A Practical Guide for Excellence in Company Unmanned Aircraft Systems Operations

by CPT John Albert

It's not hard to see the bend of history in a quick scan of world conflict today. State and non-state actors in the Ukraine, Syria and Iraq daily demonstrate the growing numbers, types and capability of unmanned aircraft systems (UAS) operations at all echelons. Large and small, combatants deploy their UAS skyward in the desperate attempt to gain an information advantage. With large fronts and limited combat power, adversaries use their temporary information advantages to make decisions on where and how to employ combat power. Click over to YouTube and watch combatants use UAS to identify enemy formations and adjust indirect fires in real combat.

Why then would we forgo the advantage provided by UAS operations of any type?

We've fully accepted the idea of large UAS operating deep across the battlefield, striking high-value targets with seeming invulnerability. The Army MQ-1C Grey Eagle and Air Force MQ-1B Predator combine lethal effects with near-real-time surveillance in a platform of extended range and endurance. Even the unarmed mid-size UAS such as the RQ-7 Shadow continuously buzz across the battlefield helping answer the brigade commander's priority intelligence requirements. Commanders grow agitated when weather or enemy air-defense threat denies them this eye in the sky.

The same is not the case for company-level UAS. The RQ-11 Raven tends to spend an equal number of hours enduring inventories as it does answering questions for the commander or enhancing depth during security operations. The reason for this inconsistency has little to do with the RQ-11's relative lack of capability. The real promise of the company UAS has yet to be realized because of the manner in which we prepare for its employment.

Systemically we fail to plan and organize for UAS operations. Commanders tend to consider UAS operations as ancillary, not essential, to company, troop and battery operations. This results in ineffectual, disconnected or nonexistent company UAS operations.

Figure 1. Raven training at Todd Field (Raven Operator's Course) at the Maneuver Center of Excellence, Fort Benning, GA. *(U.S. Army photo by Vince Little, Maneuver Center of Excellence Public Affairs Office)*

Organizing for excellence

The first thing to do is to consider the UAS as a system. Since it is a system, the commander assigns a crew just as for a vehicle platform or crew-served weapon. Because the RQ-11 requires two pilots to operate, the crew should

be assigned from personnel on the same ground vehicle or in the same infantry squad. It would not do to have one pilot in one part of the battlefield while the other pilot is in a different area. If reliable dismounts are available to mounted formations, their separation from the responsibilities of vehicle crewman make them more desirable as pilots.

Clearly, more deliberation should be put into selecting pilots. Ideal pilots demonstrate maturity, agility and forethought in addition to the intuitive finger control required for manual flight.

Ideally, a noncommissioned officer (NCO) leads this crew and is responsible for the maintenance and accountability of the system as well as managing pilot-training requirements. Just as the master gunner assists the commander in managing training requirements relating to crew-gunnery qualification, the company UAS NCO can assist the commander in managing pilot-training requirements.

The commander manages the UAS crew no differently than any other crew, minimizing personnel disruption and ensuring proficiency. A commander would not break vehicle crews following successful gunnery qualification. For the same reasons, neither should the commander break UAS crews.

Next, the commander designates alternate, contingency and emergency crews from other platoons or sections. The reality of personnel turnover due to casualty or administrative reasons requires redundancy to ensure the program survives contact with reality. The commander should consider four pilots (two UAS teams) as a minimum requirement with eight pilots (four UAS teams) as optimal. This dispersion of training ensures all elements of the troop are capable of conducting UAS operations.

The primary crew may reside in 1st Platoon, but the situation may call for UAS operation with 2nd Platoon. It's easier and more effective to transfer equipment vice personnel. Further, eight pilots and the NCO in charge represent a critical mass of pilots that ensures the program remains self-sustaining.

Training for excellence

Pilot training is time-consuming and seems hard to justify in comparison to other essential training. However, pilot training investment costs are comparable to other training.

Think of the time spent on bringing a new M3 Bradley Fighting Vehicle crew to gunnery competency. The upfront expenditure of time in simulation and gunnery skills training is quite high. In comparison, sustaining and improving on that competency is low cost in time and resources. UAS pilot training is no different.

Basic flight

Pilot terminology and currency requirements can be a little confusing. It's helpful to consider pilot training along the same lines as driver training. Each battalion element should have at least one, preferably two, master-trainer (MT) pilots. These MTs act as the commander's technical experts and assist with training management. MTs may be assigned at the company level, but this is less common.

Pilots who complete the introductory training as outlined in the brigade standard operating procedure and executed by the MT – as well as pilots new to the unit with previous pilot experience – are said to be at the mission-proficiency (MP) level. In driving terminology, MPs have a "learner's permit." These pilots have the baseline of knowledge to operate the company UAS but still need to demonstrate their proficiency to the commander. To employ the UAS, the MT must be present if an MP pilot is operating. This can be a serious limitation if the battalion has but a single MT.

Next, the commander, via the MT, issues a proficiency flight evaluation (PFE) consisting of specific tasks outlined in Appendix A of Training Circular 3-04.62, ***Small Unmanned Aircraft System Aircrew Training Program***. The commander should select additional tasks to those listed to ensure the pilot is tested under relevant conditions to the missions the unit performs. The PFE should test the pilot day and night and in all flight modes.

Upon completion of the PFE, the pilot is mission qualified (MQ). Now that the pilot has reached MQ level, MT presence is not required. The pilot effectively becomes "fully licensed," in driving parlance. Severing the leash from the in-demand battalion MTs provides much greater flexibility in incorporating the UAS in other training. To remain

current, MQ pilots must complete a flight every 30 days. This flight can be done in simulation. However, one flight each 150 days must be conducted live.

Drilling

Still, achieving MQ status and remaining current is only the start. All the upfront investment, on the order of four weeks of training or more, has produced a pilot capable of getting the UAS airborne, but not much else. Taking the step toward excellence requires reducing the UAS operation to a drill, then repeating execution in a realistic environment. Then the UAS goes from an expensive property-book item to a value-added tool.

To reduce the burden of getting the RQ-11 airborne, every facet of the operation should be reduced to a drill. The actual crew drill should be rehearsed weekly. This can be done in conjunction with command maintenance or another repetitive weekly activity. For the UAS to be useful, it must be employable in less than five minutes. If the crew cannot meet this time requirement, they must be drilled until they can. Each of the primary, alternate, contingency and emergency crews execute the crew drill to standard each week.

Beyond the UAS crew, the company must have an airspace battle drill. Whether using the fire-support officer (FSO) or executive officer, the unit must have preformatted requests that enable approval of immediate restricted operating zones (ROZs). Due to the fluid and chaotic nature of airspace, immediate requests will never be as effective as planned ROZs. However, the unit must be ready to employ the UAS within five minutes anywhere on the battlefield. This drill should be tied in with battalion and brigade rehearsals to ensure a request can move and be assessed from the company to the joint-task-force headquarters within five minutes. This level of proficiency will never be achieved if the first time it is executed is during live training at a combat training center.

Every company, troop or battery has something similar to a short halt or security battle drill. Whether moving into a herring bone, crossing a linear danger area or hastily occupying a position area for artillery, every unit has one or several. The UAS crew should execute as part of the battle drill. The reaction is drilled and immediate. Just as the troop mortars immediately begin laying on likely avenues of approach or a designated target as part of the drill, the UAS crew immediately preps to launch the UAS. The company executive officer or FSO sends the formatted request for airspace. In less than five minutes, the UAS should be winging its way along the most likely enemy avenue of approach to provide depth to the company security or answer questions for the commander.

The Raven should be employed in deliberately planned operations. The Raven assists in providing situational awareness and early warning, allowing the commander to maximize the effect of combat power. I will not examine the benefits of incorporating all information-collection assets at your disposal in this article. Field Manual 3-04.155, ***Army Unmanned Aircraft System Operations***, provides an in-depth look at the operational considerations of employing UAS in support of your operations and should be read and understood by the commander and Raven teams.

Repetition and realism

The UAS crew should fly in support of every training event, but racking up the flight hours is not enough. To be effective, the UAS crew needs to understand what military equipment and activities look like. Generally, pilots are some of the more junior Soldiers. For the UAS to do anything for the commander, the pilot needs to be able to understand what he/she is viewing and what it means. For example, the manipulation of a rocket-propelled grenade may not be obvious when seen for the first time through the RQ-11's infrared camera. Pilots need practice at observing these military activities. Pilots need to see scouts creeping through the woods, tanks maneuvering, mortars and artilleryman busily servicing their pieces, and what command posts look like in full and limited visibility.

Fortunately, the unit already does many of these military activities in normal training. The commander must not abandon these free repetitions. The RQ-11 should be up flying and identifying formations during all situational training exercises, live-fires and gunneries.

Another way to get repetitions in is to find out when other organizations are conducting their major training exercises. The other organizations are likely to have already requested airspace which you can share, and their primary training event provides free activity for your pilot to observe. If other units are hesitant, remind them that

poor airspace control is the primary factor preventing timely and accurate fires delivery. You're offering some free practice at employing procedural airspace control.

Frequently, home-station requests for training resources such as land and airspace are required to be submitted outside the normal company six-week training-planning horizon. Commanders should research their home-station training policies to ensure opportunities for training are not missed. As excuses go, not being able to navigate our own policies to ensure quality training seems especially hollow.

Looking ahead

If all this sounds intimidating, it's actually just beginning. The future battlefield will be more technical and more inhuman. Air defense, electronic warfare, cyberwarfare and autonomous ground and air robots will play an increasing role as Soldiers will need to be more culturally, linguistically and technically savvy.

Employing UAS at the platoon and squad echelon as part of the continuing technological overhaul of fighting formations is a reality. Testing a modified formation took place in September 2015 at the Network Integration Evaluation 16.1 and continues at the Maneuver Center of Excellence (MCoE) and other locations. The test formation employed squad- and platoon-level UAS; payload-carrying, lethal UAS; and automated ground platforms, in addition to the traditional company-level Raven UAS. Testing will continue, but the bend of future development is clear: companies will employ and synchronize multiple automated platforms to enhance their battlefield capability. Airspace management and electronic warfare will soon become essential components of the company-level fight. How will the company incorporate 10 to 15 more UAS if we can't operationalize a lone RQ-11 Raven?

As systems become more technically complicated, the need for specially trained personnel increases. The future Raven pilot may be military-occupation-specialty or, at minimum, additional-skill-identifier differentiated for better management and ensured expertise. Until that day comes, it's up to you, commander! Let's get going. Your adversaries already are.

For subject-matter expertise or questions in establishing your program, feel free to contact the Small UAS Master Trainer School at MCoE, http://www.benning.army.mil/Armor/316thCav/129/SUASMT/.

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