

THE FLYING GAS STATIONS
HOW THE KC-135 STRATOTANKER
& THE KC-97 STRATOFREIGHTER SAVED PLANES WHEN THEY WERE IN A “PINCH”

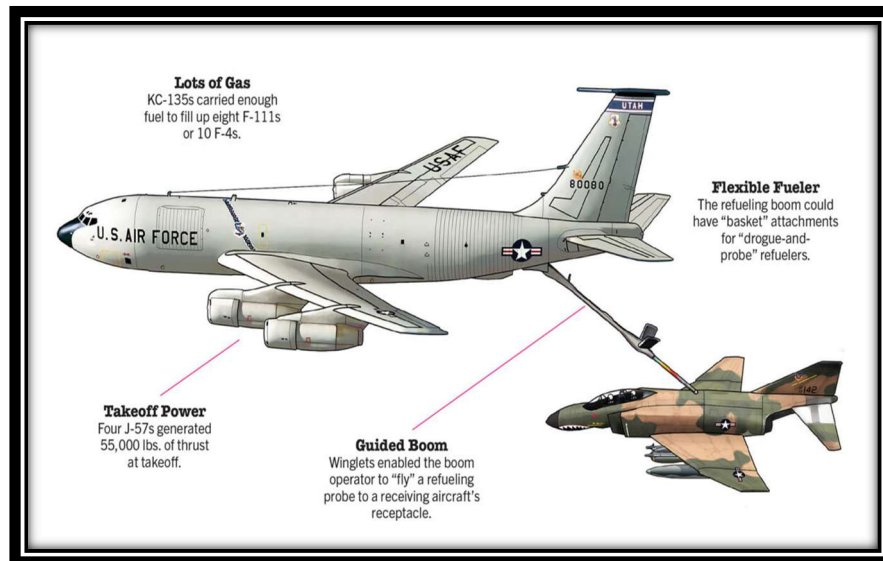
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PART ONE



1957 – Still Flying

In late August 1972, a KC-135 responded to a “mayday” call from a heavily damaged F-4D Phantom rapidly losing fuel. The tanker turned toward the fighter, guided it to rendezvous, and started pumping more fuel than the Phantom was losing. The fighter landed safely 30 minutes later. That unidentified Phantom pilot was one among hundreds saved by aerial refueling during the Vietnam War. Unheralded but not unappreciated, America's tanker crews delivered over 1.6 billion gallons of jet fuel to the attack aircraft, bombers, and fighters of the war. The U.S. Air Force's KC-135 Stratotanker provided most of that fuel.



Refueling a B-52

The KC-135 is based on the Boeing 707-80 commercial airline flight demonstrator. Boeing submitted a tanker variant as part of its bid for the Strategic Air Command's (SAC) 1954 contract for a jet-powered aerial refueling aircraft. Although it lost the bid to Lockheed, Boeing's mature manufacturing process, lower cost, and Lockheed's production delays led the Air Force to order Boeing's tanker. The first KC-135A entered service in June 1957. The last production model left the factory in 1966. A total of 803 were built.

Its swept wings had four engine nacelles mounting Pratt and Whitney J-57-P-59W engines that used water injection to boost thrust during takeoff. It carried 187,500 lbs. (31,250 gallons) of fuel in six wings and four fuselage tanks. The boom operator would "fly" the boom to the receiving aircraft's fuel receptacle or probe. Its boom aft could have a special shuttlecock-shaped drogue mounted to refuel aircraft that require refueling by drogue-and-probe.

Initially intended to support only SAC operations, the KC-135 became the tanker of choice in Indochina as mission distances and Hanoi's air defenses made in-air refueling critical to aircraft survival. Vietnam effectively became the world's first "tanker war." Over 100 KC-135s served in Vietnam, flying 194,687 sorties and conducting 813,878 refuelings. The KC-135 has undergone extensive avionics, communications, and engine upgrades since Vietnam.

It is one of the few aircraft to pass the 60-years-of-service milestone and is expected to continue refueling America's military aircraft through this decade.

KC-135A

Crew: 4

Length: 136ft 3in

Wingspan: 130ft 10in

Max Takeoff Weight: 135,000kgs/ 297,600lbs

Propulsion: 4 x PW J-57-P-59W jet engines

Thrust: 4 x 13,750lbs (for takeoff)

Top Speed: 601mph/522.25kts

Cruise Speed: 552mph/479.7kts

Max Range: 4,000miles/3,478nm

Operational Ceiling: 40,000ft

Introduced: June 1957 - Still in use

Max Fuel for Delivery: 181,000lbs/30,000gallons

PART TWO

BOEING KC-97 STRATOTANKER

THE BOEING KC-97 WAS A UNITED STATES STRATEGIC TANKER AIRCRAFT BASED ON THE BOEING C-97 STRATOFREIGHTER. IT WAS SUCCEEDED BY THE BOEING KC-135 STRATOTANKER (SEE ARTICLE ABOVE)



1950-1978

DESIGN AND DEVELOPMENT

The KC-97 Stratotanker was an aerial refueling tanker variant of the C-97 Stratofreighter (which was itself based on the B-29 Superfortress), greatly modified with all the necessary tanks, plumbing, and "flying boom." The cavernous upper deck was capable of accommodating oversize cargo accessed through a very large right-side door. **In addition, transferrable jet fuel was contained in tanks on the lower deck (G-L models).** Both decks were heated and pressurized for high-altitude operations.

OPERATIONAL HISTORY

The USAF began operating the KC-97 **in 1950. It purchased a total of 816 KC-97s from Boeing,** as opposed to only 74 of the C-97 cargo versions. The KC-97 used piston engines, fueled by aviation gasoline, but it carried jet fuel for its refueling mission. It, therefore, used independent (transfer valves) systems for both types of fuel and was able to transfer its aviation gas 145 to off-load to the receiver in an emergency (known as a "SAVE").

These tankers were vitally important to the worldwide B-47 Stratojet strategic operations. An example was the support of Arctic reconnaissance flights from Thule Air Base in Greenland.



KC97 Refueling a B-47 Stratojet

While it was an effective tanker, the KC-97's slow speed and low operational altitude complicated refueling operations with jet aircraft. B-52s typically lowered their flaps and rear landing gear to slow the aircraft enough to refuel from the KC-97. In addition, a typical B-52 refueling engagement profile would involve a descent that allowed the aircraft pair to maintain a higher airspeed (220-240 knots). In the early 1960s, the Tactical Air Command added J-47 jet pods from retired KB-50 tankers to produce the KC-97L. The jet pods increased performance and made the KC-97 more compatible with jet aircraft. In 1956, SAC began phasing out the KC-97 in favor of the KC-135. KC-97s continued operating with Tactical Air Command, the Air Force Reserve, and the Air National Guard.



KC-97 Refueling a B-52

The KC-97 was finally retired completely in 1978, when the Texas and Utah Air National Guards exchanged their KC-97Ls for C-130s and KC-135s, respectively.

SPECIFICATIONS

Number Built 888

Power Plant - 4 - Pratt & Whitney R-4360-59 Wasp Major radial piston engines (*and*)
2 - General Electric J-47-GE-23 turbojet engines

Weight: Empty 82,490 pounds, Maximum takeoff weight 175,000 pounds

Performance: Maximum speed 375 MPH, Cruising speed 297 MPH, Service Ceiling 30,000 feet, Range 1,350 miles

Crew: 5 Pilot, Copilot, Navigator, Flight Engineer, Boom Operator

Fuel Load: 9,000 Gallons of fuel