Aircraft And Ground Operations For The U.S. Army, Navy And Air Force Gain New Intelligence And Surveillance Capability With Lockheed Martin's F-22

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Two Lockheed Martin F-22 Raptors successfully sent classified sensor data to ground stations in the U.S. Air Force's Joint Expeditionary Force Experiment 2008 (JEFX 08) conducted April 15-25 at Nellis Air Force Base, Nev.

JEFX is an Air Force Chief of Staff-sponsored experiment that combines real-world air and ground forces, simulation, and technology insertions into a warfighting environment. The experiment is an annual venue for innovative command and control (C2) and targeting technologies. Numerous Army, Navy, and Air Force aircraft as well as ground forces participated in JEFX 08.

During this two-week experiment, two specially configured F-22s transmitted real-time sensor information to ground stations at Nellis AFB, Nev. and Langley AFB, Va. using an experimental version of the Tactical Targeting Network Technology (TTNT) waveform developed by Rockwell Collins. An F-22 data link test configuration flew in realistic scenarios that highlighted the Raptor's significant non-traditional intelligence surveillance and reconnaissance (NTISR) capabilities.

"Lockheed Martin was excited about the Air Force's decision to demonstrate the value of sharing F-22 ISR data with other fighters and back to the Combined Air Operations Center," said Larry Lawson, Lockheed Martin Aeronautics Company executive vice president and F-22 general program manager. "This is the first time in history that F-22 sensor data was down-linked to the Combined Air Operations Center (CAOC) using a tactical network."

The combined partnership of Lockheed Martin and the Air Force tackled the enormous security challenges to bring highly-desired F-22 sensor data to ground-based users.

"This was a team effort all the way around, from Headquarters Air Combat Command to the F-22 Program Office to the U.S. Air Force Warfare Center at Nellis AFB," Lawson said.

Not only did the F-22s share sensor data with ground-based users, the aircraft were also tactical network members among other air and ground platforms.

"Our F-22s took a huge first step toward becoming net-enabled in JEFX08. The pilots were sending and receiving information such as command and control messaging, imagery, airspace updates, and free text messages using a cockpit touch-screen color display," said Mark Jefferson, director of Lockheed Martin Aeronautics Horizontal Integration. "They stayed pretty busy conducting offensive counter air and destruction of enemy air defenses air dominance missions as well as dynamic targeting attacks with F-16s and non-traditional ISR collection events during the exercise, while also simultaneously piping classified sensor data to the CAOC."

A modified Lockheed Martin F-16 also conducted numerous close air support and interdiction missions, sharing tactical information with other JEFX08 Initiatives, including the US Navy's Maritime Ops Center, the Army's Future Combat System.

"This was a cost-effective opportunity to explore numerous areas of future interest while leveraging Lockheed Martin's extensive independent research and development efforts," said Lawson. These areas include F-22 networking requirements, assessment of Internet Protocol (IP) based waveforms on 5th generation aircraft, IP-based network application development and multi-level security issues.

The F-22 Raptor, the world's most advanced fighter, is built by Lockheed Martin teamed with Boeing and Pratt & Whitney. Parts and subsystems are provided by approximately 1,000 suppliers in 44 U.S. states. F-22 production takes place at Lockheed Martin Aeronautics facilities in Marietta, Ga.; Fort Worth, Texas; Palmdale, Calif.; and Meridian, Miss., as well as at Boeing's plant in Seattle, Wash. Final assembly, initial flight testing and delivery of the Raptor occurs at Marietta.

Raptors are currently assigned to five U.S. bases. Flight testing takes place at the Air Force Flight Test Center at

Edwards AFB, Calif. Operational tactics development and Weapons School training is ongoing at Nellis AFB, Nev. Pilot and crew chief training takes place at Tyndall AFB, Fla. Operational Raptors are assigned to the 1st Fighter Wing at Langley AFB, Va., (27th and 94th Fighter Squadrons) and now the 3rd Wing at Elmendorf AFB, Alaska. Raptors will also be based at Holloman AFB, N.M., and Hickam AFB, Hawaii.

Headquartered in Bethesda, Md., Lockheed Martin employs about 140,000 people worldwide and is principally engaged in the research, design, development, manufacture, integration and sustainment of advanced technology systems, products and services. The Corporation reported 2007 sales of $41.9 billion.

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