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The U.S. Army's Small Uncrewed Aircraft Systems

The U.S. Army is acquiring a family of small uncrewed aircraft systems (sUAS) for ground maneuver elements at the battalion level and below to provide real-time reconnaissance, surveillance, and target acquisition (RSTA) capabilities. For the past two decades, this role was largely filled by the AeroVironment RQ-11 Raven (**Figure 1**). On February 8, 2024, Secretary of the Army Christine Wormuth and General Randy George, Army Chief of Staff, announced Army plans to phase the RQ-11 Raven out of service as part of a broader “rebalance” of the Army’s aviation investments. This product covers the Group 1 and 2 UAS—those that weigh less than 55 pounds and fly at or below 3,500 feet above ground level—intended to serve as successors to the Army’s legacy RSTA sUAS.

Background

In 1988, the Department of Defense (DOD) Unmanned Aerial Vehicle Joint Program Office (UAV JPO) published its first “Master Plan” for uncrewed aircraft, which established the requirements and acquisition strategy for UAV systems. The Master Plan recommended a “close range” UAS for “lower-level tactical units,” one that could be acquired in large numbers and at low cost. In the late 1990s and early 2000s, the Military Operations in Urban Terrain Advanced Concept Technology Demonstration (MOUT ACTD), an Army-led experimentation program, showed how a man-portable sUAS could provide ground units with enhanced situational awareness and force protection. The MOUT ACTD led the Army and Special Operations Command (SOCOM) to work with AeroVironment to develop in 2002 the fixed-wing, 4-pound RQ-11 Raven, a smaller, more advanced version of the Gulf War-era AeroVironment FQM-151 Pointer. The Army introduced the RQ-11 in 2003 and, by 2010, fielded close to 4,000 Raven aircraft. The Marine Corps, SOCOM, and the Air Force also adopted the Raven.

Beginning in the early 2010s, Army officials devised plans for expanding the service’s small UAS capabilities to include a family of short-, medium-, and long-range sUAS platforms. Under the Rucksack Portable UAS Increment II Capability Production Document (RPUAS CPD), approved in 2013, the Army provided a modified Raven and limited quantities of the AeroVironment RQ-20 Puma to companies and battalions, respectively, for medium- and long-range RSTA capabilities on an interim basis pending the development of new platforms for these roles. Platoons, meanwhile, would be equipped with a short-range drone, the development of which the Army planned to begin later in the decade. Separately, in 2017, the Army approved the Soldier Borne Sensor (SBS) program to acquire miniature drones for infantry squads. The Army selected the FLIR Systems Black Hornet as the SBS and awarded FLIR a contract for the first batch of SBS systems in May 2018.

The DOD Defense Innovation Unit (DIU) issued a request for information (RFI) in November 2018 for a quadcopter drone to serve as a short-range sUAS; DIU partnered with the Army on the platoon-level drone program the following April. For medium- and long-range sUAS, the Army did not begin to seek successors to the Raven and Puma until the early 2020s.

Figure 1. AeroVironment RQ-11 Raven



Source: Kevin C. Mcdevitt, Fort Dix Training Support Center.

In June 2023, the Army transitioned the RPUAS CPD requirements to the Joint Small Uncrewed Aircraft Systems Capability Development Document (J-sUAS CDD), guidance that specifies key system and performance attributes and an acquisition timeline for the Army’s planned family of RSTA sUAS. Similar to the Army’s 2013 RPUAS CPD, the J-sUAS CDD describes Army plans to field what the service now refers to as short-range reconnaissance (SRR), medium-range reconnaissance (MRR), and long-range reconnaissance (LRR) UAS at the levels of platoon, company, and battalion, respectively. Additionally, the J-sUAS CDD contains three new initiatives—first-person view (FPV) drones for squads and platoons, tethered UAS for platoons, and a drone swarm capability for companies—the requirements for all of which remain in various stages of development. Including the SBS, the J-sUAS architecture encompasses seven programs.

The requirements for the aircraft in the J-sUAS CDD differentiate them from the Raven and Puma in several ways. The Raven and Puma sUAS feature a conventional fixed-wing configuration, which potentially hampers their usefulness in restrictive terrain, such as urban or forested areas. With SRR, MRR, and LRR UAS, the Army appears to be prioritizing a vertical takeoff and landing (VTOL) capability in the form of either multirotor or hybrid-VTOL configurations. The Army’s RFIs for future sUAS indicate that the service plans to acquire aircraft that can deliver

lethal payloads, such as air-dropped grenades or glide munitions. In contrast to the Raven and Puma, which were designed largely to conduct surveillance and reconnaissance, the Army may require the next generation of small UAS to conduct a greater variety of missions, including launching lethal strikes and relaying communications for other drones and ground units.

Small UAS in the Army's FY2025 Budget Request

In its proposed FY2025 budget, the Army requested approximately \$46.1 million in procurement and \$26.8 million in research, development, test, and evaluation (RDT&E) funding for the SRR, MRR, and LRR UAS. Additionally, the Army's list of unfunded budget priorities for FY2025 includes \$70.5 million in procurement funding for the SRR and MRR UAS. For the Soldier Borne Sensor program, the Army requested \$22 million and \$1.6 million in procurement and RDT&E funds, respectively. Excluding the unfunded priorities list, the Army's FY2025 budget request for the aforementioned small UAS is roughly 21% greater than that of FY2024.

The SRR UAS is the Army's first program of record for a small quadcopter drone. DIU and the Army argued that the SRR UAS should capitalize on the increasing sophistication of the drones available on the commercial market. By executing the program in phased tranches, the Army has indicated that it aims to maintain the flexibility to respond to advances in technology and user feedback. In April 2019, DIU and Army officials selected six companies to compete for Tranche 1 of the SRR UAS program, before awarding Skydio a contract in February 2022 for the RQ-28A, a militarized version of the Skydio X2D (**Figure 2**). In October 2024, the Army confirmed that it had selected Teal Drones, a subsidiary of the firm Red Cat, for Tranche 2 of the SRR program.

In its proposed FY2025 budget, the Army requested \$21.1 million to acquire 270 Tranche 2 systems, or 540 aircraft (two air vehicles constitute each SRR system), as well as \$1.15 million in RDT&E funding. The cost of one SRR system is expected to rise from \$39,800 in Tranche 1 to \$65,000 in Tranche 2. Army budget justification documents attribute this potential increase to the Tranche 2 version's improved obstacle avoidance, communications, and electro-optical and infrared sensors, among other enhancements. It is unclear as of this writing whether the Army intends to engage in additional tranches of the SRR program in the future.

The MRR UAS would provide an organic RSTA capability to Army companies. In 2023, the Army Futures Command approved a Directed Requirement for a "Company-Level sUAS" that is intended to provide an initial Tranche 1 capability for the MRR UAS, as well as inform the requirements of that future system. In its proposed FY2025 budget, the Army requested \$25 million in procurement funding for the Company-Level sUAS. Following a March 2024 RFI, the Army selected the Anduril Industries Ghost X, a helicopter-type drone, and the Performance Drone Works C-100 UAS quadcopter drone for Tranche 1 of the Company-Level sUAS Directed Requirement in September

2024. Then, in November 2024, Deputy Secretary of Defense Kathleen Hicks announced that the Army's selections for Tranche 1 of its Company-Level sUAS would participate in DOD's Replicator program.

In January 2023, the Army issued an RFI for the LRR UAS that expressed an interest in a platform that is capable of taking off and landing vertically and of flying for a minimum of five hours and at a line-of-sight range of 30 kilometers (18.6 miles). In its proposed FY2025 budget, the Army requested approximately \$25.6 million in RDT&E funds for work on the LRR UAS. According to Army projections in its budget justification documents, the Army expects to evaluate prototypes for the LRR through FY2026 and to begin procuring the aircraft the following fiscal year.

Figure 2. Skydio X2D



Source: Sgt. Jorden Newbanks, Camp Ripley Training Center.

Notes: The Skydio X2D, or RQ-28A, was the Army's selection for Tranche 1 of the SRR UAS program.

Considerations for Congress

As part of its oversight role, Congress could examine the following:

- Whether and the extent to which the Army is incorporating the rapid rate of technological change into the requirements and acquisition process for the SRR, MRR, and LRR UAS.
- Whether the Army is considering establishing a military occupational specialty (MOS) for small UAS operators and, if so, whether the Army has identified the potential costs associated with such a move.
- Whether and the extent to which the Army is considering acquiring low-cost, off-the-shelf drones for operational use.
- Whether and the extent to which the Army is coordinating its efforts to acquire short-, medium-, and long-range small UAS with the Marine Corps.

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