

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

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.

platform, the T-6A *Texan II*.

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 *Texan II's* instrument panel features digital, liquid crystal displays, with mechanical backups of major elements.

USN strike (T-45 *Goshawk*); USAF airlift/tanker (T-1A *Jayhawk*); USN maritime (T-44 *Pegasus*); or USAF/USN helicopter. It also will support joint Navigator and Naval Flight Officer training at NAS Pensacola, Fla.

In the Air . . .

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 *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 air-speed 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.

The T-6A's cockpit features an uncluttered instrument console with digital avionics. Major liquid crystal displays have mechanical backups in case of emergency. All gauges required for instrument flight are displayed on top of the instrument con-

sole, improving the pilot's scan and reducing workload in the cockpit. For additional safety, a collision warning system provides critical information on the proximity of other aircraft.

The *Texan II's* safety features are comparable to those of operational fighters. The Martin-Baker emergency egress seats can be set for either individual ejection or command ejection. When command eject is selected, the rear seat leaves the aircraft four-tenths of a second before the front seat. Each ejection seat has its own oxygen supply and survival equipment for ejection over land or water. Occupants of the T-6A also enjoy enhanced bird-strike protection; the canopy and windshield can withstand a four-pound impact at 270 knots, providing a greater margin of safety during low-level flights and landings.

The first production aircraft will arrive at Randolph AFB, Texas, in May 1999, where a six-month, multi-service operational test and evaluation effort will take place. The Navy plans to purchase 361 aircraft, with the first *Texan IIs* arriving in FY 2003 at NAS Whiting Field, Fla., followed by NAS Pensacola, Fla., and NAS Corpus Christi, Texas.

. . . and On the Ground

The Joint Primary Aircraft Training System would not be complete without its ground-based training component. A student's first introduction to flight training will be learning the basics from an instructor, in a classroom setting, utilizing the latest computer technology to illustrate aircraft capabilities. The computer-aided instruction classroom uses interactive computerized courseware 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



Above, the T-6A is designed for ease of maintenance. Left, safety features include Martin-Baker ejection seats and a canopy that provides enhanced bird-strike protection.

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. ✪

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