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Forces, Committee on Armed Services,
House of Representatives

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MILITARY AIRCRAFT

Information on Air Force Aerial Refueling Tankers

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Highlights

Highlights of [GAO-03-938T](#), a testimony before the Subcommittee on Projection Forces, Committee on Armed Services, House of Representatives

Why GAO Did This Study

Both the Congress and the Department of Defense are concerned about the age of the U.S. aerial refueling fleet and its potential impact on the military services' ability to meet operational requirements. Aerial refueling provides a key capability that is essential to the mobility of U.S. forces. At present, the Air Force is in the early stages of planning for modernizing its aging fleet.

In this testimony, GAO was asked to present its initial observations on

- (1) the status of the KC-135 fleet, including its age, projected life limits, and mission capable rates (i.e., the percent of time on average that the aircraft are available to perform their assigned mission); and
- (2) Air Force aerial refueling requirements.

www.gao.gov/cgi-bin/getrpt?GAO-03-938T.

To view the full product, including the scope and methodology, click on the link above. For more information, contact Neal P. Curtin, (202) 512-4914 or curtinn@gao.gov.

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Information on Air Force Aerial Refueling Tankers

What GAO Found

The Air Force fleet of KC-135 aircraft (which, at 543 aircraft, represents the bulk of U.S. refueling capability) is an average of about 42 years in age. The Air Force projects that the KC-135 aircraft have between 36,000 and 39,000 lifetime flying hours; according to the Air Force, only a few KC-135s are projected to reach these limits before 2040, although at that time some of the aircraft would be close to 80 years old. KC-135s are being flown an average of about 435 hours per year, on average, since September 2001. As the fleet has aged, the aircraft have become expensive to maintain, averaging about \$4.6 million per year in total operations and support costs for the least capable aircraft. Those costs include personnel, fuel, maintenance, and spare parts. KC-135s in the active duty forces are generally meeting the 85 percent goal for mission capable rates; rates were lower for aircraft in the reserve forces, ranging from 70 to 78 percent. The Air Force Reserve and Air National Guard operate over half of the KC-135s.

In a 1996 report, GAO pointed out that the aging fleet of KC-135s would eventually need replacement and that the Department of Defense needed to start planning for the recapitalization of the fleet. At that time, the Department responded to our report saying that the current fleet would meet requirements "for the foreseeable future" and planned to begin procurement of new tankers around fiscal year 2013. In 2000, the Air Force conducted a study called the Tanker Requirements Study-05, but it was never formally completed. Therefore, DOD does not have a current, validated study on which to base the size and composition of either the current fleet or a future aerial refueling force. There is no effort currently under way to update the Air Force study or to conduct an analysis of alternatives for tanker modernization. The Air Force indicated recently that it plans to conduct a new Tanker Requirements Study in the fiscal year 2004-2006 time frame.

KC-135 Aircraft Refueling an F-16



Source: U.S. Air Force.

Mr. Chairman and Members of the Subcommittee:

I appreciate the opportunity to appear before you today to discuss the important subject of aerial refueling for military aircraft. Aerial refueling provides a key capability in enhancing the mobility of U.S. forces. The Air Force is beginning planning for the modernization of its aging aircraft fleet.

As you requested, my statement focuses on the following issues:

- KC-135 fleet status, including mission capable rates, age, and projected life limits; and
- Air Force aerial refueling requirements, including GAO's observations and the results of GAO's 1996 Air Force air refueling study.

My statement is based on two published GAO reports¹ and on our on-going work for the Readiness Subcommittee of the House Armed Services Committee. Because of the relatively short notice for the hearing, I have kept my prepared statement short, focusing on some key issues that will help update you with basic background information on the tanker fleet, as your office had requested. As you know, DOD is in the final stages of negotiating a lease agreement with Boeing for 100 new 767 aircraft that will be modified for use as tanker aircraft and replace part of the current fleet. Because details of that agreement have not been made public or provided to us, I am not in a position today to discuss issues related to the lease.

Status of Aerial Refueling Fleet

While numerous military aircraft provide refueling services, the bulk of U.S. refueling capability lies in the Air Force fleet of 59 KC-10 and 543 KC-135 aircraft. These are large, long-range aircraft that have counterparts in the commercial airlines, but which have been modified to turn them into tankers. The KC-10 is based on the DC-10 aircraft, and the KC-135 is similar to the Boeing-707 airliner. The KC-10 aircraft are relatively young, averaging about 20 years in age. Consequently, much of the focus on modernization of the tanker fleet is centered on the KC-135s. These were built in the 1950s and 1960s, and now average about 42 years in age.

¹ U.S. General Accounting Office, *Air Force Aircraft: Preliminary Information on Air Force Tanker Leasing*, [GAO-02-724R](#) (Washington, D.C.: May 15, 2002) and *U.S. Combat Airpower: Aging Refueling Aircraft Are Costly to Maintain and Operate*, [GAO/NSIAD-96-160](#) (Washington, D.C.: August 8, 1996).

Because of their large numbers, they are the mainstay of the refueling fleet, and successfully carrying out the refueling mission depends on the continued performance of the KC-135s. Thus, recapitalizing this fleet of KC-135s will be crucial to maintaining aerial refueling capability, and it will be a very expensive undertaking.

Let me provide some additional background information on the KC-135 fleet:

- There are two basic versions of aircraft, designated the KC-135E and KC-135R. The R model aircraft have been re-fitted with modern engines and other upgrades that give them an advantage over the E models. The E model aircraft on average are about 2 years older than the R models, and the R models provide more than 20 percent greater refueling capacity per aircraft.
- The E models are located in the Air National Guard and Air Force Reserve. Active forces have only R models. Over half the KC-135 fleet is located in the reserve component.
- While the KC-135 fleet averages over 40 years in age, the aircraft have relatively low levels of flying hours. The Air Force projects that E and R models have lifetime flying hours limits of 36,000 and 39,000 hours, respectively. According to the Air Force, only a few KC-135s would reach these limits before 2040, but at that time some of the aircraft would be about 80 years old.
- Flying hours for the KC-135s averaged about 300 hours per year between 1995 and September 2001. Since then, utilization is averaging about 435 hours per year.
- According to Air Force data, the KC-135 fleet had a total operation and support cost in fiscal year 2001 of about \$2.2 billion. The older E model aircraft averaged total costs of about \$4.6 million per aircraft, while the R models averaged about \$3.7 million per aircraft. Those costs include personnel, fuel, maintenance, modifications, and spare parts.

By most indications, the fleet has performed very well during the past few years of high operational tempo. Operations in Kosovo, Afghanistan, Iraq, and here in the United States in support of Operation Noble Eagle were demanding, but the current fleet was able to meet the mission requirements. Approximately 150 KC-135s were deployed to the combat theater for Operation Allied Force in Kosovo, about 60 for Operation Enduring Freedom in Afghanistan, and about 150 for Operation Iraqi Freedom. Additional aircraft provided “air bridge” support for movement of fighter and transport aircraft to the combat theater, for some long-range bomber operations from the United States, and, at the same time, to help

maintain combat air patrols over major U.S. cities since September 11, 2001.

Data on the mission capable rates for the KC-135 fleet are shown in the following table. Mission capable rates measure the percent of time on average that the aircraft are available to perform their assigned mission. The goal for KC-135s is an 85 percent rate; the table shows the number of aircraft in the different components along with the mission capable rates for the period October 2001 through March 2002.

Table 1. Mission Capable Rates for KC-135 Aircraft

Component	Number of aircraft	Mission capable rate (percent)
Active	245	85
Reserve R models	52	78
National Guard R models	115	78
Reserve E models	16	70
National Guard E models	115	76

Source: Air Force data.

For comparison purposes, the KC-10 fleet is entirely in the active component, and the 59 KC-10s had an average mission capable rate during the same period of 81.2 percent.

The rest of the DOD refueling fleet consists of Air Force HC- and MC-130 aircraft used by special operations forces, Marine Corps KC-130 aircraft, and Navy F-18 and S-3 aircraft. However, the bulk of refueling for Marine and Navy aircraft comes from the Air Force KC-10s and KC-135s. These aircraft are capable of refueling Air Force and Navy/Marine aircraft, as well as some allied aircraft, although there are differences in the way the KC-10s and KC-135s are equipped to do this.

DOD’s Tanker Requirements and GAO’s 1996 Air Force Refueling Study

In our 1996 report, we pointed out that the aging fleet of KC-135s would eventually need replacement and that DOD needed to start planning for the recapitalization of the fleet. We recommended that DOD consider looking at dual-use aircraft—an aircraft that could be used as a tanker or as a cargo carrier, depending on mission requirements. The KC-10 fleet is actually used in this way now. In response to our recommendation, DOD agreed that it would consider such an option when it did a comprehensive analysis of tanker requirements and alternatives. However, the department also stated that the current fleet would meet requirements for “the

foreseeable future.” Moreover, in its response to our report, DOD stated that “While the KC-135 is an average of 35 years old, its airframe hours and cycles are relatively low. With proper maintenance and upgrades, we believe the aircraft may be sustainable for another 35 years.” At the time of our report, the Air Force had deferred the start of KC-135 replacement from fiscal year 2007 to 2013. In discussions with the Air Force last year, officials indicated that they had moved up that timetable to fiscal year 2009.

DOD does not have a current, validated study on which to base the size and composition of either the current fleet or a future aerial refueling force. An Air Force study called Tanker Requirements Study-05 (TRS-05) was conducted in 2000, but it was never formally completed nor were its preliminary results released. Drafts of the study identified a shortfall in tanker capability, but the study was based on the old strategy of supporting two major theater wars. There is no effort under way that we know of to update the TRS-05 study and release it or to conduct an analysis of alternatives for tanker modernization. The Air Force indicated recently that it planned to conduct a new Tanker Requirements Study in the fiscal year 2004-2006 time frame.

Mr. Chairman, this concludes my prepared statement. I would be happy to respond to any questions you or other Members of the Subcommittee may have at this time.

Contacts and Acknowledgments

For future contacts regarding this testimony, please contact me at (202) 512-4914 or Brian Lepore at (202) 512-4523. Individuals making key contributions to this testimony included Joseph J. Faley, Kenneth W. Newell, Tim F. Stone, and Susan K. Woodward.

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