Boeing Demonstrates Advanced Display Core Processor in F-15E

In its ongoing effort to implement low cost computer technology in tactical aircraft, Boeing has successfully integrated and flight tested a commercially based processor and display in an F-15E.

The new commercial system, called the Advanced Display Core Processor (ADCP), replaces both the central computer and multi-purpose display processor of the F-15E. In the July 22 flight test, the ADCP performed flawlessly, providing the same capabilities and display functions as the legacy systems.

"The ADCP for the F-15E is another successful example of how Boeing is introducing more affordable computer technology into military aircraft," said Reg Varga, head of the Bold Stroke project in the Boeing Phantom Works. "By replacing proprietary military computer systems with commercially available technology, we are significantly reducing avionics development and maintenance costs."

The Phantom Works' Bold Stroke project specializes in using commercial standards, practices and components to produce non-proprietary "open" computer systems for military aircraft. Compared with proprietary "closed" computer systems currently in use, open systems cost much less to develop and produce, are easier to maintain and upgrade, and can be readily adapted for use in more than one aircraft.

The Bold Stroke team has already developed several open systems avionics modules and demonstrated their reuse on F-15, F-18 and AV-8B aircraft. Besides leading to the successful development of the F-15E ADCP, these efforts also led to the U.S. Marines' Open Systems Core Avionics Requirement award for retrofitting commercial avionics into fleet AV-8Bs.

The development of the ADCP is sponsored by the Department of Defense's Commercial Operational & Support Savings Initiative (COSSI), focused on reducing O&S costs of fielded military systems through the use of commercially available technologies. Commercial components used in the ADCP include VME/Power PC hardware, object-oriented software and a 5"X5" color liquid crystal display.

The Boeing ADCP development team includes Honeywell Defense Avionics Systems, which provided the ADCP hardware, and General Dynamics Information Systems, which provided processing hardware. To ensure customer satisfaction and low integration costs, the team consulted with F-15E field maintenance personnel and designed the ADCP as a form and fit replacement for the multi-purpose display processor.

According to Boeing test pilot Joe Felock, "The F-15E operational flight program performed well when run by the ADCP. It was transparent as to whether it was being executed by the ADCP or by the current central computer and multipurpose display processor combination."

A second flight test of the current prototype ADCP is planned for this year. For COSSI, Boeing will also develop and flight test by late 1999 a pre-production ADCP that performs an increased number of F-15E operational flight program (OFP) functions. A production version would provide all OFP functions, as well as capabilities for advanced functions.

The F-15E is the U.S. Air Force's premier all-weather, day-night, fighter-bomber aircraft. It has unparalleled range, speed and payload carrying capability; and with the ADCP, it will have the computer power, growth capability and cost efficiencies to ensure it meets service demands well into the 21st century.

Currently, an industry/U.S. Air Force integrated product team is investigating acquisition reform practices that will help streamline the procurement of the ADCP for the F-15E.

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