

Army Unmanned Aircraft Systems DECISIVE IN BATTLE

By JEFFREY KAPPENMAN

Throughout the last 6 years of the war on terror, which has seen U.S. Army units deploy two and three times for year-long (or more) combat operations, the joint community has been unable to provide the coverage of unmanned aircraft systems (UAS) required to support tactical operations. Commanders plan operations based on known reliable resources. Joint UAS are frequently not allocated to division and brigade combat team (BCT) operations due to a lack of sufficient numbers of systems and higher priority theater, joint task force, joint force air component command (JFACC), or other government agency support mission requirements. When divisions and BCTs do receive joint UAS coverage based upon an allocation model, the support is frequently cut short, the supported tactical commander is unable to dynamically redirect the platform/sensor, or the unmanned aircraft

system breaks station just as ground forces have begun to develop the situation.

It is *imperative* that units in physical contact with the enemy have the continuous sensor coverage needed to dominate and win the engagement. Army commanders at all tactical levels (division and below) have identified a requirement for organic UAS to support their operations. The single largest gap in UAS support to tactical maneuver forces today resides at the division level.

Army UAS continue to provide unprecedented support in the Nation's war on terror, and the demand for these systems is increasing at an extraordinary rate. From the platoon to division levels, UAS are providing ground maneuver commanders with critical and timely combat information for outstanding results. The Soldiers who operate Army UAS are extremely capable in counterinsurgency missions and maintain the ability to prevail in conventional combat operations. To date,

Army UAS have flown over 375,000 hours and nearly 130,000 sorties in support of combat operations in Iraq and Afghanistan.

Capabilities of Army UAS have evolved from a theater intelligence asset to primarily tactical roles such as surveillance, reconnaissance, attack, targeting, communications relay, convoy overwatch, and cooperative target engagement through manned and unmanned (MUM) teaming. The Army is employing UAS as an extension of the tactical commander's eyes to find, fix, follow, facilitate, and finish targets. Army UAS missions are integrated into the maneuver commander's mission planning, at the start, as a combat multiplier in the contemporary operational environment.

In combat operations, the risk to platoons is often measured in seconds or minutes, with complex terrain compounding that risk. As combat echelons increase (platoon-company-battalion and so forth), the risk of significant tactical complications, possibly leading to mission

Soldier adjusts Raven UAS during operations in Iraq



U.S. Army (Teddy Wade)

Report Documentation Page

Form Approved
OMB No. 0704-0188

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1. REPORT DATE 2008		2. REPORT TYPE		3. DATES COVERED 00-00-2008 to 00-00-2008	
4. TITLE AND SUBTITLE Army Unmanned Aircraft Systems Decisive in Battle				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S)				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) National Defense University, Institute for National Strategic Studies, 260 Fifth Avenue SW Bg 64 Fort Lesley J. McNair, Washington, DC, 20319				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution unlimited					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified			

failure and increased casualties, decreases while the time available to act on information or maneuver is increased. Therefore, a BCT with troops in contact needs dedicated and integrated UAS coverage that can be immediately retasked to support situational awareness and understanding and to assist in securing the force.

Troops in contact with the enemy cannot afford to wait for a UAS request to move through the division staff, the corps staff, and the JFACC staff, then await reallocation decision-matrixing by the JFACC leadership, and then, if approved, wait for the asset to travel en route to the ground forces. In addition, since these diversions of strategic assets to support tactical operations are not preplanned, the strategic UAS operator has not been integrated into the mission planning process and may not fully understand the tactical situation, scheme of maneuver, commander's intent, preplanned effects, or other assets available for teaming opportunities, thus reducing overall mission effectiveness.

Division commanders require the flexibility and control to make those dynamic action/reaction decisions immediately. This paradigm ultimately defines information warfare, in which U.S. forces have better, timelier, and more accurate information to base decisions and maneuver to positions of advantage to defeat the threat with precision fires with fewer friendly casualties or less collateral damage. The importance of proper application of force has recently been echoed by Afghanistan President Hamid Karzai, who has called for alternatives to the use of airpower in response to civilian casualties from airstrikes. By integrating UAS in direct support of ground forces, ground maneuver commanders can adequately develop the tactical situation and employ force consistent with the threat and reduce collateral damage while enhancing force protection.

More than Support

Army commanders need UAS to do more than support strategic intelligence, surveillance, and reconnaissance (ISR), which is a *process*, not a *mission*. Army commanders require UAS that execute tactical reconnaissance, surveillance, and target acquisition (RSTA) in direct support of

their ground maneuver mission. A strategic concept of centralized control, in which UAS allocation is perceived to have scheduled predictability, does not *operationally* support ground commanders within the tactical dynamic battlespace. Army UAS provide tactical commanders immediate responsiveness or eyes on target without lengthy processing, exploitation, and dissemination processes associated with joint ISR assets. Through the real-time receipt of UAS sensor video, including necessary metadata/telemetry, via the One System Remote Video Transceiver (OSRVT) and direct voice communications with the UAS operator, ground commanders integrate UAS support into their formation and direct the employment of the system.

Because Army UAS are organic to their formations, commanders and staff planners fully integrate UAS operators into the mission planning process. This allows the operators to:

- understand their role in the overall scheme of maneuver and commander's intent of the mission
- build habitual relationships with ground maneuver units and manned aviation assets
- enable greater opportunities for cooperative engagement and MUM teaming.

In contrast, when a strategic asset is reallocated to support troops in contact, they are often responding to an emergency call and lack the situational awareness required to adequately support ground elements.

In addition to providing tactical RSTA in direct support of ground commanders, Army UAS tasks and missions are expanding to provide multidimensional capabilities. A recent example of the expanding tasks and missions of Army UAS is the integration of

a brigade combat team with troops in contact needs dedicated UAS coverage that can be immediately retasked

the General Atomics Sky Warrior A UAS into Task Force ODIN (Observe, Detect, Identify, Neutralize), an integration of manned/unmanned systems, new technologies, and nonstandard equipment conducting counter-improvised explosive device (C-IED) missions in Iraq. By combining advanced sensors, tactical RSTA, and MUM teaming of UAS, attack and reconnaissance helicopters, and air assault aviation assets, Task Force ODIN has been able to maximize combat power and employ lethal and nonlethal effects to deny the enemy a permissive environment to operate.



ERMP Sky Warrior-A will have longest range of any Army UAS

General Atomics Aeronautical Systems

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These MUM engagements are instrumental in deterring future IED emplacement by providing the insurgency a hostile environment in which to operate. Major General James Simmons, the Deputy Commanding General for Multi-National Corps–I and III Corps, was recently quoted as stating that the use of unmanned aircraft systems in Task Force ODIN has been a decisive factor in dramatically reducing the threat of IEDs. In less than a year, the Sky Warrior A UAS has been involved in 148 sensor-to-shooter target handoffs, resulting in hundreds of IED emplacers being killed, injured, or detained.

The Systems

The teaming of manned platforms with UAS is fast becoming the standard in the Army rather than the exception. MUM teaming extends the shooter’s eyes on target by linking UAS sensors to the manned platforms. UAS with laser-designator payloads have the ability to laser designate for attack platforms as part of a cooperative engagement, providing maximum standoff distance for the manned aircraft and increasing survivability. UAS are also used to cross-cue time-sensitive targets and/or provide overwatch while commanders determine the optimal manner in which to prosecute a specific target.

Army UAS interoperability ensures that products are disseminated horizontally and vertically to higher and lower echelons. Through the use of the OSRVT and other network-based linkages, both combat information and processed intelligence products are

made available to any user with the appropriate network connection. Additionally, future blocks of the OSRVT with level-3 interoperability will enable Soldiers, Marines, combat vehicles (both air and ground), and command centers to view, control, and disseminate

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sensor information. This process ensures that UAS capability is maximized for today’s fight as well as informing tomorrow’s.

The development of the One System Ground Control Station (OSGCS) will further enable control of multiple types of UAS from a single control station. The OSGCS enables

qualified Soldiers to control UAS within their battlespace and dynamically retask assets from one ground control station to another. This dynamically transferable level-4 interoperability ensures constant contact with the enemy, reducing gaps, seams, and potential loss of positive target identification.

To deliver tactical RSTA and lethality effects to the most forward operating Soldiers and Marines, the Army has developed three Joint Capabilities Integration and Development System–approved programs of record: the RQ–11 Raven Small UAS (SUAS), the RQ–7 Shadow UAS, and the MQ–1C Extended Range Multi-Purpose (ERMP) UAS. The Raven SUAS provides real-time tactical RSTA to commanders at the battalion level and below and is also in operation by the Marines, Air Force, and special operations forces. The Shadow UAS provides organic tactical RSTA and communications relay at the BCT level and below and has also been adopted by the Marine Corps. The

Soldier prepares Shadow 200 UAS for launch in Iraq



U.S. Army (James B. Smith, Jr.)

Soldier launches Raven UAS during Operation Swarmer in Iraq



U.S. Army (Alfred Johnson)

Soldiers start engine on Shadow UAS



U.S. Army (Bradley J. Clark)

ERMP UAS will provide a tactical RSTA, communications relay, and target attack capability in support of operations at division level and below.

The Deputy Secretary of Defense has directed that the Army and Air Force acquire a single air vehicle in lieu of operating both a Predator and ERMP fleet, making all three of the Army's UAS programs joint systems. In addition to these three programs of record, the Army also has two directed UAS programs, the MQ-5B Hunter UAS and the I-Gnat/Sky Warrior A UAS. The Hunter typically resides within the Aerial Exploitation Battalion of the Corps Military Intelligence Brigade but has recently seen tremendous success in Iraq as part of the 25th Infantry Division's 25th Combat Aviation Brigade (CAB).

The 25th CAB operated a Hunter UAS that had been modified to carry a Viper Strike munition and communications relay payload. By teaming the UAS with manned aviation assets within the CAB, the 25th used the UAS to cross-cue sensors and provide laser designation for cooperative engagement with manned platforms as well as utilizing the organic Viper Strike munition to prosecute time-sensitive and fleeting targets—while simultaneously providing battle damage assessment, communications relay (allowing the CAB commander to communicate with his manned platforms forward and Tactical Operations Center over 190 kilometers away), and a constant taskable presence for direct support to ground units.

The Sky Warrior A UAS, in response to the successful employment within Task Force ODIN, was recently fielded to the 82^d Infantry Division CAB in Afghanistan. The Sky Warrior A is currently undergoing weaponization testing employing Hellfire missiles, with both Iraq and Afghanistan scheduled to be weaponized in late fiscal year 2008.

Operation Considerations

The Army, as well as the Navy and Marines, use highly trained enlisted personnel to operate UAS. A significant advantage of employing enlisted Soldiers to operate Army UAS, in lieu of commissioned officer pilots who serve brief tours as UAS operators, is that the former spend their entire military career as UAS operators. This allows them to hone their skills with years of experience and become highly proficient at their craft, reducing both accident rates and training costs. Army UAS also incorporate materiel technology such as automatic take-off and landing systems and waypoint navigation to eliminate labor intensive “stick and rudder”-type flight, which significantly reduces human error and training requirements while increasing system availability and reliability.

Moreover, the employment of enlisted operators as well as open competition and adherence to Department of Defense (DOD) Federal acquisition regulation best business practices make Army UAS operations fis-

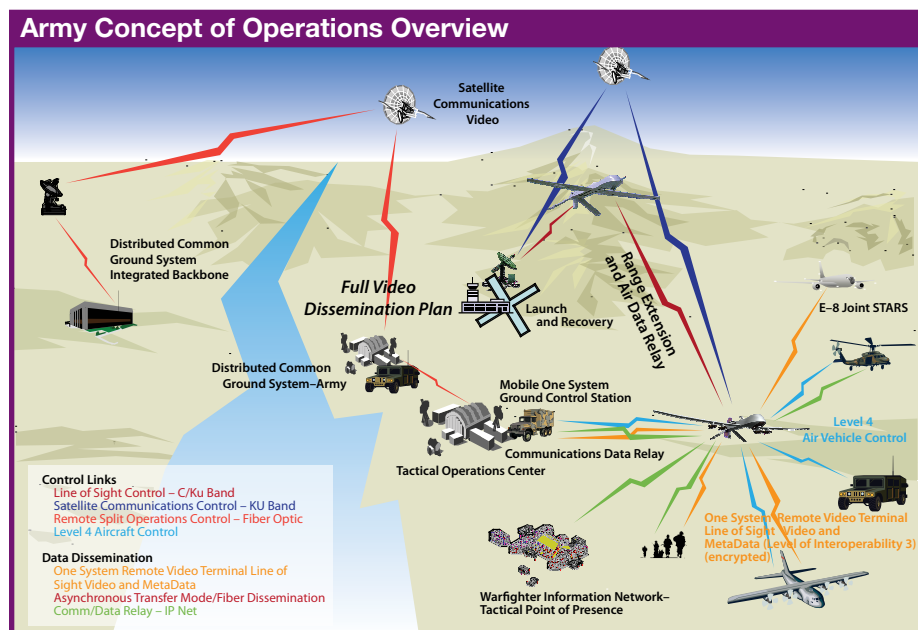
cally efficient. Based on a 2-year average of all DOD UAS systems, the Army is projected to fly 54 percent of the total DOD UAS flight hours, while receiving only 7 percent of the DOD UAS budget dollars in fiscal year 2008. The Army acquisition community continues to strive for even greater affordability by promoting increased operational availability and reliability through the integration of new technologies and continues to reduce

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accident rates by addressing material failures in existing systems to reduce the cost of repairing, sustaining, and operating unmanned aircraft systems.

Joint strategic ISR UAS assets are required to meet the intelligence collection and analysis efforts at corps echelon and above, but do not provide the real-time, dedicated combat information needed by today's ground commanders. The employment of Army UAS is tailored to provide dedicated tactical RSTA, and other battlefield enablers such as communications relay and MUM teaming, to ensure that ground maneuver commanders at division echelons and below have the timely combat information required to dominate the current and future fight. In addition to providing real-time dedicated support, Army UAS provide sensor products for intelligence analysis and exploitation through the use of the OSRVT, Distributed Common Ground System-Army, and other network-based communications linkages, contributing to higher echelon collection efforts, but not at the expense of the current fight.

Lessons learned and observations gathered from deployed units influence our training base, doctrine, leader development, force structure, and acquisition programs to ensure that both our Soldiers and systems are ready and relevant to protect the Nation. The Army is leading the way on interoperability of unmanned aircraft systems through coordination with other Services on the development of the OSRVT, OSGCS, Raven, Shadow, and ERMP systems. **JFQ**



Source: TRADOC System Manager Aircraft System