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Army Unmanned Aerial Vehicle Systems

Army Unmanned Aerial Vehicle (UAV) Systems: A Cost-Effective Combat Multiplier

The [Tactical] UAV Shadow system has become an absolute must for my [brigade combat team] commanders in locating, identifying and ultimately defeating [high-value targets] in their brigade areas of operations.

Major General Raymond T. Odierno, Commanding General
4th Infantry Division (Mechanized), Operation Iraqi Freedom

Introduction

Army unmanned aerial vehicle (UAV) systems support land warfare operations across the spectrum of conflict. Infantry, scout, intelligence, aviation, artillery, maneuver and even medical units benefit from the availability of UAVs. Typical missions include intelligence, surveillance and reconnaissance (ISR), battle damage assessment, targeting, Persistent Stare for continued operations, convoy protection and anti-ambush (Improvised Explosive Device, or IED).

UAV systems put the commander and the combat application first. The Army, unique among the services, builds and fields its UAVs as systems. A UAV system includes aircraft, ground control stations, communications and logistics as a unit set. The various UAV systems maximize common training, hardware configuration, software, communications and logistics. Army UAVs are operated and maintained by enlisted personnel. Through integration and commonality across UAV systems, the Army's use of UAVs is inherently flexible; a commander is able to mix UAVs to fit the mission without sacrificing combat power.

A Survey of Army UAV Systems

The Hunter UAV, manufactured by Northrop-Grumman, is the Army's longest-serving UAV system, having seen action in Operation Iraqi Freedom and for four years in Kosovo. The Army has installed, demonstrated or tested 23 different payloads on the Hunter, making it one of the most versatile UAVs in the world. The Hunter is capable of 18-hour duration with an Electro-Optic/Infra-Red (EO/IR) sensor or eight hours with a 250-pound payload. The EO/IR—the main payload for the Hunter—is available in both 280mm and 770mm focal lengths. Hunter is the only Department of Defense (DoD) UAV to use a dual-engine system. The MotoGuzzi gasoline engines are being replaced with three-cylinder commercial JP-8 fuel engines. The Army has three Hunter companies deployed with the XVIII Corps, III Corps and V Corps.

The Tactical UAV (Shadow) system is a DoD acquisition success story. The Army reduced the period for System Design and Development to Full Rate Production Decision, including a successful

Initial Operational Test and Evaluation, OSD (Office of the Secretary of Defense) Test and Evaluation Report, and Joint Interoperability Certification of the communications in the "one system" ground control station, to just 33 months. The Army Acquisition Objective is 83 systems consisting of four aircraft and ground equipment. TUAV-Shadow platoons are in the 4th Infantry, 1st Cavalry, 82d Airborne and 2d Infantry Divisions and in the first Stryker Brigade (3d Brigade, 2d Infantry Division). The Army's Deputy Chief of Staff G3 has directed that every maneuver brigade in Operation Iraqi Freedom (OIF) and Operation Enduring Freedom (OEF) will be equipped with the Tactical UAV system. The Shadow is manufactured by AAI Inc.

The Small UAV (Raven) is another example of rapid acquisition in support of OIF and OEF forces.

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Army Unmanned Aerial Vehicle Systems (continued)

In just 20 weeks from funding, the first of these battery-operated, 4½-pound UAVs were deployed to forces in Afghanistan. The Army and OSD elected to increase the quantity of the UAV systems (three aircraft and ground station) to 185 by the end of 2004. Each combat battalion in OIF and OEF will have small UAV systems.

The Extended Range/Multi-Purpose (ER/MP) UAV will replace and improve upon the Hunter. U.S. Army Training and Doctrine Command's (TRADOC's) Operational Requirements Document (ORD) was approved by the Army Requirements Oversight Council, chaired by the Army Vice Chief of Staff, in December 2003. The Army Aviation Transformation Plan fields the first ER/MP system in 2008. The Army will use a rapid and disciplined acquisition process, to include a competitive fly-off to determine a best-value solution for this capability. ER/MP will be a mainstay of the division/corps commander's battle-set for land warfare operations.

The Improved-GNAT (I-GNAT) is an Aeronautical Systems product the Army procured in 2003. Army I-GNAT is a downsized Predator-type system comprising three airplanes and a ground station. The Army I-GNAT was deployed to OIF just 10 months after contract award. This system will augment the Hunter systems in OIF.

UAV Observations in OIF and OEF

The demand for UAV systems is constantly increasing. Division and joint task force commanders have repeatedly communicated to Headquarters, Department of the Army and the Joint Chiefs of Staff the utility and need for additional UAV systems to prosecute the Global War on Terrorism. The UAV systems engaged in OIF and OEF are contained in the commander's order of battle, assigned 24-hour, seven-days-a-week continuous operations, with multiple aircraft in the same unit operating simultaneously.

Future UAV Systems

The Army has partnered with the Future Combat Systems (FCS) Lead Systems Integrator (LSI), Defense Advanced Research Projects Office (DARPA), Special Operations Command and the Department of the Navy to bring a number of UAV systems into the pipeline. For example, in FCS the Army/LSI team selected the Firescout, a Navy rotary-wing UAV, as the aircraft to satisfy the Unit of Action brigade and battalion requirement. Other future systems include the Micro-Air Vehicle (MAV), the Unmanned Combat Armed Rotorcraft (UCAR) and Air-Launched Extended Range Transport (ALERT) powered parafoil, and the A-160 variable-speed rotor technology helicopter (also known as the Hummingbird).

The Technology Assessment and Transition Management (TATM) process is the disciplined means of transferring emerging UAV platforms, integration and systems from science and technology (S&T) or research and development (R&D) into formal procurement.

Army UAV systems:

- provide 50 percent of the unmanned missions for OIF with 10 percent of the DoD UAV budget;
- are designed, fielded and supported with integrated logistics, personnel, training and operations; and
- provide commonality between systems to minimize uniqueness and give the combat commander flexible, reliable and versatile unmanned capability.

Army UAVs:
Enabling the combat commander, from platoon to joint task force, with a means to conduct intelligence, targeting, battle damage assessment, communications relay and lethal operations.