



News Release

AIR FORCE SPACE COMMAND

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AFSPC embarks on many firsts with TacSat-3

PETERSON AIR FORCE BASE, Colo. -- The transition of Tactical Satellite 3 (TacSat-3) from experimental to operational mode June 18, 2010 marked the beginning of many significant firsts as United States Strategic Command (USSTRATCOM) accepted the hyperspectral satellite for operational use.

During its first year on orbit, flown by the Air Force Research Laboratory (AFRL) in an experimental mode, the satellite collected thousands of hyperspectral images using its primary payload, the Advanced Responsive Tactically Effective Military Imaging Spectrometer, or ARTEMIS, developed by Raytheon.

The TacSat-3 demonstrated the ability to identify thousands of unique materials from space, according to Lt. Col. Ryan Pendleton, chief, Operationally Responsive Space Integration, Air Force Space Command. Now, under the command of USSTRATCOM, TacSat-3 has become the first free flying ISR satellite under direct control of a Department of Defense element other than the National Reconnaissance Office, National Security Agency, or other national-level organization.

“When compared to traditional imagery, hyperspectral data provides significantly more information about objects in the scene,” said Colonel Pendleton. “For example, the hyperspectral information can help recognize types of metal, concrete, man-made versus natural materials, or even help identify materials known to be associated uniquely with military equipment. This means the warfighter will have a much better understanding of the design, capabilities, and vulnerabilities of the objects imaged with the sensor.”

The Air Force recognized this great potential from the very initial planning stages of TacSat-3.

“While governmental agencies are often criticized for a lack of foresight and planning, regarding the transition of TacSat-3 we have an occasion where everything was done with a very proactive approach to long-term needs and a very purposeful approach to planning ahead,” said Colonel Pendleton.

Potential advantages to the warfighter were identified early on in the process. USSTRATCOM made its interest in using the satellite for operations known in November 2008, well before it launched. In response to a formal request from Gen. Kevin Chilton, USSTRATCOM commander, a TacSat-3 transition team was created by Gen. Robert Kehler, AFSPC commander, to evaluate what AFRL had created, consider the options for follow-on use in operations, and implement that plan if it made sense. The AFSPC team then worked in concert with AFRL, USSTRATCOM, Army team members, and National Agency representatives to achieve a smooth transition to operations.

Now that USSTRATCOM is operating the hyperspectral satellite, the command created a more streamlined process for users to request targets to be imaged, explained Colonel Pendleton. Part of this involves a dedicated ‘rapid exploitation cell’ led by a joint Army and Air Force team to dramatically increase the speed with which exploited products are delivered to the warfighter.

During the experimental phase of the satellite, approximately 25 exploitation images per month were accomplished for “direct warfighter support,” and those were often delivered weeks after the data was collected from ARTEMIS, Colonel Pendleton said. However, now that the satellite is in an operational mode, with a modified overall architecture, delivered products will exceed 300 per month with a turnaround time of a few days or less.

“The rapid exploitation cell is composed of approximately 20 people dedicated to quickly deriving the most essential information from within the hypercubes. Each hypercube is a data set collected from ARTEMIS on a specified area,” he added. “This operational architecture will produce more than 300 hyperspectral images per month, and in a much more timely manner... as in hours to days after the collect, which is more than ten times the output during the experimental phase!”

“This new capability will provide an unprecedented amount of spectral data to the warfighter on ISR targets worldwide,” said Colonel Pendleton, “and helps prove the capability and applicability of hyperspectral sensors and small tactical satellites in general.”

Lessons learned from this successful initiative are being applied to AFSPC’s next big launch system, ORS-1, part of the operationally responsive space program, and Colonel Pendleton looks forward to the future possibilities in this arena.

“TacSat-3 has made headway for the ORS-1 system, proving the capability of small satellites, streamlining the acquisition process, and test-driving the tactical architecture for overhead ISR. The potential of systems to come is incredible,” he concluded.

For more information contact AFSPC Public Affairs at 719-554-3731.