Ministry of Defense

EXCHANGE OF COMBAT EXPERIENCE OF UAV UNITS

(Translated from Ukrainian)

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Issues Covered in the Collection

On the modern battlefield, unmanned aerial systems (hereinafter UAS) play a significant role, which will only grow in the future. Their effective use depends on various factors: the availability of unmanned aerial vehicles (UAVs), their technical characteristics, and the training of crews and commanders. The latter factor is the most critical, as most UAS unit commanders are former UAV operators who lack experience in managing personnel and battle planning skills. For this reason, the Territorial Defense Forces (hereinafter TDF) of the Armed Forces of Ukraine have initiated training for such commanders. This collection compiles the experience of UAS unit commanders, which may be useful for other commanders and operators.

The document addresses the following aspects:

- The need to analyze the enemy to enhance the effectiveness of one's actions.

- The importance of crew safety measures during movement.

- The importance of establishing interaction with friendly electronic warfare (EW) units to avoid UAV losses due to friendly radio-electronic suppression.

- The crew commander's ability to control the timing and conditions of flights can prevent the loss of the crew and UAV.

- Establishing interaction with other units performing tasks nearby will ensure crew safety and increase the likelihood of successful mission completion.

****1. Positive Experience****

****Interaction with Electronic Warfare (EW)****

****Situation****

A UAS unit consisting of several reconnaissance and strike UAV crews conducted joint operations over two days, destroying a significant amount of enemy armored vehicles. No UAV losses due to "friendly" EW were recorded.

****Reason****

The UAS unit coordinator and the duty EW officer of the troop grouping were located at the same command post. Their workstations were positioned close to each other, allowing all interaction issues to be resolved quickly.

****Recommendations****

1. To avoid "friendly fire" from EW systems targeting friendly UAVs, it is crucial to maintain a unified chain of command for EW assets in a specific area and to control the boundaries of their effective impact.

2. Direct interaction between UAS and EW duty officers overseeing the use of all assets in the respective area must be established.

3. The EW duty officer must have information about all friendly EW assets, their frequencies, and the boundaries of their effective impact, while the UAS duty officer must have information about all friendly UAVs, their frequencies, and operational zones.

****Studying Enemy Behavior****

****Situation****

A strike UAV crew with no combat experience arrived at a front-line sector where combat operations were not intense. By observing enemy positions, the crew commander identified a regular gathering of enemy personnel at the same location around 06:00. One morning, after confirming the usual enemy gathering using a Mavic 3 quadcopter, the crew struck the target with an FPV drone, hitting the center of the group.

****Reason****

By studying enemy behavior and terrain in advance, the crew was able to effectively plan reconnaissance and target engagement.

****Recommendations****

1. Do not neglect studying the enemy; analyze patterns in their behavior and use them to your advantage.

2. If it is your first combat mission, plan meticulously, considering all details—this will help manage stress and build confidence. A successfully completed task is the best motivation for personnel to continue combat operations.

****Safe Crew Movement****

****Situation****

A senior commander ordered a reconnaissance and adjustment UAS platoon to conduct aerial reconnaissance in a border area. The terrain was forested, and ground observation posts were poorly organized. The platoon commander organized reconnaissance with two groups: one, including an engineering team, conducted ground reconnaissance of the launch area and provided security, while the other (the crew) followed and performed the reconnaissance flight. The task was successfully executed over an extended period, with regular changes to movement and flight routes. The crew detected enemy movements and recorded their efforts to fortify positions.

Reason

The task was thoroughly planned with all safety measures appropriate to the situation.

Recommendations

1. Ensure ground reconnaissance, security, and defense of the launch area.

2. Plan movement routes, communication protocols, and interaction between the crew, the security group, and the flight coordinator in advance.

3. If operating in the same area for an extended period, regularly change movement and flight routes to avoid becoming predictable to the enemy.

Implementation of Flight Control Tools

Situation

Friendly EW systems repeatedly interfered with a "bomber" crew from a strike UAS company, preventing them from completing their tasks. Signal loss was observed over the front line of friendly troops, but the signal was restored after entering enemy-controlled airspace. The brigade headquarters and adjacent units were informed of the issue, but the situation did not improve. Out of seven cases, only one instance saw no EW interference with the crew's operations.

Reason

The likely cause was the lack of a systematic approach to controlling airspace in the brigade's or higher-level formation's area of responsibility. Information about UAS operations was not communicated to personnel coordinating EW assets, or EW systems were used without proper oversight.

Recommendations

1. To control UAS operations, implement and use tools from the DELTA situational awareness system. Failure to do so significantly increases the risk of friendly EW systems downing your UAV.

2. During planning and combat operations, close interaction between UAS and EW coordinators must be maintained.

3. Decisions on the use of EW systems should consider information about the frequencies and operational areas of UAS in the respective sector.

****Risk of UAV Loss Should Be Assessed Only by the Crew Commander****

****Situation****

A UAS crew was adjusting fire for a mortar team. After the mortar team depleted its ammunition, the crew transitioned to reconnoitering targets for the next day. As weather conditions worsened (fog appeared), the crew commander wanted to halt operations, but the mortar team commander, under whom the crew was operating, insisted on continuing reconnaissance. As a result, the crew lost the UAV.

****Reason****

Unlike the UAS crew, the mortar team commander lacked sufficient information to assess the risks of UAV loss. Additionally, they were focused on their primary task of engaging targets.

****Recommendations****

1. When performing joint tasks, it is preferable to designate the UAS crew as a supporting unit rather than subordinating it to the commander of the fire support unit.

2. If you are a UAS crew commander operating under an artillery commander, clarify in advance the procedure for deciding to halt UAS operations. Emphasize to the artillery commander that only the crew has sufficient information to properly assess the risk of UAV loss.

3. If there is a risk of UAV loss, the crew commander should report to the operational duty officer and the strike UAS company commander about the INABILITY to use the asset (to ensure it is documented). If ordered to "continue the flight" and the UAV is subsequently lost, submit an additional report detailing the circumstances and reasons for the loss.

****Lack of a Unified Plan Limits Effectiveness and Increases Risks****

****Situation****

A reconnaissance UAS crew was tasked with reconnoitering targets. They coordinated with a strike UAS (FPV) crew from an adjacent unit, agreeing to provide reconnaissance and target designation. Over several days, the crews studied the enemy's vehicle movement patterns in the area of responsibility. The strike UAS crew selected a fuel tanker as a priority target and planned its engagement, informing the reconnaissance crew. They waited for the target to appear at the most favorable section of the route, but the operation was disrupted by friendly mortar fire. The UAS crews were unaware of the mortar team's plans. As a result, the planned target was not located. The adjacent unit's commander suggested continuing the mission by engaging a different target—an enemy platoon stronghold. This required the reconnaissance UAS crew to approach the line of contact, where they were detected and shelled by the enemy.

****Reason****

The crews' actions were not coordinated with other fire support units operating in the same area. Fire support was not properly planned, and a prioritized target list and engagement sequence were not established.

****Recommendations****

1. Engagements by strike UAS, artillery, and other fire support units must be synchronized within the senior commander's unified plan and a detailed fire support plan.

2. When planning fire support, compile a list of enemy targets and determine their priority based on the senior commander's intent. For the highest-priority targets, plan the engagement method: designate the remote piloting point, approach and withdrawal routes, evacuation routes, UAV flight paths, and other details.