Boeing and X-31A Team To Receive Prestigious International Award

The Boeing Company [NYSE: BA] and the X-31A team -- past and present -- will receive the von Karman award from the International Council of the Aeronautical Sciences (ICAS) at a ceremony Tuesday evening in Dayton, Ohio.

The award -- founded by ICAS in 1980 in memory of the Theodore von Karman, a proponent of international collaboration in aeronautical sciences -- is in recognition of the outstanding technical achievements of the multi-national X-31 team since the late 1980's in designing, building and flight demonstrating the X-31A, the world's only international experimental aircraft to date.

Designed with a thrust vectoring control system to make the aircraft more highly maneuverable, the single-seat, X-31A demonstrated its improved capabilities in two major multi-national flight test programs -- the Enhanced Fighter Maneuverability (EFM) program (1990 -1995) and the Vectoring ESTOL Control and Tailless Operational Research (VECTOR) program (April 2000 - May 2003).

The EFM program comprised Boeing, DARPA, the U.S. Navy, NASA, Germany's defense procurement agency (BWB) and the European Aeronautic Defence and Space Co. (EADS). For the recently completed VECTOR program, Boeing Phantom Works teamed with the U.S. Navy, BWB and EADS.

"The X-31A was a success in all categories, from important research results gained to developing low cost prototyping processes, but in particular in demonstrating two extremely successful international research and development collaborations," said Mike Heinz, acting vice president of Boeing Phantom Works Integrated Defense Advanced Systems.

The X-31A first flew in 1990, and in 1995, demonstrated its thrust vectoring capabilities at the Paris Air Show, where it was dubbed a "show stopper" by the air show and trade press.

The thrust vectoring system of the X-31 consists of three paddles at the rear of the fuselage that can direct the jet engine's thrust. Integrated into the vehicle's control systems, the system provided precise control at high angles of attack where conventional aircraft had lost aerodynamic control. This in turn allowed the plane to turn much tighter and faster than conventional fighters, yielding significant air combat advantage.

During the 581 flight EFM program -- the most flights of any X-plane -- the X-31 flew well beyond the aerodynamic limits of any conventional aircraft by demonstrating controlled flight at 70 degrees angle of attack, a controlled roll around at 70 degrees AOA, and a rapid minimum radius, 180-degree turn using a post-stall maneuver, dubbed the "Herbst Maneuver."

After being stored for several years, the X-31 was returned to service in 2000 to demonstrate ESTOL (extremely short takeoff and landing) capabilities also enabled by its unique thrust vectoring system. When the program ended in May, the X-31A demonstrated landing speeds of only 124 knots at 24 degrees AOA -- compared to the normal landing speeds of 175 knots at 12 degrees AOA -- and landed in about 1,700 feet rather than the more typical 8,000 feet.

"Now that we've concluded flight testing, our challenge is to take what we've learned from the X-31A and see how we can apply the technologies to operational systems," said Gary Jennings, VECTOR program manager for Boeing Phantom Works.

The X-31A is on display at the Deutsches Museum near Munich, Germany and eventually will be displayed at the National Air and Space Museum in Washington, D.C.

The Boeing Phantom Works is the advanced research and development unit and a catalyst of innovation for The Boeing Company. 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.

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