



## **Northrop Grumman-Led Team Recognized By U.S. Air Force For F-22 Avionics Cost Savings**

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BALTIMORE, March 8, 2001 -- A Northrop Grumman Corporation (NYSE:NOC) Electronic Sensors and Systems Sector-led joint venture with Raytheon Company (NYSE:RTNA) (NYSE:RTNB) has received the U.S. Air Force's first "F-22 War on Costs" Gold Award -- the highest honor bestowed on F-22 aircraft suppliers -- for an outstanding team effort to dramatically reduce avionics costs associated with the F-22.

The Northrop Grumman/Raytheon team, through a combination of aggressive engineering and management efforts, has reduced the total projected F-22 radar production costs by more than \$386 million over 12 years and 339 radar systems, with all of the savings accruing to the Department of Defense.

The radar joint venture, under contract to The Boeing Company, is developing the F-22 radar system, a key element of the overall avionics system. In addition to sharing hardware fabrication and assembly with Raytheon, Northrop Grumman is responsible for the overall design of the AN/APG-77 radar system, including the control and signal processing software. Northrop Grumman also has responsibility for radar systems integration and test activities.

Among the cost savings was the development and integration of a new robotic system to automate the assembly and testing of critical F-22 radar components, called circulators, which act as switches, allowing radio signals to be sent and received. The new robotic system, manufactured and integrated by Keller Technology Corp., of Charlotte, N.C., will reduce the time it takes to manufacture the circulator assemblies from nearly one hour to just a few minutes.

The radar joint venture team also re-engineered the radar's transmit/receive modules, reducing the number of parts, and decreasing the time required to test each module from 74 minutes to 20 minutes. Also, a new automated process for bonding radar sub-array interconnects was introduced.

"These radar system cost savings will help ensure the affordability of the F-22 program as it moves toward production," said Robert W. DuBeau, vice president-Avionics Systems at Northrop Grumman. "In keeping with the Department of Defense's recently announced 'War on Costs' initiative associated with the F-22 program, we will continue to aggressively pursue additional opportunities to reduce the cost of the radar, without sacrificing product integrity, performance or reliability.

"In addition to our 'War on Costs' efforts, the radar has met or exceeded its performance specifications during tests to date, ensuring the USAF warfighter has a significant capability advantage over current and advanced threats," Mr. DuBeau added.

The F-22 is being developed to counter lethal threats posed by advanced surface-to-air missiles and next-generation fighters. Designed to replace the F-15, the aircraft combines stealth, advanced avionics and supercruise technologies to provide a first-look, first-shot, first-kill capability against enemy aircraft. Lockheed Martin is teamed with Boeing, Pratt & Whitney and the Air Force to develop and produce the revolutionary F-22 fighter.

"The T/R Module Product Improvement Program has enabled us to insert current technology and materials into the T/R modules," said Jack Pearson, vice president, Air Combat and Strike Systems, at Raytheon. "These state-of-the-art technologies reduce the cost, while improving the already solid performance of the radar. We fully support the F-22 war on cost and are actively pursuing Raytheon Six Sigma cost saving initiatives."

Northrop Grumman's Electronic Sensors and Systems Sector, headquartered in Baltimore, is a world leader in the design, development and manufacture of defense electronics and systems, precision weapons, airspace management systems, space systems, marine systems, logistics systems, and automation and information systems.

With headquarters in Lexington, Mass., Raytheon Company is a global technology leader in defense, government and commercial electronics, and business and special mission aircraft.

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