Big Tech in a Small Package: Marines Experiment With SkyRaider UAS

Information Systems Technician 2nd Class Andrew Cleary, assigned to Naval Mobile Construction Battalion 1, pilots a SkyRaider UAS during a field training exercise at Camp Shelby, Mississippi. U.S. NAVY / Mass Communication Specialist 1st Class Caine Storino

With the wars in Iraq and Afghanistan largely in the rearview mirror and a growing emphasis on the Pacific region and littoral operations, the U.S. Marine Corps is committed to returning to its amphibious roots. And that includes a major restructuring of the service itself that involves getting lighter and more agile.

One of the ways the Marines are doing that is by embracing new technology – such as drones small enough to fit in a rucksack. And one of the new unmanned aircraft the service is experimenting with is SkyRaider – a platform that is small in stature but aims to make a big impact and show that an increasing number of missions can be done by smaller and more technologically advanced equipment.

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The Marines have started to ramp up their procurement of the SkyRaider. Manufacturer FLIR Systems received a $10 million contract for dozens of the drones. SkyRaider has long-range, high-resolution electro-optical/infrared (EO/IR) imaging sensors, and it can also be used for delivering external loads, asset extraction and "other specialized missions," according to a June 30 FLIR Systems statement announcing the contract award.

“The SkyRaider vertical takeoff and landing small unmanned aircraft system [sUAS] was procured to fill a capability gap,” the Marine Corps said in a statement, noting that the need for SkyRaider came out of the Small Unit Remote Scouting System operational requirements document and a series of Urgent Universal Needs Statements.

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>
> *Marine Corps statement*

“The sUAS will be primarily supporting the ground combat element, specifically our infantry and our light armored units by providing improved electro-optic and IR capabilities, along with an ability to carry light payloads within size, weight and payload restrictions,” the statement reads. “As we procure more systems, we plan to expand usage to other units.”

The Marine Corps plans to buy 71 systems in fiscal 2021, 60 in 2022 and 53 in 2023.

More Than Just a Drone With a Camera

David Proulx, vice president of product development for FLIR, told Seapower in an interview that while it may resemble a commercially available drone, this system has capabilities that go far beyond anything available to consumers.

For one thing, it has a robust operating envelope that can handle some of the more extreme environments that the Marines have to deal with, Proulx said.

“The Marines don’t get to just deploy on nice, sunny days at reasonable altitudes,” he said. “We had to build a UAS that can keep pace with their operations, tolerate winds at 50 miles per hour, fly up to 15,000 feet and tolerate precipitation.”

Additionally, the SkyRaider is more than just a drone with a camera, he said.

Manufacturer FLIR Systems received a $10 million contract for dozens of the drones for the U.S. Marine Corps. U.S. NAVY / Mass Communication Specialist 1st Class Caine Storino

“Our customers, as their missions evolve from [intelligence, surveillance and reconnaissance] to resupply to providing aerial comms relays, they need something that can adapt to those missions,” Proulx said. “We not only offer a range of payloads, but different operating envelopes.”

He said the UAS is designed to operate without constant input from an operator or even an active GPS signal. It can be autonomously launched and recovered on moving platforms.

SkyRaider is brand new – FLIR launched the drone at a conference just two years ago, and the UAS was in development for three years before that.

FLIR has been working on enhancements to the platform. For example, the company recently expanded its payload from 4.4 to 7 pounds.

“That may not sound like a lot from a manned aviation perspective, but for a small drone that can fit in a rucksack, it’s important,” Proulx said. “In terms of the cameras and optics it can carry, we’re now talking about payloads where previously you would need a Group 2 or 3 UAS.”

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FLIR is also looking to make the UAS usable from the deck of a

ship, primarily for use in littoral environments as opposed to the open sea. The SkyRaider could help a ship's crew get closer to a target or see around obstacles. It also can operate as a communications relay that provides over-the-horizon connectivity, essentially acting as a communications node in the sky.

Jonathan Wong, a policy researcher at Rand Corp., said the Marine Corps has been getting more creative in its use of small UAS.

Small UAS are "a relatively new technology that they know has broad military utility, but they're not sure how," Wong said. "They could have taken a traditional acquisition route of exhaustively figuring out what they need and then procuring that solution at scale. Instead, they bought a wide range of platforms in relatively small quantities, gave them to Marines, and said, 'Here, figure out what you can do with this.'"

The Marines have experimented with these UAS, hanging radios from them to serve as retransmission nodes or even using them to support light armored recon missions, Wong said.

"That iterative approach is evident in the force redesign efforts that [Marine Corps Commandant Gen. David Berger] is pursuing," Wong said. "He calls out sUAS specifically, because the Marine Corps is convinced that they can be a force multiplier, especially for disaggregated or distributed units. However, the Marine Corps also sees that the threat environment demands that sUAS be more lethal and more robust and autonomous in terms of being able to operate in a communications-degraded environment."

He added that SkyRaider appears to be a step in that direction. While the drone is not lethal, it can do things that previous platforms in its size and weight category could not do.

“It can carry a payload. It can operate autonomously,” he said. “The current contract that the Marine Corps has signed with FLIR isn’t huge – it calls for dozens, not thousands, of systems. But it strongly indicates that the Marine Corps is continuing to iterate in this technology space.”