Torchbearer
National Security Report

U.S. Army Aviation and Full-Spectrum Operations

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It is impossible to think about warfare in the modern age without thinking of Army aviation. The biplane pilots of World War I, the helicopter pilots of Korea and Vietnam and the unmanned aircraft system operators of today's conflicts are all part of an Army legacy of three-dimensional combat. The Army has always embraced the concept of a spherical battlefield and used that to propel its people and systems to the cutting edge of battle—merging air and ground forces into a seamless whole. Continued dominance of this vertical dimension of landpower is essential to defeating America's adversaries at the time and place of our choosing.

Today, Army aviation continues to enable warfighting success through a combination of effective reorganization and modernization. Full exploitation of manned and unmanned systems in a modular configuration coupled with effective recapitalization efforts have ensured our warfighters' access to decisive capabilities into the coming decades. Nonetheless, continued investment and support for aviation evolution is required to preserve the dominance and flexibility of the current force for future missions and conflicts.

In this latest installment of AUSA's signature Torchbearer series, we discuss how Army aviation is adapting and modernizing its force to support warfighters now and in the future. A look at the organizational, platform and technological facets of Army aviation provides a contextual grounding for the operational direction of the force and a basis for future discussions. We hope this report is a useful and informative resource and that you will continue to look to AUSA for insightful and credible analysis of contemporary national security issues.

GORDON R. SULLIVAN
General, USA Retired
President, AUSA

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Executive Summary

All you have to do is listen to key leaders from the administration . . . Congress . . . [the Department of Defense] . . . the Army . . . and our sister services. They all say the same thing: aviation is absolutely key to the fight.

General Peter W. Chiarelli, Vice Chief of Staff, Army
Aviation Senior Leaders Conference, 28 January 2010

More than nine years after the events of 11 September 2001, the U.S. Army remains decisively engaged in overseas contingency operations, continues to build security capacity with partner nations and supports civil authorities at home. The projection for the global environment is persistent conflict with state and nonstate actors providing diverse and simultaneous security challenges. The Army must remain agile to respond rapidly to a changing and diverse environment. Accordingly, it has conducted several expansive self-assessments over the last decade to ensure it is configured, manned and equipped to meet the nation's warfighting needs. The Army has embraced the transformative model that strives to dominate the current fight while preparing for the future by capitalizing on a deliberate and effective reinvestment strategy.

The demands of current, distributed battlespaces have placed Army aviation at the forefront of these operations. Representing the apex of precision aviation technology in combat operations are the AH-64D Apache Longbow, OH-58D Kiowa Warrior, CH-47D/F Chinook and UH-60A/L/M Black Hawk helicopters and the MQ-1C Gray Eagle, RQ-7B Shadow and RQ-11B Raven unmanned aircraft systems (UAS). Fusing the UAS to the ground commanders are the One System Remote Viewing Terminal and the One System Ground Control System, which accept plug-and-play UAS airframes and deliver common video and control to land forces in dispersed locations.

The rotary wing and UAS platforms have been the focus of a significant modernization effort fueled by RAH-66 Comanche reinvestment. The AH-64 fleet is being completely upgraded with Block III and Longbow Block II packages that not only improve targeting, aircraft performance and UAS integration but also reduce pilot workload. The UH-60 and CH-47 have also received performance-enhancing and avionics upgrades that improve mission performance for the Army's core lift platforms. Additionally, the OH-58 is undergoing a substantial upgrade process to keep the aircraft in its armed reconnaissance role until at least 2025; the OH-58 had been scheduled for replacement by the ARH-70A, but that program's cancellation required the OH-58 to make up lost ground for minimal investment due to planned retirement. Finally, the procurement and fielding of the UH-72 has improved the homeland response, medical evacuation and training capability of reserve component forces and has accelerated the retirement of the aging UH-1 Iroquois ("Huey") aircraft from the fleet. All told, the rotary-wing fleet is poised to meet the performance and technological standards for warfighting well into the next decades of the 21st century.

Army UAS are also upgrading to meet warfighter needs. Linked to ground commanders by both technology and doctrine, Army UAS continue to offer critical battlefield capability to all echelons. The RQ-7B Shadow, the backbone of UAS reconnaissance for brigade combat teams, and the battalion-and-below RQ-11B Raven are both undergoing upgrades to increase mission effectiveness. Increased flight time, upgraded sensors and expanded control capability will improve the situational awareness and flexibility of ground commanders. The low rate initial production and fielding of the MQ-1C Gray Eagle is




the first step toward significantly upgrading UAS availability and firepower for division commanders. The first MQ-1C fully equipped unit is scheduled for September 2011; smaller-size subsets are currently in the field as part of a quick-reaction capability in both Iraq and Afghanistan.

These aviation systems have flown more than 4 million flight hours since hostilities began in Afghanistan in October 2001. The monthly operational tempo, depending on the aircraft type, is six times higher than normal peacetime mission requirements. Despite these demands, aviation systems' mission-capable rates continue to meet or exceed the Army Force Generation readiness goals established for Army aircraft. Furthermore, in support of national strategic objectives the Army is building partner-nation capability while enhancing its own skill sets by adding nonstandard aircraft to its training scheme and engaging partner nations in direct training and equipping. This full-spectrum model makes Army aviation an unmatched warfighting tool for the nation.

Parallel to the airframe modernization program is an effort focused on moving the force into the future. Missile warning systems and countermeasures, improved performance engines and upgraded sensors and monitors will provide greater situational awareness and capability for aviation warfighters on future battlefields. Additionally, development of air traffic control hardware and software is making battlefield airspace not only safer for pilots, but also more responsive to ground commanders' indirect and aerial fire support requirements. A new flight school model is poised to deliver the numbers of highly trained aviation experts needed to fill the growing force. The Army is also developing the Joint Heavy Lift and Joint Multirole concepts to integrate aviation into the future joint environment in a seamless manner. Finally, implementation of maturing network technologies into current and future systems ensures that aviation capability is available to warfighters regardless of location or service.

Army aviation is on a path to success for force-wide fielding and upgrading. However, continued funding and resourcing are needed to ensure the force enters the next era of conflict at the top of the capability pyramid. Divestiture of obsolete airframes, investment in technological advancements, complete modular transformation and development of future joint systems are required to maintain relevance in modern war. Full, sustained funding is required for all aspects of Army aviation—from current rotary-wing upgrades to future UAS—to enable warfighters to fight and win.

Army forces must have the ability to respond rapidly to unexpected circumstances. The combination of manned and unmanned fleets performs landpower battlefield functions of maneuver, firepower, mobility, logistics, command and control, and intelligence and security in support of conventional and unconventional missions around the globe. The capability to exploit the vertical dimension of landpower is crucial to the nation's ability to control terrain and influence populations on the battlefields of today and tomorrow. To accomplish that mission, Army aviation will continue to evolve into an even more reliable, more deployable, more responsive and more capable full-spectrum force.




U.S. Army Aviation and Full-Spectrum Operations

The biggest force multiplier on the battlefield is aviation.

Command Sergeant Major Tod L. Glidewell, U.S. Army Aviation Center of Excellence, speaking at the Aviation Senior NCO Academy, 21 September 2010

Introduction

The decade of overseas contingency operations in Afghanistan and Iraq has been a watershed event for Army aviation. The nation's protracted military operations across the globe in unique and challenging environments have focused the military's attention on how to better dominate and exploit the vertical dimension of landpower. The application of four Army imperatives—sustain, prepare, reset and transform—to Army aviation has allowed the force as a whole to rapidly adapt to, and succeed in, a hybrid threat environment; that is, an environment that embraces opportunistic violence, decentralization and the full range of traditional and nontraditional tactics that together defy conventional categorization. This environment places at a premium operational mobility, joint interoperability, sustainability, tailorability and lethality—the very essence of Army aviation.

Continuous review of lessons learned from a decade of deployment offers evolutionary feedback from the crucible of combat. The challenging and geographically distributed nature of combat operations presents increasing demand for critical aviation capabilities such as logistics mobility, medical evacuation, personnel movement and precision lethality. Also, the long-duration mission sets coupled with persistent surveillance requirements require seamless integration of Army UAS into the formation and constant attention to modernization and capability increases.

The future battlefield is unknown; the Army must be ready to engage in, and rapidly transition between, differing levels of combat across the full spectrum—from peacekeeping and security assistance, through counterinsurgency and up to full-scale conventional war. The Army has embraced this challenge and is improving its capabilities

across the breadth of landpower. Through the decisive dominance of the vertical dimension of landpower, Army aviation delivers a force-multiplying effect with its unmatched application of maneuver, firepower, mobility, logistics, command and control, and intelligence and security. It is at the forefront of landpower dominance on the full-spectrum, nonlinear battlefield and continues to transform, evolve, adapt and win in the current fight while preparing, training, equipping and sustaining for future conflict.

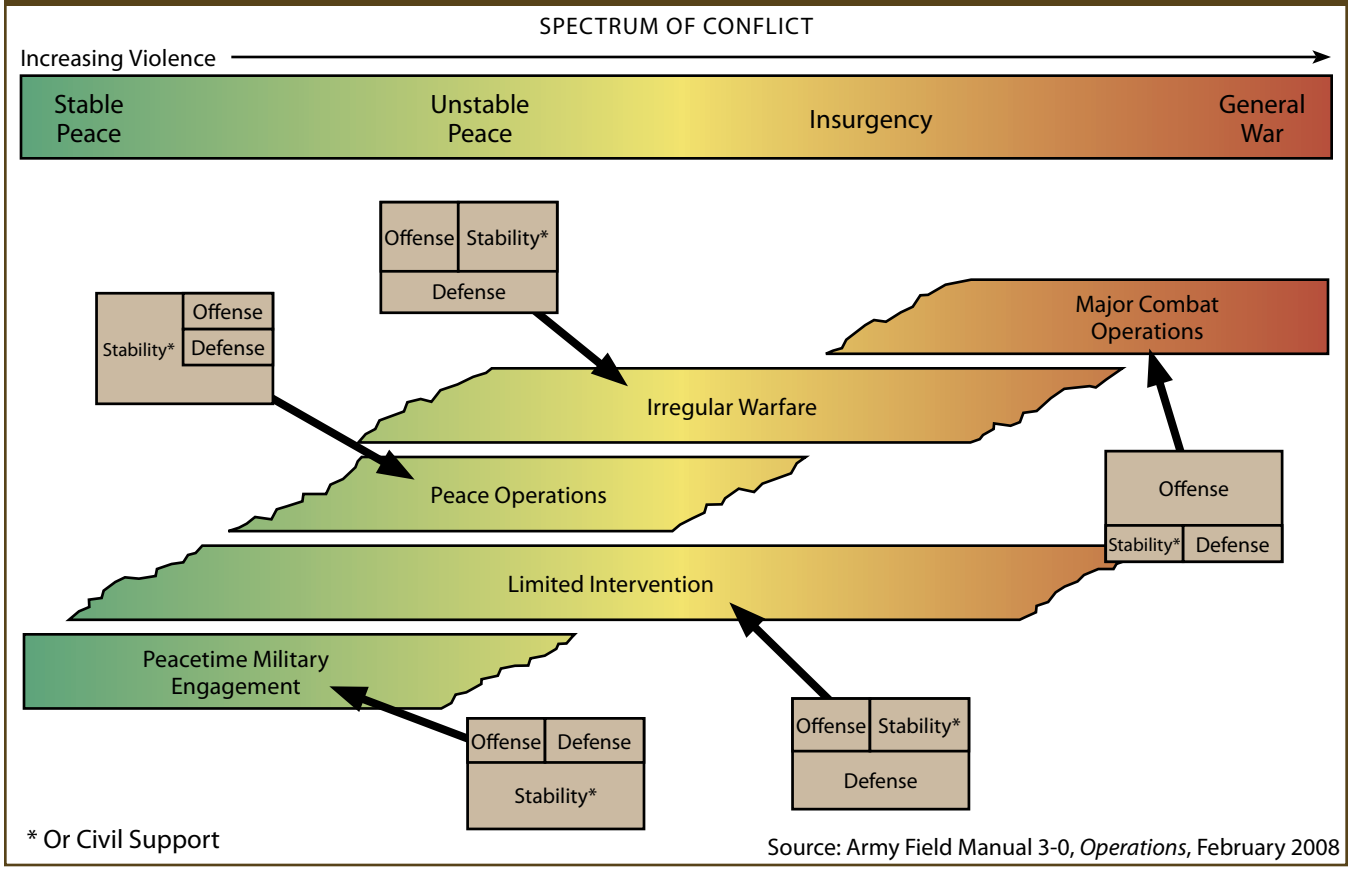
Support to the Warfighter

Army aviation has been at the very front line of current combat operations since October 2001. The successful prosecution of combat operations in the distributed environments of Afghanistan and Iraq has been possible primarily through the delivery of precision fires, logistics, medical evacuation, transport and reconnaissance capacity. To do this, the Army has flown more than 4.2 million hours on manned and unmanned systems in support of combat operations, humanitarian relief and homeland security to date.

Informed by combat experience, the Army's self-assessment process to ensure that it has the trained, ready and available forces to deploy produced two




Building a Force for Full-Spectrum Operations



Source: Army Field Manual 3-0, *Operations*, February 2008

critical aviation capability reviews. Aviation Study I, completed in 2003, called for the cancellation of the RAH-66 Comanche helicopter and the reinvestment of procurement funds into a recapitalization effort on existing airframes as well as a restructuring of combat aviation brigades (CABs) to a modular design; Aviation Study II, completed in 2009, took in the lessons of seven additional years of high-tempo combat operations and applied those lessons to the conclusions of the first review. This second review made several new recommendations to ensure the continued availability, capability and success of the Army aviation force on the full-spectrum battlefield. Among the specific findings of the 2009 study:

- Aviation units should be restructured into standardized full-spectrum combat aviation brigades (FS CABs) in both the active and reserve components to improve operational flexibility and mission tailorability.
- Aviation must continually adapt, reset and project its capable formations to meet national strategic roles and missions. Total mission flight




Long-Term Strategy to Fix Army Aviation

Extend Aviation Capabilities Beyond the 2020 Timeframe

Fixing Army Aviation Requires

Chief of Staff, Army Guidance: "Fix Army Aviation"

$35.4B

FY04–20

4,174+ Aircraft/Systems

Manned/Unmanned Aircraft Deliveries through 2025

Extended Aviation Capabilities

- Accelerate Aircraft Survivability Equipment
- Fund Apache Block III Conversion
- Analyze alternatives for Light Armed Scout Helicopter Capability
- Sustain the Cockpit and Sensor Upgrade Program for Kiowa Warrior
- Reconnaissance, Surveillance and Target Acquisition Mitigate
- Resource Army Unmanned Aerial Vehicle requirements
- Procure Light Utility Helicopter, Modernized Black Hawks and Chinooks
- Procure MEDEVAC aircraft, from 12 to 15 per company
- Invest in Aviation Munitions and Avionics
- Resource Aviation Support Systems: Air Traffic Control and Aviation Ground Support Equipment
- Restructure Aviation Organizations

650 Comanche Aircraft

Comanche Deliveries through 2025

Major Capability Gaps

- Aircraft Survivability Equipment: Not adequate for current infrared threat
- Armed Reconnaissance: Current platform (OH-58D) cannot perform mission.
- Unmanned Aerial Vehicle: Level 4 Unmanned Aerial Vehicle control and Manned Unmanned Teaming for Armed Reconnaissance Helicopter and AH-64 Block III
- Homeland Security/Homeland Defense: Army National Guard performing with legacy rotary-wing and fixed-wing assets
- UH-60/CH-47: Keep relevant for the Joint Environment
- Intra-theater lift: Current Army fixed-wing fleet not capable of meeting combat logistical requirements
- Reserve component responsiveness: Train-up for complex, combined arms operations (reconnaissance/attack/assault/general support)
- Bridging strategy from current to future munitions
- Joint interoperability
- Long logistics tail
- Deployability: Facilitate rapid force projection

President, Secretary of Defense and Chairman of the Joint Chiefs of Staff Approved Concept

Source: U.S. Army Aviation Center of Excellence

hours over the past eight years in Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF) (six times the normal mission load prior to 9/11) validated the procedure of maintaining a significant deployed presence in combat while addressing the requirement to transform and modernize.

- Army Aviation must maintain disciplined, rapid acquisition for aviation new-start programs. Recent investments have enabled the Army to field a light utility helicopter (LUH), UAS, UH-60M Black Hawk and CH-47F Chinook and to establish the AH-64D Apache Block III, a safety enhancement and recapitalization




program for the OH-58D Kiowa Warrior and the Small UAS.

- Army Aviation must continue the Armed Aerial Scout (AAS) Analysis of Alternatives (AoA) to assess alternatives for a critically needed capability to fill the future armed reconnaissance role.

In addition to self-review, Army Force Generation (ARFORGEN) requirements also drove the adaptation process.[1] To meet the force requirements and the Army-wide goal of a 1:2 "boots on the ground"/dwell (time deployed:time at home station) ratio, the Army initiated two major structural changes. The first was the addition to its force structure of two active component CABs. The first of these CABs, designated the 16th Combat Aviation Brigade, is in the constitution process; the aircraft and crews to fully man this unit already exist in the force, but approximately 700 more Soldiers are needed to fill the support structures associated with the CAB. The Army will add a thirteenth CAB to the active component. The Army leadership has directed analysis and planning to determine where this CAB will be stationed. The CAB, yet to be designated, will activate beginning in April 2013 and be ready for the fight by 1 October 2015.

Since growth in force structure is not instantaneous, the Army needed additional measures to sustain forward deployment and landpower dominance. Accordingly, it has begun the conversion of its CABs from legacy light, medium and heavy designs to a full-spectrum design.

To enable the steady flow of aviation assets to commanders, a change in the force management model was needed. As the Army moved to establish an "Enterprise Approach" to force management, Army aviation implemented a similar construct labeled the "Aviation Enterprise." The purpose is to treat certain Army capabilities, such as aviation, fires and network operations, as a whole package rather than a conglomeration of separate programs, offices and resource chains. In the case of Army aviation, the enterprise approach is synchronizing senior leaders' knowledge on aviation priorities, decisions, policies and efforts while coordinating non-aviation resourcing efforts against ARFORGEN requirements. The Aviation Enterprise model synchronizes the entire aviation concept across all relevant contributing program offices to ensure that all equipment and requirements, not just aircraft, are available to units in the appropriate ARFORGEN cycle. The end state is a properly procured, resourced and ready aviation force that provides interference-free, streamlined, whole-unit combat power to commanders backed by a long-term investment plan that supports the ARFORGEN process.

Aviation Force Structure

Army aviation is adapting its force structure to meet the evolving demands of sustained full-spectrum combat. The full-spectrum design, rooted in the legacy medium CAB design, features one AH-64D attack reconnaissance battalion and one OH-58D attack reconnaissance squadron with three troops of OH-58D Kiowa Warriors and two platoons of RQ-7B Shadow tactical unmanned aircraft systems. This "manned/unmanned" teaming concept fully maximizes the capabilities of both systems and provides expanded real-time reconnaissance, surveillance and target acquisition (RSTA) capability within the CAB.

The FS CAB is based on the modularity concept of unit building blocks, allowing the rapid addition or subtraction of manned/unmanned assets based on full-spectrum mission requirements to enhance attack, assault, intelligence, surveillance and reconnaissance operations.

The FS CAB will be designed around:

- one general support aviation battalion (GSAB) – 8 UH-60s, 12 CH-47s and 15 HH-60 (medical evacuation);

[1] The Army's model to coordinate cycles of readiness and training is called Army Force Generation (ARFORGEN). For more information about ARFORGEN, see AUSA Torchbearer National Security Report "2006 and Beyond: What the U.S. Army is Doing," March 2006, http://www.ausa.org/PDFdocs/TBSecRpt/TBear_March_06_optimized.pdf.




Aviation Enterprise Management Model

Army Enterprise

★★★★ **Training & Doctrine Command** (Personnel)

★★★★ **Forces Command** (Readiness)

★★★★ **Army Materiel Command** (Materiel)

★★★ **Installation Management Command** (Services & Infrastructure)

Aviation Enterprise

General Officer Steering Committee

U.S. Army Aviation Center of Excellence
Program Executive Office – Aviation
Aviation and Missile Command
Department of the Army G3/5/7

Council of Directors/Deputies and Colonels will coordinate attendees, depending upon topic/issue

Council of Directors/ Deputies

Program Executive Office – Aviation
Forces Command
U.S. Army Aviation Center of Excellence
Aviation and Missile Command
Program Executive Office – Aviation
Department of the Army G3/5/7

Others as invited, depending upon topic/issue

Aviation Mission and Army Force Generation

Aviation Enterprise Focus is on the Soldier

Synchronization and Battle Rhythm

Enterprise Action Teams

- Army Force Generation
- Aircraft Survivability Equipment
- Reconnaissance/Attack
- Lift
- Light Utility Helicopter
- Unmanned Aircraft System
- Aviation Logistics
- Force Structure
- Standardization
- Training Aids, Devices, Simulators and Simulations
- Temporary

Council of Directors/Deputies Established Action Teams (Standing/Temporary) (Others as required)

Source: Headquarters, Department of the Army




- one assault (ASLT) battalion – 30 UH-60s;
- one attack reconnaissance (ATK) battalion – 24 AH-64Ds;
- one aerial reconnaissance squadron (ARS) – 21 OH-58Ds, 8 RQ-7s;
- one aviation support battalion (ASB);
- one extended-range multipurpose UAS company (12 MQ-1Cs).

Army leadership is currently analyzing how many active and reserve component CABs will convert to the full-spectrum (FS CAB) design and over what timeframe; it is likely that most will convert, with some number of CABs remaining in the legacy heavy CAB structure (with two AH-64 attack reconnaissance battalions) as a foundation for potential future high-intensity conflicts/major combat operations. By converting the remainder of the heavy CABs and integrating UAS in lieu of manned aircraft for specific mission capacity, the Army can redistribute airframes and crews across the formation and provide more deployable units without a reduction in capability. The FS CAB will also complete the effort to standardize the CAB design across the aviation battlefield operating system to deliver maximum aviation capability in the most timely and flexible manner. The FS CAB will deliver steady-state combat power while maximizing efficiencies in training, maintenance and support across the Aviation Enterprise. The Army senior leadership has designated 101st CAB to be converted to the Army's first FS CAB, with an initial operating capability of 15 August 2011.

In addition to the CAB redesign, the Army is supporting warfighters in distributed battlespace by quickly growing nine additional medical evacuation (MEDEVAC) companies (two of which were deployed in 2010) in the reserve component and instituting a force design structure change in each of the 37 existing MEDEVAC companies—increasing from 12 aircraft and 12 crews to 15 aircraft and 20 crews. The first of these redesigned companies deployed in Fiscal Year (FY) 2010.

To enable these expansions, the Army programmed an increase in the Initial Entry Rotary-Wing student load at the U.S. Army Aviation Center of Excellence (USAACE) beginning in FY 2010. Work is being done in the areas of personnel, facilities expansion, aircraft and funding to ensure the expansion is sustained and operating at full capacity.

Aviation Systems

A wide variety of systems deliver the unique full-spectrum capabilities of Army aviation to the warfighter. As the precision attack backbone of the aviation fleet, the continued evolution of the AH-64 program remains vital to the Army's arsenal. The remanufacturing of the AH-64A to the AH-64D Apache Longbow configuration is scheduled for completion by 2015. With the cancellation of the ARH-70A Arapaho armed reconnaissance helicopter program, the four AH-64A units originally designated to transition to reconnaissance units were instead added to the Longbow fielding schedule. As a result, the reserve component will now be completely fielded with the Apache Longbow, providing greater capability and interoperability for combat operations.

Even as the Army fields the Apache Longbow, several mission-essential modifications are being added to the system. The Modernized Target Acquisition and Designation System (MTADS) electro-optical system provides flight crews a significant increase in visual acuity under both day and night conditions for pilotage and target acquisition. The Manned/Unmanned Teaming Level 2 (MUMT-2) system modification provides UAS video directly into the cockpit for Apache crews; it also allows the crews to stream their internal sensor video directly to the Soldier on the ground. MUMT-2 increases both aircrew and ground commander situational awareness, reduces target-to-shooter timelines and decreases the risk of fratricide.

The Apache Block III (AB3) represents the next step in the evolution of the Apache program. Induction began in FY 2011; the Army will field the first unit in FY 2013. The AB3 provides significant increases in performance and capability in high/hot environments. Advances in technology will provide the Block III with improved manned/unmanned interoperability,




weight reduction initiatives, open system architecture and reduced pilot workload via cognitive decision-aiding technologies. AB3 will also provide a net-ready capability that maintains Army interoperability for joint operations and future Army requirements. At the end state, the AH-64 fleet will consist of Apache Block IIIs and Apache Block II Longbows.

Fielding of the Black Hawk's UH-60M version and the HH-60M MEDEVAC variant began in 2008. This improved version of the UH-60 extends the fleet's lift and range capabilities, reduces operating and support costs, improves transportability, enhances survivability, integrates Air Warrior crew protection, digitizes the avionics suite, digitizes the flight management systems and extends the life of the aircraft. These two variants will meet utility and MEDEVAC mission requirements through at least 2025. Although the current variants have tremendous capabilities, the program has even more enhancements in development for future units. More reliable medical equipment, increased navigation capabilities and performance planning, increased processing power and upgraded electrical systems are currently in development and testing.

Since award of the contract in June 2006, more than 100 UH-72A Lakota helicopters have entered service with the active Army and the Army National Guard. The aircraft have flown more than 30,000 hours conducting training and test support, MEDEVAC, natural-disaster response and counter-drug missions. Most recently, the Army National Guard used its UH-72A helicopters to respond to the oil spill in the Gulf of Mexico. The rapid production and fielding of these aircraft returned 24 UH-60 aircraft to the warfight and accelerated the retirement of aging UH-1 Iroquois and OH-58A/C aircraft. In the next year, fielding of an additional 62 UH-72As will place more than half of the planned 345 UH-72A fleet in service by September 2011. In 2011 the Army National Guard will receive major upgrades to their MEDEVAC capability as several units across the United States receive the MEDEVAC version of the Lakota; the UH-72A is already flying MEDEVAC missions at three major training bases in the United States. The UH-72A will also receive two major mission equipment packages in the next year that will enhance the aircraft's capabilities to perform the security and support mission and support training at the combat training centers.

The CH-47 Chinook will remain the Army's medium-lift helicopter until at least 2030. The CH-47F model has been fielded to 50 percent of




the active Army and has been employed in the field since July 2007. The CH-47F modifications improved reliability and reduced operational costs. Specific improvements include a newly machined airframe, digital avionics, enhanced air transportability, a digital automatic flight control system and an extended-range fuel system for self-deployment missions. Reliability and maintainability improvements include airframe tuning for vibration reduction, corrosion protection, a digital source collector and an automated maintenance program with a 400-hour phase interval. The recapitalization program is rebuilding and upgrading all CH-47Ds and Special Operations MH-47Es and incorporates newly built aircraft to achieve an end state of 534 CH-47F/MH-47G airframes. Consistent with a recent completed Army and Joint Vertical Lift Capabilities-Based Assessment, a Chinook technology focus on dynamic components—e.g., rotors, drive train and engine—remains at the forefront of future upgrade efforts.

The cancellation of the ARH-70A program in October 2008 made it necessary to keep the OH-58D Kiowa Warrior (KW) on the front line for the foreseeable future. The OH-58D is a proven workhorse for the warfighter and remains a reliable asset for theater ground commanders. However, the decision to maintain the OH-58D in front-line service also meant major upgrades were required to meet the warfighter's current and future demands. Even so, the OH-58D fleet continues to surpass all other Army rotary-wing platforms in readiness while executing an operational tempo (OPTEMPO) of five times the normal peacetime rate. Still, upgrades are essential to ensure the aircraft remains technologically compatible on the modern battlefield. A series of upgrades is leveraging lessons learned in both Operations Enduring Freedom and Iraqi Freedom to make up ground lost to almost 15 years of minimal investment because of planned retirement.

In early 2009 the KW Product Management Office (PMO) began working to develop the Cockpit and Sensor Upgrade Program (CASUP)—the next-generation Kiowa Warrior. Officially launched in April 2009, the mission of the CASUP program is simple: develop a robust, fast aircraft modification program to address obsolescence, reduce weight and deliver advanced capability to the Aviation warfighter. The KW will remain a reconnaissance and support mainstay of our nation's war effort until at least 2025.

Nevertheless, the Army's requirement for an improved armed reconnaissance capability remains valid. The Armed Aerial Scout Analysis of Alternatives is divided into two phases. Phase I, completed in April 2010, indicated that manned/unmanned teaming is the best approach to meet the armed reconnaissance need. Phase II expands on the Phase I findings by examining the contribution of various manned and unmanned systems by comparing their capabilities to gain insights into potential materiel solutions. Phase II will focus on the operational effectiveness, cost, schedule and risks associated with a range of teaming alternatives; a final report is due in April 2011.




Aviation Transformation

	Converted to Modular Construct (Combat Aviation Brigade)	Aviation Programs First Unit Equipped	Critical Events
FY04			• Presidential Decision • Army Campaign Plan
FY05			• 3d Infantry Division Combat Aviation Brigade (CAB) to Operation Iraqi Freedom
FY06	Reserve Component	RQ-11 Raven	• 36th CAB to Operation Iraqi Freedom • Course of Action 4 AH-64D
FY07		CH-47 Chinook UH-72 Lakota	• Armed Reconnaissance Helicopter Re-plan • Task Force ODIN • Joint Heavy Lift Migration
FY08		UH-60 Black Hawk	• Task Force ODIN • Armed Reconnaissance Helicopter Breach
FY09		Quick Reaction Capability 1	• Joint Cargo Aircraft Transfer • Aviation Study II • 12th Active Component (AC) CAB • Resource Management Decision 802
FY10		Quick Reaction Capability 2	• Resource Management Decision 700 • Aviation Study II • 13th AC CAB • Portfolio Review
FY11		AH-64 Apache	
FY12		Program of Record	
FY13			

Source: Headquarters, Department of the Army




Manned/Unmanned Teaming[2]

The emergence of unmanned aircraft in the mid-1990s brought UAS technology to the forefront of the intelligence, surveillance and reconnaissance (ISR) mission. Since then the roles, missions and numbers of UAS have continued to expand at unprecedented rates; the number of unmanned aircraft increased from 51 aircraft in 2001 to approximately 6,000 aircraft in 2010 throughout the Army and the Department of Defense (DoD).

Recently, Army UAS surpassed the 1-million-flight-hour milestone in support of combat operations, which is more than 90 percent of the overall 1.1 million hours flown by the UAS community in all operations, including training, exercises, homeland security and humanitarian assistance efforts.

The key technological component of the UAS is the universal controller system; the individual airframes are "plug and play." The controller links the ground commander to the UAS via two critical systems: the One System Remote Viewing Terminal (OSRVT) and the One System Ground Control Station (OSGCS). The OSRVT provides real-time streaming of ISR feed to ground commanders in remote locations up to 50 kilometers from the UAS. The OSGCS is a High-Mobility Multipurpose Wheeled Vehicle-mounted system that currently provides universal control of two platforms—the RQ-7B Shadow and MQ-5B Hunter[3]—while an upgraded Universal Ground Control Station in final development will add the MQ-1C Gray Eagle. Handheld, portable stations control small, tactical-level UAS such as the Raven.

> We're at a real time of transition here in terms of future aviation. What's going to be manned? What's going to be unmanned?
>
> **Admiral Michael G. Mullen**, Chairman, Joint Chiefs of Staff, before the Senate Armed Services Committee, May 2009

To maximize the technological effects, the Army has integrated UAS and the operators into the entirety of the formation. The linchpin of this integration has been making UAS organic to brigade combat teams (BCTs), rather than attachments. This provides timely feedback on operational effectiveness and procedures—increasing team cohesion and efficiency. Using the enlisted force as a backbone, integrating the UAS system, people and equipment directly into the BCT has paid off in efficiency, responsiveness and effects as the UAS team is a formal part of the entire planning, execution, and review process. The ultimate objective is a universal UAS operator with a Universal Ground Control Station and universal software links that will enable the Army to push the most capable airframes down to BCTs and below in geographically dispersed configurations with minimal difficulty or delay.

Continued investment in UAS ensures the warfighter is prepared for the future. The ground commander's RSTA requirements are being met today and are being improved through technology developments, interoperability and open architecture initiatives, product improvements in acquisition programs (such as the RQ-7B and the RQ-11B) and introduction of new systems such as the MQ-1C UAS and the Rucksack-Portable Unmanned Aircraft System (RPUAS) family of small UAS. With improvements in video/data distribution hardware, UAS function and control is being pushed down to lower and lower echelons across the breadth of combat operations. The teaming of UAS with either Soldiers on the ground or pilots in the air enhances their lethality and situational

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[2] For more on manned/unmanned teaming and Army UAS, see AUSA Torchbearer National Security Report "U.S. Army Unmanned Aircraft Systems: Changing Modern Warfare," July 2010, http://www.ausa.org/publications/ilw/torchbearercampaign/Documents/TB-US%20Army%20Unmanned.pdf.

[3] The MQ-5B is slated for replacement by the MQ-1C Gray Eagle starting at the end of FY 2011 and is not discussed in this piece; for more information on the MQ-5B, see "U.S. Army Unmanned Aircraft Systems: Changing Modern Warfare."




awareness in full-spectrum conflict. The expansion of unmanned aircraft systems continues to provide increased capability for future Army operations.

The RQ-7B Shadow-200 UAS is the Army's system for the BCT. It is the Army's UAS workhorse, accounting for more than 50 percent of the UAS combat hours flown to date. The RQ-7B provides Army brigade commanders with tactical-level RSTA, battle damage assessment and communications relay. The RQ-7B is catapulted from a rail launcher, lands via a tactical automatic landing system and is supported by a platoon of 22 Soldiers. One RQ-7B system includes four unmanned aircraft with electro-optic/infrared imaging payloads, two OSGCS shelters and associated ground equipment.

The Army will continue procuring the RQ-7B to eventually field the system to all special operations forces and all BCTs within Army active and reserve components. The Army continues to improve the RQ-7B system to meet evolving overseas requirements, including laser designator, tactical common data link (TCDL), re-wing and electronic fuel injection. Additionally, two RQ-7B platoons will be added to the combat aviation brigade's armed reconnaissance squadron (ARS). These systems will give the ARS a manned/unmanned teaming capability and greatly increase the squadron's reconnaissance capability.

The RQ-11B Raven is a small unmanned aircraft system (SUAS) that provides commanders at battalion and below with organic tactical RSTA, enhanced situational awareness and increased force

protection. The RQ-11B is hand-launched and rucksack-portable. The system is made up of three unmanned aircraft with interchangeable electro-optical and infrared payloads, a ground control station, a remote video terminal, a field repair kit and operational spares.

The Army is currently fielding the RQ-11B with a digital data link capability and other enhancements that allow for not only more aircraft within a given mission area, but also extended-range operations via aircraft-through-aircraft relay control. Other upgrades include improvement of the daytime camera to five megapixels, upgraded encryption to the command and data link, improved power management and an open software architecture for interoperability with small unit unmanned ground vehicles (UGVs) and unattended ground sensors (UGS).

The Army is responding to requests from theater for additional small UAS capabilities. A proof-of-principle (POP) demonstration for a family of SUAS is currently operating with a BCT in OEF. The BCT received 15 POP systems and operational spares, built around the Wasp unmanned aircraft (smaller than the RQ-11B), to support squad and platoon reconnaissance with a truly micro capability. To support Afghanistan theater-specific urgent requests to provide enhanced counter-IED (improvised explosive device) situational awareness, the Army plans to procure and field 216 Puma unmanned aircraft (an upsized version of the RQ-11B Raven) for route-clearance missions in FY 2011. Additionally, the Army is working to develop and field a handheld control station that will




provide Soldiers with a single means to operate small aerial and ground robotics and to receive information from various battlefield sensors.

The MQ-1C Gray Eagle UAS will be a mainstay of the division commander's battle-set for land warfare operations. The MQ-1C completed a successful production and deployment in February 2010 and entered low-rate initial production thereafter. The MQ-1C is a division-level asset, assigned to the combat aviation brigade and teamed with manned aviation elements, that significantly improves the combat power of the CAB. The MQ-1C will be fielded in company sets consisting of 12 unmanned aircraft, five OSGCS, two portable ground control stations, five TCDL ground data terminals, two portable TCDL ground data terminals, one ground satellite ground data terminal, four backup takeoff-and-landing systems antennae and associated ground support equipment. The MQ-1C company is organized with 128 Soldiers, consisting of headquarters, flight and maintenance platoons. Platoon-size subsets of an MQ-1C company have been fielded as part of two quick-reaction capability companies in both OIF and OEF.

MQ-1C development is ongoing, and the Army is planning for 13 total systems. Other projected milestones include initial operational test and evaluation of the first unit equipped in September 2011, followed by achievement of initial operational capability by March 2012. Initial capability of the system will provide three deployable mission sets through small increases in equipment, improved technology and changes to doctrine and operational concepts.

Enhancing Partner Nation Capacity

Across DoD, conventional or general purpose forces' aviation efforts to support building partner nations' rotary-wing capabilities have traditionally centered on support to Foreign Military Sales (FMS), Technical Assistance Fielding Teams and partnerships. In conjunction with these traditional methods, the Army is expanding its support for building partner nations' vertical lift capabilities by expanding Security Forces Assistance (SFA) programs. As DoD's largest rotary-wing operator, the Army will play an increasing role in these SFA engagements.

In the fall of 2009, DoD asked the Army to reconstitute Mi-17 Hip (a Soviet-bloc transport helicopter frequently found in developing nations) training capability in the short term (FY 2010–11) to meet DoD requirements until a long-term solution could be developed through a Non-Standard Rotary-Wing Study led by the Office of the Secretary of Defense. The Mi-17 program is in response to directed guidance from the Secretary of Defense to build partner-nation vertical lift capabilities. It provides the United States with improved mechanisms for supporting allied and partner nations that still use Soviet-bloc equipment. Reconstitution efforts continue today with the establishment of a company-size unit at the USAACE at Fort Rucker, Alabama, the overhaul and modification of replacement Mi-17s that were transferred at no cost to DoD from other government agencies and efforts to improve materiel risks associated with non-U.S. manufactured aircraft by establishing a Non-Standard Rotary-Wing Program Management Office within the Program Executive Office (PEO) Aviation.

Another SFA program underway is the pending sale of UH-60M assault helicopters to the Mexican Navy and National Police to assist in counter-narcotics operations. To build the capability as quickly as possible, the U.S. Army is reprioritizing traditional Spanish-language UH-60A/L training for the Mexican military, developing UH-60M Spanish-language training and providing the UH-60M via FMS. These efforts will provide Mexico an initial UH-60M operational capability in the fall of 2011.




Adapting Technology to the Aviation Enterprise

The Army has invested more than $2.4 billion on safety and survivability enhancements to the aircraft fleets while fielding more than $40 billion in new aircraft with enhanced safety and survivability features. These investments generate expanded freedom of maneuver on the battlefield in support of ground operations. They include:

- installation of the Common Missile Warning System to provide protection against man-portable air defense weapon systems;
- installation of the Advanced Threat Infrared Countermeasure for infrared suppression on the CH-47D/F;
- future enhancements such as the common infrared countermeasure and Hostile Fire Detection Systems for all airframe types;
- development of an integrated sensor fusion to provide enhanced threat situational awareness against complex threats;
- survivability initiatives in numerous aviation programs such as digital cockpits with moving maps, emergency locator transmitters, flight data recorder, armor upgrades, better engines and transmissions, an improved turbine engine program, digital aircraft monitoring systems, crashworthy seating, night vision systems, integrated helmet systems and infrared suppression.

Furthermore, Army technical advancements will continue to improve UAS capabilities alongside those of manned platforms. Ongoing and future technology enhancements include signature reduction, supervisory control of multiple systems, advanced vertical takeoff and landing capabilities, collision avoidance, survivability improvements, weaponization, autonomy, advanced manned/unmanned teaming, small heavy-fuel engines and communications relay and extension. Additionally, sustainment/cargo UAS may emerge as a capability to deliver logistical support to Soldiers in hard-to-reach locations or where use of manned aircraft is not feasible. All of these advancements are in concert with the Army's overall enhancements to network centricity.

The Army also opened a new UAS Rapid Integration and Acceptance Center at Dugway Proving Ground in Utah. This organization has the airspace, expertise and facilities to accommodate specific air vehicles for training, maintenance and testing. The facility provides one unified location for development activities and acceptance testing that can be shared by all services, academia and industry to demonstrate and improve capabilities, ensuring the Soldier is continually armed and equipped with cutting-edge technology.

The issue of the complexity of airspace over the combat zone is a real concern that the Army has been addressing for several years. The Army created more than 1,700 airspace control personnel positions to manage the complex airspace from the BCT level up to theater organizations. Additionally, the Army has fielded the Tactical Airspace Integration System (TAIS) of the Army Battle Command suite of command and control systems. TAIS provides Army airspace managers with a tool to digitally receive and display airspace requests, automatically identify airspace conflicts and digitally pass requests to the Joint Forces Air Component Command/Airspace Control Authority. The potential of the Army's digitized Battle Command suite of systems has been demonstrated in Iraq and Afghanistan by its ability to safely mass the desired effects of aerial systems while deconflicting integrated fires, unmanned aircraft systems, helicopters, fast-moving jets, slow




airplanes and contracted aircraft from the Army, Air Force, Navy, Marines, coalition military, coalition civilian and commercial airlines.

The Army has initiated an Airspace Integration Improvements Initiative (AI3) to address airspace command and control gaps that still exist. AI3 provides a vision for integrating existing systems and to evolve the current procedural airspace management process to a more dynamic model that better supports immediate re-tasking of assets in support of the ground commander. AI3 seeks to provide incremental improvements for real-time collaboration and decisionmaking among all airspace stakeholders to:

- achieve collaboration and airspace situational awareness with disparate systems via the TAIS Dynamic Airspace Collaboration Tool;
- improve Air Tasking Order/Airspace Control Order interfaces and processes that are ineffective for dynamic execution;
- network and correlate all sensors available to the commander to capture an air common operating picture for the low/slow environment during mission execution;
- digitally transmit operationally relevant airspace graphical changes to aviators in flight and UAS operators;
- facilitate improved airspace integration for subsequent decreased sensor-shooter-decider timelines for air-ground integration;
- use exercise and experimentation venues for test-analyze-fix-test of AI3 technologies.

The Way Ahead

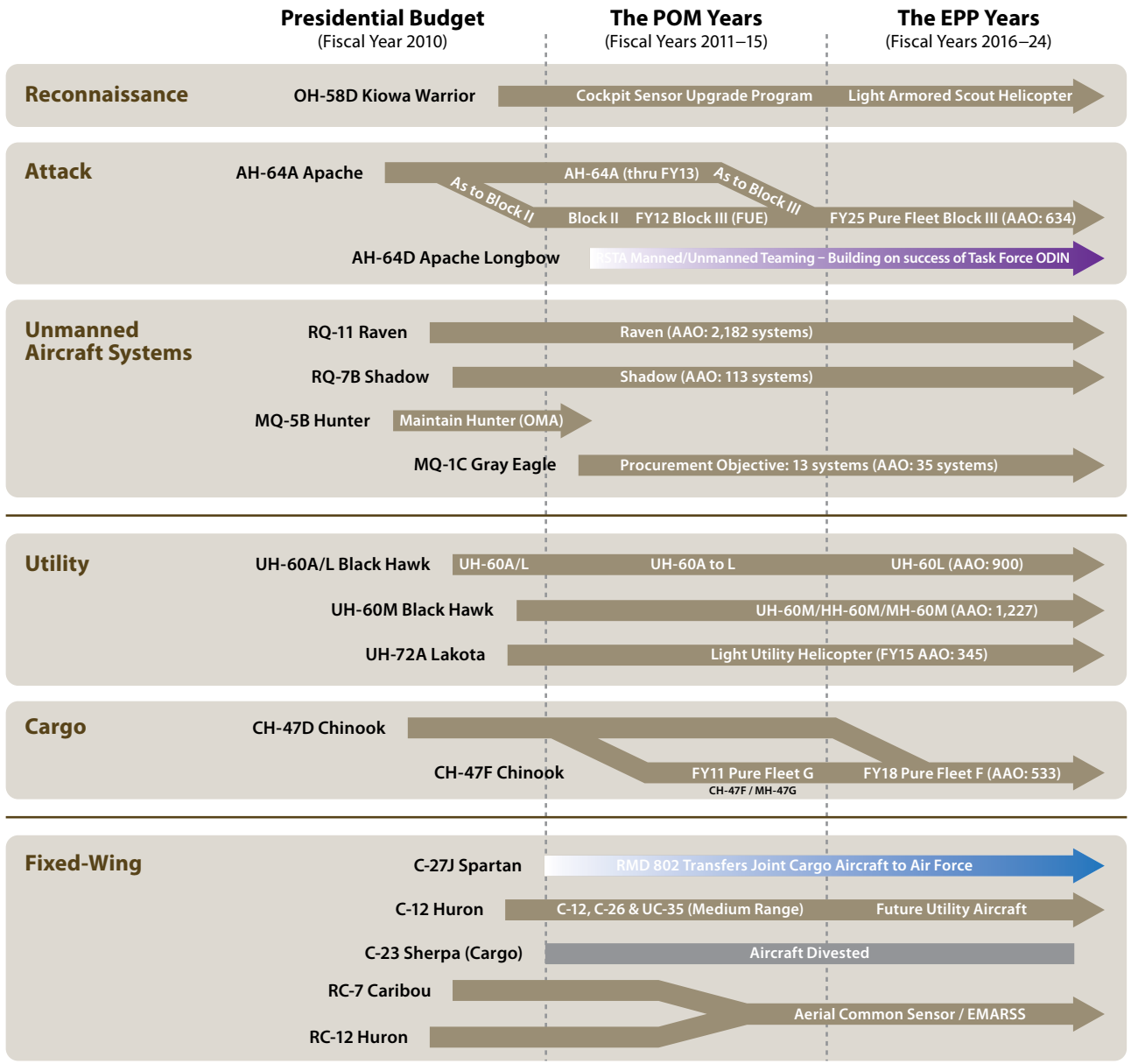
Since the conclusion of Aviation Study I in 2003 and the subsequent reinvestment of the RAH-66 Comanche program dollars, the Army has aggressively and effectively addressed modernization and obsolescence in current airframes across the fleet. The Army has fielded MTADS to every Apache Longbow in the fight. The Apache Block III program has remained on schedule and within cost, and the UH-72A Lakota has been fielded in multiple configurations. Deploying aviation battalions now contain the modernized UH-60M Black Hawk and CH-47F Chinook, timely delivering next-generation medium and heavy lift to units in the warfight. The proliferation of multiple unmanned aircraft systems has reshaped and increased the options available to Army and joint force commanders across the spectrum of conflict. The Army is currently applying the same energy to the recommendations of Aviation Study II with the reorganization into FS CABs, the rapid fielding of the UH-72A and MQ-1C and the pursuit of joint-lift/multirole capability.

High OPTEMPO combined with short home-station dwell times has fundamentally changed how units train to deploy. By forming mobile training and assistance teams, with augmentation from other organizations and training centers, the Army is effectively increasing training capability for resetting, deploying and mobilizing aviation units while maintaining standardization in the force.

To meet the demands and throughput required to support ARFORGEN requirements, the Army is adapting the Flight School XXI model to deliver combat-ready aviators to every formation preparing to deploy. Additional investments in flight training will incrementally increase student throughput using a tiered approach. The end-state throughput will be 1,498 flight students each year by FY 2012. The Army anticipated this increase in demand and shifted some of the student quotas to the Eastern Aviation Training Site at Fort Indiantown Gap, Pennsylvania, the Western Aviation Training Site at Silverbell Army Heliport




Army Aviation Modernization Strategy



Future Aviation Concepts

- Joint Multirole
- Joint Unmanned Aircraft Systems
- Future Utility Aircraft

UAS Strategic Approach

- Distributive Control
- Interoperable Systems
- Technology Infusion

Planned Divestures

- UH-1 Iroquois
- OH-58A/C Kiowa
- C-23 Sherpa
- RC-12 Huron
- RC-7 Caribou
- MQ-5B Hunter

AAO – Army Acquisition Objective
EMARSS – Enhanced Medium Altitude Reconnaissance Surveillance System
EPP – Extended Planning Program
FUE – First Unit Equipped
ODIN – Observe, Detect, Identify and Neutralize
OMA – Operations and Maintenance, Army
POM – Program Objective Memorandum
RMD – Resource Management Decision
RSTA – Reconnaissance, Surveillance and Target Acquisition
UAS – Unmanned Aircraft System

Source: Headquarters, Department of the Army




in Marana, Arizona, and the High-Altitude Aviation Training Site in Gypsum, Colorado. Other initiatives include the continuation of MQ-1C flight training at the Unmanned Aircraft Systems Training Battalion and the development of a program at Fort Carson, Colorado, to expand the Army's ability to conduct high-altitude mountain environmental training.

Investment in the far term rests on multiple factors that delineate how the Army shapes the next generation of its aviation. For its part, Army aviation continues to study the Joint Heavy Lift and Joint Multirole (JMR) concepts for future aviation systems by marrying emerging technologies with forecasted capabilities requirements. In the future joint battlespace, aviation systems will require an increase in speed and payload-carrying capability to cover larger areas of difficult terrain, in any environment and across the full spectrum of conflict. Generational improvements in engines, drive systems, airframe technology and improved sensors are essential to defeat high-end threats, neutralize adversary countermeasures and eliminate the enemy's ability to hide. These improvements and abilities will reside in both manned and unmanned systems for even more mission flexibility.

A critical factor in making these systems effective on the joint battlefield is their ability to function in an inclusive network that gives command, control and situational awareness to the joint force commander. To this end, the aviation science and technology community has initiated a program to develop, by FY 2017, concept aircraft that demonstrate the needed technology and architecture to support a joint mission platform for an FY 2020 procurement decision. Concurrently, a new set of mission equipment will be developed to provide enhanced situational awareness and survivability through the use of open software architecture to facilitate continuous upgrades and improvements with a minimum of procurement effort. This development is also teamed with other-service participation, to include the Coast Guard, to better identify and define joint system capabilities and expectations.

Future UAS will build the aerial layer of the Army's networked force. Contingency operations require forces to operate and communicate while maneuvering forces without building static cellular towers. UAS are the logical choice to provide the force the ability to communicate and share huge volumes of data. The Joint Aerial Layer Network describes using UAS to thicken the network to enable the Warfighter Information Network-Tactical and the Joint Tactical Radio System to function effectively via planned positioning over the battlefield.

Finally, the Army will investigate the use of optionally piloted vehicles as a means to bridge the transition between manned and solely unmanned aircraft. The Army has a large capital investment in very capable manned rotary-wing platforms, and OPV provides a method of potentially increasing synergy through technological advancements.

What Is Needed

A deliberate and continuous self-assessment of capabilities and requirements has proven that the Army can adapt in the midst of combat as it also invests in the future. Within Army aviation, rapidly inserting emerging technologies into current systems without lengthy delays or burdening costs is achievable.

In today's era of persistent conflict, there is more demand for aviation than capacity to deliver. The Army continues to address that disparity through innovative measures and sound investment decisions, including:

- assessing how many FS CABs are required to support the ongoing ARFORGEN model and determining where those CABs will reside when in reset and train-up pending the next deployment;
- making capital investments in the current force to retain its relevance;
- maximizing the capabilities of the UAS. Combining manned and unmanned systems has proven to enhance situational awareness, increase firepower and refine the commander's ability to shape the battlefield. Developing tactics, techniques and procedures for the




Shaping Decisions 2003–2010

Army and external decisions resulted in $35.4 billion for modernization, procurement and recapitalization of more than 4,000 aircraft and systems.

Aviation Study I	• Aviation Modernization Strategy (represents current Combat Aviation Brigade design)
Termination of Armed Reconnaissance Helicopter	• Additional sustainment required of Kiowa Warrior fleet and investment in Army National Guard AH-64s
Unmanned Aircraft System Mix Analysis and Strategic Choices	• Recommended product-improving current Raven and Shadow capabilities • Moved Class II and Class III unmanned aircraft systems to objective
Resource Management Decision 802	• Loss of Joint Cargo Aircraft to U.S. Air Force (additional demand on fighter wing and cargo helicopter fleets in theater) • Institutional training base increases • Addition of Extended-Range Multipurpose* company
Aviation Study II	• Full-spectrum combat aviation brigade design (Manned/Unmanned Teaming)
Three-fold increase in Aviation in Operation Enduring Freedom (FY11 Peak Operations Tempo/Lowest Dwell)	• MEDEVAC growth (12–15 MEDEVAC and 9 new MEDEVAC companies) • Increased demand for unmanned aircraft systems (investment in platforms, encryption and sensors) • Increased demand on High/Hot capability
Decrease in Operation Iraqi Freedom Requirements	• Increased operation tempo for cargo/lift as battlespace increases
Quadrennial Defense Review	• 2010 Army Quadrennial Defense Review reccomendations: increase capacity and availability of rotary-wing lift assets; expand manned and unmanned aerial systems for intelligence, surveillance and reconnaissance; succeed in counterinsurgency, stability and counterterrorism operations.
Resource Management Decision 700	• 12th combat aviation brigade (designated 16th Combat Aviation Brigade) in FY12 • 13th combat aviation brigade • Airborne Intelligence, Surveillance and Reconnaissance Mix Study • Special Operations Forces Aviation Growth (MH-47G Company) • Brigade Combat Team Modernization (Shadow Research, Development, Testing and Evaluation) • Extended-Range Multipurpose* growth (2 per year, FY11–FY15) • Removed funding for Class IV unmanned aircraft systems and Airborne Surveillance, Target Acquisition and Minefield Detection System

Army
Office of the Secretary of Defense
Joint/Combatant Command

* Now known as Gray Eagle

Source: Headquarters, Department of the Army




capability is under way today and will evolve with the technology as it is fielded;

- further refining pilot and maintainer courses of instruction. Seizing the opportunity to increase use of simulations will drive training costs down while allowing the Army to include higher-risk events in the training programs. A complementary training construct that combines live training with simulations delivers Soldiers who are more combat ready upon arrival at their first duty station. The complexity of the current environment, combined with the rapid changes expected in the future, demands that the Army attract the most capable and dedicated aviation Soldiers available.

What Must Be Done

The demands for the unique capabilities of Army aviation will not decrease in the future. So far, Army aviation's ability to deliver precision fires, intelligence, logistical support and battlefield mobility has been a prerequisite for success in current, distributed combat operations. The future battlefield will be no less complex in violence, terrain, mission or scope; Army aviation will remain a critical enabler for the ground maneuver commander to fight and win. To deliver a professional, flexible and lethal aviation force in support of ground commanders anywhere in the world, Congress and DoD must support Army initiatives and properly resource, fund, invest in and develop Army aviation. Specifically:

- Continue investment in Aircraft Survivability Equipment. Both passive and active systems integrated onto warfighting aircraft will allow crews to avoid detection; if detected, to avoid being hit; and if hit, to survive damage and return home safely. Address the documented need for the ability to operate in a degraded visual environment. (AUSA Resolution 11-14)
- Follow up the recent Vice Chief of Staff, Army's Aviation Capability Portfolio Review and determine how many full-spectrum CABs are required. Further determine where those FS CABs will be stationed to take advantage of training and support demands associated with pre-deployment training and subsequent recovery and reset upon mission completion. (AUSA Resolutions 11-8, 11-9 and 11-10)
- Complete the development and delivery of the Apache Block III. Divest the A-model Apaches and remanufacture all attack aviation, continuing its reputation as the most capable attack helicopter in the world. (AUSA Resolution 11-16)
- Fully fund the utility fleet and complete the fielding of the UH-60M. Standardize the utility fleet and address obsolescence before it impacts readiness. (AUSA Resolution 11-16)
- Execute the CH-47F program and deliver this capability to every medium-lift formation in the force structure. (AUSA Resolution 11-16)
- Exploit the opportunity to fully develop the MQ-1C UAS and deliver it to the warfighter. Support the use of training airspace to enable the force to bring seasoned UAS operators and relevant techniques into the warfight. (AUSA Resolution 11-10)
- Continue to address the future development of Armed Aerial Scout capabilities. Capitalize on the results of the AAS study to address the capability gaps in this critical mission set. Establish a long-term program of record to close the gaps and keep this mission in step and synchronized with other crucial capabilities. (AUSA Resolution 11-16)
- Replace the current fleet with mature JMR aircraft capability during the 2025–30 time frame. The JMR will bring scalable multirole capability with condition-based maintenance and greater parts commonality, which will reduce the aviation logistics footprint. (AUSA Resolution 11-16)
- Invest in science and technology to deliver increased speed and power to the fleets. Advanced turbine engine technology, the use of composite materials, reduced fuel consumption and improved component reliability are essential to driving down cost while increasing availability of combat aviation. (AUSA Resolution 11-14)




Torchbearer Message

The Army has accepted the challenge of the complex operating environment and has aggressively transformed and modernized its aviation fleet to better exploit and dominate the vertical dimension of landpower. Aviation's supremacy on the nonlinear battlefield ensures that Soldiers on the ground will have access to the best precision fires, medical evacuation, transport, logistics and reconnaissance capability in the world.

After a self-assessment process informed by a decade of combat, the Army is transforming its aviation force into one that is more capable and available than at any other time in history. The conversion of legacy combat aviation brigades (CABs) from light, medium and heavy designs to a full-spectrum design will provide greater mission flexibility to more supported units. The addition of unmanned aircraft systems (UAS) to the CABs will add greater persistent surveillance and precision fire capability to the force.

In addition to the restructuring, Army aviation is pursuing a comprehensive recapitalization and modernization program for its entire fleet—the payoff from the sound reinvestment of program resources from the cancelled RAH-66 Comanche. This effort is delivering the upgraded AH-64D Apache Longbow Block II and AH-64D Apache Block III that will improve the performance and lethality of the world's premier attack helicopter. It is also upgrading the assault and transport capability with system improvements to the UH-60A/L/M Black Hawk and the CH-47D/F Chinook that will extend the life cycle of these airframes through at least 2025; the OH-58D Kiowa Warrior is also undergoing a substantial upgrade so the Army can maintain an armed reconnaissance capability even as the analysis of a replacement commences. The modernization effort has also produced two new airframes: the UH-72A Lakota utility helicopter (for use in homeland security missions) and the MQ-1C Gray Eagle UAS, which will be the precision strike and persistent surveillance mainstay for ground commanders in the future.

Critical to the continued success of aviation modernization is robust funding across the enterprise. A steady flow of dollars to upgrade existing platforms is required to maintain battlefield dominance into the next decades and stave off obsolescence. Timely delivery of the MQ-1C, upgraded AH-64s, UH-60s and OH-58s is vital to this requirement, as is proper resourcing for research and development of survivability and performance technology features to protect our investment in Soldiers. Moreover, a deliberate effort to find a new armed reconnaissance platform and develop both the Joint Multirole and Joint Heavy Lift concepts must be made to ensure Army aviation remains relevant to the joint, distributed battlefield of the future.

Further maturation of the UAS family is also needed; smaller frames, better sensors and longer duration will give leaders on the ground more control over shaping the battlefield. Development of the Universal Ground Control Station and remote viewing capability will simplify UAS command, control and information distribution and will integrate more airframes and echelons into the manned/unmanned teaming framework.

Army aviation has wisely invested and husbanded the resources it has been given and is postured to do so well into the next decades of the 21st century. It is imperative that Army aviation funding and investment continue uninterrupted so that top-level, versatile capabilities are perpetually available to the warfighter in the full-spectrum environment.

Over the course of this war, our aviation community has done exceptionally well —in very difficult and demanding environments—integrating both manned and unmanned aviation assets into a single, cohesive combat capability.

General Peter W. Chiarelli, Vice Chief of Staff, Army,
at the AAAA Convention, Fort Worth, Texas, 15 April 2010







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Institute of Land Warfare
Association of the United States Army

2425 Wilson Boulevard, Arlington, Virginia 22201-3385

800-336-4570 www.ausa.org