

Integration of Dragon Eye into Combat Operations

Subject Area Warfighting

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Five years ago, the average military personnel had limited knowledge of unmanned aerial vehicles (UAVs) despite the fact that they had been around for several decades. Today, all military personnel have at least a limited to very extensive knowledge of UAVs due to news covering the Predator UAV and UAV support to deployed battalions. In fact, over the past two years, UAV support at the battalion level has proven indispensable to the complex targeting process that units have faced in both Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF). As a result, the need for UAV support at the battalion level has become imperative to mission accomplishment. The Dragon Eye UAV is being fielded to the battalions to provide an organic UAV capability that better supports the battalion than the unreliable general support UAVs that higher headquarters provides.

Introduction

The use of UAVs has become a necessity in OEF and OIF where battalions are responsible for vast areas of operation that cannot be covered adequately with ground units. To address this problem, battalion's request UAV support from higher headquarters to cover areas of interest (NAIs) that ground units are unable to cover. Despite the

large number of UAV's deployed in support of OEF and OIF, they have not proven to be a practical solution to ground units' inability to cover certain areas. Because the UAVs are general support assets, multiple units request their support. When a general support UAV is dedicated to a particular battalion, the battalion has to be prepared to lose the asset at a moments notice when higher headquarters identifies time sensitive targets and/or another unit has contact with the enemy. The only viable solution is to have a dedicated UAV at the battalion level that the battalion can operate and task accordingly to accomplish their mission. Currently, Marine Corps Systems Command is fielding the Dragon Eye system to the battalion to fill this need. With the correct supervision and integration, the Dragon Eye system can become an essential member of the Battalion Intelligence, Surveillance, and Reconnaissance (ISR) team.

A brief description of Dragon Eye

The Dragon Eye system came into existence several years ago when the Marine Corps identified a need for a Small Unit Remote Scouting System (SURSS) that was low cost and attritable. The Dragon Eye system fulfilled these needs and became the first tier of the Marine Corps UAV hierarchy

as it provided the company/platoon/squad level with an organic UAV capability. Each deployed battalion to OEF and OIF receives three systems. Each system, consists of three planes, a ground station and a field support kit, and cost roughly \$130,000.

The Dragon Eye System provides the unit with:

- Small, reusable, low cost, backpackable UAV
- Over-the-hill reconnaissance and surveillance capability with a range of up to 10K (Line of Sight)
- Operates between 200 and 500 feet above ground level
- The air vehicle can stay aloft for 45-60mins
- Payloads: real-time, day (color), low light (black/white) and infrared imaging (IR)
- Electric motors provide an extremely low noise signature
 - small wingspan makes it difficult to detect
- Can be assembled and launched by a two-man team in under 10 minutes

Drawbacks to the Dragon Eye System include:

- Speed-35MPH (ground speed) "Susceptible to ground fire"
- Requires approximately 200 foot clearing to launch (no vertical obstacles in launch direction)
- Requires approximately 400 foot clearing to land—softer surface better for survivability, large rocks destroy DE

Different ways to integrate Dragon Eye

The Dragon Eye system has been employed by numerous battalions in both OEF and OIF, and has aided in detecting, identifying and engaging or avoiding enemy units within range of the employing battalion's direct and indirect fire weapons. Col Howcroft (I MEF G2) states, "It wouldn't be good to fly a whole border area, but if a company commander wanted to look at a valley or wadi [a dry water channel] ... they could put the Dragon Eye up and survey that."¹ Each battalion has integrated the Dragon Eye system differently into their daily combat operations, each proving that the Dragon Eye is a useful asset for battalions to have.

When Third Battalion, First Marines (3/1) deployed to Fallujah and the surrounding area from June 2004 to January 2005, they maximized the use of the Dragon Eye system. The small logistical footprint allowed the battalion to deploy one Dragon Eye System with each of the three rifle companies that was out-posted. The companies used the Dragon Eye out of their firm bases to cover areas of interest (NAIs) and to provide real-time imagery of targeted houses. The real-time imagery provided the company raid force with an advanced look at the targeted

¹ Stars and Strips European edition, Friday, January 23, 2004

house. During several large cordon and knock operations, the companies put the Dragon Eye system in the back of a High Mobility Multi-Wheeled Vehicle (HMMWV) and launched it from their expeditionary command post using the sensors to view individuals or cars attempting to escape the cordon. Because the battalion had its own Dragon Eye systems, it was able to accomplish all of the above without requesting general support UAV assets.

In October 2004, the battalion was tasked with conducting Tactical Control Points (TCP's) and feints into southern Fallujah. When the TCP's were established in mid to late August 2004 the mission was to cut off civilian traffic flow from the south and attempt to uncover enemy positions inside the city, however, because of operational constraints the battalion was unable to move within two kilometers of the city. With the significant urban build-up on the outskirts of the city, the battalion was unable to see more than one block into the city with conventional optics. This left the battalion blind to the enemy actions inside the city. The battalion tried to use higher headquarters UAV's to view deeper into the city but unfortunately, more times than not, higher headquarters needed those UAV's for their own purposes. That left the

battalion with Dragon Eye as the only reliable UAV to accomplish the mission.

When Dragon Eye was launched from three kilometers south of the city, the enemy immediately began shooting at the aerial vehicle. Although a Dragon Eye aerial vehicle was shot down, 3/1 received positive identification (PID) of the enemy position. With the PID, 3/1 was then able to call for an air strike. This bait and trap TTP, involved using the aerial vehicle of Dragon Eye to draw fire and then using other assets to neutralize/destroy the enemy positions that shot at Dragon Eye. This "bait and trap" maneuver resulted in several destroyed enemy positions.

As 3/1 began the assault on Fallujah in November 2004, several new Dragon Eye TTPs would be developed that would ultimately reshape the fight. Two days before the assault began, 3/1 launched the Dragon Eye from three kilometers north of the city and set-up an eight-millimeter tape recorder at the base station to record the mission. The Dragon Eye flew the very route the battalion would take to assault the city. The eight-millimeter tape was then played for all the companies and battalion staff, giving them a bird's eye view of the route and the terrain inside the city. This mission would not have been successfully if a general support UAV would have been used because the

battalion did not possess the ability to record a general support UAV mission. A secondary success to the recorded mission was that the enemy shot at the aerial vehicle from several fortified positions, thus uncovering key enemy bunkers that could now be identified from the recording. Ten-digit grids of these enemy positions were then handed to the battalion fire direction center (FDC) for their ultimate reduction. Because Dragon Eye was an organic UAV to the battalion it was relatively easy to coordinate target identification and process the targets at the battalion level.

The complex urban terrain inside the city was not practical for the Dragon Eye to be launched and recovered from inside the city however the live video feed was critical for the rifle companies to view. The battalion's solution was to fly the Dragon Eye from a battalion command post that was six hundred meters north of the city. Each rifle company had a base station that allowed them to view what the Dragon Eye was viewing, without the telemetry. The Dragon Eye became a forward observer (FO) for the battalion fire direction center (FDC) as it flew the forward edge of the battlefield (FEBA) and identified enemy targets. Dragon Eye stayed on station and conducted battle damage assessment (BDA) of these targets once they were

fired upon. Utilizing Dragon Eye in this manner allowed for the reduction of hundreds of enemy targets without putting Marines at risk. When companies wanted to view a route before advancing they radioed in to the battalion and asked to have the Dragon Eye fly the particular route. All of the above employment techniques were a success because of Dragon Eye's relatively easy employment and small logistical footprint.

Because Dragon Eye is an organic UAV to the battalion it is able to adapt and develop new TTPs that best support that battalion's mission. Today's battlefields are asymmetric and require battalions to be flexible and responsive, this is not possible when utilizing general support UAVs that support multiple battalions across large areas of operation.

The counter-argument

There are two main arguments as to why a battalion does not need an organic UAV capability. The first argument is that there is no manpower structure to support a UAV at the battalion level. Having a small easy to use UAV such as Dragon Eye that only requires two Marines to operate the system at the battalion level mitigates this argument. Currently, Marines receive a four-day training

package before they are certified to operate the Dragon Eye system. This is a relatively low cost of manpower to the battalion for a unique capability that can enhance mission accomplishment. The second argument is that there is no support structure to support a UAV at the battalion level. The Dragon Eye system requires minimal support structure. The only consumable that Dragon Eye needs is the battery it operates on. When Dragon Eye needs repairs such as patching a bullet hole, the Marines receive training to do just that. Major repairs that will keep the system from operating are sent to a depot center in theater or CONUS. Having additional systems on stand-by that can be shipped can alleviate the loss of a Dragon Eye system to a battalion. The Dragon Eye system provides a battalion with an organic UAV capability that can be employed best to fit that units needs in accomplishing its mission with minimal manpower and support structure.

The future

Dragon Eye is not the end all be all solution to the battalions need for an organic UAV capability. It is currently the system being fielded but there needs to be modifications to improve on the overall performance. Such modifications would include longer endurance, IR pointer,

30 frames a second full motion video and the ability to downlink the video with telemetry to hand-held PDAs that squad leaders would operate. These modifications would need to be made without increasing the manpower and support structure already dedicated by the battalion to the Dragon Eye system.

Conclusion

The argument that battalions do not need a UAV that directly supports them can be discounted by the numerous situations in which Dragon Eye was employed by 3/1 to accomplish its mission when a general support UAVs were not available. If a commander does not own an asset, he cannot rely on its support. As such, general support UAVs are useful when available, but the battalion is left floundering when it counts on UAV support and receives none. The battalion needs the dedicated UAV such as Dragon Eye at their level so they can plan accordingly and employ/task the asset to best accomplish their mission vice the unreliable general support UAVs that higher headquarters provides.



*Complete Dragon Eye System

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