

# AIR FORCE PROGRAMS

## C-17A Globemaster III Aircraft

### SUMMARY

- Based upon Initial Operational Test and Evaluation (IOT&E) completion in 1995, DOT&E evaluated the C-17 as operationally effective (with limitations) and operationally suitable.
- DOT&E approved an updated C-17 Test and Evaluation Master Plan (TEMP) in October 2004. The updated TEMP better addresses continuing flight tests, particularly the follow-on flight test program at Edwards Air Force Base, California, and operational testing by the Air Mobility Command.
- DOT&E is monitoring C-17 follow-on tests that verify correction of operational limitations.



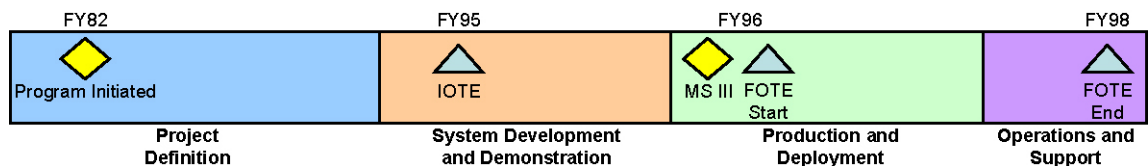
*The C-17 delivery of outsize combat cargo and equipment directly into austere airfields.*

### SYSTEM DESCRIPTION AND MISSION

The C-17 is a four-engine turbofan aircraft capable of airlifting large payloads over intercontinental ranges without refueling. It is intended to allow delivery of outsize combat cargo and equipment directly into austere airfields. The C-17 is required to deliver passengers and cargo between continents, provide theater and strategic airlift in both air/land and air/drop modes, and augment aeromedical evacuation and special operations missions.

The Air Force conducted IOT&E of the C-17 in three phases from May 1992 to August 1995. Based upon results of IOT&E and Live Fire Test and Evaluation (LFT&E), DOT&E submitted an OT&E/LFT&E report to Congress to support the full-rate initial production decision in November 1995. The report assessed the operational effectiveness and suitability of the aircraft to conduct operational missions within the context of the existing airlift system. We evaluated the C-17 as operationally effective (with limitations) and operationally suitable. Combined developmental test and evaluation and follow-on test and evaluation involving the contractor, the Air Force Flight Test Center, the Air Mobility Command, and the Air Force Operational Test and Evaluation Center have occurred on a nearly continuous basis since the production decision in 1995.

### TEST AND EVALUATION ACTIVITY



DOT&E is monitoring C-17 follow-on tests that verify correction of operational limitations. These include the Onboard Inert Gas Generating System (OBIGGS), introduction of the composite material horizontal tail, improved station-keeping equipment for formation flying, an extended range fuel containment system, crew protection armor, liquid oxygen bottle design, and changes related to the Strategic Brigade Airdrop mission.

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One important survivability upgrade still in progress involves improvements to the OBIGGS. FY03 funding supported the initiation of a two-stage effort to improve OBIGGS. In stage one, reliability upgrades are being implemented for high failure rate items in the current OBIGGS system. In stage two, OBIGGS will be redesigned for improved reliability. The first production aircraft with the redesigned OBIGGS is aircraft P-138, planned for delivery in FY05. Aircraft with the original design of OBIGGS may not be retrofitted with the redesigned OBIGGS.

Developmental test and evaluation will continue at Edwards Air Force Base as part of the follow-on flight test program. The Air Mobility Command's test and evaluation squadron remains involved through ongoing communication with the program office and the combined contractor/government C-17 Test Team resident at Edwards Air Force Base. For future block upgrades, the Air Mobility Command will perform Force Development Evaluation, and the Air Force Operational Test and Evaluation Center will participate if full-scale follow-on operational test and evaluation events are required.

The C-17 aircraft are delivered in a block configuration with each block containing approximately fifteen aircraft. Block XV fielded the Terrain Collision Avoidance System Overlay improvement along with station-keeping equipment used in flying formation. Testing is scheduled to complete in 2004. The Block XVI will contain OBIGGS II, an avionics modernization package, and a weather radar modification with testing to complete in 2006. Additional enhancements, modifications, and corrections to existing deficiencies will happen concurrently and include a fuel system retrofit, main landing gear deficiency corrections, and a wheel brake and tire cost saving initiative. Detailed developmental and operational test planning is underway.

There were no LFT&E activities during FY04. The Air Force plans to conduct Composite Horizontal Tail LFT&E during the 1QFY05 that will complete the vulnerability testing on the current version of the C-17.

## TEST AND EVALUATION ASSESSMENT

Only one dedicated test asset existed prior to this year (aircraft T-1). A lack of test assets has been a limitation since requests for flight test time on operational aircraft compete with high operational mission demands. Due to the combined efforts from the Program Executive Office, program office, the flight test center, the test team, and the user, an additional production representative aircraft will be provided to the test community to achieve a greater tempo of testing.

DOT&E approved the C-17 TEMP in October 2004. The updated TEMP better addresses continuing flight tests, particularly the follow-on flight test program at Edwards Air Force Base, California, and operational testing by the Air Mobility Command. The TEMP also defines the future LFT&E program. Specific operational test plans will also be submitted for DOT&E approval as defined in the TEMP.