

Lockheed Martin Unmanned Aerial System First To Fly High-Resolution Synthetic Aperture Surveillance Radar

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Lockheed Martin recently accomplished a first for unmanned aerial systems (UAS), demonstrating that high-resolution, broad-area imaging from a Miniaturized Synthetic Aperture Radar (MiniSAR) could effectively be delivered by a UAS into the hands of tactical unit commanders, regardless of smoke, dust, heavy rain or nighttime conditions.

During a successful field exercise at the Minnesota National Guard test facility on October 19, Lockheed Martin's small SkySpirit UAS - with a Sandia National Laboratories developed MiniSAR sensor - soared to nearly 3,000 feet and, in near real-time, became the first UAS to successfully transmit four-inch resolution SAR imagery. During four different mission demonstrations, the SkySpirit transmitted MiniSAR images capturing actionable data in two operational modes: focused area circle-mapping and broad area strip-mapping. Multiple imaging passes were post-processed to demonstrate coherent change detection used to identify changes over time.

This demonstration was the first time that an autonomous flight of a small tactical UAS has captured SAR data of this type and resolution. The use of a MiniSAR, which is being produced by Rockwell Collins, Inc., could greatly enhance a ground unit's surveillance capabilities with a UAS, delivering high-resolution images to ground units in all-weather, day or night conditions, as well as operating in various modes, including ground-moving target indicator and coherent change detection.

"Lockheed Martin understands the military's need to provide tactical support for the warfighter," said Rick Udicious, vice president and general manager of Lockheed Martin's Tactical Systems business. "The need for small unmanned systems that meet emerging mission requirements for agility, endurance, affordability and the next generation of resolution accuracy is a key element in extending the tactical capabilities of United States forces."

In its current configuration, Lockheed Martin's SkySpirit UAS has a gross take-off weight of 180 pounds and a payload capacity of 75 pounds. SkySpirit was designed to allow flexible payload and fuel-weight combinations, as well as extended endurance profiles and persistent surveillance capabilities.

Headquartered in Bethesda, MD, Lockheed Martin employs about 140,000 people worldwide and is principally engaged in the research, design, development, manufacture, sustainment and integration of advanced technology systems, products and services.

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