

## JOINT PRIMARY AIRCRAFT TRAINING SYSTEM (JPATS)



### **Joint AF/Navy ACAT IC Program**

Total Number of Systems:	782
Total Program Cost (TY\$):	\$4287M
Average Unit Cost (TY\$):	\$5M
Full-rate production:	2QFY01

### **Prime Contractor**

Raytheon Aircraft Company

### **SYSTEM DESCRIPTION & CONTRIBUTION TO JOINT VISION 2020**

The Joint Primary Aircraft Training System (JPATS) is a set of primary flight training devices tailored to meet U.S. Air Force (USAF) and U.S. Navy (USN) aircrew requirements. The principal JPATS mission is to train entry-level USAF/USN student pilots in primary flying skills to a level of proficiency at which they can transition into an advanced pilot training track leading to qualification as military pilots, navigators, and Naval Flight Officers. JPATS is designed to replace the USAF T-37B and USN T-34C aircraft and their associated Ground-Based Training Systems (GBTS).

The Joint Primary Aircraft Training System consists of the T-6A Texan II air vehicles, simulators and associated ground-based training devices, a training integration management system, instructional courseware, and contractor logistics support. The Services will acquire common aircraft and the remaining components will be as common as possible. Logistics support will be tailored to each Service's maintenance concept.

The ground and air components of JPATS support the *Joint Vision 2020* objective of preparing joint warriors to meet the challenges of future battlespaces by ensuring that they are properly trained using a common training platform and curriculum.

## **BACKGROUND INFORMATION**

In December 1990, the Joint Requirements Oversight Council validated the JPATS Mission Need Statement. Operational requirements were subsequently codified in the JPATS Operational Requirements Document (ORD). JPATS was designated a Defense Acquisition Pilot Program in the 1994 Federal Acquisition Streamlining Act, becoming the first aircraft program to be selected.

An EOA was conducted during the Source Selection Flight Evaluation from July-October 1994 at Wright Patterson AFB. Seven candidate aircraft were evaluated, each completing 13 flights. Milestone II was held in August 1995, and the Raytheon Corporation was awarded contracts for Lots 1 and 2, with additional priced options through Lot 8 in February 1996. A Milestone II TEMP was approved in July 1995. The ORD was signed in December 1996 and a draft ORD, dated April 2000, is currently in coordination. Following a source selection process conducted by Raytheon, the GBTS subcontract was awarded to the Flight Safety Services Corporation in April 1997.

Aircraft tests have included developmental testing by Raytheon, Qualification Test and Evaluation (QT&E) addressing joint service requirements led by the Air Force Flight Test Center, and Federal Aviation Administration (FAA) certification of commercial components. In March 1997, DOT&E approved a plan for a three-phase OA during QT&E. The first phase of the OA was completed in May 1997. It focused on four key areas: (1) effectiveness and suitability; (2) programmatic voids; (3) program documentation; and (4) the ability to support the aircraft Multi-Service Operational Test and Evaluation (MOT&E). Flight assessment consisted of ten flights and 16 flight hours, conducted from April 22-May 1, 1997, in a non production-representative prototype aircraft. A human factors ground assessment, conducted from May 6-7, 1997, involved 13 Air Force and 15 Navy pilots. Both assessments were conducted at Raytheon Aircraft Company.

Phase II of OA flight testing began in January 1998, with four of ten planned flights completed in the prototype aircraft. Production delays on the EMD article delayed the first flight until July 1998. The remaining six flights of Phase II were deleted due to prototype unavailability. Developmental testing proceeded. Phase III of the OA was completed in April 1999. The T-6A aircraft was determined to be potentially operationally effective and suitable.

An updated TEMP was approved in January 1999. The TEMP was revised to reflect changes in the ORD, delays in the development and production schedules, and updated GBTS information following selection of a GBTS contractor Flight Safety Systems. That revision contained a more detailed plan for testing the requirements of all GBTS components and the full range of air vehicle missions described in the ORD.

Delays in achieving FAA certification resulted in a breach of the Acquisition Program Baseline schedule so the program was re-baselined in February 1999. At that time, the Milestone III date was moved from January 2000 to June 2000. Subsequently, it was further delayed to February 2001 because of engine anomalies and an oil cooler rupture. Delays in the development of three key Aircrew Training Devices (ATDs) also delayed their readiness for testing. The start dates of component MOT&E for both the T-6A and the ATDs were moved correspondingly.

## **TEST & EVALUATION ACTIVITY**

The TEMP is currently in revision to support the Milestone III proposed for February 2001.

The AFOTEC test team has been on-site at Randolph AFB conducting MOT&E(A) for the T-6A and in the Flight Safety plant conducting MOT&E(I) for the ATDs. MOT&E(A) consisted of approximately 300 flight hours flown by experienced instructor pilots from the USAF using command (AETC) and operational test pilots from AFOTEC and COMOPTEVFOR. The Joint Primary Pilot Training (JPPT) course syllabus was the basis for mission profiles. Common student errors, those mistakes made by inexperienced students, were employed to determine the viability of the T-6A as a primary student trainer. In addition, deficiencies identified in previous tests were re-evaluated. MOT&E (A) commenced in June 2000. Testing was completed in November 2000.

MOT&E(I), an in-plant operational assessment (OA) of the GBTS, was performed in September 2000. Eighty-three deficiencies were identified and one safety issue was highlighted.

In June 2000, a change in the original operational test was proposed by the Services. Initial plans called for an end-to-end, system-level test to be conducted during the System Level Formative Evaluation (SLFE, a DT&E event) for the integrated GBTS components, scheduled for spring 2001. A proposal to delay the system-level OT&E to Moody AFB in conjunction with the first class of students in June 2001 was proposed. That proposal was accepted in principle. Details will be delineated in the TEMP.

## **TEST & EVALUATION ASSESSMENT**

The environmental control system is still deficient. Adequate cooling of the cockpit has not been demonstrated using a production-representative system in typical operational environments nor does it meet system specifications. Cockpit temperatures near 100 degrees farenheight have been recorded. Four problems are being examined: (1) rapid system cycling; (2) distribution of air in the cockpit areas; (3) reducing the temperature of cooled air; and (4) improving control of louvers for directing airflow. The contractor has determined that the system evaporator is performing well below its anticipated efficiency. Flow through the condenser may be deficient, but that cannot be confirmed until the evaporator problem is resolved.

Although a Milestone III production decision has been scheduled fro February 2001, there are still contractor developmental tests to be completed. Those developmental tests include an icing transition demonstration that would clear the aircraft to fly through 5,000 feet of light rime ice, and fatigue and durability testing (originally prescribed before the award of production Lot 7, now a prerequisite for the Lot 8 award).

The SLFE for the integrated GBTS components is now scheduled to start in January 2001. It will evaluate, for the first time, whether the suite of JPATS GBTS components has the capability to operate as an integrated system. A dedicated period of MOT&E is planned at Randolph AFB in conjunction with the SLFE. This will represent the first opportunity to evaluate, in part, the integrated JPATS, including the aircraft and GBTS, from an operational perspective minus actual students.

The system-level MOT&E(S) at Moody AFB will consist of 17 Air Force and Navy students. Those students will follow the JPPT course syllabus, approximately five to six months in duration.

However, in order to accomplish intended training, all required assets must be in place. It is not apparent that the GBTS will be mature enough nor will there be sufficient numbers of fully qualified instructor pilots by the scheduled start in June 2001. Fleet aircraft reliability is also questionable at this time.

In August 2000 an AETC T-6A aircraft crashed near Randolph AFB. The aircraft was owned by the using command and operated by two of their experienced pilots. One pilot was a T-6A pilot and the other was on an introductory T-6A flight. Both pilots ejected and survived. The Safety Investigation Board report has been released to a limited audience listing a number of recommendations for suggested improvements. The Accident Investigation Board findings indicated that the crash was due to the pilot inadvertently shutting the aircraft down.

## **CONCLUSIONS**

JPATS is the first aircraft pilot program for acquisition reform using a streamlined approach to theoretically reduce the acquisition time required to obtain and field a system. Developmental testing is still not complete, and while operational testing was ongoing, aircraft were delivered to the user. Delivery of any system to the user prior to completion of appropriate testing is never a good situation. The process by how a system is chosen to be a commercial acquisition candidate should be reviewed.

Since the SLFE, MOT&E(O), and the dedicated system-level MOT&E(S) will occur after the proposed Milestone III in February 2001, a supplemental DOT&E B-LRIP report will be sent to Congress upon completion of the system-level test.