each cost element that makes up the sales price or cringe whenever some firm announces that its annual profit margin is 28 percent. The Army needs to look at COGS and accept an industry standard for GPM. By treating costs this way, the Army leaves the decisions that affect a firm's profitability to the firm's managers and owners. They are the ones most affected by the firm's profitability.
- If these ideas are too radical, at least with cost-type contracts, the Army needs to treat G&A and FCCM the same way the fee is treated: by fixing the GPM. This would provide greater incentive for the contractor to control cost because GPM would not fluctuate with its COGS. Treating G&A and FCCM as part of the fee will leave the contractor in better control to decide its profitability.
- Finally, to maintain or increase a firm's profitability or at least reduce the effects of a firm's inefficient management, the Army must be a good consumer. Good consumers purchase quantities of products that provide for the most efficient use of a firm's assets. Good consumers take possession of the products in the manner agreed to in the contract. Good consumers pay for products on time and in the agreed-to amount. In other words, the Army could improve a firm's profitability by accelerating product acquisition (reducing a firm's ending inventory costs) and paying for those products on time (maintaining or improving a firm's cash flow).

In summary, the Army must realize that the market, even a monopsony, is an economic war between the supplier and consumer. If the Army expects to prevail, it needs to learn the rules of engagement in commercial terms, particularly in terms of profit, profitability, and how these terms relate to the goals of a particular firm and an industry at large. Also, when conducting cost analyses, the Army needs to limit its focus to COGS and establish or accept an industry rate for GPM. This will increase the Army's ability to improve a firm's profitability; increase the Army's market advantage; and enhance the Army's ability to increase its supplier base. Finally, the Army has an easy way to positively influence a firm's profitability: be a good consumer.

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MANAGING EXPECTATIONS IN WEAPON SYSTEMS DEVELOPMENT

LTC(P) Michael E. Johnson

"Oft expectation fails, and most oft there where most it promises."

—William Shakespeare
All's Well That Ends Well

Introduction

Carefully managing the expectations of soldiers and other key stakeholders can play a pivotal role in the development of weapon systems. Soldiers are an integral part of nearly all weapon systems, and they can have significant influence on expected, as well as actual, equipment performance. Increasingly, soldiers are involved earlier in the development process—long before the hardware and/or software is mature. Seeking soldier feedback earlier can save developers time and money by ensuring that a program is on the right track to achieve its performance objectives. Ensuring that expectations of key stakeholders are realistic can avoid creating perceptions that are either inflated or too low. This article provides examples of the potential impact of getting soldier feedback early in the materiel development process and examines how two different development teams managed the expectations of key stakeholders.

Effect Of Expectations

Soldier expectations can affect a weapon system's anticipated performance. There is a saying that goes, if a scientist is asked if a system works, he will say yes if it works once. If an engineer is asked, he will say yes if the system works most of the time. If an end user or soldier is asked, he will say no if the system fails once. This adage was clearly illustrated with the Ground Based Sensor Non-developmental Item Candidate Evaluation conducted at a Fort Bliss, TX, test range in spring 1991. Seven radars were evaluated for the opportunity to become the next air defense artillery forward-area sensor by competing in several tests to provide early warning and target-location data to supported Avenger weapon systems. The selected radar evaluated as "outstanding" actually could have been chosen more than a year earlier, but was competed against other radars at least in part because of its apparently "poor performance." What allowed the radar to go from poor to outstanding in 1 year? When asked, the contractor's engineers replied that they had only made relatively minor software modifications. From the outset, the radar still had ample capability to meet all shared operational requirements, but most important, the changes to the radar software reduced soldiers' confusion by lowering the number of false targets. The baseline version had caused soldiers to hear many audible tones and see many screen indications for aircraft that were not really there. One of the many factors contributing to the radar being selected as the winner was soldier confidence in the system and a willingness to trust the radar data when conducting simulated Avenger engagements. The winning radar is now fielded and known as the highly successful Sentinel.

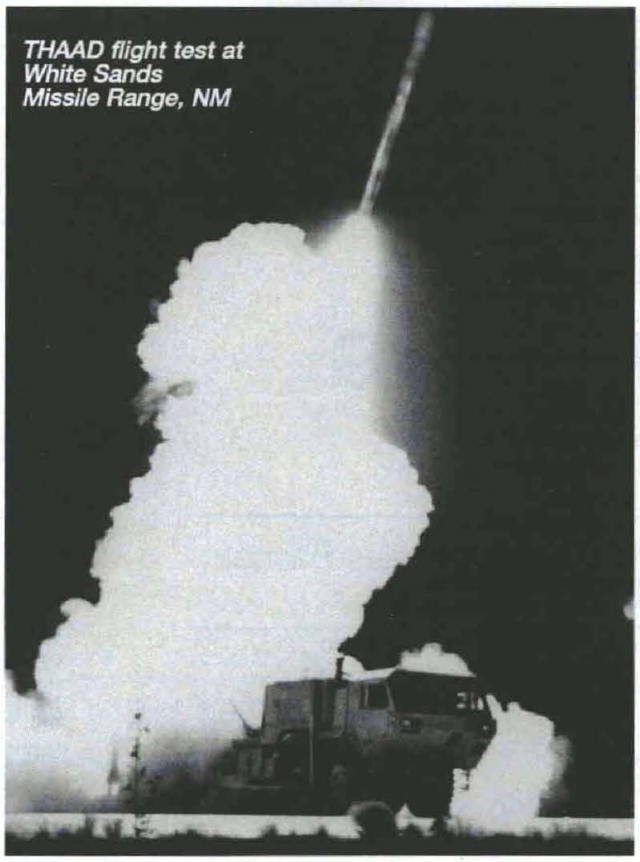
Sentinel system and prime mover/power

Input To EFOGM

Soldiers also provided critical user input to the design of the Enhanced Fiber-Optic Guided Missile (EFOGM). A well-planned, short-duration evaluation was conducted early in the development process. Soldiers were carefully integrated into the program to ensure that they understood performance capabilities of the prototype system and their role in influencing the final product. The EFOGM early soldier evaluation was planned and conducted less than 3 months after a contract award. Key stakeholders, including the government EFOGM Project Office, soldiers from Fort Benning, GA, and the prime contractor, Raytheon, were cooperatively involved throughout the planning and conduct of the soldier evaluation. Preparation included an early safety assessment and interim safety release to cover the scope of expected soldier involvement; development of a data-collection plan and a questionnaire; and identification of environmental factors that might affect performance (noise, light, etc.). Both a pre-evaluation for

soldiers and a contractor system orientation were conducted. Lessons learned from the pre-evaluation were then applied to the evaluation conducted the following day. Each day's testing concluded with soldier outbriefs and questionnaires to capture real-time soldier feedback. The entire evaluation required less than 1 week and fewer than 20 soldiers, but it yielded significant design recommendations including the following:

- Create channel guides for missile retaining pins to ease reload operations, especially at night;
- Redesign gunner console screens to be thinner (more room was needed) and to be nonglare;
- Change filter locations to make them more accessible for required periodic maintenance;
- Add inside blackout curtains to reduce nighttime detection from screen glare; and
- Change gunner screen displays to be more intuitive and to guide gunners through correct steps.



THAAD flight test at White Sands Missile Range, NM

The changes (and more) were implemented to provide a superior product and to achieve significant cost savings.

THAAD System Enhancements

A critical element in the Theater High Altitude Area Defense (THAAD) system development included the management of expectations for its interim prototype called the User Operational Evaluation System (UOES). Unlike the short duration effort of the EFOGM development team, the THAAD team has included continuous soldier involvement over many years to support early development and to deploy, if necessary, with the UOES in a national emergency. The team found that if performance expectations became too high, then continued development of the THAAD objective system was at risk. In an era of tight research, development, test, and evaluation budgets, there was a concern that an overly optimistic perception of the prototype's performance could stop the effort to develop the objective system.

The THAAD UOES created an initial impression that it was a highly capable system based on well-packaged system segments, incorporating many military off-the-shelf components and government-furnished equipment. In fact, many individuals felt that the objective system capability was now there. If the warfighters relied too heavily on the system's perceived capabilities, they would push to prematurely deploy it at the expense of a more mature and dependable system. As such, numerous briefings were presented to explain the differences between developmental capabilities and documented soldier requirements.

Hundreds of thousands of lines of software code must still be completed to ensure THADD meets warfighter requirements. In addition, equipment design upgrades are still needed to make it sufficiently rugged for soldier use, and required comprehensive testing and evaluation must continue to validate its performance.

Conversely, a dilemma also existed if the expectations of the prototype's performance were too low. In particular, there was concern that the objective system's performance and suitability may have been prematurely judged. The THAAD team has made remarkable progress in developing and integrating a *complete weapon system* including launchers, radars, battle management systems, and missiles. There has been criticism of the missile for not hitting a target until its seventh and eighth intercept attempts. Yet there have been repeated successes of all ground segments and continued progress has been made in missile design durability and producibility. Many successfully fielded weapon systems required significantly more development during their prototype stages than THAAD. Again, the management of warfighters' and key decisionmakers' expectations was necessary to ensure that perceptions of performance and suitability were realistically aligned with the prototype nature of the UOES.

Today, THAAD is progressing into the engineering and manufacturing development phase while portions of the UOES (most notably the radar elements) are being evaluated for near-term surveillance missions. Early soldier input into the objective system design saved THAAD developers nearly $25 million.

Conclusion

Soldier involvement in the development process is a sure means to obtain valuable early feedback. A costly future test or design iteration/spiral can be avoided if soldier input is properly planned for and collected, and if soldier expectations are kept appropriate to the level of the design maturity of the system's hardware and software. The investment in continuous communication with warfighters and other stakeholders is essential to ensure that prototype capabilities are neither undersold nor overestimated. Today, military and industry program managers have increasingly more responsibilities and less time to carry them out. Therefore, careful attention to managing stakeholder expectations is paramount to reduce unnecessary risk and optimize resources. Expectation should succeed "where most it promises" to give soldiers the best possible product whenever it is needed.

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STANDARDIZING INSPECTION AND ACCEPTANCE THROUGH PARTNERING AND SPI

LTC Stephen D. Kreider, LTC Charles Basham, and MAJ Darryl Colvin

Introduction

The Army's overarching goal for acquisition reform is to reduce cost, remove barriers, and promote business efficiencies between the government and industry. The Single Process Initiative (SPI), introduced by Secretary of Defense William J. Perry on Dec. 8, 1995, is the mechanism for implementing changes to existing contracts to bring about these goals.

In 1999, the Program Management Office for the Multiple Launch Rocket System (PMO, MLRS) and the Program Management Office for the Bradley Fighting Vehicle Systems (PMO, BFVS) partnered with United Defense Limited Partnership (UDLP), Lockheed Martin Missiles and Fire Control–Dallas (LMMFC-D), Defense Distribution Depot Red River (DDRT), Red River Army Depot (RRAD), and the then Defense Contracting Management Command (DCMC-York and -Camden) to develop an SPI to standardize the inspection and acceptance procedures for the M993/A1 carrier and the M270/A1 launcher. The standardized inspection and acceptance procedures were designed to eliminate multiple inspection and acceptance processes; establish advanced world-class practices while reducing the need for oversight; and achieve cost, schedule, and performance benefits for the government and the contractor. The M270/A1 Talkman inspection and acceptance system, designed by UDLP, will achieve these goals by providing a single, accurate, and consistent process for inspection and acceptance and by providing real-time deficiency reporting to contractors and the government. (Talkman is a registered trademark of Vocollect Verbal Computing Systems.)

Why SPI?

SPI allows (not requires) contractors to establish a single process within their facilities to increase efficiency, reduce contractor and product costs, and improve product quality. Use of single processes will help the contractor meet the needs of multiple government customers, thus eliminating duplicative contractor systems and processes.

Talkman System Background

Talkman is a portable electronic data collection device worn on the belt. With a rechargeable battery pack, it weighs approximately 3 pounds. Unlike any other data collection device, Talkman uses a combination of text-to-speech voice synthesis and voice-recognition technology. In other words, Talkman actually talks to the inspector and responds to the inspector's verbal commands.

In 1992, UDLP introduced Talkman into the weld inspection area where the BFV was built. Instructions were developed to guide the inspector through a consistent predetermined inspection sequence ensuring a complete and thorough examination of the hull weld. Talkman instructs the inspector where to go and what to look at, and asks questions to determine the suitability of the equipment. If the inspector is uncertain, he or she can ask Talkman for help, criteria, or drawing information and receive a spoken message that provides the information instantly. Any reported defects are automatically documented by Talkman and downloaded to a database for tracking corrective action and defect trend analysis.

In 1995, PMO, BFVS asked UDLP to develop a Talkman inspection program for the BFV A2 deprocessing operations at Fort Stewart, GA. As a result of this request, Talkman saved inspectors between 2 and 4 hours of documentation and inspection criteria research time per vehicle.

MLRS Initiative

In 1998, impressed with the work done for the PMO, BFVS, the PMO, MLRS awarded a contract to UDLP to develop the MLRS Talkman inspection and acceptance system. The system was to go beyond just UDLP carrier inspection to establish real-time reporting through the LMMFC-D network, and to be used by inspectors at DDRT, RRAD, LMMFC (Camden, AR), and UDLP (York, PA) to examine a complete M270/A1 system. Common inspection criteria would be used for all aspects of production, fielding, foreign military sales (FMS), and depot support.

Partnering was used to generate the common inspection and acceptance criteria. A process action team (PAT) was formed with quality assurance, engineering, logistics, fielding, and contract representatives from PMO, MLRS; PMO, BFVS; RRAD; DDRT; DCMC-York and -Camden; LMMFC; and UDLP. The team's goal was to decrease unexpected government and contractor costs by developing and implementing a process to address launcher inspection and acceptance, deficiency reporting, and issue resolution.

The PAT reviewed the carrier and launcher final inspection records, the launcher advanced test procedures, and the launcher fielding checklists and quickly learned that not only were there 11 different inspection and acceptance documents, the inspection and acceptance criteria were not the same. Information on recurring and nonrecurring deficiencies was not getting back to the depot and contractor production lines for root-cause analysis and corrective action. In less than a year, the PAT established standardized inspection and acceptance criteria from production through fielding. The PAT accomplished this by doing the following:

- Developing a Talkman system for M270/A1 inspection, acceptance, and deficiency reporting, thereby condensing the 11 different inspection and acceptance documents into 1 common inspection criterion;
- Developing a database to capture deficiency reporting from each inspection and acceptance point;

• Reviewing, updating, and approving the standardized aluminum welding specification for implementation at UDLP and RRAD;

• Reviewing, updating, and approving the depot maintenance work requirements for the M993 carrier; and

• Re-establishing the M993 baseline for all organizations involved with carrier remanufacturing (from induction through fielding).

Overall Benefits

The M270/A1 Talkman system improves quality and provides significant cost savings (i.e., time, dollars, and manpower requirements) by doing the following:

• *Reducing Variability In Inspection.* Each inspection is performed exactly the same way regardless of the operator. The process is consistent, efficient, thorough, and repeatable. Consistent data collection also provides better overall analysis capability across multiple locations and organizations.

• *Reducing Documentation Time.* Inspection data are collected while the task is performed rather than after it is completed. The data are downloaded to provide computer-generated reporting and automated quality trend analysis. Prior to fielding the MLRS Talkman system, DDRT averaged 100 hours preparing for each quarterly MLRS production review because of lengthy checklists, defect sheets, and other handwritten documentation. The same process took them less than 1 hour to prepare for the most recent MLRS production review using the MLRS Talkman system and database.

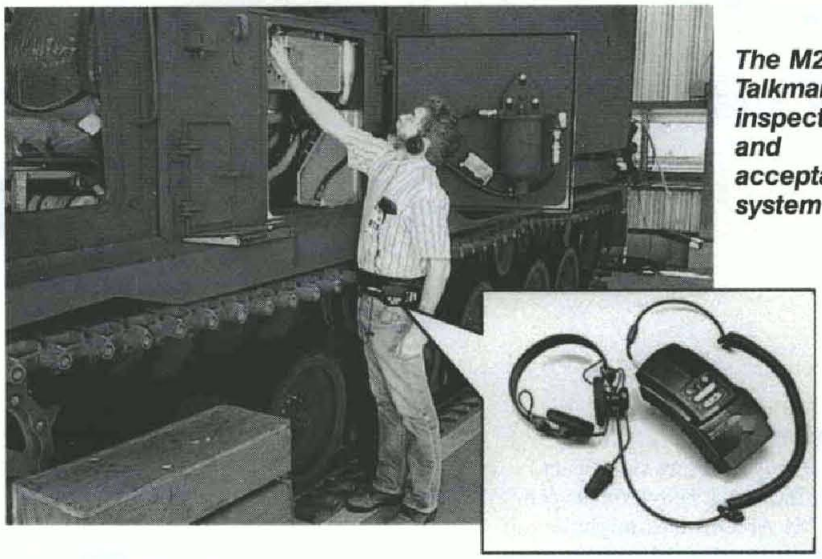
• *Reducing Training Time.* With minimal training, an operator can independently begin performing lengthy, detailed tasks by just following step by step verbal instructions from Talkman.

• *Reducing Research Time.* The operator can verbally request and retrieve itemized inspection criteria. This often eliminates the need to perform lengthy research of technical manuals and drawing requirements.

• *Increasing Efficiency.* Talkman is a hands-free data collector. The human voice is the fastest, most accurate means of data collection, and is easily the most practical and versatile.

• *Reducing Oversight.* Government or contractor quality assurance specialists can quickly scan the printed report of inspection results, thereby eliminating the need for redundant inspections.

The Talkman inspection database developed by UDLP has automated defect trend analysis capabilities. The database identifies the most frequently occurring items found deficient by inspection. Manpower necessary to perform root-cause investigations and corrective-action initiatives concentrates on those areas that will have the greatest impact on reducing deficiencies overall. For example, out of 24 launchers inspected, 5 had deficiencies relative to the records and forms required as part of the preparation for delivery, and 5 had problems with the initial elevation resolver readout tests. Each of these deficiencies had a 20.8 percent occurrence rate, or one out of every five units. Correcting the cause of these two deficiencies alone would significantly reduce the average defects per unit and eliminate predictable recurring deficiencies.



The M270/A1 Talkman inspection and acceptance system

Other automated reports provide running averages on the number of overall defects per vehicle or launcher. These reports identify which units were affected by certain defect types. The running average reports provide management with a quick reference on the effectiveness of the corrective action systems and initiatives in place. Reports identifying which vehicles or launchers had specific problems provide traceability and detailed problem descriptions. Anyone can produce accurate professional quality reports in just a few seconds using a point-and-click medium.

Other Uses

The M270/A1 Talkman system can be programmed for deprocessing any configuration of the M270. This is extremely important for the different FMS configurations. Redundant documentation requirements will be eliminated. Once the collected information is loaded into a database, it can be directed to appear on as many different forms as required by each respective government agency or contractor.

Summary

The MLRS teaming effort between contractors and government agencies to provide a standardized inspection and acceptance process under the SPI has been a resounding success. The MLRS M270/A1 Talkman system clearly met the intent of SPI to eliminate multiple inspection and acceptance processes; achieve cost, schedule, and performance benefits; and establish advanced world-class practices.

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A New Strategy For Buying Ground Weapon Systems . . .

PRODUCTION LEVELING

COL James R. Moran and
Wesley L. Glasgow

Introduction

Today's Army is facing significant change. Convinced that heavy forces centered on the M1 Abrams tank might be self-limiting, planners are investing in a strategically lighter and operationally more agile force. To win battles on the ground, however, the Army still requires a highly lethal, mobile, survivable, and versatile ground system.

While planners define that system's form and function, there is a need to examine new manufacturing and fielding strategies. For example, how can the systems-development process be made more cost-effective and fielded systems be made more supportable? Can we profit from existing lessons learned? This article explores these questions by looking at an alternative strategy called "production leveling," a new approach to acquire future ground systems.

The Production Leveling Approach

To set the stage, consider a hypothetical system we'll call the Combat Assault Vehicle (CAV). Assume CAV is an entirely new combat system, one that can assume many roles, has advanced mobility and survivability features, employs different weapons for different missions, and is the principal weapon platform in combat battalions. The CAV is not a single system but a "system of systems," employing common components for multiple combat roles.

The first goal in devising a CAV acquisition concept ought to be *consistency and predictability* in production and deployment. Past systems, such as the M1 Abrams tank, were hampered by a significant "bulge" in early production that caused difficult modernization problems later. CAV, on the other hand, has a nearly level production stream to avoid the bulge effect. The heart of the strategy is to make *consistent* management decisions from the beginning to the end of production through deployment.

To implement this approach, the system is annually procured in battalion or unit sets—enough to equip the force structure and maintain consistent fielding packages. For example, suppose that 45 CAVs are fielded for each battalion. Assume also that there is a validated need for 80 battalions (Active and Reserve) in the force structure. Thus, roughly 3,600 systems comprise the objective quantity (a few extras added for training purposes). More systems might actually be needed, but numbers of battalions or numbers of vehicles per unit (more or less) can be adjusted over the course of the program. Numbers are less important than consistently managing the fielding packages. If more or fewer vehicles are needed, the program will be adjusted to meet that quantity. The same approach works for augmentations supporting the Marine Corps, foreign military sales, or coproduction requirements.

Let's take a closer look at this approach. Beginning in year 1, 90 CAVs might be purchased to equip 2 battalions while fielding the first CAV battalion. (Assume a 1-year lag time between purchase and fielding, i.e., the first battalion set was purchased in year 0.)

Production increases up to 4 battalion sets per year (it could be 2, 6, or x sets if needed) up to year 7. At this point, 23 base model battalions are bought and 21 fielded, but now accumulated modifications in the 5 intervening years are applied to a block upgrade on one battalion set of CAVs, which then undergoes validation testing.

The 5- to 7-year cycle of upgrades continues over the 20-year useful life of the CAV until the full complement is produced. For each upgrade phase, six battalions (perhaps one division or two brigades worth of CAVs) over 3 years become the "testbed" assets to prove out new modifications. These vehicles remain fielded and attain their useful life as the remaining units field the latest CAV modification. Eventually, something either replaces CAV, or, another CAV mod will be fielded back to the initial gaining units, thus replacing their 20-year-old models.

The CAV level-production process should foster more stable research, development, test, and evaluation (RDT&E) and procurement budgets and improve overall management of the program. In general, budget forecasting is easier and, even with increasing technical complexity from the CAV modifications, costs should be offset by manufacturing innovations, engineering breakthroughs, and other savings.

The Upside To The CAV Case

The CAV strategy's major advantage is consistency. The program never really ends until the next generation system is fielded. By the Army consciously deciding to field at a level rate, production endures over time and the "pure" sustainment phase is avoided. Uncertain support of out-of-production fielded systems is replaced with modernized product improvement to ongoing production models. Other government benefits include predictable technical manual changes, resourced test and experimentation, easier provisioning, and better coordinated equipment changes and technology insertions.

Beyond these government benefits, industry also gains. Contractor resources will be directed at a known quantity, which lowers manufacturing costs and contributes to more efficient production and healthier profits. Ultimately, restricted budgets make cost containment a necessity.

Additionally, with stable production, the industrial base remains hot, retooling is

reduced, and technical expertise remains fresh. Stability also facilitates configuration control. Retrofit operations can be fine-tuned to mirror production processes and, ultimately, upgrades will be fielded sooner.

The CAV approach is particularly useful when there is low risk of a major war because large numbers of systems are not immediately needed. Instead, it makes more sense to field and upgrade systematically to tailor capability as the threat evolves. Tailoring can occur by moving battalions from Active to Reserve forces, or vice-versa as the threat changes.

CAV benefits should cascade throughout the force, including support elements. Producing known quantities of the main ground combat system will result in better decisionmaking and enhanced capability and efficiency of all supporting systems.

The Downside

The CAV approach does have some disadvantages. One apparent disadvantage is the seemingly high state of obsolescence in the majority of the force. The longest fielded CAV systems will have increasingly less capability over the life of the program. This is particularly true if technological "leap-aheads" occur every 6-8 years. To deal with this problem, a portion of the annual procurement budget should be earmarked for retrofitting older versions.

Another disadvantage is that CAV might foster "armies within the Army," where units with different capabilities exist simultaneously. Fielding of only a few battalion sets at a time to a division may be unavoidable; however, management could mandate subunits (such as a brigade or regiment) be fielded in the same timeframe as the new system. Logisticians may argue that this fosters multiple support requirements. While true to a degree, the problem depends on whether the Army still employs division-sized elements when CAV is fielded. Speculation seems to lean more toward a distributed battlefield where brigade-sized or smaller units operate, a view consistent with the Army's emerging medium-brigade fielding plans.

Opening scenes of a major conflict could present problems for CAV. Combat leaders of early deploying forces will want the very best systems in the hands of their soldiers. There will be pressure to bring all forces up to snuff quickly. One might argue that under the CAV scenario, too few of the best types would be available to equip early entry forces.

This perception is mitigated by the fact that in all years, save those when CAV first enters test and evaluation, several battalions will have been equipped with the latest modification. In fact, the average probability for any year that a single given crew has the latest CAV configuration is 0.206. While this appears low, it actually exceeds the M1 Program, where since 1980 under the same conditions, the average probability was only 0.184 that a given crew was equipped with the latest vehicle configuration.

Another concern is whether crisis surge potential exists. Although a concern, the M1 Program faced the same situation in its earliest years, but 10 production years passed before the Persian Gulf War demanded a production surge. With the planned retrofit of older CAV models, the fleet should be close in capability to the latest production model. A surge retrofit program may also be easier to manage in an emergency than rapidly increasing new production. Additionally, under a level-production concept, some capability should exist in production facilities to increase production through adding additional shifts and employing existing underemployed production capacity.

Another subtle argument is the CAV implications to industrial competition. For a single 20-year program, a prime integrating contractor would be inevitable. Opportunities for competition at this level, therefore, would arguably diminish. With reduced competitive pressures, one might argue that prices will rise above the rate of savings from the likely multiyear CAV contracts. However, the reality today is that only two major combat vehicle producers stand in the competitive arena and neither are major producers of commercial products. Indeed, they operate at marginal efficiency because of unstable government purchasing.

Why does this situation exist? An often-heard criticism of military programs is that major automotive producers hesitate to play precisely because production is unpredictable. Perceived restrictive requirements, lengthy RDT&E, and government red tape make it problematic whether production can recoup costs. The government sales volume, compared with commercial sales, is such that diverting scarce engineering and production talent is viewed as counterproductive. So what difference could the CAV Program make?

The competitive balance might change under a structured and predictable CAV approach. Perhaps incentives such as commitment to commercial standards, employing systems close to the commercial designs, or government purchase of the technical data could generate greater competitive interest. These factors might actually stimulate a healthier Defense vehicle industry.

Do We Take The Step?

When a needed capability surfaces, the urge is to strike while the need is hot. But that strategy has consequences the day the threat changes. Decisions then are inevitable on whether to build new systems, deploy resources to upgrade existing systems, or to simply accept the risky situation. Meanwhile, system capability dips and it becomes increasingly difficult to re-energize industry for a crisis.

Production leveling has promise in avoiding some of these problems. It can be easier to sustain, hardier in times of economic constraint, and potentially popular with industry. The concept offers promise in several directions that should be carefully weighed by decisionmakers as we head into the next significant round of combat vehicle development.

COL JAMES R. MORAN is Project Manager, Abrams Tank Systems, in Warren, MI. He is a graduate of the U.S. Military Academy. In addition, he holds an M.S. in mechanical engineering from the Air Force Institute of Technology and an M.S. in national resource strategy from the Industrial College of the Armed Forces.

WESLEY L. GLASGOW is an Analyst with Camber Corp., headquartered in Huntsville, AL. A retired Army officer, he served previous assignments as an Operational Tester at Fort Sill, OK, and a Materiel Developer at the U.S. Army Tank-automotive and Armaments Command in Warren, MI.

A Historical Perspective . . .

THE U.S. ARMY INFORMATION SYSTEMS ENGINEERING COMMAND'S TECHNOLOGY INTEGRATION CENTER

James H. Ward

Introduction

In terms of impact, no single system, strategy, or focus in the Army has been a greater change agent than computers and the networks that have linked them. In fact, as early as 1984, U.S. Army Information Systems Command (ISC) officials forecast the Army's growing reliance on the computer. In so doing, they were determined to shorten the acquisition cycle while being mindful of the total cost of ownership.

In 1984, like today, new systems were being developed to replace old machines, enhance capabilities, and add staggering capacity to the Army's voice, data, and messaging processes. It was clear that the Army needed a center of excellence to test and validate its information technology (IT) capabilities and tools for integration and application within its infrastructure.

The responsibility to develop and manage such a center of excellence was assigned by ISC to the U.S. Army Information Systems Engineering Command (ISEC), which had worked for years on computing and information management improvements. In late 1984, LTG Emmett Paige (USA, Ret.) launched the Small Computer Engineering Center (SCEC) in Fort Huachuca's Splinter Village, AZ. This facility represented a quantum leap forward in the Army's commitment to the future of information systems integration, which was sparked by the sweeping changes the personal computer (PC) was introducing to the world. In a way, it represented a kind of Manhattan Project for IT.

The Early Years

Historically, in the years following World War II, many engineers and computer scientists believed in the old acquisition cycle. Paige said they believed that the intensive "waterfall" method of design, build, test, and field had served the military well and, if it was not broken, why fix it. "There was no doubt in my mind that it was an almost impossible task to change the culture of the scientists and engineers who had come along after World War II. They wanted no part of using commercial communications and computers on the battlefield, and that attitude also permeated the Army combat development community at Fort Gordon [GA] and the troop units in the field, ... " Paige added.

With the advent of the PC, the Army needed to identify machines with the right capabilities at a time when numerous computer manufacturers were bursting on the scene. The Army also needed to support signal leaders' decisions to purchase commercially built PCs. "Our intent was that no computer would be purchased for Army use unless it had been evaluated by the SCEC. It was our intent that the project managers and program managers at Fort Monmouth, [NJ], would have a cell of experts to help and advise them in their task of providing the Army with the capabilities they needed at the lowest total cost of ownership," Paige said.

In its early days, the SCEC operated as a kind of skunk works with 20 engineers, most of them young officers and students who could get in on the ground floor of equipment testing and evaluation. Then, as they moved up in rank or position, they would be in place to influence the way technology would be used in the military.

Jo Tate Osborne, who served as SCEC's Senior Electronics Engineer and Deputy in the early years, said the center was responsible for reviewing each component of the Army's mini- and microcomputer contracts and for assisting systems engineers in selecting the most appropriate platforms for their application.

Another key member of the staff was Ron Boggie, who served in a number of capacities within ISEC and the SCEC, which later became known as the Computer Engineering Center (CEC) in 1989. Boggie believed that the "slick" advertising brochures and new product briefings that promised performance were directed more at outdistancing the competition than meeting the needs of the kind of large-scale competitive procurement the military was demanding.

Dr. Frank Jenia, ISEC's Deputy Commander and Technical Director said, "The staff knew that their evaluations

would influence the shape of information technology. We simply had to ensure that our reports were completely free of personal opinion and based solely on empirical results."

Echoing those remarks is one of ISEC's early CEC military engineers whose pioneering work led the military down the domain name server road. "All small computer software and hardware had to pass our evaluations," said MAJ Curt Vincent, who served in the CEC from 1985 to 1990. "They had to be nonproprietary. We take that for granted now, but back then, it was no fun. We had tons and tons of 'stovepipe' information systems, which could not talk to each other. Within a particular military organization, the personnel systems didn't talk to the logistics systems so data had to be entered twice or printed out and reentered. This had to go."

The Next Phase

The leap from single-box evaluations to ensuring "systems integration" began with evaluations the team conducted on servers, routers, switches, and local area networks.

By the late 1980s and early 1990s, it became clear that the CEC would be asked to do system-of-systems or end-to-end integration testing. (In 1993, with the increase in whole systems engineering, CEC became known as the Technology Integration Center (TIC).) At first, this meant sending engineers to Army installations, setting up a parallel system to the one being used in the field, and running the evaluations.

ISEC soon realized that this method of testing at Army installations would be far too costly and disruptive to the Army. The practice of placing terminal emulators in the TIC laboratory began shortly thereafter.

"The real breakthrough came when we were able to capture all the keystrokes being used in the field under what was called Installation Transition Processing (the forerunner to Sustaining Base Information Services) and simulate on a broad scale how that system would operate. For the first time, we could see where the bottlenecks were and recommend hardware and software fixes, Dr. Michael Gentry, the Army Signal Command's Senior Technical Director, said. By providing a place for systems evaluations, Gentry said the TIC could also help the Army look into the future with a certain high level of certainty and credibility.

Throughout its history, ISEC's TIC, now a part of the U.S. Army Communications-Electronics Command, Fort Monmouth, NJ, has served as DOD's information technology gatekeeper.

"Everyone in the vendor community knows that if they want to sell a product to the Army, they should make plans to work with ISEC and get their box on our evaluation schedule. Most of them know this and, because of our reputation, they want to do business the TIC way," Jenia said.

And what is "the TIC way?" According to Jenia, the TIC staff also acts as an innkeeper. They are responsible for maintaining the laboratories, test equipment, computers, networks, and facilities in a ready state to emulate any Army infrastructure for complete and unbiased evaluations. In computer-technology terms, this also means having access to the full intellectual capacity of the ISEC, with its critical-skill engineering experts in all areas of technology. The TIC can then provide the Army and the vendor the empirical evidence required to shorten the acquisition cycle at dramatically lower cost and risk to the government.

According to Tate, the TIC is respected throughout the Defense establishment as an organization that has changed the way computing is done—at every Army post, camp, and station.

According to Paige, the value of the TIC continues to grow because it has stayed close to its original charter of being the one place in the Defense community where IT professionals can go to get a true picture of the system they are working on. This includes gigabit Ethernet (which will help greatly speed up traffic flow on the installations' campus area networks), modeling and simulation, public key infrastructure, security, knowledge management, multimedia, voice and data over Internet protocol, and other applications and technologies.

The TIC also supports the Army by evaluating the functions of the Common User Installation Transport Network at all Army camps, posts, and stations. To this end, the TIC emulates such state-of-the-art information infrastructure components as routers, switches, hubs, and concentrators. This process also involves work with other ISEC engineers who troubleshoot network and system problems throughout the command and the Army.

Conclusion

Not only has the TIC grown in size, Paige said, it has grown in importance to both the Army and DOD. "When I was the Assistant Secretary of Defense for C3I [Command, Control, Communications, and Intelligence], I fully supported the relationship between the TIC and such other DOD agencies as the Joint Interoperability Test Command [at Fort Huachuca]," Paige said.

The ISEC's TIC has added to the military's ability to get the right box thoroughly evaluated and into the hands of the end user prior to fielding.

"We've been able to leverage the expertise of ISEC and combine this with the fact that the TIC holds the reputation as the top lab of its kind to really change the whole nature of information technology. Members of ISEC evaluate and design integrated commercial information technology we use out there, and that's significant," Jenia said.

JAMES H. WARD is a Research Analyst for ISEC, Fort Huachuca, AZ. He is a former Army Public Affairs noncommissioned officer with a B.S. in government and politics from the University of Maryland.

A NEW APPROACH TO CROSS TRAINING FOR THE U.S. ARMY CORPS OF ENGINEERS

MAJ Michael K. Wegler

Introduction

Traditional cross-training programs have been in use for decades. Individuals can be trained to perform duties that are different from those they normally perform with the expectation that they may be required to perform these new duties in the future. The U.S. Army Corps of Engineers Los Angeles District has developed a cross-training program with a different focus. This program emphasizes efficiency and cooperation between members of the Construction-Operations (Con-Ops) and Contracting Divisions through a better understanding of the duties and responsibilities performed by other Los Angeles District members. Because the offices are geographically dispersed, the two divisions routinely interact via e-mail and telephone. The new cross-training program provides employees the opportunity to interact with each other in person. They learn how effective and efficient execution of their duties and responsibilities is critical to completing the Los Angeles District's overall mission.

Training Overview

Since December 1999, three Con-Ops Division employees have spent 2 weeks each learning the many facets of contracting. Division and branch chiefs presented the trainees with an overview outlining the organization's mission and individual duties and responsibilities. This was followed by several days of working with members of the Procurement Branch. This branch is responsible for all procurements up to the simplified acquisition threshold of $100,000 as well as all construction projects. Con-Ops participants learned about the Simplified Acquisition Procedure (SAP) used to procure goods and services. They also learned about changes in the SAP that have resulted from the increased use of automation systems such as the Central Contractor Registration Database and Procurement Desktop Defense (PD2).

Participants were also introduced to "formal" acquisition procedures and processes for awarding construction contracts in excess of $100,000. The overview covered topics such as project identification; the project's introduction to the Advanced Acquisition Planning Board (AAPB); the AAPB decisionmaking process regarding the most effective contracting tool to use for the project; solicitation development and advertisement, bid openings and receipt of proposals; evaluation of the bid and proposals; contract award; and the transition to the contract-administration phase of the process. After completing this overview, the participants worked with the Architect–Engineer (A/E)/Contract Compliance Branch. This training focused on A/E contracting and negotiation procedures, pre-award activities, and contract-compliance requirements.

Pete Gauer, the Office Engineer at the Las Vegas Resident Office, was one of the Con-Ops participants. Gauer feels he now has a greater knowledge of how important the contracting function is to the Los Angeles District Corps of Engineers. "I know now that without Contracting's effort, our contracts would grind to a halt," he said. "I'm glad that I was afforded this opportunity to meet most of [the contracting personnel] and look forward to working with all those affiliated with the Nellis Air Force Base projects."

Cross-training program participants have a greater appreciation for the planning and tasks performed by other Los Angeles District team members.

In February 2000, Contract Specialist Maria Cisneros spent 2 weeks working at a military resident office and a civilian project office in Las Vegas. While members of Con-Ops operate in three states and in numerous project and resident offices, they work very closely with contracting personnel throughout the procurement and contract administration process. Cisneros, who worked with Gauer and members of the Las Vegas Resident Office and the Tropicana-Flamingo Project Office teams, said, "This was a great opportunity and experience ... it was a great follow-on to my attendance at the PROSPECT [Proponent Sponsored Engineer Corps Training] Construction Contract Administration Course.

"My training period began at the [Las Vegas] Resident Office with an orientation of office procedures and project safety programs. I visited work sites and performed quality assurance tasks, answered requests for information, [and] prepared modifications and estimates to modifications in the Resident Management System (RMS). I also reviewed bidability/constructability/operability/environmental documents, wrote Pre-negotiation Objective Memorandums and Price Negotiation Memorandums, and reviewed claims."

To gain additional experience, Cisneros also worked in the Tropicana-Flamingo Project Office, where she worked on the civil works modification process, wrote Basic Change Documents, prepared estimates, and conducted negotiations. "It was an incredible 2 weeks with so much information to absorb," Cisneros said. "My experience at the Las Vegas Resident Office provided superb reinforcement of the materials covered in the course and gave me a better appreciation of the work our other employees perform in the field."

In addition to working with other Los Angeles District team members, both divisions have included their trainees in all significant and related activities. Individuals working in contracting attended meetings to finalize a source selection evaluation plan. They also met with the RMS Program Manager to discuss system integration into PD2, bid openings in response to an Invitation For Bid, and debriefings to contractors. Cisneros also participated in Con-Ops meetings and attended the Nellis AFB civil engineer coordination meeting as well as several weekly contractor meetings with the Corps of Engineers, including one at the Unmanned Aerial Vehicle project site in Indian Springs, NV.

In the spring of 2000, members of the Contracting Division attended the PROSPECT Negotiation of Construction Contract Modifications Course. Cross training of the participants began when they returned. The cross-training location was determined by field requirements and activities that best reinforced the training received during the course. This provided another opportunity to send contracting personnel to a different field location. These efforts benefited the trainees as well as field office staff.

Conclusion

Cross-training program participants have a greater appreciation for the planning and tasks performed by other Los Angeles District team members. These participants also gained a better understanding of overall procurement and construction-management processes and procedures. Experience has no substitute, and our cross-training program affords members of the Los Angeles District the opportunity to grow as professionals. The program has resulted in increased cooperation among the participants and their respective offices, which should improve the processes and the service the Los Angeles District provides to its customers. We believe that most multifunctional organizations will benefit significantly from a similar program.

MAJ MICHAEL K. WEGLER is the Deputy Chief of the Contracting Division and a Contracting Officer for the U.S. Army Corps of Engineers, Los Angeles District, CA. He holds a B.S. in economics from the U.S. Military Academy, an M.S. in administration from Central Michigan University, and an M.S. in acquisition and contract management from the Naval Postgraduate School. He is also a certified Professional Contracts Manager.

FROM THE DIRECTOR ACQUISITION CAREER MANAGEMENT OFFICE

Although many clichés are not true, there is one that may be: "The only constant is change." For those of you who don't know me, let me introduce myself. I am Sandy Long, and on Sept. 12, 2000, I assumed duties as Acting Director of the Acquisition Career Management Office (ACMO). These duties are in addition to my regular assignment as National Capital Regional Director for Acquisition Career Management. I served previously to this as an Acquisition Proponency Officer in the ACMO. I expect to serve as Acting ACMO Director until a permanent director is named.

In September, former ACMO Director COL Roger Carter retired from the U.S. Army and accepted a position as Program Executive Officer at the National Security Agency. For those of you who have not heard, Mary Thomas—the former ACMO Deputy Director—was selected to attend the Industrial College of the Armed Forces (ICAF), which also began in September. She will attend ICAF for 1 year. On behalf of the ACMO staff, I want to wish the very best to both COL Carter and Mary Thomas in their future endeavors. I also want to announce that as this issue of *Army AL&T* goes to press, COL John Como has been designated as the Acting Deputy Director for Acquisition Career Management (DDACM). He will also continue to serve as Chief of Staff to the Assistant Secretary of the Army for Acquisition, Logistics and Technology.

By the time you read this article, we will have celebrated the traditional Annual Acquisition Ball at the Fort Belvoir Officer's Club on Oct. 15th. This event coincided with the annual meeting of the Association of the United States Army (AUSA). I hope that many of you had the opportunity to attend the annual AUSA meeting and stop by the Army Acquisition Corps (AAC) booth to see the new AAC exhibit, "Make It Happen," and to visit the Acquisition Career Management suite. My office is always available to provide the information you need to *make it happen* in your acquisition career. The most current list of our Acquisition Career Managers can be found on our AAC home page at **http://dacm.sarda.army.mil/contacts/CareerManweb.htm**.

I want to take this opportunity to congratulate the Acquisition Education, Training and Experience Board selectees (Page 49 of this magazine) and the Materiel Acquisition Management Course graduates. Announcements of the FY01 LTC/GS-14 product manager/acquisition command assignments and FY00 AAC officers selected for promotion to major, and the Senior Service College selectees are also listed in this section of the magazine.

For those of you who were unaware, a Competitive Development Group (CDG) Military Cohort Program was established this year by the DDACM. This program provides eligible military officers an opportunity to train concurrently with AAC civilian CDG members. Be sure to read about this program, the CDG Program selection criteria as well as CDG opportunities, and the article on the year group 01 CDG orientation on Pages 33-35. The CDG Program is at the center of initiatives to build outstanding leaders for the future Army Acquisition Workforce (AAW).

The AAW has grown and changed during the last several years and currently includes approximately 30,000 members. These members are key to the Army's success, and *we are making it happen*. Change is exciting and offers many opportunities. As noted at the outset of this letter, change is also constant, and again my office is always available to provide the information, assistance, and changes necessary to advance your acquisition career.

Sandy Long
Acting Director
Acquisition Career
Management Office

46 Graduate From MAM Course

In September 2000, 46 students graduated from the Materiel Acquisition Management (MAM) Course, Class 00-004, at the U.S. Army Logistics Management College, Fort Lee, VA. The graduates included four allied students from the Philippines, Estonia, Korea, and Israel. The Distinguished Graduate Award was presented to CPT Robert F. Mortlock, assigned to the Joint Program Office for Biological Defense, Falls Church, VA.

The 7-week MAM Course provides a broad perspective of the materiel acquisition process. The course includes a discussion of national policies and objectives that shape the acquisition process and the U.S. Army's implementation of them. Areas of coverage include acquisition concepts and policies; research, development, test, and evaluation; financial and cost management; integrated logistics support; force modernization; production management; and contract management. Emphasis is on developing midlevel managers to effectively participate in managing the acquisition process.

Research and development, testing, contracting, requirements generation, logistics, and production management are some of the materiel acquisition work assignments offered to these graduates.

AETE Board Results

The Acquisition Career Management Office is pleased to announce results from the Acquisition Education, Training and Experience (AETE) Board, which met Aug. 15-16, 2000, to review applications for training and educational opportunities. Listed below are the personnel selected by the board. The AETE Board will meet again in January 2001. These opportunities are funded entirely by the Army Acquisition Corps (AAC). The application suspense dates for upcoming boards can be found under "News" on the AAC home page at: **http://dacm.sarda.army.mil**. (Note: Under the "Selected For" column, NPS denotes Naval Postgraduate School and SOC denotes School of Choice.)

Name	Organization	Selected For
Armstrong, MAJ Scott	USATSC	Leadership Development Program
Binney, Barbara	AAESA	Senior Executive Fellows
Boyer, Elisa	AMCOM	NPS
Bozzard, James	AMC	Gateway to Business Mgt
Ca.leton, Mahona	AMCOM	SOC
Carter, Robert	ATEC	Leadership for a Democratic Society
Chronister, Ronald	Missile RDE Center	NPS
Cooper, Michael	PM, Saudi Arabia (Korea)	NPS
Devlin, Lisa	Rock Island Arsenal	SOC
Dobbs, Andrew	SMDC	NPS
Esquibel, Jerry	SMDC	NPS
Ference, Edward	PEO, Aviation	NPS
Foley, Gail	WSMR	Airborne Operations Greening Program
Freeman, Wilma	AMCOM	NPS
Fuller, Beverly	PEO, Tactical Missiles	NPS
Golden, Robert	CECOM	Leadership for a Democratic Society
Goodwin, Connie	AMCOM	NPS
Granda, Laurie	SMDC	SOC
Haack, Margaret	PEO, Aviation	NPS
Hemphill, Gloria	PEO, Tactical Missiles	SOC
Kierman, Edward	CECOM	SOC
Krost, Neill	Army Contracting Cmd, Korea	NPS
Kruse, Darin	Missile RDE Center	NPS
Kruse, Rachel	Missile RDE Center	NPS
LaFerriere, Philip	Aviation RDE Center	NPS
Lambert, LTC Charles	ACMO	Harvard Business School
Lamphear, Thomas	CECOM	Brigade Field Training Exercise
Leonard, Scarlet	AMCOM	NPS
McPherson, Glenn	Missile RDE Center	NPS
Miller, Steven	PM, Small Computer Program	NPS
Milton, Pamela	AMCOM	NPS
Myres, Pamela	AMCOM	SOC
Nevels, Pamela	CBDCOM	Leadership Potential Seminar
Oelrich, Jerome	Missile RDE Center	NPS
Pearce, William	Missile RDE Center	NPS
Ramsey, MAJ Andrew	PM, Soldier Support	Executive Development Program
Schumacher, Daniel	SMDC	Leadership Development Program
Stueber, Debra	CECOM	NPS
Tappel, Joseph	AMCOM	NPS
Tatum, George	Missile RDE Center	Brigade Field Training Exercise
Townsend, Houston	COE	Senior Executive Fellows
Wilderson, Brenda	PM, IM TELCOM	SOC
Williams, LTC Yancy	OUSD(AT&L)/ARA	Columbia Business School
Williamson, LTC Michael	U.S. Student Detachment	Harvard Business School

PERSCOM Notes . . .

SSC Selection Board Results

Results of the Senior Service College (SSC) Selection Board were released Sept. 19, 2000. The board selected 30 members of the Army Acquisition Corps (AAC) to attend SSC during academic year (AY) 01/02. The AAC had 385 officers eligible for selection to SSC and had a selection rate of 7.8 percent. The Army selection rate was 7.4 percent.

Each officer selected for attendance at SSC should receive a letter from the U.S. Total Army Personnel Command's (PERSCOM's) Acquisition Management Branch explaining how to access the PERSCOM Officer Career Management Knowledge Center. Officers will provide their SSC preferences online through the center.

The names of the selectees are listed below. (Note: * indicates an officer revalidated from AY00/01 list; ** indicates officers activated from AY00/01 alternate list.) Unless otherwise noted, all selectees are lieutenant colonels.

Bell, Anthony B.
Bliss, Gary L.
Bowman, Michael**
Buck, Stephen D.
Chase, Deborah J.
Coker, David W.
Conley, Joe E.
Fox, Steven G.**
Fritz, Gregory J.**
Fuller, Peter N.
Harvill, James T.
Incorvati, Anthony R.
Janker, Peter S.
Jette, Bruce (COL)*
Maddux, Jonathan A.
Mancuso, August R.
McDaniels, Lloyd E.
Newton, Robert A.
Neumann, Marcus R.**
Nichols, Camille M.
Noonan, Kevin S.
Norgaard, Kevin R.
Ostrom, Peter R.
Patterson, William N.
Payne, Jerome F.
Pecoraro, Joseph E.
Pinter, Steven S.
Price, Nancy L.S.
Stautz, Thomas R. (COL)
Stone, Jesse M.
Valent, Oscar R.

FY01 Army Experimental Test Pilot Board

A U.S. Total Army Personnel Command (PERSCOM) board will convene on or about Feb. 6, 2001, to select aviators best qualified to participate in the Army Aviation Experimental Test Pilot Training Program. This board will review the qualifications of both commissioned and warrant officers. Commissioned officers selected to attend the U.S. Naval Test Pilot School (USNTPS) are automatically accessed into the Army Acquisition Corps, where they will serve for the remainder of their careers. Warrant officers will continue to be managed by the Warrant Officer Division.

For warrant officers to be eligible, they must have an associate's degree with above-average grades; have completed college courses in algebra, calculus, differential equations, and physics (or mechanics) with above-average grades; and be in the grade of Chief Warrant Officer 2 or higher. Candidates must also have completed military education level for current grade prior to attending the test pilot training program; have a total of 1,000 flying hours; and have sufficient time remaining upon completion of training to complete the active duty service obligation.

For commissioned officers to be eligible, they must have a bachelor's degree in an engineering discipline or hard science and be in the grade of captain or major. Eligible candidates must also have at least 7 years of active federal service, be branch-qualified prior to attendance at USNTPS, and have a minimum of 700 hours total flight time.

Highly desirable qualifications for commissioned officers include successful completion of courses in college mechanics (solids, fluid, flight), thermodynamics, aerodynamics, control theory, and advanced mathematics, with above-average grades; experience in complex aircraft such as the CH-47, UH-60, AH-64, OH-58D, and/or fixed-wing military aircraft; and rating as an instructor pilot, instrument flight examiner, or maintenance test pilot. Pilot-in-command flight hours are weighted accordingly in the selection process.

Personnel in a position to recommend and endorse applicants are urged to make a thorough appraisal of that applicant's flying ability, operational experience, motivation, adaptability, and ability to communicate orally and in writing.

All FY01 Army Aviation Experimental Test Pilot Board applications must be received at PERSCOM no later than Jan. 19, 2001. Applications must include an official transcript of college credits; a copy of the aviator's most current DA Form 759, *Individual Flight Record and Flight Certificate-Army*; and endorsements by an instructor pilot/standardization instructor pilot, who will comment on the applicant's flying ability. Commissioned officer and warrant officer applications should be mailed to: Commander, U.S. Total Army Personnel Command, ATTN: TAPC-OPB-E (MAJ Rickey), 200 Stovall Street, Alexandria, VA 22332-0411.

Experimental test pilot assignments will be based on the Army's needs. Initial tours will be served at the Aviation Technical Test Center at Fort Rucker, AL. USNTPS graduates will serve in experimental test pilot or organizational staff positions that directly affect the type, design, and configuration of Army aircraft.

For additional information or a sample memorandum explaining how to apply for the Army Aviation Experimental Test Pilot Training Program, contact: MAJ Jon Rickey at DSN 221-2800, (703) 325-2800, **rickeyj@hoffman.army.mil**; or CW5 Carlton Jenkins at DSN 221-5251, (703) 325-5251, **jenkinsc@hoffman.army.mil**.

Correction

The branch of LTC Allen L. Green was incorrectly listed as EN (Engineer) on Page 49 of the September-October 2000 issue. His correct branch is QM (Quartermaster). We regret this error.

FY01 LTC/GS-14 PM/AC Slate

The U.S. Total Army Personnel Command recently announced the following 55 officers and 2 civilians for FY01 product manager (PM)/acquisition command (AC) assignments. Unless otherwise indicated, all officers are lieutenant colonels.

NAME	SLATED TO
Azemar, Jacques	DEFENSE CONTRACT MGT AGENCY-ISRAEL
Bass, Joseph L.	DEFENSE CONTRACT MGT AGENCY-AO DALLAS
Bedell, Cynthia M.	SOLDIER EQUIPMENT
Biega, Michael J.	JOINT TACTICAL INFO DISTRIBUTION SYSTEM
Bryant, Thomas H.	AIRCREW INTEGRATED SYSTEMS (AVN)
Burke, Kyle T., **MAJ(P)**	BRADLEY FIRE SUPPORT VEHICLE
Callahan, Michael O., **MAJ(P)**	STRATEGIC TEST
Cantor, Michael E.	EXOATMOSPHERIC KILL VEHICLE
Conley, Mark A.	ENHANCED POSITION LOCATION REPORT SYSTEM
Cottrell, Daniel T.	DEFENSE CONTRACT MGT AGENCY-HUNTSVILLE
Cook, David A., **MAJ(P)**	SENTINEL
Curry, Virgil Jr.	COMMON HARDWARE
Dean, Charles E.	MORTARS
Delaney, Michael J.	AIRCRAFT SURVIVABILITY SYSTEM
Dockins, Chauncey D. (USAR)	DISTRIBUTIVE TRAINING TECHNOLOGY
Eberle, Nathan R.	COMMUNICATION & INTEL SUPPORT SYSTEM
Fellows, John R. (ARNG), **MAJ(P)**	GROUND BASE RADAR-PROTOTYPE
Gazzano, Lee D.	COUNTER PROLIFERATION
Green, Allen L. III	DEFENSE CONTRACT MGT AGENCY-CLEVELAND
Green, Dwayne S.	DIGITAL SWITCHED SYSTEMS
Hansen, Jacob B.	DEFENSE CONTRACT MGT AGENCY-CLEARWATER
Hazelwood, Donald A.	ARMY AIRBORNE COMM & CONTROL SYSTEM
Hoppe, William C.	RESEARCH & DEV ACQ INFO SYSTEMS ACTIVITY
Jennings, Theodore L.	GRIZZLY
Johnson, Clarence E.	KWAJALEIN TEST RANGE
Klein, Dale E.	AVIATION ELECTRONICS COMBAT
Kunkel, George D.	AERIAL COMMON SENSOR
Kwak, Michael J.	DIGITAL WIDE TRANSMISSION SYSTEM
Lambert, Charles S.	DIGITIZED TRAINING
Lehman, Greta P.	PUBLIC KEY INFO SYSTEM
Leisenring, Stephen B.	DEFENSE CONTRACT MGT AGENCY-MANASSAS
Lockhart, David E., **MAJ(P)**	JOINT TACTICAL RADIO GROUND & AIR
Lovett, Robert A.	M1A2 TANK
McDaniel, Michael A.	DEFENSE CONTRACT MGT AGENCY-PITTSFIELD
McGuiness, John J.	M2/M3 BRADLEY FIGHTING VEHICLE
Miller, Christopher M.	COLD REGIONS TEST CENTER
Miller, Russell F., **Civ.**	T-800 ENGINE SYSTEM
Miller, Scot C.	TRI-BAND SATELLITE TERMINALS
Myrick, Paul R.	IMPROVED MULTIPLE LAUNCH ROCKET SYSTEM
Nulk, Raymond H.	155T ARTILLERY DIGITALIZATION
Nutbrown, Curtis H.	REGIONAL CONTRACTING-WIESBADEN
Parker, James M.	COMMON ENGINE
Paul, Richard B., **Civ.**	TEST/MEASURE/DIAGNOSTIC EQUIPMENT
Pottinger, John M.	COMMON SOFTWARE
Rasmussen, Christopher M., **MAJ(P)**	WEST DESERT TEST CENTER
Shufflebarger, Newman D., **MAJ(P)**	IMPROVED CARGO HELICOPTER SYSTEM
Skinner, Eugene W. Jr.	TENCAP FIELD SUPPORT
Stockel, Eugene F.	M113/M60 VEHICLE FAMILY
Thomson, Douglas R. (USAR)	WATERCRAFT
Trang, Jeffrey A.	PLATFORMS
Turner, Thomas E. Jr.	DEFENSE CONTRACT MGT AGENCY-SEATTLE
Williams, Yancey R.	M1A1 ABRAMS TANK
Williamson, Michael E.	GLOBAL COMMAND & CONTROL SYSTEM
Wilson, Jeffrey K.	EXCALIBER
Wilson, John M.	DEFENSE CONTRACT MGT AGENCY-PHILADELPHIA
Yacovoni, Philip M., **MAJ(P)**	DEFENSE CONTRACT MGT AGENCY-LOCKHEED
Yarborough, Michelle F.	ELECTRO OPTICAL SENSOR SYSTEM

FY00 Major Promotion Board Results

The FY00 Major Promotion Board results were released Aug. 17, 2000. The Army Acquisition Corps (AAC) select rate was above the Army average for promotion to major. This article analyzes the board results.

Overall Acquisition Corps Results

Board members reviewed the files of 133 AAC officers in the primary zone. From this population, the board selected 106. The resulting primary zone selection rate of 79.7 percent was above the Army competitive category primary zone of 79.6 percent. In addition, 4 officers below the zone and 12 officers above the zone of consideration were selected for promotion. Among the other selectees were 16 basic branch promotable officers who were accessed into the Acquisition Corps under the Career Field Designation process.

The Trend For Selectees

Selection to major is primarily a reflection of how an officer performs in his or her basic branch assignments. Most AAC officers have few, if any, officer evaluation reports (OERs) from acquisition assignments when the Major Promotion Board considers them. Many officers are still completing basic branch assignments, Reserve Officer Training Corps/recruiting, Active component/Reserve component assignments, or attending advanced civil schooling. Thus, AAC officers are judged against the same criteria as basic branch officers.

The Army is more competitive now than ever. There were minimal differences between the files of year group (YG) 89 (officers in last year's primary zone) and YG90 (officers in this year's primary zone). Second lieutenant OERs were not reviewed by the promotion board and were removed from the officer's file. The most important discriminator continues to be company command OERs, and board members appear to use them as the measure of an officer's ability to succeed as a major.

With a majority of the officers receiving "one block" command OERs, the senior rater narrative was extremely important in determining the strength of an OER. Senior rater narratives that quantified an officer's performance when the profile did not, sent a clearer picture to the board on the "true block check" (i.e., best officer in a command, top 1 percent, 1 out of 10.) Additionally, senior rater narratives that focused on an officer's potential were generally more effective than OERs that focused on how an officer performed. Officers with overall Above Center of Mass (ACOM) files and "two block" COM command OERs were less likely to be selected. Officers with overall COM files and "top block" center of mass command OERs were less likely to be promoted.

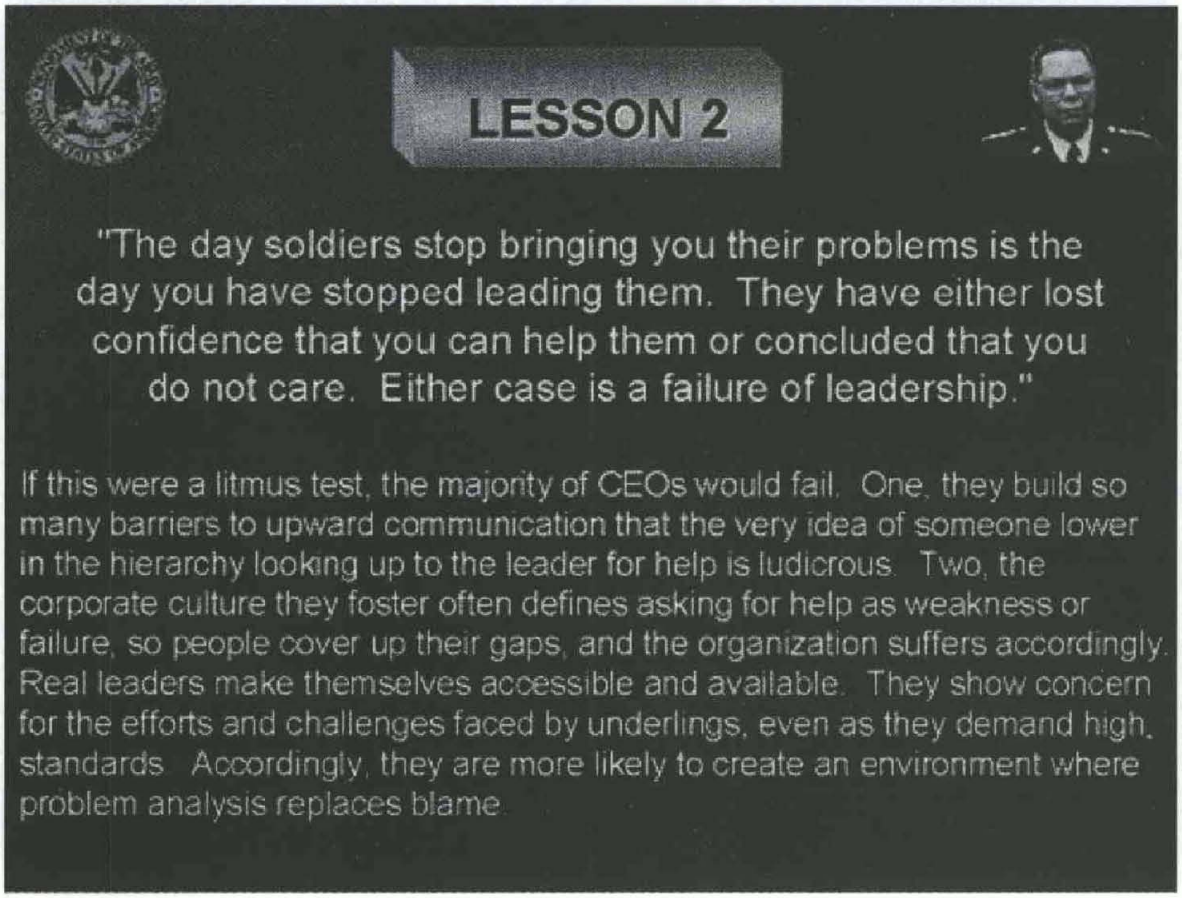
Performance in basic branch assignments, especially company command, appeared to be the board's focus. The message is clear: seek company command, do well, and maintain a high level of performance on all other assignments.

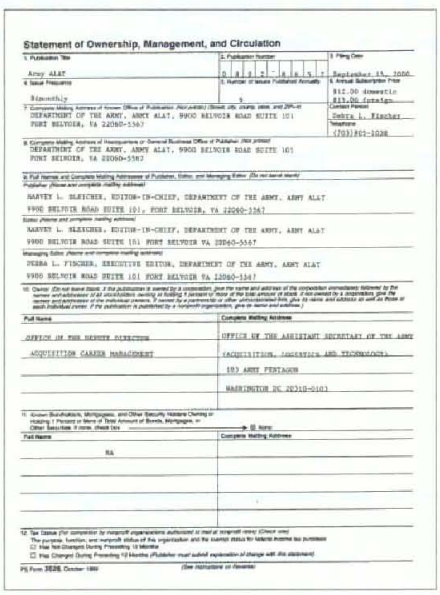
The AAC officers selected for promotion to major are shown below. The names of three selectees were unavailable. Names preceded by an asterisk indicate a below-the-zone selection.

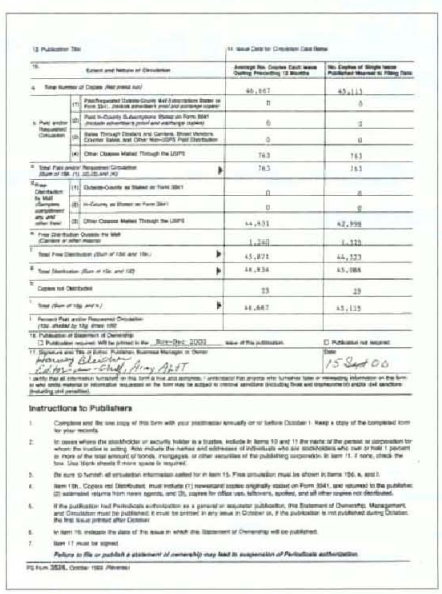
Major Promotion List

Abbott, Timothy Frederick
Adams, Larry Kim
Adomatis, Dennis Paul
Anderson, Larry Scott
Arrington, Vance Russell
Barrera, Marco Julio
Black, Michelle Andrea
Bodrick, Morris Lee
Boyd, Raymond Earl Jr.
Branham, Eva Treciokas
Broek, Harold Dale Jr.
Broughton, Johnny Roscoe
Brown, Sharon Lavonne
Bruce, Jeffrey Allen
Canter, Bryan Eric
Card, Rose Katherine
Cauley, Timothy Mark
Clanton, Andrew Bullington
Coleman, Willie Deron
Corbin, Frederick Bernard
Craft, Jason Todd
Crick, Michael Dean
Cross, Robert Glenn
Daniels, Mark Richard
Davis, Rodney Allan
Dellolio, James Todd
Dykes, James Blaine IV
Eggert, John Martin
Farmer, Michael Patrick
Figueroa, Mercado Johnny
Fiorella, Salvatore Anthony
Fischer, William Dennis
Flowers, Thomas Russell
Gaare, Dennis
Galindo, Jason Lewis
Glenn, Eric Sean
Gould, Robert Jay
Green, Gregory Sean
Greene, Christopher Kevin
Grosenheider, Craig Lane
Grover, Jeffrey Carlson
*Gutierrez, Moises Mota
Hamilton, Andrew Bruce
Harger, Daryl
Hayes, Derrick Gene
Helm, Eric Gordon
Henderson, Kevin Chernard
Hogans, William Robertson
Holifield, Gregory Alton
*Hornstein, Richard John
Hossack, Timothy Clark
Howard, Paul Dekle
Hunter, Thomas Day
Ingram, John Mathew
Jackson, Alfred Eugene
Jackson, Hope Michaela
James, Dannie Eugene Jr.
Jaynes, Howard Richard Jr.
Johnson, Eddie Adam
Kerish, John Francis
Kleese, Bryan Edward
Klinkhammer, Ian Bradley
Kollhoff, Joy Neville
Kros, Todd Christopher
Lane, Jeffrey Dean
Lehner, Christopher
Lewis, Leslie Latreese
Lind, Susan McMurdy
Lockard, William MacLean
Lonardo, Richard Joseph
Long, Robert Derek
Ludden, Frederick Coleman
Maloney, Patrick William
Manns, Terrence Tyrone
Marr, Charles Arthur
Mast, Jack Herbert
McNulty, James Francis
Meyer, Stuart Lee
Miller, Susan Camille
Moorhouse, Kent Grover
Mortlock, Robert Fred
Murphy, Brian Patrick
Murray, Randy
Neal, Mark Andrew
Nichols, Walter Guy Jr.
O'Donnell, Mark Gerald
O'Keefe, Dewander Lavoy
Orange, Terry Mark
Patterson, Robert Edward
Paul, Gregory Joseph
Perryman, Theodore Max
Peterson, Kevin Wlliam
Phillips, Joel Richard
Pound, Michael Allen
Power, Harold James
Price, Jeniffer Rae
Quinter, Ronald Leroy
Reddick, Jeffrey Edward
Reim, John Thomas
Rieman, Joel Bernard
Robinson, Dwight Eric
Romero, Alex Vincent
Ross, James Patrick
Sanchez, Anthony John
Schweitzer, Steven John
Seay, Arnold
*Shelton, Robert Wayne
Short, Daniel Richard
Simonson, Erik John
Smith, Mark Adam
Smith, Reginald Eugene
Spencer, Gary Todd

Starostanko, Timothy Allen
Stein, Charles Michael
Stein, Cynthia Hope
Stephan, Vincent Noel
Strayer, Kenneth
Stroyan, Richard Jay
Terrell-Simmons, Vaneada
Tice, Michael Jay
Tisdale, Riley Olin
Tufts, Scott Kenneth
*Vannoy, John Marshall
Vinson, Timothy James
Washington, David Benton
Weaver, Mickey Eugene
Webb, Eric Christopher
Williams, Andrea Rene
Wilson, Eddie Dean
Wilson, Terry Mac
Wittges, Charles Edward
Wolons, David Scott
Youmans, Mark Alan
Zurmuehlen, Kevin Karl
Zuvanich, Michael Joseph




Statement of Ownership, Management, and Circulation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Organizing Genius: The Secrets of Creative Collaboration

By Warren Bennis and
Patricia Ward Biederman

Addison-Wesley Publishing Co.,
Reading, MA, 1997

Reviewed by LTC John Lesko (U.S. Army Reserve), Senior Analyst and Group Facilitator for ANSER, a public service research institute in Arlington, VA. Lesko is a member of the Army Acquisition Corps.

What makes some groups succeed and others—perhaps staffed with equally talented people and many times enjoying more resources—fail? How do some managers lead their teams to achieve outstanding results while other managers fall short? What are the elements of leadership that result in breakthrough discovery or, to use the vernacular, "the next great thing"?

These are the questions addressed by Bennis and Biederman as they analyze six histories of "Great Groups." The resulting insights may help today's acquisition executives in their attempts at organizing genius. The six case studies examined are:

- The Resurgence Of The Disney Animation Studio;
- Xerox Palo Alto Research Center (PARC) And Its Relationship With Apple Computer;
- The 1992 Political Campaign Of Candidate Bill Clinton;
- Lockheed's Skunk Works;
- The Experimental Campus At Black Mountain, North Carolina; and
- The Manhattan Project.

Each of these six stories has something unique to offer. Each examines the creative dynamics that describe the fruitful relationships between the leader and the "followers," if you can indeed call such brilliant contributors followers.

The authors conclude with 15 take-home lessons, many directly applicable to the Army's Acquisition Corps and its critical role in modernizing this Nation's military force. Highlights of these 15 lessons and commentary from the reviewer are as follows:

- *Greatness starts with superb people.* Bob Taylor, leader of Xerox PARC and former Defense Advanced Research Projects Agency administrator, said, "You can't pile together enough good people to make a great one." As a program manager or acquisition official, ask yourself if your staff passes the "greatness test." If not, have them identify early in your programs the creative scientists and industry leaders who are "on point" in their respective fields. You should then partner with these experts.
- *Great groups and great leaders create each other.*
- *Every great group has a strong leader.* This is not to say that the strong leader is an authoritarian in temperament. Rather, he or she acts as a maestro amongst gifted equals. Asking others to play "second fiddle" in such groups will be a challenge for the strong leader.
- *The leaders of great groups love talent and know where to find it.*
- *Great groups are full of talented people who can work together.* Groups of talented engineers and scientists managed by program leaders and supported by administrators must take time for team-building activities. Morale maintenance is critical to group success.
- *Great groups think they are on a mission from God.* There is tremendous energy associated with being the very first group to accomplish something. Harness this energy as a driving force.
- *Every great group is an island, but an island with a bridge to the mainland.* Sometimes the program manager is the toll collector on that bridge. Those who don't belong on the island must be kept away long enough for the group to accomplish its mission.
- *Great groups see themselves as winning underdogs.*
- *Great groups always have an enemy.* This enemy may be another nation's military, a rogue nation, or a terrorist group.
- *People in great groups have blinders on.*
- *Great groups are optimistic, not realistic.*
- *In great groups, the right person has the right job.* A psychometric test such as the Myers-Briggs personality indicator or the Kirton Innovative-Adaptive index may help both the leader and the group better understand themselves and their colleagues, thus enabling better communication within the team.
- *The leaders of great groups give them what they need and free them from the rest.*
- *Great groups ship.* As Steve Jobs reminded the Macintosh Team in 1984, "Real artists ship." In today's era of shrinking R&D budgets and competing programs, Army acquisition executives may discover a debilitating cost to delay a program's schedule. This reviewer suggests that Army program managers and executives consider an emerging analytic technique used within the Air Force called cost-of-delay analysis.
- *Great work is its own reward.*

Organizing Genius is a must-read for those acquisition professionals called on to lead the Army's transformation.

The 9 Natural Laws of Leadership

By Warren Blank
AMACOM, NY, 1995

Reviewed by CPT John H. Grimes, a year group 91 Procurement Officer with the U.S. Army Tank-automotive and Armaments Command, Rock Island Arsenal, IL.

During a recent television interview, I was asked, "What is leadership?" I responded, "It's that intangible asset, dealing in the human relations field, that most contributes to mission success or failure." I continued, explaining that leaders are not self-determinative, but are chosen by their followers.

Warren Blank's *The 9 Natural Laws of Leadership* philosophically captures and explains that answer in 230 pages. The leadership consultant and trainer's premise is that Newton's natural laws (e.g., law of cause and effect), from which we have traditionally come to study leadership (e.g., attributes, characteristics, and styles), works for material objects but is insufficient for understanding the intangible of leadership. Authoring a true paradigm, Blank goes on to reframe the leadership model under the title of "quantum leadership."

BOOKS

Quantum leadership, like quantum physics, shatters the old models and thought patterns imbued by many past leadership theorists. It diverges from the traditional components of leadership and truly focuses on the leader-follower relationship. However, like quantum physics, quantum leadership is a real phenomenon and must follow certain natural laws.

Blank's nine natural laws are that a leader has willing followers; leadership is a field of interaction; leadership occurs as an event; leaders use influence beyond formal authority; leaders operate outside the boundaries of organizationally defined procedures; leadership involves risk and uncertainty; not everyone will follow a leader's initiative; consciousness creates leadership; and leadership is a self-referral process.

Based on these nine laws, this new leadership model is supported by more than 150 practical action ideas. Many of the action ideas seemed a little flaky, but most also proved immediately useful. A recurring theme for many of the action ideas is that quantum leaders "go into the G.A.P." to perceive, shape, and perform in uncharted realms where others, limited to traditional views, don't. The author defines G.A.P. as a place where quantum leaders "gain another perspective," and he dedicates an entire chapter to developing that concept. Staying consistent with the leader-follower model throughout, both the action ideas and G.A.P. theme revolve around the nine laws and the interrelationship of leaders and their followers.

I strongly recommend this book, which is available online for less than $20 (hardcover). While this book will probably challenge your view of leadership, it is a change in the right direction—one that you've most likely always understood: you manage things (classical physical worldview) and you lead people (new quantum leadership model).

Leadership is indeed the single asset, above all others, that DOD values in its military and civilian employees. All current or aspiring program managers, commanders, team leaders, and team members of an empowered workforce would do well to read this book.

Patton on Leadership: Strategic Lessons for Corporate Warfare

By Alan Axelrod, Prentice Hall, 1999

Reviewed by LTC Kenneth H. Rose (USA, Ret.), Tidewater-Richmond Area Manager for WPI in Hampton, VA, and former member of the Army Acquisition Corps.

George S. Patton Jr. was one of America's greatest military leaders. In *Patton on Leadership: Strategic Lessons for Corporate Warfare*, the author tries to distill those aspects of Patton's philosophy and extract wisdom applicable to the business world.

The book is a collection of Patton's quotes, notes from his writings, and observations by others—183 examples in all. Each is accompanied by an author comment that expands or interprets the thought. Examples are grouped into nine topical areas, such as "Developing a Winning Attitude," "Communication and Coordination," and "Creating Efficiency."

The opening chapter provides background information on Patton, including the more complete and slightly more colorful version of the speech that opened the 1970 film *Patton*. Readers will likely find their favorite quote or discover a new one of particular relevance among the remaining nine chapters. The book concludes with a bibliography of sources from which most of the quoted material was drawn. Some of the quotes are brief: "Do not take counsel of your fears" (borrowed from Stonewall Jackson). Others have a familiar ring: "Never tell people how to do things. Tell them what to do and they will surprise you with their ingenuity." Some suggest an immediate interpretation. "Hold the enemy by the nose and kick him in the pants" could be restated as "hold a project by the nose with control systems and kick it in the pants with well-planned actions."

Most of the examples require translation into a business context. "Officers must not hesitate to lead. Before an attack is declared hopeless, the senior officer must lead an attack in person." The author comments that failure is a part of business life. Leaders must not be fair-weather friends who find parades in front of which to walk. They must have courage and character. They must be able to intervene in a faltering project not just with demands for improvement, but with personal involvement that will lead the project out of trouble.

The author's commentary is a valuable part of this book. However, in a broader perspective, Patton's views on leadership are not uniquely "business" oriented. They would be equally applicable to a Boy Scout troop or a church choir. Although most of the author's comments are sensible, they are fundamentally the observations of a dilettante. Corporate readers would be better served by Michael Porter's insights on business strategy, the business management concepts of Peter Drucker, and the business leadership ideas of John Kotter.

Still, *Patton on Leadership: Strategic Lessons for Corporate Warfare* has much to offer the military reader. It is a comprehensive and well-organized collection of a great military leader's legacy of practice and thought. Just take it for what it is, not for what it pretends to be.

NEWS BRIEFS

New AH-64 Main Rotor Blade Repair Method

The U.S. Army spends approximately $100,000 for one new AH-64 helicopter blade every 200 to 1,000 hours of flight time because of adhesive debonding problems. The current repair method does not resolve the problem and often causes additional debonding. The blades' projected 6,000-hour life cycle decreases to less than 1,000 hours when debonding occurs. To date, the Army has discarded more than 1,100 AH-64 main rotor blades because of debonding.

To resolve the problem, Composite Technology Inc. (CTI) and the U.S. Army Aviation and Missile Command (AMCOM) Aviation Research, Development and Engineering Center (AVRDEC) jointly identified and developed a cost-effective method for repairing debonded AH-64 main rotor blades. The cost is estimated at less than $24,000 per helicopter. AVRDEC initially completed a cursory cost analysis indicating that if all of the 1,100 discarded blades had been repaired, the Army would have saved $83.6 million.

To evaluate the new repair method, contractor static and fatigue bench tests on some debonded blades were successfully completed. These tests indicated that the repair method was determined to be structurally airworthy for flight testing. Typically, major aircraft manufacturers conduct structural flight

tests and lead industry/government Combined Test Teams (CTTs) because they possess the requisite technical expertise. However, when the major manufacturer of these AH-64 helicopter blades declined to perform the flight tests, the AMCOM requested the U.S. Army Aviation Technical Test Center (ATTC) to lead an Army CTT to conduct a limited flight loads survey test. ATTC, AVRDEC, and AMCOM Aviation Applied Technology Directorate evaluated the experimental blade and its effect on critical dynamic components of the AH-64 main rotor system. The ability to track and balance the blades was also evaluated.

The blade repair patch consists of four graphite composite layers sealed with a single layer of fiberglass overlay. This patch is applied across the top and bottom of the blade. The CTI composite blade repair should extend the life of AH-64 blades well beyond the 1,000-hour mark and could approach the projected 6,000-hour life cycle. Engineering analysis showed that the repaired blades' increased stiffness and weight did not significantly affect the fatigue life of the rotor blades' critical dynamic components. Additionally, no changes in handling qualities or rotor vibrations were noted. The CTT capitalized on the strengths and resources of several Army aviation research and development and test and evaluation organizations to successfully complete structural flight testing.

For more information on this repair method, contact Courtland C. Bivens III, Chief Engineer of the Flight Test Directorate at the U.S. Army Aviation Technical Test Center, Fort Rucker, AL, at (334) 255-8593/DSN 558-8593, e-mail **bivensc@attc.army.mil**.

U.S. Army Uses Foreign Vehicles For IBCT Developmental Training

Introduction

Armored vehicles from three foreign countries arrived at Fort Lewis, WA, at the end of September to serve as surrogate interim armored vehicles (IAVs) for the interim brigade combat team (IBCT) developmental training. Although the future IAV has not been identified, milestones have been established for their selection and fielding. The foreign loaner vehicles, along with other U.S. surrogate vehicles, will also be used to validate key operational capabilities outlined in the operational and organizational concept and key performance parameter sections of the IAV Operational Requirements Document. Canada, Italy, and Germany are the foreign countries providing loaner vehicles.

Canada

A loan agreement between the United States and the Canadian Minister of National Defence for 32 Light Armored Vehicle (LAV) IIIs was signed Feb. 15, 2000. The LAV III is an 8 by 8, 3- to 8-man armored wheeled vehicle with an M242, 25mm chain gun. The IBCT will use the LAV IIIs as surrogates for infantry carriers and command and control (C2). The Army Testing and Evaluation Command completed safety testing of the LAV IIIs at Yuma Proving Ground, AZ, on March 3, 2000. Sixteen of the 32 LAV IIIs arrived at Fort Lewis in April 2000. The remaining 16 arrived in September 2000. The loan of the 32 LAV IIIs is for a 2-year period that expires in January 2002.

Italy

A loan agreement between the United States and the Italian Ministry of Defense for 16 CENTAURO Armored Fighting Vehicles was signed June 15, 2000. The CENTAURO is an 8 by 8, 4-man armored wheeled vehicle with a 105mm main gun. It also has a coaxial 7.62mm NATO machine gun. The IBCT will use CENTAUROs as surrogates for the Mobile Gun System and Anti-Tank Guided Missile System. Five of the 16 CENTAUROs underwent safety testing and had command, control, communications, and computers (C4) integration installed at Aberdeen Proving Ground, MD, prior to their arrival at Fort Lewis. All 16 CENTAUROs were at Fort Lewis in October 2000 to begin developmental training. The loan of the 16 CENTAUROs is for a 2-year period that expires in June 2002.

Germany

A loan agreement between the United States and the German Federal Ministry of Defense for 10 FOX and 10 LYNX wheeled armored vehicles was signed June 15, 2000. The FOX is a 6 by 6, 2- to 10-man wheeled amphibious vehicle with a 20mm cannon. The IBCT will use the FOX as a surrogate for infantry carriers and C2. The LYNX is an 8 by 8, 4-man amphibious reconnaissance vehicle with a 20mm machine gun. The IBCT will use the LYNX as a surrogate for reconnaissance operations. Two of the 10 LYNXs and 2 of the 10 FOXs underwent safety testing and had C4 integration (two FOXs only) installed at Aberdeen Proving Ground prior to their arrival at Fort Lewis in October 2000. The remaining eight LYNXs and eight FOXs arrived at Fort Lewis in September 2000 to begin developmental training. The loan of the 20 foreign vehicles is for a 2-year period that expires in May 2002.

Conclusion

The loaner vehicles and other surrogate vehicles will assist in the development, refinement, and assessment of tactics, techniques, and procedures. However, use of the loaner or any other surrogate vehicles for the IBCT is not an indication that the U.S. Army has chosen a specific vehicle platform or manufacturer for its future IAV.

The preceding article was submitted by CPT(P) Alfred E. Jackson, who reports to the U.S. Army Training and Doctrine Command System Manager-IAV/Future Combat Systems at Fort Monroe, VA.

New Process Monitors Delinquent Purchase Card Accounts

Since its introduction, the government-wide commercial purchase card has proven to be an excellent procurement tool that eliminates the need for purchase orders, invoice receipts, imprest funds, third party drafts, and cash-on-hand. However, the increased popularity and use of the card during the past few years has resulted in an increased number of delinquent DOD accounts. In an effort to deal with this issue, the U.S. Army Corps of Engineers' Los Angeles District Contracting Division

has established a self-monitoring query system on its Internet site to identify potential delinquent accounts.

Following instructions posted on the Customer Automation and Reporting Environment (C.A.R.E.) link on the Internet site, individuals can generate reports that provide daily balances for all Authorizing Official (AO) accounts. The Organization Program Coordinator e-mails the report to the AOs weekly to indicate how well the district is paying its purchase card bills.

Since instituting this process in March 2000, the L.A. District has reduced its number of AO past due balances by more than 50 percent. Although the new process is not a "silver bullet" to fix all program problems, it is an effective tool to inform AOs and other managers about payment deficiencies.

If you would like to develop your own report for tracking your AO accounts at levels 1-4, which are controlled and authorized by the C.A.R.E. Program, visit the L.A. District Web site at **http://www.spl.usace.army.mil/ct/ct.html** and click on **C.A.R.E REPORT INSTRUCTIONS**. For the most current delinquency account information, visit **http://purchasecard.sarda.army.mil** and click on **Payments & Delinquencies**.

New Web Site For Army Engineers And Scientists (CP-16)

"Engineers and Scientists (E&S) Non-Construction (NC)" is the name of a new Web site for current and prospective non-construction Department of the Army (DA) engineers and scientists in Career Program 16 (CP-16). Designed to be a valuable career planning resource, the new Web site includes organization, management, and points of contact information; information on professional development opportunities and professional recognition; job announcements for entry- and senior-level positions; and information on workforce demographics and the DA E&S Career Program Strategic Plan. The Web site is located at **http://www.dacp16.net**.

For further information, contact Wallis Berrios at (703) 617-1947.

Purchase Card Electronic Certification—A Paperless Success!

On July 24, 2000, officials at the Fort Rucker and Fort Polk beta test sites began receiving their purchase card statements through a secured Internet connection. This new automated electronic payment certification process, in addition to the Web-based account setup and maintenance function used by local program coordinators, is a paperless success!

This new application, provided under the *SmartPay* task order with U.S. Bank, gives card officials 24-hour, 7-day-a-week access to purchase card transactions, billing statements, and monthly invoices. Officials can now review or dispute transactions, approve cardholder or billing statements, and certify invoices for payment, all with the click on their Web browser. Not only is the certification paperless, the bank sends the certified invoice in electronic format directly to the payment office, which then downloads it directly into the payment system without re-keying.

The new system is expected to speed the processing of statements because there is no dependence on traditional mail delivery. Additionally, the Army will avoid interest resulting from late payments, and cardholders will receive larger bank rebate credits on their statements.

This Web-based application for cardholders and billing officials began for the entire Army on Oct. 1, 2000. Interactive Web-based training has been developed, and access will be provided through local program coordinators.

If you have questions or would like to share your purchase card experiences, contact Dorothy Hindman, Army Purchase Card Program Coordinator, at (703) 681-3417, e-mail **hindmand@sarda.army.mil**.

Army Launches New Contracting Initiative

In recent years, senior Army and DOD acquisition leaders have become concerned that some incentive programs are not yielding the anticipated benefits (i.e., enhanced performance and lower costs). In fact, it is believed that contractors might be encouraged to achieve the reverse behavior of what is intended and needed. Consequently, in February 1999, Under Secretary of Defense for Acquisition, Technology and Logistics Dr. Jacques S. Gansler issued a memorandum to Service acquisition executives re-emphasizing the importance of appropriately using "award-fee" contracts as effective motivators for excellent contractor performance. For continuous performance improvement, Gansler's memo highlighted the areas of quality, timeliness, technical ingenuity, and cost-effective management.

In November 1999, Deputy Assistant Secretary of the Army for Procurement Dr. Kenneth J. Oscar expressed concerns to the Army acquisition community that award fees issued to contractors are not commensurate with their levels of performance. As a result of these concerns, the Army and the Office of the Secretary of Defense are taking another look at the effectiveness of long-standing incentive programs with a view toward realizing greater benefits.

Consequently, the Award-Term Contracts Incentive was recently launched as a 3-year pilot program. This concept establishes stable partnering relationships between government and industry to provide long-term sources of quality products and services. In addition to enabling the government to form long-term relationships with proven high-performing contractors, it also enables contractors to make investments in process improvements that few companies would make when dealing with short-term awards.

Under award-term incentives, contractors receive periodic performance evaluations and scores. Based on these evaluations and scores, contractors may receive contract extensions for excellent performance and cost savings or have the contract

period of performance reduced for not rendering excellent performance.

The award-term concept is best suited for cost-plus-incentive fee, firm-fixed-price, and fixed-price incentive contracts, particularly in the service arena. Naturally, cost-plus-award fee contracts are excluded from this concept because the objective in award-term contracts is to achieve a level of performance that other incentives are not achieving. Under the pilot program, the Army expects contracting officers to make decisions concerning contract types in their respective commands that are most suitable for award-term application.

The pilot phase of this program will run for 3 years, during which time contracting activities involved in the pilot will annually provide status updates to Headquarters, Department of the Army. Based on lessons learned and feedback from the field, the Army will determine the merits of institutionalizing this concept.

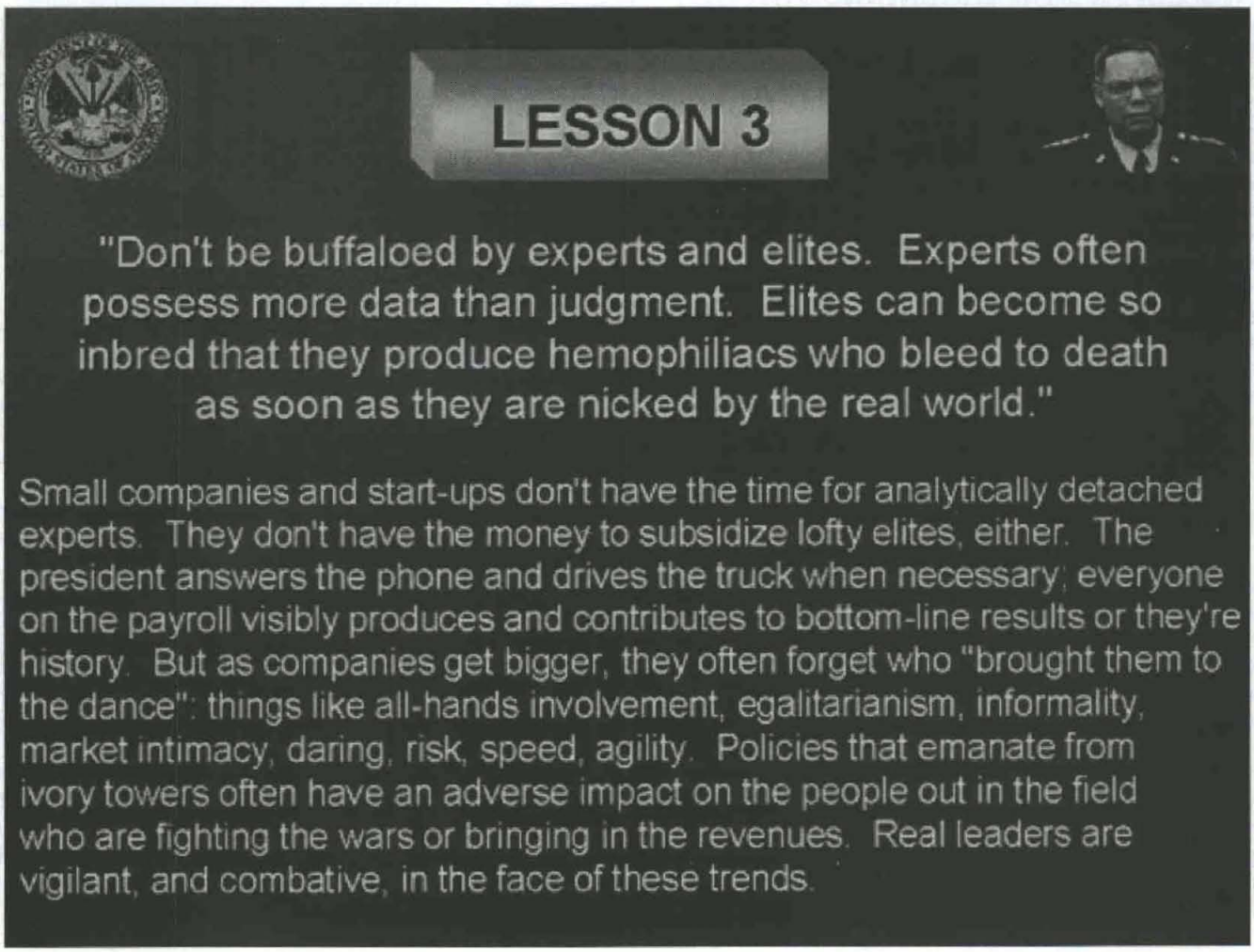
The preceding article was written by Esther Morse, Director, Procurement and Industrial Base Policy, Office of the Deputy Assistant Secretary of the Army (Procurement).

CONFERENCES

Second Annual Aviation Ground Support Equipment Users Conference

The Directorate of Combat Developments-Aviation, Materiel and Logistics Systems Division will host the Second Annual Aviation Ground Support Equipment (AGSE) Users Conference Dec. 5-6, 2000, at the Fort Rucker, AL, Officer's Club. The theme for this year's conference is "Focus on the Future." The proposed aviation logistics vision supporting AGSE will be reviewed and priorities set for future Army AGSE development and acquisition. User participation gives the field commander the opportunity to provide input to future systems requirements.

Conference attendance is intended for brigade, battalion, and company-level maintenance officers and noncommissioned officers. Attendees who want an electronic copy of the presentations are encouraged to bring a CD-R compact disc. Fort Rucker billeting reservations can be made by calling (334) 255-2626 or DSN 558-2626. For additional conference information, contact CPT Rob Wegner, DSN 558-1580, (334) 255-1580, fax (334) 255-9191, or e-mail **WegnerR@rucker.army.mil**.



FROM THE ACQUISITION REFORM OFFICE . . .

Savings Expected From Small-Caliber Ammo Contract

The Operations Support Command (OSC), located at Rock Island, IL, recently awarded a 10-year production contract for small-caliber ammunition. It is expected to save the government about $700 million in comparison with similar earlier contracts. The award process took half the time and consumed half the resources of previous acquisitions.

An integrated product team was used in the development and evaluation of the proposal. Team members were functional experts from OSC, the Services, and higher headquarters. The terms and conditions of the solicitation were developed under the Alpha contracting process through discussions between the government and the interested offerors. All related scopes of work were performance-oriented. Military specifications and standards were reduced by approximately 60 percent from the previous acquisitions and replaced with commercial or performance standards. Further, electronic contracting greatly reduced processing time.

A firm-fixed-price contract was awarded on the basis of best value. Price, past performance, and technical expertise were evaluated about equally. There were 45 different (but similar) items included in the acquisition. By combining these items, the contractor achieved economies of scale, which were passed on to the government. Prices were provided for each item for the entire range of expected quantities from the minimum through the maximum expected each year.

Offerors were allowed to use government facilities for manufacture. The successful offeror chose to use a government facility because it had the capability and capacity to manufacture most of the items at one location. Direct Vendor Delivery saved money because shipments were sent directly to the customer, rather than to a storage facility, whenever possible.

THAAD Award-Fee Contract Emphasizes Successful Flight Tests

The Theater High Altitude Area Defense (THAAD) Engineering and Manufacturing Development (EMD) contract valued at $3.8 billion was awarded to Lockheed Martin Space Systems Co., Missile and Space Operations, Sunnyvale, CA, on June 28, 2000. The THAAD EMD contract is an award-fee type contract. The functional performance areas are technical, management, and cost and schedule.

Emphasis was placed on the importance of successful flight tests occurring on schedule and within cost. The contract includes an award fee pool with special incentives for successful flight test intercepts for the first two flight attempts at White Sands Missile Range (WSMR) and Kwajalein Missile Range (KMR). If Lockheed Martin achieves a successful intercept within the first two attempts at WSMR, the company will receive a $25 million award fee. However, if it is unsuccessful after the first attempt, Lockheed will share $15 million of the incurred EMD contract cost. If Lockheed Martin achieves a successful intercept within the first two attempts at KMR, it will receive a $25 million award fee. However, if it is unsuccessful after the first attempt, Lockheed will share $20 million of the contract cost. The clause identifies technical parameters that must be met during each of the first two flight tests at both ranges.

Use of the Alpha contracting process for developing the scope of work and the integrated master plan (IMP) and integrated master schedule (IMS), as well as for proposal preparation and evaluation, provided the government with a best-value contract. The IMP provides the process narratives, events, and criteria for the EMD Program. The IMS provides the detail tasks and schedule for implementing the IMP. Both the IMP and the IMS were developed during the Alpha contracting process, substantially reducing the normal negotiation time and promoting a better understanding of the EMD requirements and the contractor-proposed approach to meeting these requirements.

Standard Procurement System Adds Value At U.S. Army Space Command

The U.S. Army Space Command (ARSPACE), Colorado Springs, CO, uses the Standard Procurement System/Procurement Desktop Defense (SPS/PD2) system throughout its acquisition process, from the requirements process through distribution of contractual documents. Using this one system for many acquisition functions standardizes the process within ARSPACE and ensures a seamless acquisition environment. This process also brings several functional areas together during daily operations.

Each functional area office within ARSPACE now uses the requirements portion of SPS/PD2, Acquiline, to input purchase requirements. This eliminates the need for written forms and alleviates any translation issues arising when another office completes purchase request forms.

Resource Management (RM) personnel fund the electronic purchase requests after all requirements are input and enter the accounting citation in SPS/PD2. This reduces errors in the accounting cycle. Previously, RM personnel funded requirements on a hard-copy purchase request, transmitted the request to contracting personnel who would manually put the citation into SPS/PD2. This resulted in errors because contracting personnel are generally unfamiliar with various fund citations.

Once funded, the purchase request is sent to contracting personnel to acquire the requested item. Distribution of the resulting contractual document is now made via e-mail as a Microsoft Word attachment. Electronic distribution is efficient, inexpensive, and allows the contractor to further distribute the document in a timely manner to all involved. Subcontractors, suppliers, and all other parties are able to get the contract instantly without the cost for postage and administrative personnel to make the distribution. This distribution enables contracting personnel to attach other documents such as task orders and statements of work to the contract.

ARSPACE contracting personnel have found that command-wide use of SPS/PD2 gives each functional area a better understanding of what the other does and brings them together working toward a common goal. As a result, the command has benefited by saving time and money and having a more accurate contract with instantaneous distribution to the customer.

ARMY AL&T WRITER'S GUIDELINES
http://dacm.sarda.army.mil/publications/rda/

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Purpose

To instruct members of the AL&T community about relevant processes, procedures, techniques, and management philosophy and to disseminate other information pertinent to the professional development of the Army Acquisition Workforce.

Subject Matter

Subjects may include, but are not restricted to, professional development of the Army's Acquisition Workforce, AL&T program accomplishments, technology developments, policy guidance, information technology, and acquisition reform initiatives. Acronyms used in manuscripts, photos, illustrations, and captions must be kept to a minimum and must be defined on first reference. **Articles submitted to *Army AL&T* will not be accepted if they have been scheduled for publication in other magazines.**

Length of Articles

Articles should be approximately 8 double-spaced typed pages, using a 20-line page, and must not exceed 1,600 words. **Articles exceeding 1,600 words will not be accepted.** Do not submit articles in a layout format or articles containing footnotes or endnotes.

Photos and Illustrations

A maximum of 3 photos or illustrations, or a combination of both, may accompany each article in a separate file from the manuscript. Photos may be black and white or color. **Illustrations must be black and white and must not contain any shading, screens, or tints. All electronic files of photos must have a resolution of at least 300 dpi (JPEG or TIFF). If they do not meet this requirement, glossy prints of all photos must be submitted via U.S. mail, Fedex, etc.** Photos and illustrations will not be returned unless requested.

Biographical Sketch

Include a short biographical sketch of the author/s that includes educational background and current position.

Clearance

All articles must be cleared by the author's security/OPSEC office and public affairs office prior to submission. The cover letter accompanying the article must state that these clearances have been obtained and that the article has command approval for open publication.

Offices and individuals submitting articles that report Army cost savings must be prepared to quickly provide detailed documentation upon request that verifies the cost savings and shows where the savings were reinvested. Organizations should be prepared to defend these monies in the event that higher headquarters have a higher priority use for these savings. All Army AL&T articles are cleared through SAAL-ZAC. SAAL-ZAC will clear all articles reporting cost savings through SAAL-RI.

Submission Dates

Issue	*Author's Deadline*
January-February	15 October
March-April	15 December
May-June	15 February
July-August	15 April
September-October	15 June
November-December	15 August

Submission Procedures

Article manuscripts (in MS Word) and illustrations/photos (300 dpi JPEG or TIFF) may be submitted via e-mail to **bleicheh@aaesa.belvoir.army.mil**, or via U.S. mail to the address in the first paragraph at the top of this page. All submissions must include the author's mailing address; office phone number (DSN and commercial); and a typed, self-adhesive return address label.

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