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Explosions at Jammu IAF Base: A Stark Reminder of the Looming Threat from Mini-Drones

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India witnessed the first ever drone attack on a defence establishment this week. Two low intensity explosions rocked the technical area of Air Force Station Jammu in the early hours of June 27, 2021. One explosion caused minor damage to the roof of a building while the other explosion was in an open area. As per an initial assessment report, low-flying drones were used to drop the two Improvised Explosive Devices (IED). The likely targets were helicopters parked near the sites of explosion. No equipment was damaged, according to the Indian Air Force.[1]

Where could these drones have come from! This is not the first instance of drones from across the border being spotted. Drones from across the border have been used to smuggle arms, explosives and even drugs in the past, some have been shot down too by Border Security Force (BSF) and Army jawans. The novel mode of transportation was necessitated by the increased vigil by the Indian security forces over the borders and LoC in recent years to counter influx of terrorists. But this is the first instance of an armed attack, that too at an airbase 14 km away from the border. It is believed that the drones were operated from within India in the vicinity of the airbase, though the handlers could have been across the border. The fact that nobody- civilian or military- reported any drone sighting and no debris was found within the IAF base or outside is also a pointer in this direction. The timing of the attack has also been carefully chosen beyond midnight to avoid any visual spotting at a base which is tuned to counter traditional security threats. Moreover, the commercially available miniature drones are difficult to spot at night as the sound is also less. They fly below the radar detection envelope and have very less acoustic, infra-red and radar signature to be picked up by the traditional Air Defence systems.[2]

Has this incident come as a surprise to the security establishment? It was definitely not unforeseen. Though the timing of the attack did catch the security set up at the Jammu Air Base off-guard, the possibility of terrorists using the aerial route was known. Use of handy, convenient and easily available miniature drones is a tempting low cost option for terrorists aiming for disproportionate results while being out of harms way. The incidents in the spotlight which highlighted the threat were the August 04, 2018, attack by two drones in Venezuela which attempted to target President Nicolas Maduro, who was addressing the Bolivarian National Guard, and, the September 14, 2019 attack by drones on the state-owned Saudi Aramco oil processing facilities. Employment of countermeasures is in serious discussions ever since these mini- drones have been commercially available.

Countermeasures against these types of mini-drones could be ground based or airborne and mainly involve soft kill techniques, such as RF Jamming, GNSS Jamming, Spoofing, Dazzling and High Power Microwaves, besides hard kill options like Laser Directed Energy Weapons, Nets, kinetic

weapons using projectiles and Drone Catchers.[3] Lasers however, are not suitable against multi-directional swarm drones. Some systems like the RF Jammers are already under trials indigenously while some commercially available systems have been deployed for protection of high value assets. There is no limit to the innovations that high technology can bring into Counter Drone systems, but ultimately the adversary can beat the system using lower end of the technology curve. There is therefore, no single solution for anti-drone countermeasures, so it would be prudent to employ multiple techniques in a mixed deployment pattern.

Countering these mini-drones involves multiple challenges. Such drones are hard to detect and can be launched with minimal infrastructure, even from roof tops. Conventional perimeter security guard posts and patrols can do little against such threats unless concrete and timely intelligence is available. In the event of a drone sighting, the OODA loop in the decision cycle is bound to get disrupted, which in a worst case scenario, may result in fratricide?[4] The biggest challenge, therefore, remains in identifying a rogue drone. The issue assumes significance with the ease of access to commercially available drones and the proximity of civil residential and commercial areas to many defence establishments across the country. It is also necessary to recognise that any countermeasure would also affect friendly drones and in some ways the aviation activity at an airfield too. Another challenge would be in drawing a balance between the cost effectiveness of defensive measures employed vis-à-vis the very low cost of mini-drones that could be employed by terror groups.

To emerge victorious against this Mini-Drone threat, it is incumbent upon the field commanders to put in place sound and well rehearsed procedures, backed with proven technology in terms of countermeasure systems, to thwart any misadventure by terror groups using rogue drones. Every air base or military installation would have its own unique complexities in terms of security. This entails a detailed study from a 3 dimensional perspective by professionals within the air base or camp area to arrive at unique and innovative solutions in employing a mix of countermeasures. The field commanders could be financially empowered to procure commercially available anti-drone countermeasure systems independently from local or indigenous sources. This is akin to procurements of Flight Safety measures deployed at an Air Force Station. It is better to deploy what is within reach than to wait for the perfect equipment. A close liaison with the police is also called for to ensure timely inputs of drone activity. The police also need to formulate seamless procedures for reporting of drone activity.

Finally, from a national security perspective, some steps need to be taken as a visible measure to counter the small drone menace. In the aftermath of the Jammu incident, the Rajouri district administration imposed a ban on storage, sale, possession, use and transport of any drone or small

flying objects and toys in the district of Rajaouri. Similar bans were later imposed in Kathua district and later in Srinagar.[5] Such an action is a welcome step and should be imposed in the vicinity of every airfield, defence installation and major industries. Furthermore, there needs to be some action - covert or overt - towards raising the cost of escalation for the sponsors of such crimes. Counterattacks can be used as tools to messaging an intent if they are timely. Offence is the best defence, they say, in Grey Zone warfare where there is plausible deniability on both sides. However, prior to such action, the investigative process needs to swiftly and clearly establish the source of drone attacks.

To have an effective security mechanism against the threat from drones, policy, organisation and technology have to grow together. Knee jerk reactions have to be avoided, but it definitely can't be business as usual. The explosions at Jammu are a reminder that the threat of Grey Zone warfare is real. We have to adapt. This is Just the beginning !

Notes

[1] "Drone attack at Jammu air base: 2 suspects detained, IAF chief monitoring situation | What has happened so far" at https://www.indiatoday.in/india/story/drone-attack-jammu-air-base-top-points-1819969-2021-06-27, accessed on Jun 30, 2021.

[2] Snehesh Alex Philip, "Why countering 'low-tech drone terror' is going to be a big challenge for India", thePrint.in, June 28, 2021, at https://theprint.in/defence/why-countering-low-tech-drone-terror-is-going-to-be-a-big-challenge-for-india/685607/, accessed on July 01, 2021

[3] Arthur Holland Michel, "Counter Drone Systems" 2nd Edition, December 2019, at https://dronecenter.bard.edu/files/2019/12/CSD-CUAS-2nd-Edition-Web.pdf, accessed on July 02, 2021.

[4] KP Sanjeev Kumar, "Drone Attack on AFS Jammu Takes Asymmetric Warfare in India to NextLlevel", at https://kaypius.com/2021/06/27/drone-attack-on-afs-jammu-takes-asymmetric-warfare-in-india-to-next-level/ accessed on July 02, 2021.

[5] Peerzada Ashiq, "Drones, flying toys banned in J&K's Rajouri district after attacks", July 01, 2021, and "Drones, unmanned vehicles banned in Srinagar", July 04, 2021, web articles at https://www.thehindu.com/news/national/other-states ; Sanjay Khajuria, "J&K: After Rajouri, Kathua district bans drones, July 03, 2021, webarticle at https://timesofindia.indiatimes.com/india, both accessed on July 05, 2021.