

KC-46A

Executive Summary

- The KC-46A contract is firm-fixed-price with incentive for engineering and manufacturing development. The Air Force awarded the contract to the Boeing Company in February 2011.
- The DOT&E review of the post-Milestone B draft Test and Evaluation Master Plan (TEMP) indicates the KC-46A test program it describes is not executable.

System

- The KC-46A aerial refueling aircraft is the first increment (179) of replacement tankers for the Air Force's fleet of KC-135 tankers (more than 500). The KC-46A will use a modified Boeing 767-200 commercial airframe with numerous military and technological upgrades. The KC-46A is intended to provide boom (pictured above) and probe-drogue refueling capabilities on every sortie. The Air Force intends to equip the KC-46A with an air refueling receptacle so that it can also receive fuel from other tankers, including the legacy aircraft.
- The KC-46A will be designed to have significant palletized cargo and aeromedical capacities, defensive systems, chemical/biological/radiological/nuclear survivability, and the ability to host communications gateway payloads.

Mission

- Units equipped with the KC-46A will perform air refueling to accomplish six primary missions: nuclear operations support, global strike, air bridge support, aircraft deployment, theater



support, and special operations support. Units will use the KC-46A for airlift, aeromedical evacuation, emergency aerial refueling, air sampling, and support of combat search and rescue.

- Units equipped with the KC-46A will be capable of operating in day/night and adverse weather conditions over vast distances to support U.S. joint, allied, and coalition forces. The units will have the necessary navigation and communication equipment for worldwide operations, including secure line-of-sight and beyond line-of-sight tactical datalink capability.

Major Contractor

The Boeing Company, Commercial Aircraft in conjunction with Defense, Space & Security – Seattle, Washington

Activity

- The KC-46A contract is firm-fixed-price with incentive for engineering and manufacturing development. The Air Force awarded the contract to the Boeing Company in February 2011.
- Developmental, operational, defensive systems, live fire, and integrated survivability test planning are ongoing.

Assessment

The DOT&E review of the post-Milestone B draft TEMP indicates the KC-46 test program is not executable. Specifically, the planned test program includes the following deficiencies:

- The military flight-hours-per-aircraft-per-month that are proposed in the TEMP exceed the historical averages that the Air Force and Navy have experienced during other large aircraft test programs. Disregarding Federal Aviation Administration (FAA) Amended Type Certification, the 42 flight-hours-per-aircraft-per-month for military testing is too aggressive for flight tests that are more specialized, higher

- risk, and more resource-intensive than FAA certification. Military testing experience with aircraft including the P-8, C-17, C-130J, C-27, and C-5 reflects fewer than 30 flight-hours-per-aircraft-per-month on average.
- Planned effectiveness for military flight testing substantially exceeds the relevant historical experience. The planned 15 percent re-fly rate for military test points is optimistic. That factor may be appropriate for commercial aircraft flight testing; however, it is not realistic for flight testing of military aircraft, including those derived from commercial aircraft. The P-8 (a B-737 derivative) is currently demonstrating a 45 percent re-fly rate for military test points. An average re-fly rate of 45 percent combined with 30 flight-hours-per-aircraft-per-month would extend the projected 17-month schedule for military testing by at least 4 months, a best case estimate because it assumes all 4 test aircraft would be available and equally capable of conducting the additional flight testing needed.

AIR FORCE PROGRAMS

- The proposed schedule has no calendar time allotted for correction of discrepancies and/or deficiencies discovered during developmental testing prior to the planned start of operational testing. Historical experience indicates that some deficiencies will be discovered that need to be corrected prior to conducting operational testing.
- The contract identifies three phases of engineering and manufacturing development devoted to Air Force and Navy receiver aircraft qualifications: (1) five receivers including the KC-46 before Milestone C; (2) an uncertain number during military developmental test (the number, type, and flight hours needed for receivers are currently unknown because of uncertainty regarding extensive data collection requirements for KC-46 simulators); and (3) as many receivers as possible during a maximum of 750 flight hours after IOT&E, to be accomplished in parallel with the correction of deficiencies discovered during developmental and operational testing. Previous receiver certifications have required control law changes for the refueling boom and/or procedural modifications for boom or drogue operations. Time for such changes is not evident in the developmental test program.
- The draft TEMP allocates only four months for operational testing. The proposed 750 operational test flight hours will

require approximately 47 flight-hours-per-aircraft-per-month using 4 aircraft, another aggressive plan. However, those 750 flight hours are inadequate to assess KC-46 suitability using operational personnel and flying a full complement of operationally representative missions. To achieve about 75 percent probability of demonstrating the required “break rate” during IOT&E, 1,250 flight hours are needed. At the assumed flight rate, that would require 2.7 additional calendar months. At a more typical 30 flight-hours-per-aircraft-per-month, IOT&E would require an additional 4 months. This extension is additive to the minimum 4-month extension of the military flight test program discussed above.

Recommendations

- Status of Previous Recommendations. This is the first annual report for this program.
- FY11 Recommendation.
 1. The Air Force should provide a TEMP that contains a realistic schedule using historical military flight test parameters.