

# Lieutenant Colonel Keirin Joyce

UAS programme manager, Australian Army

Testing and evaluation of unmanned aerial systems (UASs) should be redirected from the acquisition of purely military assets to commercial off-the-shelf (COTS) systems, according to Lieutenant Colonel Keirin Joyce, UAS programme manager for the Australian Army.

"Given the great variety and affordability of commercial platforms developed in the civil and hobbyist domain, and the fact that commercial technology is moving faster than military, it is critical for armed forces to begin experimenting with cheaper, commercial UASs," he told *Jane's*, adding that it will help to define future requirements for the acquisition of new capabilities.

Lt Col Joyce said that the Australian Army has been experimenting with UASs since the 1990s, introducing them into service from 2005. Deployments have included Afghanistan, East Timor, and Iraq.

He explained that the service fields UASs in a specialised role as a tactical asset in the army's unmanned aerial vehicle (UAV) regiment, which flies all year round. However, he also noted that the army fields UASs in non-specialised regiments.

Turning to the types of UAS in service with the army, Lt Col Joyce described the PD-100 Black Hornet, a Helicopter Personal Reconnaissance System manufactured by FLIR, as the smallest system fielded by Australia. Noting that this 'nanocopter', which can cover up to 2 km with an endurance of 25 minutes, was trialled for three years before being acquired, he confirmed that this year 160 Black Hornet UASs will be deployed across every combat platoon as a reconnaissance asset. He added that training to operate the Black Hornet is ongoing and will last for one year.

Another system, AeroVironment's Wasp, "is also operational with the Australian Army at the special forces and combat unit level", Lt Col Joyce noted, describing it as a fixed-wing micro-UAS weighing 1.5 kg with a length of 76 cm, a range of 5 km, and endurance of 50 minutes. He noted that the training required to operate this UAS is more complex than that to operate the Black Hornet.

Meanwhile, at brigade level the Australian Army fields the Textron Systems Shadow 200, which was acquired from the United States via



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a Foreign Military Sale and has been in service since 2011. The Shadow 200 is a surveillance and target acquisition UAS that can cover 100 km and fly for up to nine hours. According to Lt Col Joyce, its main role is to support the brigade commander and it is therefore equipped with an electro-optics/infrared camera, a laser target designator, and communications relay payloads. "However," he said "the Shadow 200 is now halfway through its lifespan and the Australian Army has already initiated a project to replace it, known as the L-129-Phase 3, with the aim of acquiring a new capability in about four years".

Lt Col Joyce pointed to leasing UASs as another area that the army is exploring. He said the service has already leased some examples of the Schiebel Camcopter S-100: a vertical take-off and landing (VTOL) UAS with a service ceiling of 18,000 ft and endurance of up to 10 hours if fitted with external fuel tanks. He noted that the Camcopter S-100 is also in service with the Royal Australian Navy. "The army chose to lease this VTOL UAS," he explained, "because it is interested in learning more about current-generation electro-optics and other advanced payloads."

Furthermore, "testing the Camcopter

S-100 represents an opportunity to test synthetic aperture radar and other payloads", he added. However, Lt Col Joyce confirmed that there are no plans to deploy the Camcopter S-100 during testing and evaluation, although he conceded that the UAS may be considered as a candidate for the acquisition of the new capability. Indeed, he emphasised that leasing is not a new concept for the Australian Army: before acquiring the Shadow 200, during 2006-12 the army leased Insitu ScanEagles and clocked up 45,000 flying hours while deploying the system in Afghanistan.

Another experiment being conducted by the Australian Army that Lt Col Joyce detailed to *Jane's* is the acquisition of several DJI Phantom-4 commercial UAVs. As part of this effort a Phantom-4 will be distributed to every unit in the army for testing and evaluation to enable feedback of new concepts and ideas for future requirements. According to Lt Col Joyce, "There is a potential for drones in other roles and the acquisition of a commercial platform is an inexpensive and easy way to modernise the army."

Underscoring the benefits of acquiring such a platform, he added, "The Phantom-4 is a small, inexpensive commercial quadcopter, and was chosen because its low cost enabled the army to procure it in large quantities." Lt Col Joyce noted that the Australian Army is supplementing the Phantom-4 acquisition with a COTS camera, drop kits, and additional specialised cameras.

"The experiment involves a one-day training course for all the units of the army," he said, "including some training on privacy, security, and airworthiness." The programme is expected to be rolled out between August and October, with the aim of starting the test and evaluation phase from 2019.

"This phase," he continued, "will last for 18 months, during which time the army units will be able to operate the Phantom-4 and test ideas and concepts that they will be able to share on an army chat forum." Finally, Lt Col Joyce said the units will feed back on their test results in a one-page report.

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