Boeing/DARPA Demonstrate UCAV Interoperability with Manned Aircraft

In a new block of demonstrations in the Unmanned Combat Air Vehicle (UCAV) program, Boeing [NYSE: BA] and DARPA (the Defense Advanced Research Projects Agency) have successfully demonstrated that an autonomous unmanned aircraft controlled from the ground could be successfully integrated into air-traffic-controlled airspace with manned aircraft.

"Air Force leadership has made it very clear that the UCAV system must interoperate within the manned environment," said Andy Gutierrez, the government X-45A chief systems engineer. "Manned airspace control procedures are not going to substantially change and the design of the UCAV must adapt so that it can safely and effectively operate in such an environment. This demo has taken a giant first step towards making manned and unmanned systems co-exist."

The demonstration, the first of the UCAV Block 2 capabilities, was conducted at Edwards and Eglin Air Force bases using the T-33 UCAV Surrogate aircraft. Equipped with an avionics pallet fully representative of the X-45A UCAV system, the T-33 can autonomously fly pre-planned mission routes while also having a hands-off test pilot aboard to take manual control if necessary to ensure operational safety. This approach also allows operators on the ground to control the T-33 as if it were a UCAV.

As the T-33 autonomously flew pre-planned routes around Edwards and Eglin, operators in the UCAV mission control station on the ground interacted with air traffic controllers to alter the T-33's flight as necessary for air traffic separation, de-confliction, holding, and simulated missed approaches. None of the actions adversely affected base tempo and day-to-day operations, and feedback from airspace controllers was favorable.

"This flight demonstration provided the UCAV team with a unique opportunity to integrate the UCAV system into a high operations tempo airspace with manned aircraft," said Mike Harlan, X-45A test and operations manager for the Boeing Phantom Works advanced R&D unit. "Using our surrogate aircraft not only increases flight safety, it also allows us to evaluate our system much earlier in the development cycle and provide a more mature product for our customer."

The demonstration began in February 2003 with five flights at the NASA Dryden Flight Research Center, Edwards Air Force Base, California. These initial flights were conducted to verify airspace procedures and basic functionality in a low tempo environment. The T-33 surrogate UCAV was flown in and out of controlled airspace multiple times per flight, integrating with other aircraft in the traffic pattern.

Another eight missions were conducted this month at Eglin Air Force Base, Fla. Since Eglin AFB has a higher tempo of operations that includes military, commercial, rotorcraft, and general aviation aircraft, the UCAV system and operator performance could be evaluated under more realistic high task loading conditions.

As another milestone, the flight demonstration was the first use of Link-16 data link to remotely operate an air vehicle from the ground. Link-16 is a high capacity, anti-jam, secure communication system and the data link of choice for the US and its NATO allies.

"These surrogate UCAV demonstration flights are an essential element in our strategy to assure interoperability in manned airspace," said Col. Earl Wyatt, UCAV program manager for the U.S. Air Force. "Our demonstration program is aggressively reducing risk on a path to a robust operational UCAV system."

As the initial Block 2 demonstration flights were being conducted with the T-33 UCAV Surrogate, Block 1 demonstrations with the X-45A UCAV were being successfully completed at NASA Dryden. During Block 1, 48 discrete laboratory, simulation and flight demonstrations were conducted, primarily focused on initial systems checkout. The demonstrations included a total of 16 individual test flights of the two X-45A air vehicles.

The UCAV program is a joint DARPA/U.S. Air Force/Boeing effort to demonstrate the technical feasibility, military utility and operational value of a UCAV system to effectively and affordably prosecute 21st century lethal and non-lethal suppression of enemy air defenses and strike missions within the emerging global command and control architecture. The X-45A is demonstrating the technical feasibility of the UCAV concept. The program is now designing a more operationally representative prototype that will demonstrate the military utility and operational value of the UCAV system.

The X-45A UCAV system is being developed by the Boeing Phantom Works, which is the advanced R&D unit and catalyst of innovation for the Boeing enterprise. By working with the company's business units, it provides advanced solutions and innovative, breakthrough technologies that reduce cycle time and cost while improving the quality and performance of aerospace products and services.

###

C1961

For further information:
Dave Phillips

312-544-2125
William Cole
314-232-2186