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Refueling Tanker Aircraft: Background and Issues for Congress

The U.S. Air Force operates tanker aircraft to refuel and extend the range of U.S. and allied aircraft during military operations. For example, in June 2025, the Air Force reportedly used "dozens" of tankers to refuel the B-2 bombers that flew from the United States to Iran and back on a mission to strike Iranian nuclear facilities. According to the Air Force, tanker aircraft (or tankers) support a function known as *rapid global mobility* to deploy U.S. aircraft abroad. Air Force doctrine states that aerial refueling "provides the [Joint Force Commander] the ability to maneuver and mass forces to coerce or defeat the enemy at times and places where they are least prepared." According to the service, tankers support several types of refueling operations (see the **text box** below). Since the 2024 retirement of the 1980s-era KC-10 Extender, the Air Force has operated two types of tanker aircraft: the 1950s-era KC-135 Stratotanker and the newer KC-46A Pegasus, which entered service in 2019. The U.S. Navy also uses tanker aircraft, procures air-to-air refueling services from commercial companies, and is developing an uncrewed, carrier-based tanker, the MQ-25 Stingray. Congress regularly expresses interest in the size and composition of the Air Force refueling tanker fleet, for example, by setting policy related to fleet size and authorizing and appropriating funding for such aircraft in annual defense authorization and appropriations legislation, respectively.

Types of Refueling Operations

Nuclear. Multiple tankers refueling bombers and communications aircraft supporting a nuclear operation.

Global Strike. Multiple tankers refueling U.S.-based aircraft flying on a long-range strategic operation.

Airbridge. A refueling relay involving multiple tankers to enable movement of aircraft between distant locations.

Aircraft deployment. A single tanker refueling fighter aircraft moving from base to base in support of contingencies.

Theater. A single tanker circling a combat zone to refuel tactical aircraft.

Special operations. Refueling support for Special Operations Forces in an operational area.

KC-135 Stratotanker

The KC-135 (see **Figure 1**) has served as the Air Force's main aerial refueling tanker since 1957. The KC-135 also provides fuel to Navy, Marine Corps, and allied nation aircraft. The KC-135 passes fuel using a device called a boom, which an operator on the tanker aircraft maneuvers into a receptacle on the receiver aircraft. The boom can be fitted with a hose-like drogue adapter to refuel naval and allied aircraft equipped with refueling probes. KC-135s were manufactured through 1965 and have since been upgraded with digital displays, improved communications systems, and other cockpit advances. The Air Force has also modified KC-135s with specialized equipment to fly different types of missions: RC-135s conduct special reconnaissance, and WC-135s sample the atmosphere for nuclear radiation. As of FY2025, the Air Force reportedly has a total of 376 KC-135s, including 151 KC-135s on active duty, 163 in the Air National Guard, and 62 in the Air Force Reserve. The Air Force is continuing to upgrade certain KC-135 aircraft with improved communications and survivability systems, while retiring others as it receives new KC-46As.

Figure 1. KC-135 Stratotanker

Source: U.S. Air Force.

KC-46A Pegasus

In 2010, the Air Force planned to recapitalize its aerial refueling tanker fleet with new aircraft. The initial phase of the effort was to procure 179 KC-46As (see **Figure 2**) starting in 2011 to replace approximately a portion of the existing KC-135 aircraft. The service later increased that number to 183 KC-46As. The Air Force intends for the aircraft to provide greater refueling, cargo, and aeromedical evacuation capabilities compared with the KC-135. The KC-46A has both a boom and built-in centerline drogue system designed to refuel all types of receivers. In 2019, the KC-46A began initial operational test and evaluation. In January 2025, the Department of Defense (DOD) Director of Operational Test and Evaluation stated the program was still addressing major technical deficiencies, including multiple deficiencies with the refueling boom. As of December 2025, the Air Force had received 100 KC-46As from Boeing. From February 2025 to May 2025, following the discovery of cracks in aircraft, the Air Force reportedly paused deliveries while the service inspected the fleet. The Air Force has reportedly considered different approaches to its future tanker fleet—including whether to procure more KC-46s, procure a new tanker based on existing Boeing or Airbus designs (i.e., a "bridge" tanker), or develop and procure by the mid-2030s a more survivable type of tanker known as Next Generation Aerial Refueling System (NGAS). In July 2025, the Air Force reportedly announced that it intended buy up to 75 more KC-46A aircraft (in addition to the 183 planned aircraft), opting not to conduct

a competition for the next phase of its tanker purchases to focus instead on accelerating a plan for NGAS.

Figure 2. KC-46A Pegasus

Source: U.S. Air Force.

Next-Generation Aerial Refueling System (NGAS)

The Air Force has considered several concepts for an NGAS to be available by 2036 and better equipped for operations in contested airspace with more advanced technologies (e.g., stealth, defensive, and communications systems). A 2024 Air Force report to Congress stated that the future Joint Force would likely have similar requirements for the size of the tanker fleet but that such aircraft would face a "more stressing threat environment" (e.g., long-range stand-off weapons). The report stated that future combat aircraft will be designed in conjunction with "concepts for more resilient tanking, including the possibility of a Next Generation Aerial Refueling System (NGAS)." The report envisioned existing tankers needing more advanced communications and connectivity systems to improve resilience in future operational environments.

Connectivity

Air Mobility Command, the Air Force's Major Command (MAJCOM) in charge of the refueling mission, reportedly plans to increase the connectivity of the mobility fleet (i.e., cargo, refueling, and medical evacuation aircraft) to allow both line-of-sight (e.g., radio) and beyond line-of-sight (e.g., satellite) secure communications. According to the Air Force, the tankers' ability to access tactical data links could increase mission success in contested environments by improving survivability, agility, and situational awareness for command-and-control elements and aircrews. The connectivity could provide aircrews with such information as potential threats, fuel availability, and safer landing sites. In addition, tanker aircraft could serve as a backup information conduit for other aircraft in a degraded communications environment.

Selected FY2025 Legislative Actions

The Senate Armed Services Committee, in a report (S.Rept. 118-188) accompanying its version of a National Defense Authorization Act for Fiscal Year 2025 (NDAA; S. 4638), directed the Air Force to submit a report on the planned procurement of commercial aerial refueling services. In slides for its report, the service stated that commercial air refueling can augment support to training and exercises through an existing Navy contract. The Air Force did not plan to request funds for commercial aerial refueling. The Full-Year Continuing Appropriations and Extensions Act, 2025 (P.L. 119-4), provided $111.65 million in FY2025 for the C-135, according to DOD (which is using a secondary Department of War designation, under Executive Order 14347). The legislation also provided $2.78 billion for the purchase of 15 KC-46A tankers, in addition to $102.75 million for modifications and research and development, according to the document. Separately, Congress provided $84 million in the FY2025 reconciliation act (P.L. 119-21) for KC-135 connectivity.

Selected FY2026 Budget Items

- **KC-46A.** The Air Force requested $2.8 billion to purchase 15 KC-46A aircraft. Additionally, the service requested $145.43 million in part to improve KC-46A connectivity so that the tanker aircraft can become "a key joint and coalition communications node."
- **KC-135.** The Air Force requested $124.37 million in discretionary funding for modifications to the KC-135, according to budget documents.
- **NGAS.** The Air Force requested $12.96 million for NGAS RDT&E funding to continue an analysis of alternatives, planning for more survivable connectivity, survivability, and market research.

Section 141 of the FY2026 NDAA (P.L. 119-60) authorized an increase to the mandatory minimum tanker fleet size to 502 aircraft by FY2028. The section authorized KC-135s being replaced by KC-46As to remain in service and be transferred to other air refueling wings. Section 148 directed the Air Force to keep retired KC-10 aircraft in flyable condition. Section 164 limited delivery of KC-46A aircraft until the Secretary of Defense submits to the congressional defense committees certain corrective action plans for major technical difficulties. A negotiated version of a Consolidated Appropriations Act, 2026, would provide $2.75 billion for KC-46A procurement; $131.98 million in RDT&E funding for KC-46A connectivity and other items; $124.37 million in procurement for C-135 modifications; and $11.96 million in RDT&E funding for NGAS, according to the Joint Explanatory Statement for Division A, the Department of Defense Appropriations Act, 2026.

Potential Issues for Congress

Congress may consider whether or not to maintain or adjust the statutory requirement for an overall tanker fleet size of 502 aircraft beginning in FY2029. Members may consider whether or not to retire additional KC-135s, buy more or fewer KC-46A aircraft, develop a future NGAS aircraft that could be crewed or uncrewed, or expand commercial air refueling. A related potential consideration for Members is whether or not to provide funding for KC-135 and KC-46A upgrades, such as communications equipment or survivability equipment to include electronic warfare pods. Members may consider providing additional oversight of technical issues on the KC-46A.

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