Training for the Future—In the Air and On the Ground

By Ens. A. Lodhi

The next millennium will usher in a new era of aviation training for both the Navy and the Air Force when the Joint Primary Aircraft Training System (JPATS) becomes operational. It comprises a complete flight instruction package common to both services, including ground-based training devices and a state-of-the-art aircraft platform, the T-6A Texan II.

Navy and Air Force students will train for the future in the T-6A Texan II, which accommodates occupants in a wide range of physical sizes.

The system will provide undergraduate flight training at Naval Air Stations Corpus Christi, Texas, Pensacola, Fla., and Whiting Field, Fla., and five Air Force bases—Vance in Oklahoma, Columbus in Mississippi, and Sheppard, Randolph and Laughlin in Texas. The Joint Primary Aircraft Training System will give entry-level aviation students the skills they need to complete primary pilot training and successfully progress to mission-specific training tracks: USAF bomber/fighter (T-38 Talon);
The T-6A Texan II will phase in as a replacement for the Navy T-34C Turbo-Mentor and the Air Force T-37B Tweet primary trainer aircraft. This low-wing plane, approved for night-and-day visual and instrument flight rules operation, provides better performance and significant improvements in training effectiveness, safety, cockpit accommodations and operational capabilities over present aircraft.

The T-6A Texan II’s flight limits—from 7 positive to 3.5 negative Gs—combine with exceptional takeoff, landing, aerobatic and formation-flying characteristics to make the T-6A an outstanding trainer. To handle its impressive rate of climb—more than 4,000 feet per minute at a maximum speed of 310 knots—the T-6A uses a single power-control lever for precise airspeed control. Its single Pratt & Whitney turboprop engine generates 1,110 shaft horsepower for the aircraft’s maximum weight of 6,300 pounds. Two digital systems help the pilot control the torque generated by the four-blade propeller. The first is the power management unit, which controls all the functions of the engine including propeller blade angle and provides linear, jet-like power response. The second, a rudder trim aid device, prepositions the rudder trim tab to compensate for aircraft torque, airspeed, altitude and pitch rate, so the pilot needs to make only minor corrections for correct rudder trim.

The Texan II’s cockpit is designed to accommodate pilots of many sizes. Its step-down tandem design allows the rear occupant to sit slightly higher, significantly improving visibility, and it is pressurized to allow operations up to 31,000 feet. Environmental controls provide comfortable conditions whether it is hot and humid on the deck or extremely cold at altitude.

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The T-6A Texan II’s cockpit features an uncluttered instrument console with high-resolution, animated, three-dimensional graphics depicting aircraft systems and functions. Outside the classroom, other training aids come into play, namely, procedures trainers that teach the physiological basics—proper ejection seat and parachute use, and cockpit orientation—before a student gets into the aircraft or the simulators.

Three flight training devices place students in a single-seat, simulated cockpit to prepare them for many aspects of actual flight. The operational flight trainer—a domed, high-fidelity equipped simulator with five...
high-definition projectors providing a 70 by 270 degree field of view—allows students to feel like they are flying the Texan II. The less-sophisticated instrument flight trainer uses a single channel display to provide out-of-cockpit cues to teach in-flight instrument procedures. The unit training device, with no video interface, teaches normal and emergency aircraft procedures.

The joint nature of this primary training program means that Navy student pilots will be training at Air Force facilities, and vice versa, following the same curriculum. An integrated network—the Training Integration Management System (TIMS)—will link the five Navy and seven Air Force training bases together, allowing each service to track the progress of their students regardless of the training site. TIMS will administer and score tests, retain student progress reports and evaluations, and schedule advancement through the curriculum based on student performance. Students, instructors and the headquarters of the Navy and Air Force training commands can all use the system to track student progress.

The Joint Primary Aircraft Training System is more than just an airplane or a simulator. It combines the best of new technology in the air and on the ground so that the training commands of both services can provide the best training for their future jet pilots.