

A Look Back...

USAF AERIAL TANKERS OF THE JET AGE: KC-97, KC-135, KC-10 & KC-46



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USAF AERIAL TANKERS OF THE JET AGE

Though the first aerial refueling tests took place in 1929 with C-2A biplane 'Question Mark', the United States Army Air Corps were slow to adopt the concept of in-flight refueling. As the jet age began, the need for longer range from America's jet-powered fighters, bombers and cargo aircraft quickly grew. Early jet engines used vast amounts of fuel and the demand for in-flight refueling became increasingly clear. At first, the USAF



modified many of the aging B-29 and B-50 bombers into tankers as well as constructing refueling variants of the C-97 Stratofreighter in the form of the KC-97. Even with jet engine pods added to their wings, the propeller-driven aircraft could barely hold formation with the latest jets coming into service.

Upon seeing Boeing's newest all-jet airliner design in 1954, the 367-80, which would become the very successful Boeing 707 series, the USAF immediately saw potential for an all-jet tanker aircraft. The KC-135 Stratotanker took to the skies for the first time on August 31, 1956 and it remains in front line service to this day.

The need for longer range and greater fuel and cargo capacity gave birth to the tanker variant of the McDonnell Douglas DC-10, first flown in 1970. The USAF KC-10 Extender offered greater global mobility than the smaller KC-135. Performing its first flight in July 1980 and its first fuel transfer in October 1980, the KC-10 continues to be a backbone for aerial tanker support and airlift around the world.

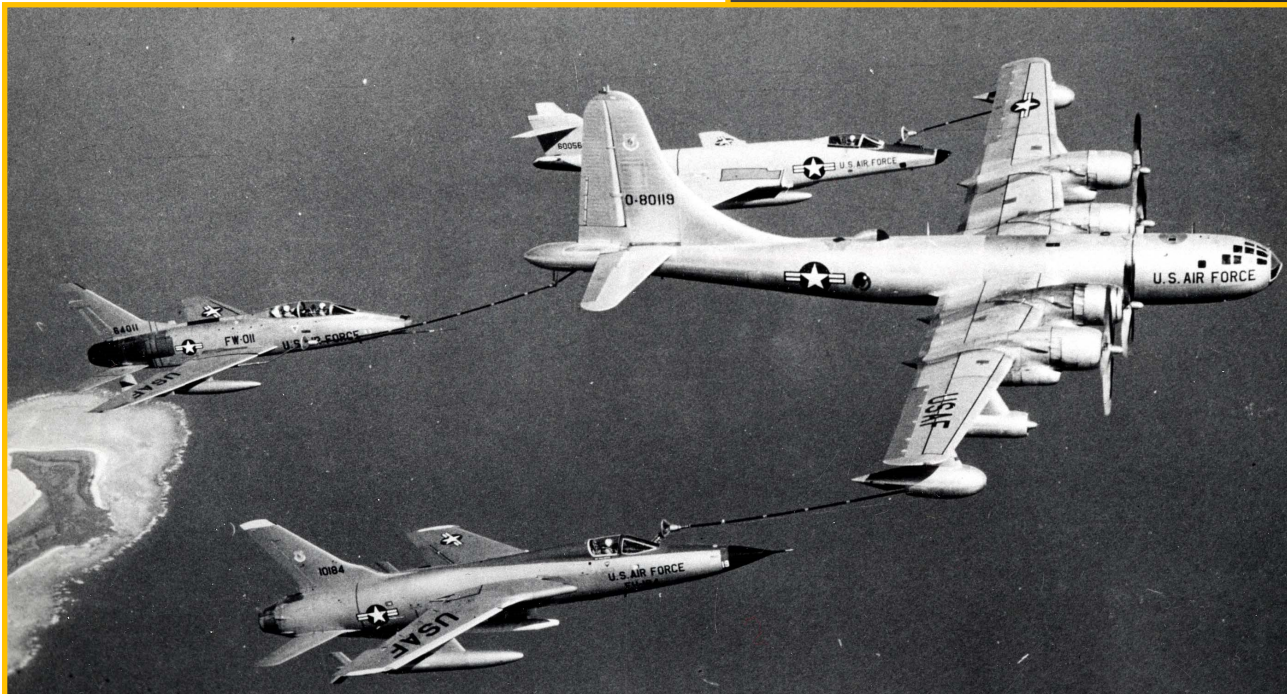
Continuing the practice of modifying airliner designs for the aerial refueling mission, the latest aircraft to fill this roll, the Boeing KC-46 Pegasus, is based around Boeing 767 airliner which first entered service with United Air Lines in 1982. Unlike other aircraft types used in Air Force service, there has never been a clean-sheet tanker design put into production.

The Air Force selected Boeing's design as the winner of the KC-X competition in February 2011 as a replacement for the aging KC-135 and KC-10 fleet. The KC-46 first took to the air on September 25, 2015 with the first delivery to the military taking place in January 2019. Though suffering from some early setbacks, the KC-46 is now certified to refuel nearly all US aircraft used by the military services. With an intended purchase of 179 Pegasus airframes, in-flight refueling remains important to the Air Force's warfighting ability as it makes global reach a reality.



BOEING KC-97 STRATOFREIGHTER

Utilizing the same wings, tail and engines as the B-29, the Boeing YC-97 first flew in the latter days of WWII. Later model C-97's are based off the B-50 utilizing the larger tail, bigger engines and revised wing design. Making use of a Boeing-designed 'flying boom', aerial refueling techniques for the Air Force changed overnight with the KC-97. Instead of the probe and drogue method, refueling boom operators, known as 'Boomers', in the rear of the aircraft could fly the boom into the receptacle of the awaiting aircraft.



The need for in flight refueling became a necessity early in the jet age as these turbojets had a thirst for fuel. Initially the Air Force turned to modifying older bomber airframes for the refueling role. Shown here, a KB-50 Superfortress refuels three Century Series aircraft, the F-100 Super Sabre, F-101 Voodoo and F-105 Thunderchief using the original probe and drogue method of fuel transfer.

USAF AERIAL TANKERS OF THE JET AGE

When introduced in 1950, the KC-97 could barely keep pace with the latest jet aircraft. With its highly swept wings, the B-47 Stratojet presented quite a challenge for the loitering tanker. Often the KC-97 would put in a shallow dive in order to keep pace with its much faster recipient. Note the Northrop YF-89 Scorpion flying chase in the foreground at right.



BOEING KC-97 STRATOFREIGHTER



Like most Air Force aircraft, the KC-97 Stratofreighter aerial refueling fleet had to be capable of operating in extreme weather conditions at all times. Some media sources state the tanker version of the Stratofreighter had been renamed Stratotanker, but no official source for this has been located.

This aerial tanker demonstration shows a pair of Strategic Air Command KC-97's refueling the latest turbojet bombers, the Boeing B-47 Stratojet.



USAF AERIAL TANKERS OF THE JET AGE



In addition to the four Pratt & Whitney R-4360 Wasp Major radial engines, additional power was added in the form of two General Electric J47 turbojet engines mounted in pods on the outboard wing of the KC-97L. Even with the additional power, some aircraft like this Boeing B-52 Stratofortress had to get creative to stay in formation with the slower-paced tanker.



Fighter aircraft such as this McDonnell F-4C Phantom II were often just above their stall speed while taking on additional fuel. Later model jet aircraft moved the refueling receptacle behind the cockpit for added crew safety during refueling missions.

BOEING KC-97 STRATOFREIGHTER



Beginning in 1964, the Air Force began transferring some KC-97L tankers to the Air National Guard and Air Force Reserves. The KC-97 remained in front line service until 1973, but continued flying with the Guard and Reserves until the end of the decade.

USAF AERIAL TANKERS OF THE JET AGE



The Missouri Air National Guard provided KC-97 tanker support to many Air Force units located in the southeast United States, including these LTV A-7D's from the 23rd Tactical Fighter Wing (TFW) out of England AFB, Louisiana.



The latest fighter aircraft required certification with the KC-97 since it was still in the active inventory. Note the high angle of attack required by this early F-15 Eagle prototype to keep formation with the lumbering KC-97L.

BOEING KC-97 STRATOFREIGHTER

The Fairchild-Republic A-10 Warthog was still in the testing phase during the latter days of the KC-97's operational use.

The boom operators flying in the aft of the KC-97 made use of the large windows while laying in a prone position in order to operate the flying boom.



Convair F-106A and F-106B Delta Darts, assigned to Air Defense Command's Air Defense Weapons Center out of Tyndall AFB, Florida take on fuel from a KC-97L over the Atlantic.

USAF AERIAL TANKERS OF THE JET AGE

Some of the final aircraft to receive certification to refuel from the Boeing KC-97 were the prototypes of the lightweight fighter competition, the General Dynamics YF-16 Fighting Falcon and Northrop YF-17 Cobra.



As the KC-97 flew off into the sunset in the late 1970's, a new all-jet replacement had already taken over many duties of this reliable workhorse.

The first KC-135 Stratotanker emerges from the factory in Renton, Wash., next to the KC-97 Stratofreighter in 1956. This pairing symbolized the new age of jet tankers, which eventually replaced the propeller driven aircraft to keep up with faster fighter aircraft.



Strategic Air Command's dream of an all-jet Air Force came with the arrival of the KC-135 Stratotanker. The new jet powered tanker could easily keep up with the latest fighters, bombers and other aircraft in the operational fleet.

USAF AERIAL TANKERS OF THE JET AGE



KC-153A, 58-0004, prepares to transfer fuel to B-52G, 57-6471. Placed in service in 1969, 58-0004 was upgraded to KC-135E, and again to KC-135R, and remains in service to this day.



One of the most challenging aircraft to perform in-flight refueling, the B-58 Hustler. With the highly-swept delta wing and limited visibility, crews had to remain alert during this delicate activity.

BOEING KC-135 STRATOTANKER



Sometimes even tankers need refueling. Early KC-135's remained in their bare metal finish throughout the 1960's before receiving a silver paint finish to resist corrosion. Here, KC-135B 62-8036 prepares to transfer fuel to the first KC-135B off the assembly line, 62-3581.

USAF AERIAL TANKERS OF THE JET AGE

During the Vietnam war, KC-135 Stratotankers deployed to various locations in Southeast Asia to support fighter, bomber and attack planes performing missions over hostile territory.



A trio of F-4C Phantom II's take on fuel during the Vietnam war. The F-4C in the foreground, 63-7544, was shot down by friendly fire near Da Nang on December 9, 1966. Both crew members ejected safely.

BOEING KC-135 STRATOTANKER

Three Republic F-105 Thunderchiefs loaded with extra fuel tanks, air-to-air and air-to-ground weapons receive one last refueling before heading to their respective targets.



The boomers view of a pair of F-4C Phantoms pulling up to take on gas over South Vietnam. There are many great stories of tanker crews using the boom to tow damaged aircraft to safe territory in order for the crews to escape safely.

USAF AERIAL TANKERS OF THE JET AGE



KC-135A, 58-0088, passes fuel to an A-7D near Edwards AFB on August 26, 1970. Later modified to a KC-135Q, specifically to refuel the SR-71 Blackbird, this aircraft is currently flying as a KC-135T.

The refueling boom on the Stratotanker could be modified to use the probe and drogue method of refueling as shown here as KC-135A, 57-1429, fuels some Northrop F-5A's. This KC-135 is currently on display at the Kansas National Guard Museum in Topeka, Kansas.



BOEING KC-135 STRATOTANKER



A prototype McDonnell Douglas KC-10 Extender prepares to receive fuel from NKC-135E, 55-3135 near Edwards AFB. The NKC-135 is a specially instrumented tanker used for test and evaluation. Some KC-135's and all KC-10's have the capability of pumping fuel up the boom into the tanker if required.



KC-135A Stratotanker from the 97th Aerial refueling Squadron, Biggs AFB, TX, refuels two C-141B Starlifters from the 437th MAW, Charleston AFB, SC on February 1, 1983.

USAF AERIAL TANKERS OF THE JET AGE



KC-135A, 63-8012, holds formation with the U.S. Air Force aerial demonstration team 'Thunderbirds' flying their F-4E Phantom II's in 1971. This KC-135 is still in service as a KC-135R.

BOEING KC-135 STRATOTANKER



SR-71A 61-7952 takes on fuel from KC-135A, 58-0054, during the first aerial refueling of the SR-71 Blackbird on April 29, 1965.

USAF AERIAL TANKERS OF THE JET AGE

Maj. Reed Cooley and Capt. Greg Thomas, both F-15C Eagle pilots assigned to Detachment 1, 28th Test Squadron located at Nellis Air Force Base, Nev., receive fuel from a KC-135R tanker from the 916th Air Refueling Wing located at Seymour Johnson, N.C., while conducting a test mission of the AIM-9X short-range, heat-seeking air intercept missile conducted over the Gulf of Mexico on Nov. 19, 2002. The mission was conducted by the Air Force Operational Test and Evaluation Center, Detachment 2, located at Eglin Air Force Base, Fla. (USAF photo by Tech. Sgt. Michael Ammons)



A KC-135 Stratotanker with the 314th Air Refueling Squadron, Beale Air Force Base, Calif., soars above the Sierra Nevada Mountains in Calif. on December 22, 2016. KC-135s have played a vital role in the United States Air Forces aerial refueling capabilities since the 1950s. (USAF photo by Staff Sgt. Bobby Cummings)

BOEING KC-135 STRATOTANKER

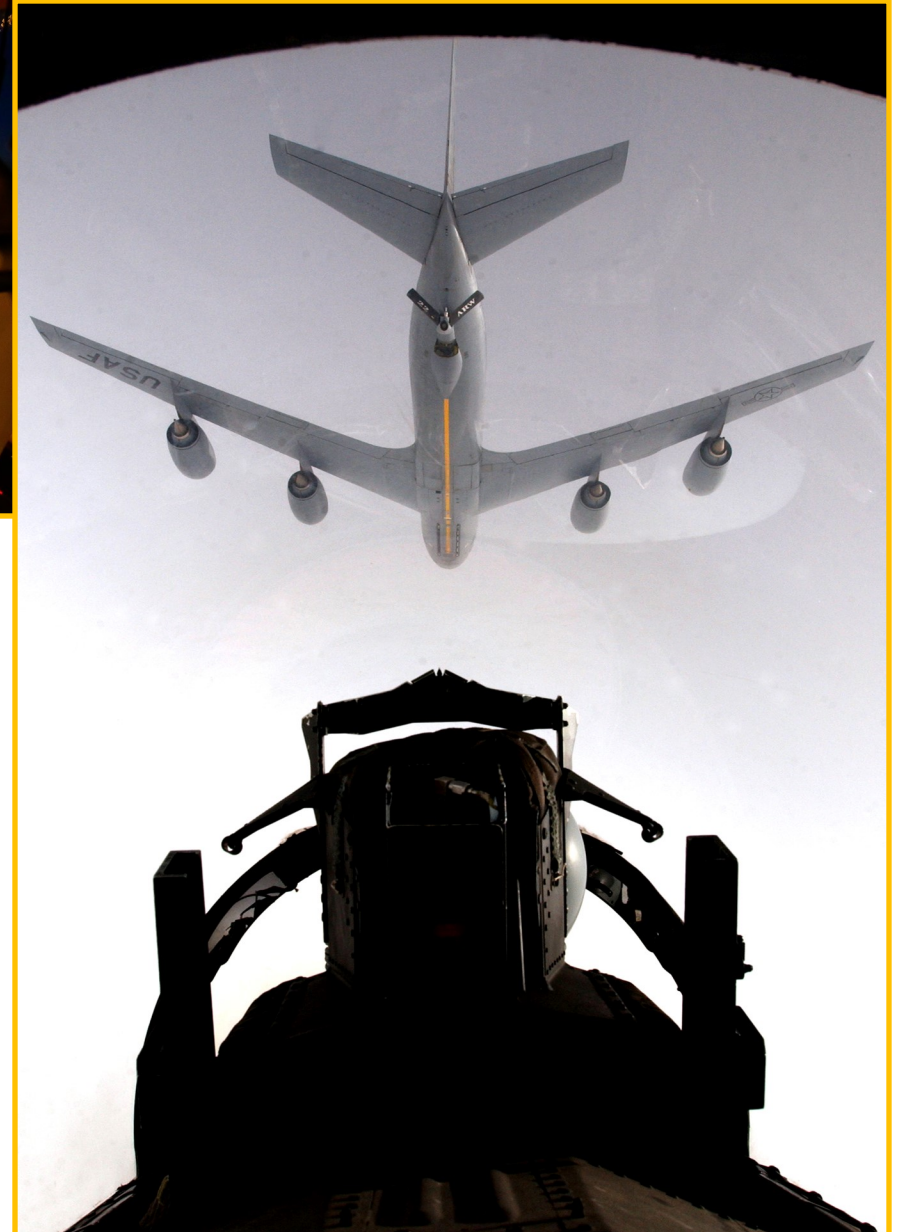


Boom operator TSgt John Baughman connects the 92nd Air Refueling Squadron's KC-135 Air Refueling Tanker from Farichild AFB, Wash., with an F-16 from Aviano Air Base's 55th Fighter Squadron in support of Operation Iraqi Freedom. (USAF Photo by MSgt John E. Lasky)

USAF AERIAL TANKERS OF THE JET AGE



KC-135 Stratotanker pilots assigned to the 97th Expeditionary Aerial Refueling Squadron prepare to refuel F/A-18D Hornet aircraft during a mission supporting Dynamic Force Employment at Al Udeid Air Base, Qatar, May 20, 2021. (U.S. Air Force photo by Tech. Sgt. Robert Harnden)



F-15 Eagle pilot's view of KC-135 tanker operations during Northern Edge exercise in Alaska on April 30, 2002.

BOEING KC-135 STRATOTANKER



U.S. Air Force KC-135 Stratotankers, C-17 Globemaster IIIs and KC-46 Pegasus aircraft line up for an elephant walk at Altus Air Force Base, Oklahoma, during a large formation exercise, May 21, 2020. During the exercise, 24 aircraft from Altus AFB lined up and took off from the base to practice a large-scale evacuation. (USAF photo by Tech. Sgt. Kenneth W. Norman)



Aerial refueling demonstration over Edwards AFB, Calif., using an NKC-135E and Boeing B-52G Stratofortress.

USAF AERIAL TANKERS OF THE JET AGE



A KC-135R Stratotanker from Kadena AB, Okinawa, refuels a U.S. Air Force B-1B Lancer from Ellsworth Air Force Base, S.D., during a Bomber Task Force mission, Dec. 23, 2020.

Sunset aerial refueling operation between a KC-135E Stratotanker and a Boeing E-3A AWACS.



BOEING KC-135 STRATOTANKER



KC-135 Stratotankers from Kadena Air Base, Japan, and the Alaska Air National Guard sit on the flight line at Eielson Air Force Base, Alaska on 21 December 2004. The Alaskan tankers belong to the 168th Air Refueling Wing. The 168 ARW is the only Arctic-region refueling unit for all of PACAF. (USAF Photo by SrA Joshua Strang)



Airmen of the 100th Maintenance Squadron Hydraulics section repair the flying boom of a KC-135 Stratotanker at RAF Mildenhall, England, July 17, 2020. The 100 MXS maintains the only permanent fleet of KC-135s in the United States in Europe and Air Forces Africa theatre. (USAF photo by Airman 1st Class Joseph Barron)



Aircraft of the 379th Air Expeditionary Wing and coalition counterparts stationed together in a deployed location in southwest Asia fly over the desert on April 14, 2003. Aircraft include KC-135 Stratotanker, F-15E Strike Eagle, F-117 Nighthawk, F-16CJ, British GR-4 Tornado, and Australian F/A-18 Hornet. (USAF photo by Master Sgt. Ron Przynsucha)

USAF AERIAL TANKERS OF THE JET AGE



An F-15C Eagle and two F-15E Strike Eagles assigned to the 48th Fighter Wing painted with their respective squadron heritage color scheme, rendezvous with a KC-135 Stratotanker assigned to the 100th Air Refueling Wing in support a fly past over the MSPO Expo at Kielce, Poland Sept. 3, 2019. (USAF photo by Tech. Sgt. Matthew Plew)

BOEING KC-135 STRATOTANKER

A KC-135R Stratotanker from the 92nd Air Refueling Wing and several F-16C Fighting Falcons from the U.S. Air Force Air Demonstration Squadron 'Thunderbirds' and 64th Aggressor Squadron fly over the Pacific Northwest region August 8, 2019. The Thunderbirds and Aggressors participated in the Abbotsford International Air Show in Abbotsford, Canada, August 9-11, 2019. (USAF Photo by SSgt Cory W. Bush)



Grand Forks AFB, N.D., KC-135R refuels an F-22 Raptor from Edwards AFB on November 15, 2005. A refueling team from Grand Forks was the lead tanker unit at the Red Flag exercise held at Nellis Air Force Base, Nev., in February 2006. (USAF photo by Darin Russell)

USAF AERIAL TANKERS OF THE JET AGE



The instrumented NKC-135 Stratotanker provided test support for over four decades. Just a few of the many test aircraft refueled by this historic aircraft were the Northrop YF-17 Cobra and McDonnell Douglas YC-15 shown above in 1976, and the YAL-1A Airborne Laser at right in 2008.



BOEING KC-135 STRATOTANKER

A B-2A Spirit bomber assigned to the 509th Bomb Wing, conducts aerial refueling operations with a KC-135R Stratotanker assigned to the 100th Air Refueling Wing over the North Sea on Sept. 16, 2019. (USAF photo by Tech. Sgt. Matthew Plew)



A B-2 Spirit assigned to Whiteman Air Force Base, Mo., receives fuel from a KC-135 Stratotanker, Feb 7, 2021. This B-2 Spirit performed alongside a B-1B Lancer and a B-52 Stratofortress for the Super Bowl LV flyover on Feb. 7, 2021. (USAF photo by Airman 1st Class David D. McLoney)

USAF AERIAL TANKERS OF THE JET AGE



A 33rd Fighter Wing F-35A Lightning II escorts a 126th Air Refueling Wing KC-135R Stratotanker and a 176th Fighter Squadron F-16C Fighting Falcon during Exercise Northern Lightning Aug. 31, 2016. Northern Lightning is a tactical-level, joint training exercise that emphasizes fourth and fifth generation assets engaged in a contested, degraded environment. (USAF photo by Staff Sgt. DeAndre Curtiss)



KC-135R Stratotanker from Beale Air Force Base, Calif., refuels a KC-10 Extender from Travis Air Force Base, Calif., on December 22, 2016. The pilots and crew on board the KC-135 are with the 314th Aerial Refueling Squadron, Beale Air Force Base, Calif., and the pilots and crew aboard the KC-10 are with the 60th Formal Training Unit, Travis Air Force Base. (USAF photo by Staff Sgt. Bobby Cummings)

MCDONNELL DOUGLAS KC-10 EXTENDER



An Air Force requirement for a larger aerial tanker aircraft led to the Advanced Tanker Cargo Aircraft Program. The Air Force selected the McDonnell Douglas DC-10 tanker variant over the Lockheed C-5 & L-1011 and Boeing's 747 in December 1977.



Many of the support aircraft for the U.S. Air Force did not receive low visibility paint schemes until the late 1980's. The standard markings used for large tanker and cargo aircraft was the white over gray with blue cheat line as shown in this photo of a KC-10 refueling and Lockheed C-5A Galaxy.

USAF AERIAL TANKERS OF THE JET AGE



Right front view of a KC-10 Extender aircraft, foreground, and F-15 Eagle aircraft from the 18th Tactical Fighter Wing, Kadena AB, Okinawa, prior to their departure to participate in a 1983 William Tell Exercise.



An Air Mobility Command KC-10 Extender holds formation with a Holloman Air Force Base, NM, 49th Tactical Fighter Wing F-15 Eagle and three F-4 Phantoms from Tyndall Air Force Base, FL.

MCDONNELL DOUGLAS KC-10 EXTENDER



Two Northrop Grumman B-2 Spirit aircraft take on fuel from a KC-10 Extender near Edwards AFB, Calif., during early flight testing of the new stealth bombers.



A U.S. Air Force B-2 Spirit stealth bomber, 36th Expeditionary Wing, conducts an aerial refueling with a KC-10 Extender during exercise Green Lightning, Royal Australian Air Force (RAAF) Base Darwin, Northern Territory, Australia, July 25, 2006. (USAF photo by Tech Sgt. Shane A. Cuomo)



While en route to Saudi Arabia, a 37th Tactical Fighter Wing F-117A Stealth fighter aircraft refuels from a 22nd Air Refueling Wing KC-10 Extender aircraft during Operation Desert Shield.

USAF AERIAL TANKERS OF THE JET AGE



Staff Sgt. Talbert Reese performs preflight checks on a KC-10A Extender. Sergeant Reese is a flight engineer with the 9th Air Refueling Squadron at Travis AFB, Calif. (USAF photo by Master Sgt. Lance Cheung)



Left side view of a KC-10 Extender aircraft refueling an F-4 Phantom II aircraft with three other Phantoms flying above in 1984.



A KC-10A Extender aircraft refueling boom operator of the 9th Air Refueling Squadron refuels an F-4 Phantom II aircraft during Theater Force Employment Exercise IV.

MCDONNELL DOUGLAS KC-10 EXTENDER



A McDonnell Douglas KC-10 Extender provides fuel to a General Dynamics F-111 Aardvark from Cannon AFB, NM.



KC-10 Extender aircraft from the 78th Refueling Squadron (AFRES) refuels an A-10 Thunderbolt II from the 917th Tactical Fighter Group (AFRES) as another A-10 awaits in turn in the background. (USAF photo by Ken Hackman)

USAF AERIAL TANKERS OF THE JET AGE



Though certified for use with the SR-71 Blackbird, KC-10 tankers were seldom used since the JP-7 fuel used exclusively in the SR-71 meant the tanker could not support other aircraft, and the refueling system needed flushed prior to being loaded with the JP-8 used by most other airframes.



A KC-10 Extender advanced tanker/cargo aircraft refueling an E-3A Sentry airborne warning and control system (AWACS) aircraft during a mission on January 6, 1981.



After a short period using a two-tone camouflage scheme (at left), most of the support aircraft fleet, including the KC-10, received the standard overall gray paint scheme in the late 1990's.

MCDONNELL DOUGLAS KC-10 EXTENDER



Aerial view looking down at a USAF KC-10 Extender refueling a C-141 Starlifter cargo plane. This image was also used in the January 1999 edition of Airman Magazine highlighting the Expeditionary Aerospace Force.



A CV-22 Osprey tiltrotor aircraft with the 8th Special Operations Squadron connects to a KC-10 Extender air-refueling receptacle during a training mission over the Gulf of Mexico, Nov. 18, 2016. The air-refuel mission marked the first time an 8th SOS aircraft has connected to a KC-10. (USAF photo by Airman 1st Class Joseph Pick)

USAF AERIAL TANKERS OF THE JET AGE



An elephant walk, comprising twelve KC-10 Extenders and six C-17 Globemaster III's from the 305th Air Mobility Wing, was held Nov. 21, 2013, as part of a training exercise at Joint Base McGuire-Dix-Lakehurst, N.J. The exercise enabled aircrew, maintenance, command post and operational support personnel to test their ability to launch a mass amount of aircraft in support of real-world operations. An elephant walk is a nose-to-tail taxi formation. (USAF photo by Wayne Russell)



In overcast skies, a C-17 Globemaster III pulls in behind the KC-10 Extender during aerial refueling mission .



KC-10 Extender aircraft, a workhorse platform that brings several distinctive capabilities to the joint warfighter, are parked on the flight line at Travis Air Force Base, Calif., Oct. 29, 2020. (USAF photo by Heide Couch)

MCDONNELL DOUGLAS KC-10 EXTENDER



A U.S. Air Force B-52H Stratofortress from Barksdale Air Force Base, Louisiana, receives fuel from a KC-10 Extender during a bomber task force mission over the U.S. Central Command area of responsibility on Jan. 27, 2021. (USAF photo by Staff Sgt. Trevor T. McBride)



US Navy (USN) F-14D Tomcat and F/A-18C Hornets conduct air-to-air refueling operations with a US Air Force KC-10 Extender aircraft from the 763rd Expeditionary Air Refueling Squadron, during a refueling mission flown in support of Operation Enduring Freedom. Unlike the KC-135, the refueling hose was a permanent installation.

USAF AERIAL TANKERS OF THE JET AGE



B-1B Lancer being refueled by a KC-10 Extender over an undisclosed location on April 14, 2018. The aircraft were taking part in strikes against Syrian targets in response to the use of chemical weapons. (USAF photo by Staff Sgt. Erica Rodriguez)



A B-1B Lancer receives fuel from a KC-10A Extender during a mission in support of Operation Enduring Freedom (OEF). In the first 68 days of OEF, the Air Force flew more than 6,800 sorties, which is about 46 percent of all OEF missions. (USAF photo by Tech. Sgt. Cedric H. Rudisill)

MCDONNELL DOUGLAS KC-10 EXTENDER



380th Air Expeditionary Wing aircraft, to include a KC-10 Extender, E-3 Sentry, two F-35 Lightning IIs and two F-16 “Viper” Fighting Falcons , fly in formation in the area of responsibility (AOR) over the United Arab Emirates on May 8, 2020. The 380th AEW is one of the most diverse combat wings in the Air Force; it is comprised of four groups and 15 squadrons. Its mission is to conduct combat operations directed by the President to provide high-altitude all-weather intelligence, surveillance, reconnaissance, command and control and air refueling for Operations Inherent Resolve and Resolute Support. (USAF photo by Tech. Sgt. Kat Justen)

USAF AERIAL TANKERS OF THE JET AGE



Three F-16's of the United States Air Force Air Demonstration Squadron 'Thunderbirds' aerial refuel via a KC-10 Extender en route to Washington D.C. for a nation's capital flyover on May 2, 2020. The flyover was part of America Strong; a collaborative salute from the Air Force and Navy to recognize healthcare workers, first responders, military, and other essential personnel while standing in solidarity with all Americans during the COVID-19 pandemic. (USAF photo by Tech. Sgt. Ned T. Johnston)



KC-10 Extenders brave the brunt of the "Blizzard of 2003." Twenty-one inches of snow fell McGuire AFB, NJ, during the storm Feb. 16 and 17, 2005, making it the largest snowfall here since 1996 when more than 27 inches blanketed the region. . (USAF photo by Staff Sgt. Michael O'Connor)



KC-10 Extender aircraft conduct normal air operations at Travis Air Force Base Calif., Oct. 19, 2017. With roughly 3,300 aircraft continuously arriving and departing on a monthly basis, Travis AFB handles more cargo and passenger traffic than any other military air terminal in the United States. (USAF photo by Heide Couch)

MCDONNELL DOUGLAS KC-10 EXTENDER



Three F/A-18 Hornets from Strike Fighter Squadron Nine Four (VFA-94) and an EA-6B Prowler from Electronic Counter measures Squadron One Three Five (VAQ-135), conduct refueling operations with a KC-10 Extender in the skies over the Persian Gulf. Aircraft are conducting missions in support of the United Nations No-Fly zone over Southern Iraq, Operation Southern Watch. Both squadrons are operating from the aircraft carrier USS Carl Vinson (CVN 70) on a regularly scheduled deployment in the region. (U.S. Navy Photo by Lieutenant Steve Lightstone)



An Air Force KC-10 Extender assigned to the 305th Air Mobility Wing, McGuire Air Force Base, N.J., refuels a Royal Air Force Eurofighter Typhoon during Razor Talon at Seymour Johnson AFB, N.C., on Feb., 7, 2013. Razor Talon is an Atlantic Coast monthly large force exercise and joint-unit training opportunity to employ cutting edge operational concepts such as AirSea Battle and Maritime Air Support. (USAF photo by Staff Sgt. Andy M. Kin)

USAF AERIAL TANKERS OF THE JET AGE



A pair of U.S Air Force F-35 Lightning IIs with the 419th Fighter Squadron fly alongside a KC-10 Extender crewed by Reserve Citizen Airmen with the 78th Air Refueling Squadron, 514th Air Mobility Wing, as an F-15 Eagle with the 104th Fighter Squadron approaches during a joint training mission over the United States on April 7, 2018. The 514th is an Air Force Reserve Command (AFRC) unit located at Joint Base McGuire-Dix-Lakehurst, N.J. The 419th is an AFRC unit assigned to Hill Air Force Base, Utah. The 104th is with the Massachusetts Air National Guard located at Barnes Air National Guard Base. (USAF photo by Master Sgt. Mark C. Olsen)

MCDONNELL DOUGLAS KC-10 EXTENDER

A KC-10 Extender from Travis Air Force Base, Calif., refuels an F-22 Raptor. The Raptor is the most advanced fighter aircraft in the world, combining a revolutionary leap in technology and capability with reduced support requirements and maintenance costs. (USAF photo by Judson Brohmer)



A KC-10 Extender from the 908th Expeditionary Air Refueling Squadron, Al Dhafra Air Base, United Arab Emirates, refuels an F-22 Raptor from the 95th Expeditionary Fighter Squadron in support of an offensive campaign in Afghanistan, Nov. 19, 2017. (USAF Photo by Tech. Sgt. Gregory Brook)

USAF AERIAL TANKERS OF THE JET AGE



With a safety chase F-16 in the background, the prototype KC-46 Pegasus receives fuel from a KC-10 Extender during Milestone C certification testing on February 13, 2016. Like the KC-10, the KC-46 can have additional refueling pods mounted on the outboard wings that house a fueling hose system. The KC-46 is expected to replace the KC-10 and KC-135 fleet by the end of the decade.



U.S. Air Force KC-10 Extender crewed by members of the 78th Air Refueling Squadron, 514th Air Mobility Wing, Joint Base McGuire-Dix-Lakehurst, N.J., flies over the Atlantic Ocean July 15, 2017. (USAF photo by Master Sgt. Mark C. Olsen)

BOEING KC-46 PEGASUS



A Boeing KC-46 Pegasus assigned to the 22nd Air Refueling Wing (ARW), McConnell AFB, Kansas, flies behind a KC-135R assigned to the Utah Air National Guard's 151st Air Refueling Wing during an air refueling operation on November 6, 2019. The KC-46 is the Air Force's newest aircraft and can carry a combination of more than 210,000 pounds of fuel, 65,000 pounds of cargo and 58 passengers. (USANG photo by TSgt John Winn)

Key Features and Capabilities

KC-46 TANKER

Self Protection

- Electromagnetic pulse hardening
- Chemical / biological operations
- Fuel tank ballistic protection
- Cockpit armor

Air Refueling Receptacle

- Extended range and flexibility
- 1,200 GPM

Crew Compartment

- Seating for 15 crew members
- Bunk/Storage/Galley/Lav

Camera Systems

- Hi resolution stereoscopic boom cameras
- 185 degree panoramic field of view

Wing Air Refueling Pods (WARPS)

- 400 GPM offload rate
- Improved hose response
- Improved fault detection and isolation

Defensive Systems

- Infrared countermeasures
- Radio frequency warning
- Night vision lighting

Centerline Drogue System (CDS)

- 400 GPM offload rate
- Parts commonality with WARPS
- Permanently installed

Advanced Fly-By-Wire Refueling Boom

- Modernized KC-10 boom design
- 1,200 GPM offload rate
- Full-time independent disconnect
- Full-time automatic load alleviation

Pratt & Whitney PW4062 Engines

- 62K thrust per engine
- 120 kVA generators

Multi-role Capabilities

Passenger Configuration

- FAA certified for 58 passengers; 114 for contingency operations
- C-17 palletized seating
- Palletized Air Transportable Galley/Lavatory
- Palletized passenger bags

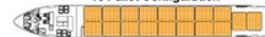
Passenger Configuration with Palletized Crew Bags and Air Transportable Galley/Lavatory



Cargo Configuration

- Seamless integration with Defense Transportation System
- 18 463L pallets; 10 pallets centerline configuration
- Integrated roller system
- Compatible with all USAF loaders

18 Pallet Configuration

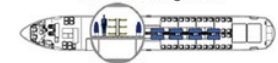


10 Pallet/Centerline Configuration

Aeromedical Evacuation Configuration

- 54 patients with patient support pallets
- 24 Litter / 30 Ambulatory
- 6-patient integrated capability
- Onboard emergency oxygen & electrical power

54 Patient Configuration



A detailed graphic of the Boeing KC-46 Pegasus showing many of the key features and capabilities of the new tanker.

USAF AERIAL TANKERS OF THE JET AGE



Aircrews from the 77th Air Refueling Squadron of the 916th Air Refueling Wing fly a KC-135R Stratotanker to rendezvous with a KC-46A Pegasus from the 22nd ARW stationed at McConnell AFB, Kansas but operating out of Pease Air National Guard Base, Portsmouth, N.H., for this mission on Aug. 4, 2019. The 916 ARW is in airframe transition to the KC-46. (USAF photo by Staff Sgt. Mary McKnight)



A 914th Air Refueling Wing KC-135 boom is extended while a 157th ARW KC-46 gets closer for refueling over the Atlantic Ocean on April 28, 2020. With no boomer windows in the tail of the KC-46, spectacular views such as this will be a thing of the past once the KC-46 replaces the KC-135 and KC-10. (USAF photo by Peter Borys)

BOEING KC-46 PEGASUS



Lt. Col. Nicholas Laplant, and Maj. Patrick Miller, 344th Air Refueling Squadron pilots, navigate a KC-46 Pegasus during the initial delivery to McConnell Air Force Base, Kansas on Jan. 25, 2019. McConnell is receiving the first two KC-46's to supplement the KC-135 Stratotanker's mission. (USAF photo by Staff Sgt. Chris Thornbury)



After decades of having the boomer in the tail of the tanker, the KC-46 Pegasus uses a Remote Vision System of cameras and sensors to provide information to the boomers now sitting comfortably near the front of the aircraft.

USAF AERIAL TANKERS OF THE JET AGE



KC-46 Pegasus flying out of Edwards AFB, Calif., makes first-ever contact with a C-5 Galaxy out of Travis Air Force Base, Calif. on April 29, 2019. (USAF photo by Christian Turner)



An F-15E from the 422nd Test and Evaluation Squadron refuels from a KC-46 over the Nevada Test and Training Range on November 17, 2020 for Large Force Test Event (LFTE) 20.03. LFTE 20.03 is a premier joint operational test event hosted by the 53rd Wing that validates tactics in a combat relevant environment. (USAF photo by 1st Lt Savannah Bray)

BOEING KC-46 PEGASUS



As part of Boeing's Flight Test & Evaluation of the KC-46, the Pegasus flew from Boeing Field, Wash., and met up with a C-17 out of McChord AFB, Wash., for C-17 refueling certification on July 12, 2016.



The Boeing B-52 Stratofortress is one of at least four aircraft types to have been refueled by the KC-97 Stratofreighter, KC-135 Stratotanker, KC-10 Extender and the KC-46 Pegasus. The others include early prototypes of the F-15 Eagle, F-16 Fighting Falcon and A-10 Thunderbolt II.

USAF AERIAL TANKERS OF THE JET AGE



A KC-46 Pegasus assigned to the 931st Air Refueling Wing, McConnell Air Force Base, Kansas, lines up to refuel an U.S. Navy Blue Angels F/A-18 Hornet, July 1, 2020 over South Dakota. This marks the first time the 931st ARW refueled the Blue Angels using a KC-46. The aircraft is capable of refueling through the center-mounted drogue or wing aerial refueling pods (WARPs) to provide simultaneous multi-point air refueling. (USAF photo by Maj. Andrea Morris)



The KC-46 Pegasus prototype undergoes certification testing to refuel the US Marine Corps AV-8B Harrier on March 1, 2016.

BOEING KC-46 PEGASUS



Test pilots and personnel from the 418th Flight Test Squadron, out of Edwards Air Force Base, Calif., conduct aerial refueling testing with a KC-46 Pegasus and an E-4B Nightwatch, out of Offutt Air Force Base, Neb., in the skies over Southern California, April 4, 2022. (USAF photo by Christian Turner)

USAF AERIAL TANKERS OF THE JET AGE



F-15E's and F-16's from 422nd Test and Evaluation Squadron refuel from a KC-46 over the Nevada Test and Training Range on November 17, 2020 for Large Force Test Event 20.03. LFTE 20.03 was a beta version of "Black Flag," a new, premier joint operational test event hosted by the 53rd Wing that validates tactics in a combat relevant environment. (USAF photo by 1st Lt Savannah Bray)



A KC-46 Pegasus from the 22 ARW departs Pease Air National Guard Base, Portsmouth, N.H., to meet up with two KC-135 Stratotankers from the 77th Air Refueling Squadron of the 916th Air Refueling Wing on Aug. 4, 2019. (USAF photo by Staff Sgt. Mary McKnight)

BOEING KC-46 PEGASUS



A KC-46 Pegasus from the 916th Air Refueling Wing refuels an F-15E Strike Eagle from the 336th Fighter Squadron at Seymour Johnson Air Force Base over North Carolina on Sept. 3, 2020. In-flight refueling is important to the Air Force's warfighting ability as it makes global reach a reality. (USAF photo by Airman 1st Class Kimberly Barrera)



KC-46 aircraft assigned to the 157th Air Refueling Wing perform an elephant walk formation on the runway at Pease Air National Guard Base, Sept. 8, 2021. After taxiing, the planes were parked on the airfield ramp in preparation for the Thunder Over New Hampshire Air Show. The occasion marked the first time the wing performed the formation since receiving the new airframes. (U.S. Air National Guard Photo by Senior Master Sgt. Tim Huffman)

USAF AERIAL TANKERS OF THE JET AGE



KC-46 Pegasus refuels an A-10 with 1,500 pounds of fuel July 15, 2016 during Milestone C testing. The mission was the last of all flight tests required for the tanker's Milestone C production decision. (Boeing photo by John D. Parker)

U.S. Air Force Staff Sgt. Joshua Poticha, a crew chief assigned to the 157th Maintenance Group, New Hampshire Air National Guard, marshals the 157th Air Refueling Wing's, Pease Air National Guard Base, N.H., 11th KC-46 tanker on Dec. 11, 2020. The delivery official was Brig. Gen. Keith MacDonald, director of operations, National Guard Bureau. (U.S. Air National Guard photo by Tech. Sgt. Aaron Vezeau)



BOEING KC-46 PEGASUS

The first Boeing KC-46A tanker built for the Japan Air Self-Defense Force (JASDF) recently refueled another KC-46 aircraft in the skies over Washington state on August 16, 2021. The Japan-bound tanker also successfully received fuel in return. The KC-46 will supplement the four KC-767 tankers in use with the JASDF.



In February 2022, the United States and Israel signed an agreement to supply KC-46 Pegasus aircraft to replace the aging fleet of Israeli tankers. The \$1.1 billion deal will provide two KC-46 tankers, spare parts and training. The aircraft are not expected to be delivered before 2024.



USAF AERIAL TANKERS OF THE JET AGE



F-35's from the 422nd Test and Evaluation Squadron, 53rd Test and Evaluation Group, Nellis AFB, Nev., refuel from a KC-46 Pegasus over the Nevada Test and Training Range on November 17, 2020. (USAF photo by 1st Lt Savannah Bray)



Supported by the 418th Flight Test Squadron (FLTS) and the 461st FLTS at Edwards AFB, Calif., certification testing between the KC-46 Pegasus and F-22 Raptor was completed in November 2019.

BOEING KC-46 PEGASUS



Boeing KC-46 Pegasus refuels the Northrop Grumman B-2 Spirit for the first time during developmental flight test over Edwards AFB, Calif., and the Sierra Nevada Mountains on Apr. 23, 2019. (USAF photo by Christian Turner)



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