# Boeing Demonstrates Feasibility of Air Traffic System Improvements

Boeing's Air Traffic Management (ATM) and Connexion by Boeing [SM] units yesterday successfully demonstrated the feasibility of a number of potential enhancements to the National Airspace System (NAS). The enhancements are intended to improve the capacity, efficiency, safety and security of the NAS by providing both air- and ground-based personnel with improved real-time situational awareness of the entire flying environment.

The demonstrations were completed during a test flight from Seattle conducted under ATM's Global Communications, Navigation, and Surveillance System (GCNSS) contract with the Federal Aviation Administration. Capabilities demonstrated include the following:

- Transmission of aircraft position data, both current and planned, to networked computers at multiple sites on the ground, enabling more strategic management of air traffic and rapid detection of aircraft deviations from their approved flight paths
- Uplink of radar weather images to the flight deck, and downlink of data regarding environmental conditions outside an aircraft, enabling the display of better real-time weather information both in the air and on the ground
- Transmission of operational data from an airplane, enabling the ground display of real-time visual models of aircraft in flight, aircraft instrument readings, and the status of aircraft systems
- Transmission of voice and data messages, and video of multiple aircraft interior spaces, between an aircraft in flight and multiple locations across the United States
- Transmission of voice, data and video between the ground and hand-held Personal Digital Assistants onboard an airplane

All of these transmissions were accomplished using broadband and narrowband satellite links, demonstrating the feasibility of moving voice, video and other data between systems on the ground and systems aboard aircraft in oceanic airspace and other remote environments.

"These technologies have the potential to enable the creation of a fully linked and integrated network of aircraft, airlines, controllers, security personnel, law enforcement officials, and others-regardless of their geographic location," said Mike Lewis, Boeing program manager for the GCNSS contract. "Connectivity of this sort will substantially improve air system efficiency by ensuring that controllers, dispatchers, pilots and airline operation centers have the best information at their disposal, as well as improve the ability of security personnel to detect and respond to unusual situations aboard aircraft."

The demonstration flight was conducted aboard Connexion One, a specially equipped 737 aircraft operated by the Connexion by Boeing[SM] business unit. This unique flying test-bed is designed to test, validate and pioneer new solutions in broadband airborne communications.

The GCNSS contract was awarded to ATM in July 2002 to evaluate the feasibility of integrating emerging capacity- and security-enhancing technologies into the NAS. These enhancements would increase common situational awareness across the entire airspace system and, based on the availability of better information, improve collaborative decision-making in response to traffic- and weather-related congestion, security alerts and other unusual events.

"The GCNSS team has put a lot of work into meeting the needs of our customer," said John Hayhurst, ATM president, "and they should all be proud of today's successful demonstration flight. Today's achievements give me great confidence as we move into the next phases of this contract."

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