# DRONE WARFARE

The drone is revolutionising warfare. These semi-autonomous, remotely piloted vehicles can be used to spy on enemy troops and provide intelligence, without sending in recon troops or piloted recon planes. They can also be used to loiter over the battlefield and drop ordnance on a potential target when it appears. Drones vary tremendously in capability, from jet-powered drones flying at 350 knots and 50,000 feet, and carrying a suite of Hellfire missiles; to cheap recreational drones with 15 minute flight-times, available for $60 at any branch of Walmart. We are interested in the small (often civilian) UAVs, often used for reconnaissance, and in the tactical military drones used at the battalion or company level.

**TYPES OF DRONES**

**Small UAVs:** These drones are designed to be used by the infantryman, they are usually very portable and can be hand-launched with ease. Although some military models (the Russian ZALA 421-08 and US RQ-11 Raven) are winged and resemble model aeroplanes, many others are of quadcopter design. All military designs of this category are surveillance drones, used to provide battlefield awareness for the infantry unit. Small UAVs (SUAVs) are small, easy to deploy, cheap, concealable and difficult for an enemy to trace back to the infantryman who launched it. Many non-state actors (terror groups, rebel factions, and so on) buy commercially available SUAVs such as the Chinese DJI Phantom 4 or the DJI Mavic 3 and use them in a variety of ways, particularly for recon and surveillance, but also as kamikaze drones or miniature bombers (which the drone manufacturers certainly do not cover in their multi-lingual warranty guides).

***Speed:*** 1.2 km per minute
***Ascent:*** 5 metres per second
***Comms:*** Range: 6 km
***Endurance:*** 30 minutes
***Mass:*** 1.4 kg
***Armour/Hull/Structure Points:*** 1/2/2 (small-arms may damage)
***Sensors:*** Real-time Video Camera
***Payload:*** normally none; guerrilla fighters can mount a single 40mm grenade for an on-command release.

**Tactical UAVs:** The tactical UAVs (TUAVs) are winged, propeller-driven drones that are specially designed and used in the organic battalion level or in Special Forces. These UAVs help with medium range surveillance and they have a vital role filling the gap between short-range small UAVs and the strategic drones. They combine flexibility and endurance as well as ruggedness for this middle ground territory, which has proven useful when carrying out situational analysis or awareness surveillance. The RQ-7 Shadow that is launched from a trailer or vehicle-mounted pneumatic catapult, is typical of these category of drone, but other examples include the British Army's Watchkeeper WK450, the German Luna X-2000 and French CAC Fox. Capable of high altitude surveillance, using low-intensity cameras and ground radar, these drones are dedicated battlefield UAVs often with limited range and endurance. A dedicated ground military unit, with its own set of vehicles and personnel is required to main, launch and retrieve its TUAVs.

***Speed:*** 130 kph (2.4 km per minute)
***Ascent:*** 8 metres per second
***Comms:*** Range: 100 km
***Endurance:*** 6 hours
***Mass:*** 60 kg
***Armour/Hull/Structure Points:*** 4/4/4 (small-arms may damage)
***Sensors:*** Real-time Video Camera, Video Recording
***Payload:*** Configurable section for another sensor: Laser Painter for Guided Munitions, Infra-Red Camera, Troop Radio-Relay Package, Ground Radar,
***Notes:*** Autopilot can carry out pre-programmed recon flight paths. Some larger TUAVs (such as the Israeli Searcher, Russian Forpost-R and US RQ-121 Blackjack and MQ-27 ScanEagle) have an endurance of 20 hours and a range of 350 km).

***Suicide Drones:*** These are 'loitering munitions', single-use tactical drones that can loiter over the battlefield and strike a target of opportunity by flying into it at high speed and detonating its warhead. Most are user operated and come in two main types: anti-personnel and ant-vehicle, with the former being more lightweight and man-portable. Examples of suicide drones include Iran's Shahed-136, the US's Switchblade, Israel's Harop and China's FH-901. Russia has been using the Shahed-136 recently. A drone swarm of multiple suicide drones can be employed in an attempt to overwhelm any anti-drone defences (particularly anti-aircraft guns and missiles). An operator directs the swarm to the right general area, and the largely autonomous swarm can do the rest. Small suicide drones have a warhead similar to a 40mm grenade (5D6); large suicide drones have the explosive power of a light anti-tank missile (9D6 AP2).

***Strategic UAVs:*** The larger, strategic drones are virtually unmanned stealth bombers able to fly across oceans to drop conventional munitions on targets. These high-end propeller or turbofan-powered smart-munitions platforms are as large as small piloted aircraft and require both a concrete runway, substantial ground servicing facilities and a dedicated control centre (often based in the military's home nation). Some of these drones, such as the RQ-4 Global Hawk are dedicated recon and surveillance platforms, whilst others like the American MQ-9A Reaper, Turkish Bayraktar TB2, British Aerospace Taranis, Chinese Wing Loong and Russian S-70 Okhotnik-B and Sokol Altius serve as strike drones. These drones can be used for surveillance and reconnaissance on a low-threat area like the Middle East or Eastern Europe due to their long range capabilities in these

regions; they're especially ideal because of how ground troops won't have an easy time spotting them. Only large national air forces can afford to field these impressive drones. In this book, the use of strategic drones will be handled by the Fire Support rules on pages 138-139.

**USING DRONES**

Small UAVs used by the company or battalion, are small and quiet, can flit out and quickly locate enemies. They can peer into the windows of buildings, look behind walls and detect ambushes and other traps. In defence, they can keep track of advancing enemies, allowing friendly troops to more easily repel attacks. In offense it can scout out routes of advance, spotting potential ambushes, and enable soldiers to pick out the least dangerous way forward.

Tactical UAVs can easily loiter above small-arms range, with the ability to identify enemy forces with electro-optical and infrared sensors, lase targets for indirect fire from a smart munition, push full-motion video down to ground forces, and even serve as a relay communications for infantry squads.

If the PCs are using a SUAV then make a Routine (+2) Comms roll to retain control and contact with it. Roll 1D6 on a failure: 1-2 it is jammed and/or crashes; 3-6 it makes an automated return to the launch point. To carry out recon, tracking a specific target or making a sweep of a particular location, make an Average (0) Comms roll (-2 if the enemy unit has good anti-drone discipline). Success indicates you got what you needed. Failure indicates you did not get good coverage, were distracted by false targets, or lost your focus on the target. Each search and skill roll requires another 6 minutes. Remember to factor in time to the target area.

Your drone isn't a godly, all-seeing and untouchable eye in the sky however. Remember that using a drone camera is like looking through a drinking straw, focussing on a single point location, while other things may be happening just a hundred metres away. In heavy vegetation or urban areas, the usefulness of the drone shrinks even more. Enemy units might have anti-drone training, with clever use of camouflage and employment of 'air guards' posted to watch and listen for hostile drones and then alert the rest of the unit. The unit might be equipped with GPS jammers or (if a major state) even anti-drone guns. Finally, drones go wrong, command signals can be lost, and batteries die (and the colder the air the poorer the battery life). Drones refuse to operate if there is something wrong with them – do you have the spare blades and batteries that you need?

## DEFENDING AGAINST DRONES

*You are on patrol with a squad-sized element. You hear the buzz of a SUAV overhead. Your immediate action drill is to seek the nearest cover and hold still while you radio higher to confirm whether the SUAV is friendly or hostile. While waiting for a response you stay as still as possible to avoid being noticed by the SUAV. Higher confirms that the SUAV is hostile and you know from the operations order that the enemy has the capability to drop a munition or call for fire based on real-time SUAV feed. Without confirmation that you have been spotted your best option is to hold firm, and hope the SUAV moves elsewhere. If you unmask your squad you will increase the likelihood you are spotted and you cannot outrun the SUAV.*

The squad is suppressed. Knowing that drones will provoke a specific reaction in an enemy force means small drones can be used deliberately to trigger that reaction. The most reasonable reaction to a SUAV overhead is to go to ground which prevents a unit from employing its weapon systems or fulfilling its assigned mission.

***Hiding:*** A unit with anti-drone training camouflages everything and blends themselves and their equipment in with their surroundings. They utilise natural shadows and use the correct camouflage pattern for the terrain. Multi-cam is useless for this! These units take a leaf out of the Second World War playbook (pun intended) and use improvised camouflage, grabbing local vegetation and covering helmets, smocks, camps and vehicles with it. Beware vehicle tracks, particularly in snow and sand, they could lead directly to your 'hide'. Tactical drones may be equipped with SIGINT sensors to detect enemy radio transmissions (even those encrypted), providing the drone operators with a rough SIGINT 'ellipse' on the map within which those signals originate from. Your 'hide' will be inside that ellipse and soon come under intense drone surveillance. Radio silence is golden.

Note that a vehicle is easy to detect by drone, infantry should move away from it if it cannot be disguised with vegetation or tarpaulins that match the terrain and cover its shadows. Convoys, road junctions, bridges and highways are all key targets for surveillance drones. US forces put a priority on night-vision, few other nations do so. So operate at night if possible, but think about thermal contrast and your unit's heat signature. A tactical UAV might pick you up at night using infra-red sensors. In a built-up area, it might be possible to move from building-to-building by breaking through partition walls.

Have you been spotted? The referee decides how well you are camouflaged against the prying downward-looking eye of a drone, and assigns a value (4 is poorly and 10 is expertly). As referee, roll 2D6 to beat that number when a drone flies overhead. If it is a tactical drone engaged in a search pattern, make that roll three times in a row over a one hour period.

***Destroying Drones:*** There are only a few ways to destroy a drone or render it inoperable, these are: anti-drone guns, jamming and traditional anti-aircraft defences. Drones fly so high and are so small that conventional firearms are almost useless. Of course, destroying a drone might just alert the operator to a hostile force in the area!! Catch 22. Note that a suicide drone will be moving too quickly for the targets to themselves react to it.

- **Anti-Drone Guns –** These exist and are somewhat useful against small UAVs that have been detected by the infantry unit. The gun is rifle-sized, hand-held and battery-powered. Various models exist; the Skynet Anti-Drone Rifle, the Battelle Drone Defender, the Russian REX-1 and the Drone Blaster. To spot the location of a suspected drone make a Formidable (-4) Int roll (+4 if using binoculars). Anti-drone teams operate in pairs, like snipers. To shoot down a drone that has been positively identified, the shooter makes an Difficult (-2) Comms or Electronics roll. He only has 5 shots before the battery dies. Batteries weigh 1 kg.

| Anti-Drone Gun | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Dmg | Range Band | Base Range | Auto | UR | Length (cm) | Req.Str | Wgt (kg) | Shots | Recharge |
| - | Medium | 500m | 6 | 9+ | 75 | - | 6 | 5 | 90 mins |

- **Jamming –** Handheld multiband jammers are available, these weigh 1kg and can jam cell-phone signals, Wi-Fi, Bluetooth and GPS connections. Each unit has 5 inbuilt aerials. Range is around 100 metres (300 feet) and the battery lasts 3 hours. Should a small UAV approach the jammer, roll 2D6; on a 10+ the UAV falls to the ground. Its unreliability stems from its poor range, both horizontally and vertically.

- **Anti-Aircraft Defences –** Radar (both air and ground) and traditional AA guns and missiles work just fine against drones. Any dedicated anti-aircraft weapon or vehicle can shoot a drone down on a 5+ before the drone can make its escape, this includes SAMs and self-propelled multi-barrelled guns like the Tunguska and Shilka. Is there an anti-aircraft unit nearby? Thought not …