

Boeing T-45 Training System

The T-45 Training System, or T45TS, is the first totally integrated training system developed for and used by the U.S. Navy's Naval Air Training Command. It includes the Boeing-built T-45 Goshawk aircraft, advanced flight and instrument simulators, computer-assisted instructional programs, and a computerized training integration system. The integration of all five system elements produces a superior pilot in less time and at lower cost than previous training systems. The T45TS replaced two training aircraft and added advanced simulators to improve the process for training U.S. Navy and Marine Corps pilots for conversion into the F/A-18A-D Hornet, the F/A-18E/F Super Hornet, the EA-18G Growler, the AV-8B Harrier and the EA-6B Prowler.

The Goshawk

At the heart of the training system is the two-seat, single-engine T-45 Goshawk. The aircraft has a wingspan of 30.1 feet, a length of 39.3 feet, a tail height of 13.5 feet and a gross takeoff weight of 13,636 pounds. The U.S. Navy's T-45 Goshawk is powered by a Rolls-Royce Adour F405-RR-401 engine producing 5,845 pounds of thrust. Designed to excel in the rigorous environment of naval aviation training, it has been fatigue-tested successfully to demonstrate a service life that exceeds the required 14, 400 flight-hours.

Described by instructor-pilots who fly it as “eminently forgiving,” the T-45 is the only jet trainer designed to land routinely at sink rates of greater than 700 feet per minute, which are required for aircraft carrier approach landings. The Boeing team has continually upgraded the aircraft with features such as leading-edge wing slats for better low-speed performance, high-gain nosewheel steering for safer ground handling, and a reinforced composite stabilator with increased span for better pitch control.

In the 16 years since they entered service in 1992, T-45s have logged over 800,000 flight-hours and made over 50,000 arrested carrier landings. Approximately 3,500 student aviators from the U.S. Navy, Marine Corps and a number of foreign militaries have earned their wings in the T-45.

The T-45A (with an analog cockpit) and T-45C (with a digital cockpit) are in service with Training Air Wing 1 at Naval Air Station Meridian, Miss., and Training Air Wing 2 at Naval Air Station Kingsville, Texas. Training Air Wing 6 at Naval Air Station Pensacola, Fla., received the first of 19 T-45Cs in April 2008 for use in its Undergraduate Military Flight Officer (UMFO) curriculum, which trains ‘backseaters’ for the U.S. Air Force as well as the Navy and Marine Corps.

The Totally Integrated System

Student aviators gain basic aviation knowledge and skills in electronic classrooms with state-of-the-art projection systems. They learn about difficult three-dimensional air combat maneuvers, strike tactics and weapons delivery through computer-aided instruction that features sophisticated animation. Flying skills are introduced and practiced in high-fidelity visual simulators that include training in instruments, visual/contact, formation flight, weapons, and carrier approaches, all in a variety of weather conditions and day/night scenarios.

The T45TS also includes a computerized management system that coordinates activities such as scheduling, student tracking, record-keeping and report-generating at the command level. The system integrates and networks all elements of the T45TS to make planning and decision-making easier, more flexible and more efficient. Boeing produces the aircraft's forward fuselage and horizontal stabilators and performs final assembly and production flight-test. BAE Systems produces the center and aft fuselage sections and wings, and Rolls-Royce provides the engine.

Virtual Mission Training

Boeing is currently under contract to develop the Virtual Mission Training System (VMTS), an economical synthetic radar capability that will integrate realistic tactical radar training into the T45TS. VMTS simulates a tactical radar with air-to-air and air-to-ground modes as well as simulated weapons and simulated electronic warfare. These functions can be networked between the participating aircraft and instructor ground stations that control the mission presentation. VMTS will provide in-flight training in the use of radar and weapons against virtual enemy aircraft and actual aircraft participating in the exercise.

To date, the Boeing Company has delivered 214 T-45 Goshawks to the U.S. Navy, with a total of 221 currently on contract.

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