26th MEU Communicators Shoot for the Sky

by GySgt Bryce Piper, 26th MEU Public Affairs
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CAMP BUEHRING, Kuwait - Approximately 20 Marines from the 26th Marine Expeditionary Unit took an opportunity here this week to learn about a new tool to extend the range of deployed communications.

Arizona Air National Guard MSgt Jake Martinez shows the SkySat payload to 26th Marine Expeditionary Unit Command Office Col. Mark Desens and 26th MEU Operations Officer Lt. Col. Walter Sopp as the SkySat balloon inflates behind them. SkySat could one day help Marines in the field with handheld radios communicate as far as 500 miles, regardless of terrain. 26th MEU Marines learned about the system Jan. 12 and got hands-on with the gear during the next several days. (Official USMC photo by Gunnery Sgt. Bryce Piper)

The Combat SkySat High Altitude Operational Payload system could allow Marines in the near future to extend the range of some communications by more than 100 times, said Arizona Air National Guard Detachment 2 Commander Lt. Col. Patty Tuttle. The Marines attended a class explaining the system Jan. 12 and got hands-on with it during the next several days.

SkySat merges modern high-tech communications equipment with technology hundreds of years old: balloons. By floating relay equipment as high as 80,000 feet on a helium balloon, SkySat can extend the range of military radios like the handheld PRC-148 from a traditional three to four miles up to 500 miles.

By elevating the system by balloon, SkySat also allows communicators to overcome terrain features like mountains and valleys by changing the operator's line of sight, which could be of particular benefit to Marines in rough terrain like Afghanistan, said Tuttle.

"This is such a tactical mission enabler," she said. "It can really add to a commander's abilities. It can help troops on the ground, it can help pilots in the air – anyone who needs communications. We're excited to get it out and with (the Marines) and get it deployed," she said.

Given the ranges SkySat makes possible, communications are little affected by wind direction, according to Tuttle. Still, the system can be somewhat directed with the use of vents and ballast. It's also portable; the entire system is mobile and fits in the bed of a pickup truck, allowing commanders to extend communications at will in almost any area.

Skysat's equipment payload is expendable, according to Tuttle. After use, controllers on the ground command the balloon to release the communications equipment, which floats to the ground by parachute. No secret or classified equipment is housed in the payload, so it doesn't have to be recovered after deployment. If it is recovered, it can be sent back to the manufacturer to be reset for future use.

Currently the system is used only by the Air Force. But the tactical benefits were not overlooked by 26th MEU leaders.

"A commander's ability to extend long-range communications on the ground is key," said 26th MEU Executive Officer Lt. Col. Wes Capdepon. "And this is an asset that will allow us to extend communications over nearly any terrain and distance. This is a viable means to extend comm."

Increased communications will multiply the MEU's ability to perform missions with accuracy and control, Capdepon said.

"Clear communications is one of the most important things for leaders in the field," he stated. "But it's also important for their commanders. Without good comm, the commander's message to his Marines in the field could get lost, inferences could be lost. As such, the commander's intent could be lost."

"This gives the MEU a unique capability to provide long-range communications," said Maj. Roman Vitkovitsky, the MEU's communications officer. Several of Vitkovitsky's Marines attended the course along with Marines from all the MEU's Major Subordinate Elements. With the ability to extend classified and unclassified voice and data, Vitkovitsky and his Marines agreed SkySat is a true force multiplier.

ADDITIONAL PHOTOS:

Arizona Air National Guard MSgt. Jake Martinez and Tech. Sgt. Craig Armstrong attach the payload to SkySat's latex balloon. SkySat could one day help Marines in the field with handheld radios communicate as far as 500 miles, regardless of terrain. 26th MEU Marines learned about the system Jan. 12 and got hands-on with the gear during the next several days. (Official USMC photo by Gunnery Sgt. Bryce Piper)

Arizona Air National Guard MSgt. Jake Martinez and Tech. Sgt. Craig Armstrong release the SkySat High Altitude Operational Payload system while leaders from the 26th Marine Expeditionary Unit observe the launch. SkySat could one day help Marines in the field with handheld radios communicate as far as 500 miles, regardless of terrain. 26th MEU Marines learned about the system Jan. 12 and got hands-on with the gear during the next several days. (Official USMC photo by Gunnery Sgt. Bryce Piper)

Arizona Air National Guard Lt. Col. Patty Tuttle and Tech. Sgt. Craig Armstrong release the SkySat High Altitude Operational Payload system while leaders from the 26th Marine Expeditionary Unit observe the launch. SkySat could one day help Marines in the field with handheld radios communicate as far as 500 miles, regardless of terrain. 26th MEU Marines learned about the system Jan. 12 and got hands-on with the gear during the next several days. (Official USMC photo by Gunnery Sgt. Bryce Piper)

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MILITARYSPACE

Pentagon Eyes High-Altitude Balloons For Emergency Communications System

JEREMY SINGER, BOSTON

A recent U.S. Defense Department exercise has helped increase awareness in the military about the value of using high-altitude balloons operating near the edge of space to set up emergency communications networks on short notice, according to an Air National Guard official.

The balloons played a significant role in the exercise, which featured a scenario in which Air National Guard units responded to a fictional earthquake in Hilo, Hawaii, from June 18 to 20, according to Lt. Col. Patty Tuttle, commander of the Arizona Air National Guard's Second Detachment.

The exercise was part of the California Air National Guard's regular training, but the Arizona unit, which is dedicated to operating high-altitude platforms, was brought in to supply communications in the initial phases of the scenario, in which the earthquake wiped out existing communications infrastructure, Tuttle said in a July 10 interview.

Tuttle's unit is the only military organization today that is trained and equipped to operate the high-altitude platforms, and would be the organization the Department of Defense turned to if that capability were needed in an operational deployment, she said.

The Pentagon previously had referred to these types of platforms as "near space" vehicles, but now refers to them as "high-altitude" vehicles in an effort to avoid defining where space begins, Tuttle said.

The Arizona unit is currently working with a system called Combat SkySat, which is built by Space Data Corp. of Chandler, Ariz. Jerry Quenneville, Space Data Corp. vice president for government programs business development, said that the vehicle operates at an altitude of roughly 20,000 meters to nearly 31,000 meters. Space Data Corp. currently markets its services commercially to relay information from oil fields.

The Air Force awarded an indefinite delivery/indefinite quantity contract to Space Data Corp. in August 2006 with a total possible value of $49 million. Quenneville said the company has booked roughly $6 million in orders so far under that contract.

Each vehicle costs about $10,000, though the price could be driven down over time through larger production runs, Quenneville said. While the company leases services to the oil industry, it sells the hardware to the Pentagon, he said.

Combat SkySat, which features a disposable balloon and UHF communications payload, could be used today to set up an emergency communications network in a domestic disaster response operation, Tuttle said. If the Pentagon chose to deploy the system as part of military operations overseas, it would likely need several months to purchase a stockpile of platforms to maintain operations over an extended period, she said.

Following the June exercise, members of the California and Hawaii guard units that participated expressed interest in having their own high-altitude platforms, Tuttle said.

A military unit would need two or three troops to launch the balloons, and three more to operate and maintain the high-altitude vehicles, Tuttle said. If other military units are going to begin using the vehicles, they will need to find the additional manpower to handle the task because it requires dedicated personnel, she said.

Combat SkySat is capable of connecting users with handheld communications devices spread out over an area with a radius of about 480 kilometers, Tuttle said. The system could be useful for troops operating in an urban setting or mountainous terrain who would not normally be able to access line-of-sight communications signals, she said.

The system could be particularly useful to special operations personnel because it uses a low power signal that does not require troops to carry a lot of heavy batteries, Tuttle said.

The focus of the Combat SkySat experimentation to date has been on communications missions, but the balloon also could be used as a platform for surveillance payloads, Tuttle said.

While Combat SkySat is the only high-altitude balloon ready for disaster response operations inside the United States today, and overseas deployments within a matter of months, other concepts on the horizon include a vehicle built by Near Space Corp. of Tillamook, Ore., that offers users the ability to safely return payloads to troops on the ground. That capability could be particularly attractive to the military if it opts to deploy classified payloads on high-altitude platforms, as those payloads cannot be abandoned, Tuttle said.

PHOTO BY TSGT. ANGELA WALZ

Air National Guard personnel (above) attach the payload and prepare to release a near-space high-altitude balloon in Hawaii.

Quenneville said Space Data Corp. has sold training versions of Combat SkySat to the Air Force that feature beacons to assist with recovery, but said that the operational versions that it has built so far for the military have not been designed to be recovered.

Near Space Corp., which was formerly known as GSSL Inc., has been focused to date on working with civil agencies like NASA, where it developed its technology while working on various potential Mars exploration vehicles, according to Tim Lachenmeier, Near Space Corp. president.

Lachenmeier said in a July 9 interview that the company received an Air Force contract that ran from April 2005 through March 2006 worth several million dollars that covered a feasibility study and a demonstration of the launch of its vehicle, operation of a communications payload, and the return of the payload at the Yakima Training Center, a U.S. Army facility in Yakima, Wash.

Near Space Corp. received a follow-on contract worth around $1 million from the Air Force in June that runs through the end of 2007 to improve the robustness and simplify the operations of the vehicle, he said.

The company could have a Near Space Shuttle System geared towards the needs of military users within a year to 18 months, Lachenmeier said. Such tactical users require the ability to launch in conditions with significant wind. Near Space could supply that capability if the company receives a follow-on contract from the Defense Department with a value of $10 million or less, he said.

If it is tapped to deliver operational vehicles to the military, Near Space likely would partner with a company that would serve as an integrator for the vehicle's payload and connect the system with the Pentagon's information networks, Lachenmeier said. Near Space currently is talking with General Dynamics Advanced Information Systems about serving in that role, he said.

In addition to the return capability, the Near Space vehicle could carry much more capable payloads than Combat SkySat. Tuttle said Combat SkySat carries payloads weighing less than 3 kilograms, and Lachenmeier said his company's vehicle could be able to carry more than 45 kilograms.

Lachenmeier said the Near Space Shuttle System could play an important role in supplying communications to bandwidth-consuming unmanned aerial vehicles that the Pentagon is deploying in increasing numbers.

Comments: jsinger@space.com

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