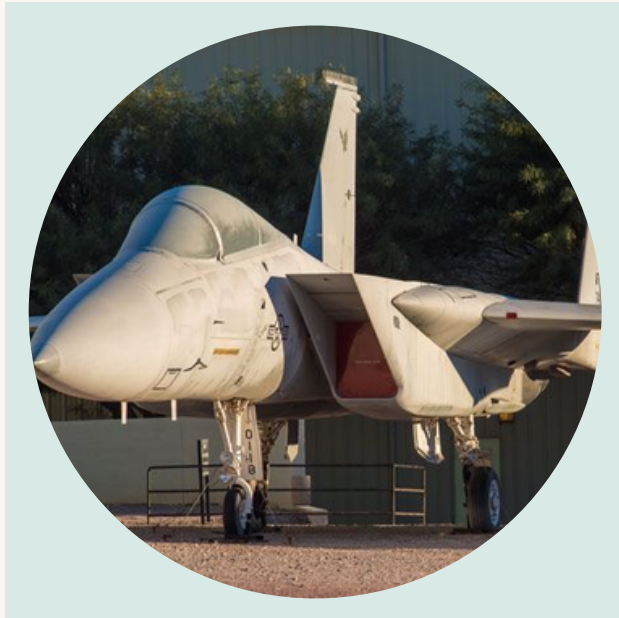
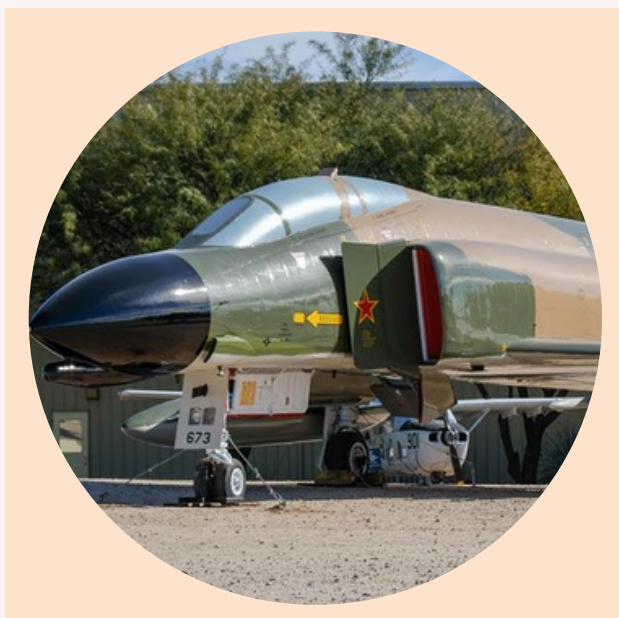


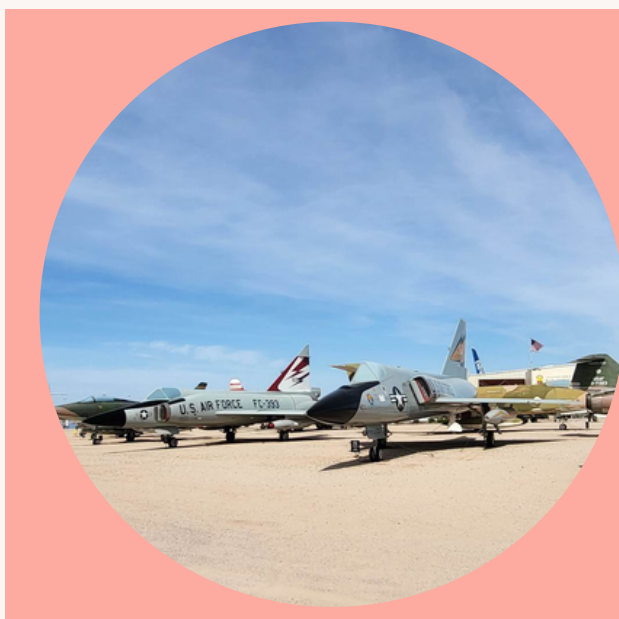
This is a field trip guide for some of our significant and unique outdoor aircraft. Use the attached map to navigate to the different planes and helicopters.



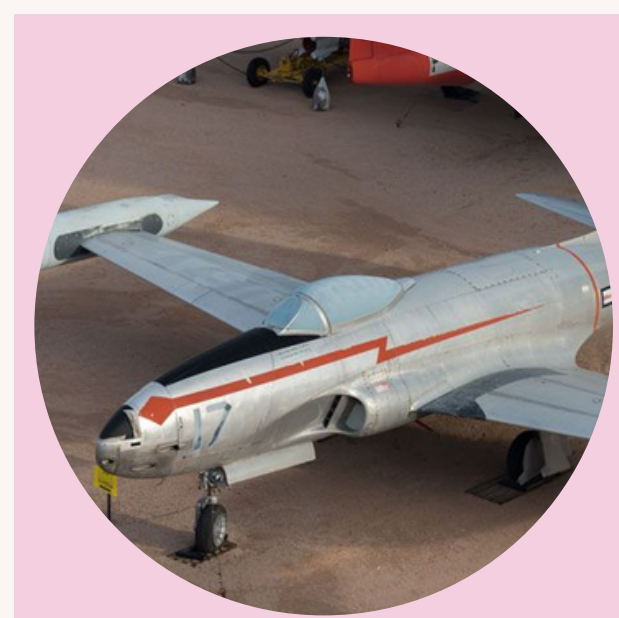
The **F-15 Eagle** was designed in the late 1960s as an air superiority fighter. One of the requirements for this role was for it to be highly maneuverable at all altitudes. The plane also has the ability to accelerate straight up. Worldwide, F-15s have a combat record of 104:0, meaning F-15s have shot down 104 planes, while never being shot down in air-to-air combat. This gives the Eagle the most successful combat record of any aircraft in history. They are still in use with the US Air Force.



The **F-4 Phantom II** was originally designed for the Navy and the Air Force later adopted the Phantom in 1962 for their own use because they were more adaptable than the F-102s and 106s that were in use at the time. Early versions were designed without a gun and relied on missiles for combat against other aircraft but Vietnam showed that a gun was necessary and later versions were designed to include one. The F-4 became one of the most successful and widely used strike-fighters ever.



This is the **F-102 Delta Dagger** and this is the **F-106 Delta Dart**. Both planes were designed as high-speed interceptors in the 1950s. Their mission was to intercept enemy planes before they could reach the coast of the United States. The planes' triangular or "delta" shaped wings make them very efficient at high speeds, but they do make the planes significantly less maneuverable than planes with other wing types.



The **P-80 Shooting Star** is the first mass-produced jet in the United States. The first country to put jets (as opposed to piston-engine aircraft) into combat was Germany during WWII, when they flew their Me 262s. P-80s were originally designed for air-to-air combat, but they saw most of their service as ground support aircraft during the Korean War. The P-80 is credited with the first jet-on-jet combat victory, when one shot down a MiG-15 in 1950.

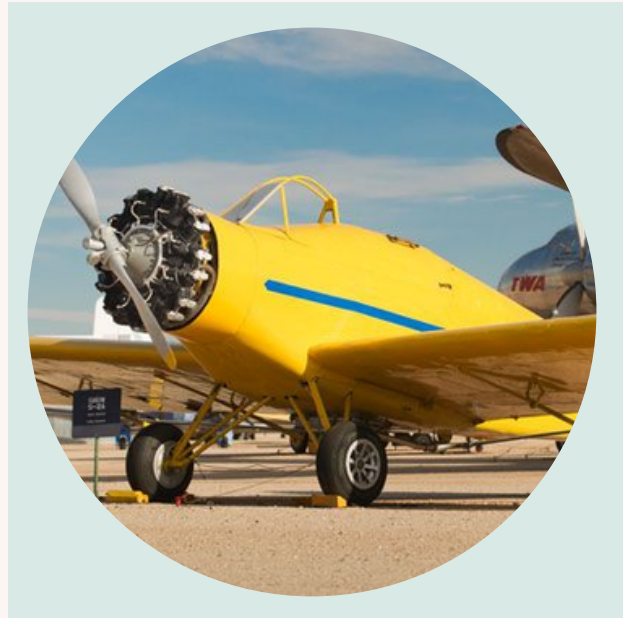


This incomplete plane is the **Budd RB-1 Conestoga**. In the early days of WWII, it was feared that there would be an aluminum shortage, so the US government began seeking alternate materials for airplane construction. This generally meant wood, but Budd Company, a railway car manufacturer, decided to build planes out of stainless steel. However, the predicted aluminum shortage never developed, and only 17 of these planes were ever built.

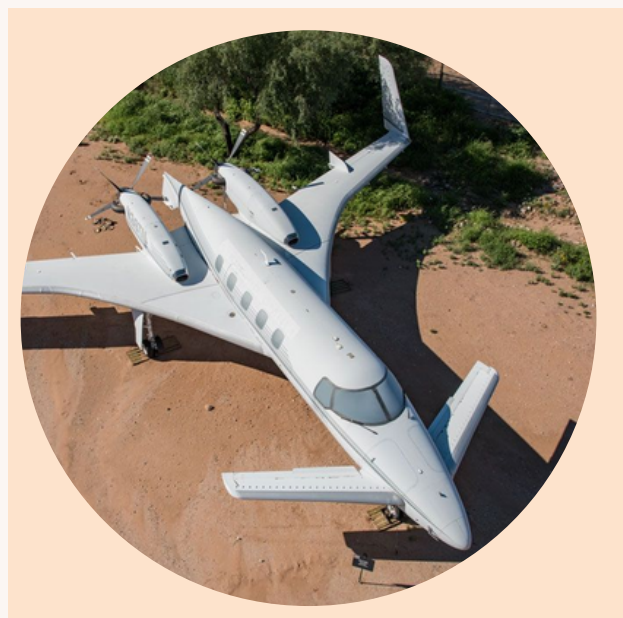




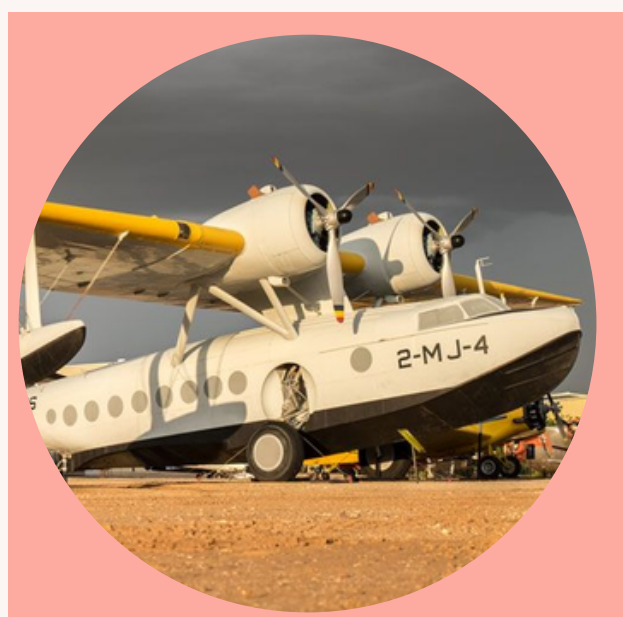
# OUTSIDE



The yellow plane is a **Snow S-2A** crop-dusting plane. Crop-dusting or "aerial application" involves a plane carrying pesticides or fertilizers flying over an agricultural field and applying it from the air. The S-2 was designed in 1958, and the 2A version like this one was the second version built and introduced in 1959. The founder of Snow Aeronautical Corporation also founded Air Tractor in 1972, a company that is still producing agricultural aircraft.



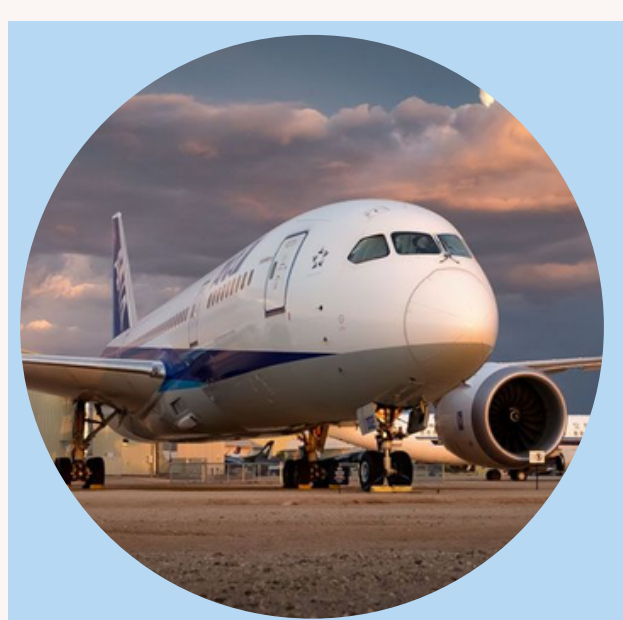
The **Beechcraft Starship** was the first all-composite pressurized business-class jet, designed by the famous aircraft designer, Burt Rutan. This futuristic-looking plane was first flown in 1986 and a total of 53 were built by 1995. The plane was considered a commercial failure, however, and only a handful are still flying today.



The seaplane is a **Sikorsky S-43 Baby Clipper**, an airliner from the 1930s, also used by the US Navy and Marines as personnel transports. Since there weren't many runways at the time, many airliners were designed as seaplanes because lakes rivers, and oceans could be used as substitutes for runways. This plane flew in Hawaii and later crashed into a lake while flying in Alaska. The plane spent 30 years underwater before it was recovered. It is painted to represent a Baby Clipper lost in a fire in 1942.



The **Lockheed Constellation** or "Connie" was an airliner that first flew in 1942 with Trans World Airline. They are regarded as one of the best piston-engine airliners of the post-WWII era. Over 800 were built and they flew with most of the world's major airline companies into the 1960s. This one is the 10th Connie ever built and is the oldest surviving one in the world.



The **787 Dreamliner** is the newest airliner from Boeing. This is the first jet airliner not constructed of aluminum and is instead nearly 80% carbon-fiber composites. This along with advances in engines and wing shape make it one of the most fuel-efficient jet airliners ever. This is the second ever built and participated along with the other prototypes in the testing process that lasted from late 2009 to 2011. The first airline to operate 787s was All Nippon Airlines of Japan, and this one carries their markings.





PIMA AIR & SPACE  
MUSEUM

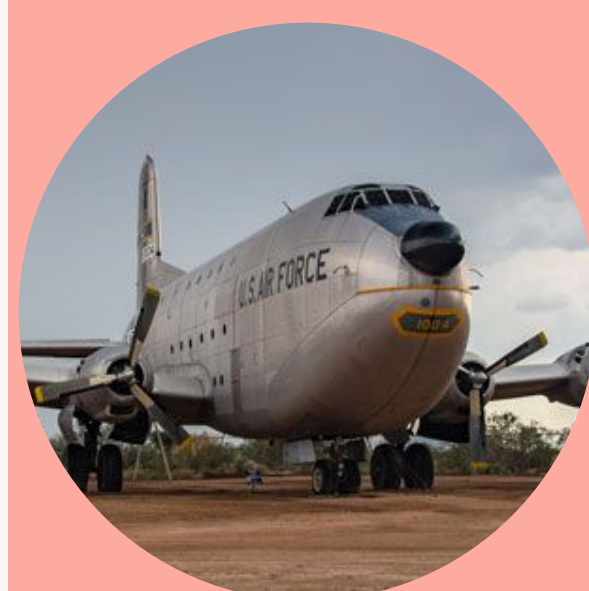
# OUTSIDE



The **Douglas C-54 Skymaster** is a cargo plane based on the DC-4 airliner. The first C-54s began as commercial airliners but were commandeered by the Army Air Forces in 1942. Requests for cargo versions followed. C-54s are the first four-engine cargo plane in Army Air Force service. They're best known for their participation in the Berlin Airlift in which cargo planes, most of them C-54s, delivered supplies to West Berlin. This one participated in the airlift from September 1948 to January 1948.



These two cargo planes are the **C-130 Hercules**, one of the most popular cargo planes ever. They've been in military and civilian use since the 1950s, and advanced versions are still in production today, giving them the record for the longest production run of a US military aircraft. The green one is an example of the first version of the plane. The gray one was modified to deliver supplies to the research centers in the North and South Poles, by using the large skis attached to the landing gear.



The **C-124 Globemaster II** was in service with the US Air Force from 1950 to the 1970s. The C-124 could carry 200 troops or bulky cargo that wouldn't fit in any other cargo plane. They provided airlift capability during the Korean War, flew resupply missions to Antarctica, and flew evacuation/mercy flights in the Congo, Morocco, and Chile. The plane features "clamshell" loading doors and hydraulic ramps in the nose for loading cargo. There is also an elevator in the rear fuselage.



The **Boeing C-97 Stratofreighter** was designed after a request by the Army Air Forces for a transport/cargo aircraft based on the famed B-29 Superfortress. They first flew in 1949 and proved to be a very successful and versatile aircraft. In fact, Boeing's first post-war airliner, the 377 is based on the C-97. This one was loaned to the Red Cross to fly relief supplies to Nigeria during their civil war in 1969. The plane next to the C-97 is the **KC-97**, which is the aerial refueling version.



The **Fairy Gannet** was originally designed as an anti-submarine aircraft for the British Royal Navy and first flew in 1949. The large fuselage made them ideal for carrying radar, which is what the dome beneath the plane is. The radar gave the naval fleet radar coverage 200 miles from the aircraft. The plane uses contra-rotating propellers, in which two propellers in line with each other turn in opposite directions, giving them more efficiency and power than a single propeller.





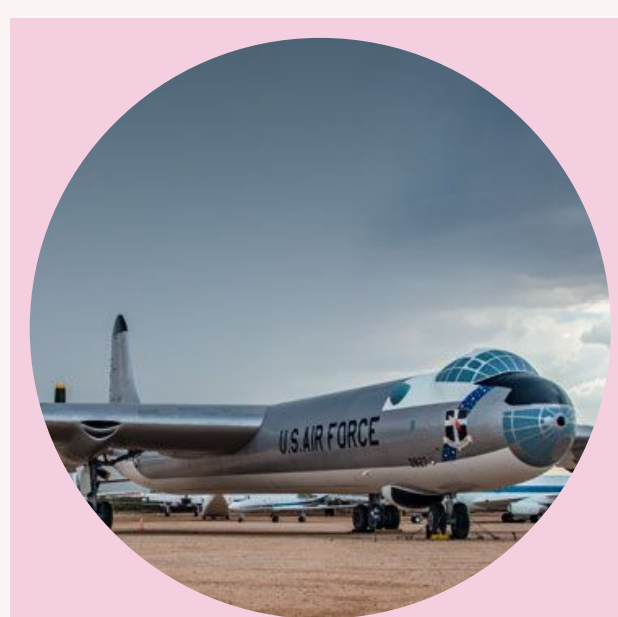
The **AVRO Shackleton** was developed in response to the Royal Air Force requirement for a maritime patrol bomber to replace their American-made Liberators and Fortresses from WWII. These planes entered service in 1951 and served with the RAF until 1991. In 1971, a dozen of the planes were modified into Airborne Early Warning aircraft by adding the radar systems and domes that had been removed from Fairy Gannets. Like Gannets, Shackletons also feature contra-rotating propellers.



The **EC-121 Warning Star** was an upgraded Constellation called the Super Constellation. The US military used them in roles ranging from transport to radar aircraft. The airborne radar version entered service in 1953 and they served with the Air Force into the late 70s. The first successful airborne radar-controlled interception of an aircraft, courtesy of an EC-121, occurred in 1967 when the radar plane directed an Air Force plane to intercept and shoot down a North Vietnamese plane.



The **SEPECAT Jaguar** was designed as part of a joint venture between France and Great Britain for a supersonic jet trainer and light attack aircraft. In the end, the Jaguar evolved into a single-seat strike fighter with nuclear capability, and a two-seat trainer version. They first flew in 1968 and they entered service with the French Air Force in 1973 and the Royal Air Force in 1974. This one was flown by Great Britain during the first Gulf War and features the distinct "desert pink" paint color.



With a wing span of 230 feet, the **B-36 Peacemaker** is the largest bomber to ever serve with the US Air Force. The development of the atomic bomb at the end of WWII meant that the US military required larger and longer-range bombers. The B-36 uses six of the most powerful piston engines ever developed and is the last propeller-driven bomber used by the US. They entered service in 1949 but were already obsolete. The last B-36 left service by 1959 when they were fully replaced by B-52s.

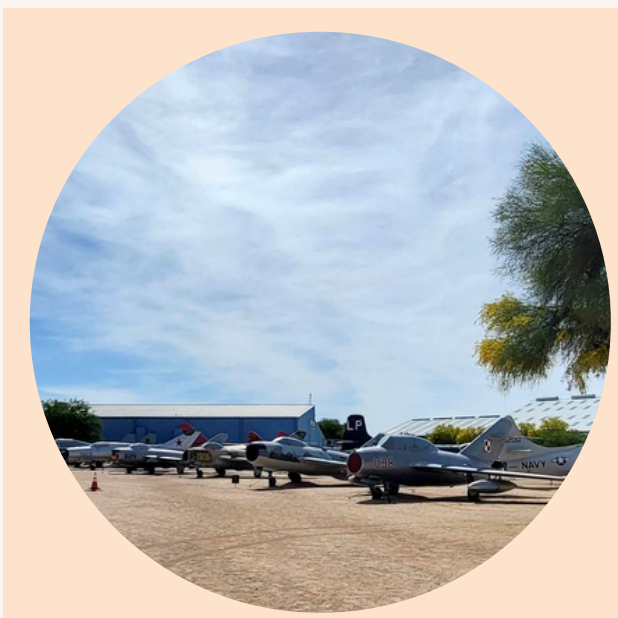


The **B-52 Stratofortress** entered service with the US Air Force in 1955. The camouflaged G model participated in the 91 Gulf War and flew combat missions that lasted up to 35 hours. The D model, painted with a black bottom, was the main version used during Vietnam. They were painted this way because many of their missions over North Vietnam were flown at night. The last B-52 left the assembly line in 1962. Today, 70 of them remain in service and are expected to be used through the 2050s.

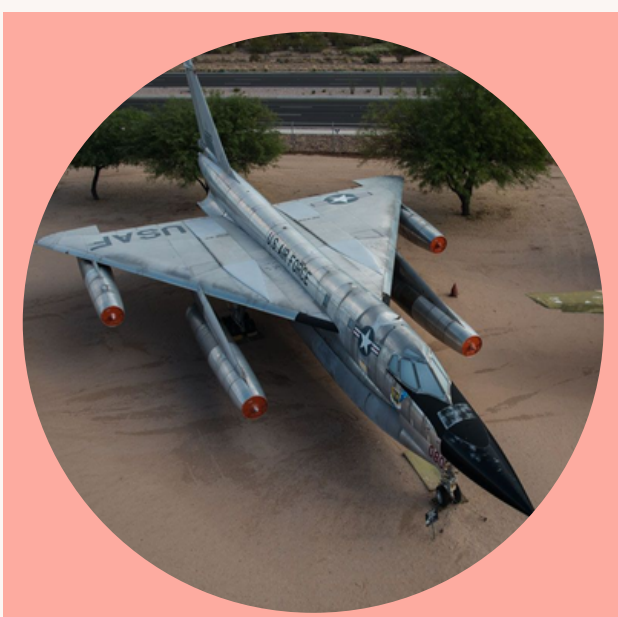




The green plane is the **Folland Gnat**. This two-seat plane served as the main advanced jet trainer for the British Royal Air Force from 1959 to 1979. The single-seat fighter version also flew with the Indian Air Force in the 60s. Folland Gnats are most recognizable from their use as demonstration aircraft when they were used by the Royal Air Force's Red Arrows demonstration team. The museum has the Gnat's replacement, the Hawk, on display in Hangar 1, also used by the Red Arrows.



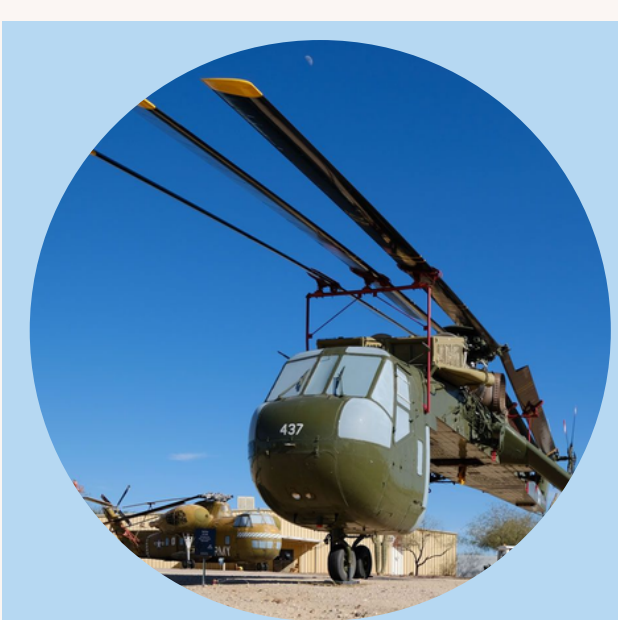
This row of aircraft are Soviet designed jet fighters, or **MiGs**. The earliest example here is the MiG-15 trainer, dating from the 1950s. Other examples include the MiG-17, MiG 19, MiG 21, MiG-23, and the latest in our collection, the MiG-29 introduced in the 1980s. You'll notice, some of the signs also include the designation "Lim". This indicates that they were built in Poland. Those that are designated "J" were built in China.



The **B-58 Hustler** is the world's first supersonic bomber (faster than the speed of sound) and the first to reach Mach 2 (twice the speed of sound). The first one flew in 1956, and they entered service in 1960. They included many advanced features for the time, including stellar inertial navigation, honeycomb construction, and enclosed ejection seats. The planes suffered from a very high accident rate and they left service after less than 10 years, in 1970.



The Huey, officially the **UH-1 Iroquois**, is one of the most well-known helicopters in the world. Introduced by the US Army during the Vietnam War, the Huey continues to fly in military and civilian hands around the world. During Vietnam, more than 7,000 of these helicopters were deployed in various roles, including troop transport, armed gun ships, and medical evacuation (medevac) helicopters like this one.



The **CH-54 Tarhe**, or Skycrane is one of the largest heavy lift helicopters developed for the US Army and is capable of carry large object like small vehicles and artillery. Initially developed in the 60s, they are capable of carrying up to 27,000 pounds. After their retirement from the military in the early 90s, Skycranes have seen extensive use fighting forest fires, and in the logging and construction industries.





**The Mi-24**, NATO designation "Hind", is a Soviet designed attack helicopter. It was first used with Soviet forces beginning in 1970 and was then widely sold to Soviet allies. It first came to public attention in the West in the 80s during Soviet occupation of Afghanistan, where Hinds proved to be very difficult to shoot down. It is one of the most successful attack helicopters of all time and survived the dissolution of the Soviet Union to remain in use with the Russian military today.



Design work for the **CH- 37 Mojave** began in the early 50s after the Marines issued a requirement for a heavy assault helicopter. The result was the unusual Mojave. It features a clamshell door, retractable landing gear, and, most noticeable, twin engines mounted in large pods on each side of the main fuselage. The five blade rotor was designed so the helicopter could still fly, even if one of the blades was shot off. The US military used the Mojave as heavy lift transports until the early 70s.



The **UH-1N Iroquois**, the Twin Huey, was originally designed for the Canadian military, and featured two engines and was larger than the original Huey. They also served extensively with the US military until the last ones were retired in 2020. This one served as a VIP transport for the US Marine Corps, and served as Marine One when it carried President Ronald Reagan in 1987. It was later designated **HH-1N** and was assigned to the Marine Corps Air Base in Yuma as a search and rescue helicopter.



The **F/A 18 Hornet** was originally designed for the US Navy to replace their F-4s and A-7s. The first Hornets went into service in 1983. Hornets that are used on aircraft carriers also have to incorporate strengthened structures to withstand the forces of taking off and being yanked to a stop when landing on the ships. Currently the Navy and Marines operate Hornets as fighters and ground attack aircraft. This one flew with the US Navy's Blue Angels demonstration team from 2008-2012.



The **A-4 Skyhawk** was designed to be a lightweight, carrier-based, nuclear capable, attack bomber beginning in 1954. These planes went on to become one of the main Navy and Marine strike aircraft during the Vietnam War. They took off from every aircraft carrier at the time, as well as land-based airfields. A-4s continued to serve with the Navy in training roles until the early 1990s.





These unique looking planes are the **A-6 Intruder** and **EA-6 Prowler**. The A-6 was a ground attack aircraft used by the US Navy and Marines beginning in the 60s until they were retired in 1997. The EA-6 is the electronic warfare version of the A-6 that was introduced almost as soon as design work for the A-6 had been completed. The EA-6B had four seats for extra crew to operate the electronics. Prowlers served until 2019. The tube coming out of the nose is for aerial refueling.



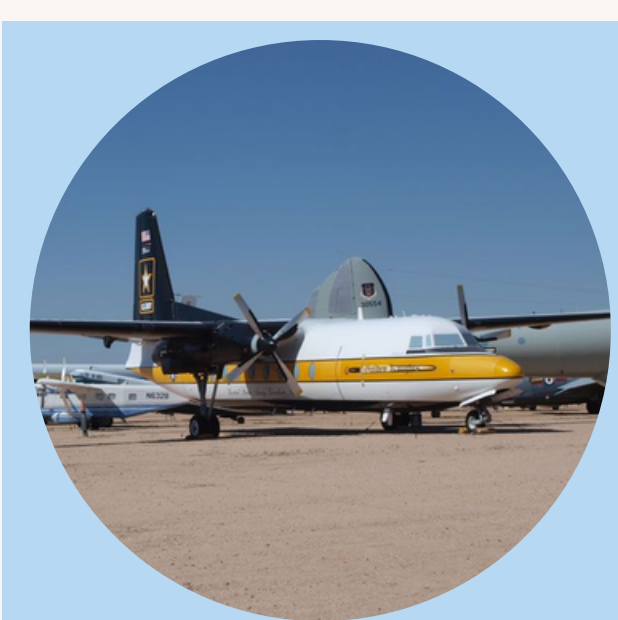
The **Gloster Meteor** was Great Britain's first jet and the only jet on the Allied side that saw combat during WWII. They entered service with the RAF in 1944 and were used to shoot down German V-1 Flying Bombs before they could land in Great Britain. The two-seat trainer, like this one, was introduced in 1948. The fighter version served with the RAF until 1962, and there are still two trainers in use by a private company today. This one is painted to represent a plane used by the Israeli Air Force.



The **TF-102 Delta Dagger** is a trainer, and so has two seats, one for an instructor and one for a student. This plane is the trainer version of the F-102, a plane used as a missile-armed interceptor. The F-102 features a "delta" wing, a new design at the time. Delta-wing aircraft handle differently than planes with other wing types, so it was determined that a dedicated trainer version needed to be designed to give pilots experience with the tricky to control plane. 63 TF-102s were built.

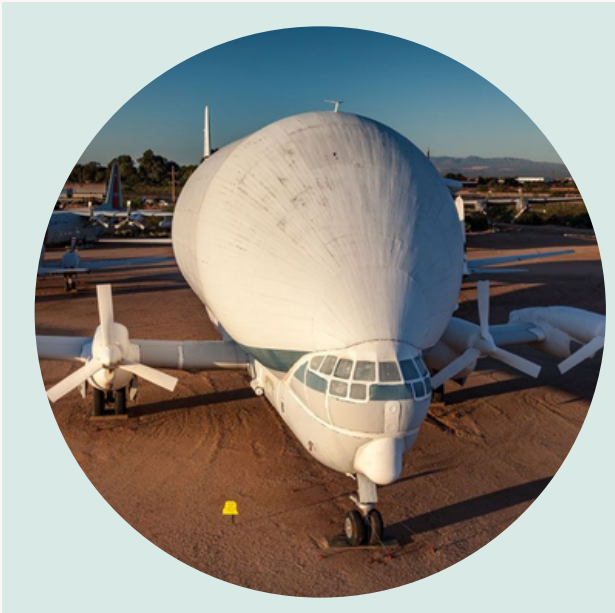


The **F5-Tiger II** was originally selected as an export fighter beginning in 1962, to send to foreign militaries participating in the Military Assistance Program. The US Air Force also used it, as did the Navy and Marines, eventually. They were particularly successful in their roles as "Aggressors" with the US military. In that role, the F-5s acted as enemy aircraft for pilots to train against. You'll notice this one is painted with both American and Soviet Union markings to represent an Aggressor.

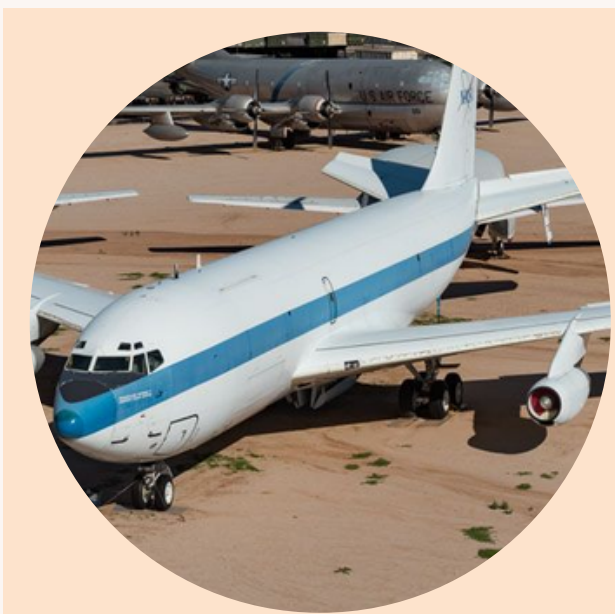


The **C-31 Troopship** is a militarized version of the Dutch-designed F27 Friendship airliner from the 1950s. This C-31 is one of two that were delivered to the US Army for use at air shows for the Army Golden Knights Parachute Demonstration Team. The team used C-31s from 1985 until 2019, when they were replaced by the C-147, another militarized version of an airliner.

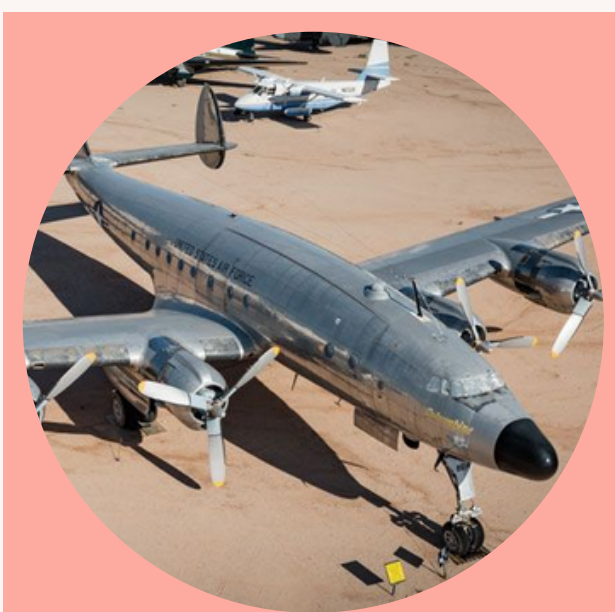




One of the most unique and recognizable aircraft on display is the **Super Guppy**. It was used as a cargo plane for NASA beginning in the 1960s. The Super Guppy is built from the parts of Boeing C-97s and 377 airliners. They are used to carry sections of rockets, Apollo space capsules, moon landers, and even entire other airplanes. The last cargo that this one carried before it was retired in 1991 was the Hubble Space Telescope.



The **KC-135** was designed as an aerial refueler for the US Air Force and entered service in 1957. They remain the main aerial tanker of the Air Force. This one was modified for use by NASA for astronaut training and zero-gravity experiments. The plane flew in a parabolic arc and during the dive, passengers experienced zero-gravity for up to 25 seconds. The constant arcs the plane flew did have a rather unpleasant effect on some people, causing the plane to earn the nickname "Vomit Comet".



This is the **VC-121**, based on the Constellation airliner. The Air Force purchased 10 of these planes for use as VIP transports. This one was used by General Dwight Eisenhower when he was commander of Allied forces in Europe after WWII. During his time as commander in Europe and later as President of the United States, Eisenhower used three Connies, all of which he named Columbine after the state flower of Colorado. Colorado is where his wife, Mamie, spent much of her childhood.



The **VH-34 Choctaw** is also a VIP transport. The helicopter was originally designed as a cargo and troop transport helicopter, but some were eventually converted to VIP transports for the Army beginning in 1958. This one carried Presidents Eisenhower, Kennedy, and Johnson during its time in this role, from 1960 to 1964. After 1964, all Presidential helicopter transport has been provided by the US Marine Corps.



This **VC-137** was assigned to the Executive Branch of the US government as a VIP transport in 1959. It is thought to have carried President Kennedy at least once, when it would have used the call sign "Air Force One". Any plane that carries a US President uses this call sign while the President is on board. The plane also used the call sign "Freedom One" in 1981 when it was used to bring the 52 American hostages from Iran back to the US and again in 1991 when it brought American POWs back from Iraq.

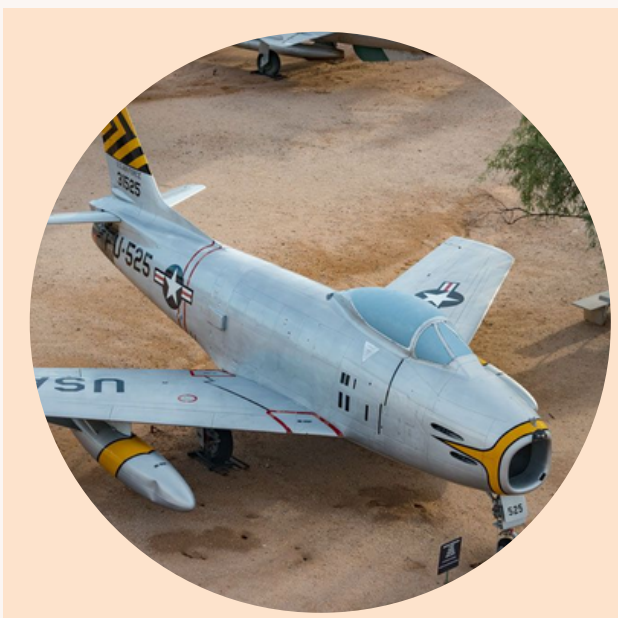




# OUTSIDE



The **VC-118** also served as Air Force One and carried Presidents Kennedy and Johnson on multiple occasions. Both men did prefer to fly on the larger and faster jet-powered VC-137s (there were 5 in total). However, many airports at the time were too small to accommodate the larger jets, so the smaller plane remained important to the Air Force One fleet. It was the last propeller driven aircraft to be assigned as the primary aircraft of the President. Now, Boeing 747s (VC-35s) serve as Air Force One.



The **F-86 Sabre** was introduced during the Korean War. This -H version features a larger fuselage and updated weaponry. It is also the last non-radar equipped Sabre to be put in production. By the time this version entered service, other aircraft were already outperforming the Sabre and it only served in front line units from 54-58, although it was used in National Guard units until the 1970s. The -L version is a radar version. Notice the different nose on this plane that accommodates the radar.



The aircraft in this row are **Harriers**, vertical take-off and landing planes. Designed in the United Kingdom, the Harrier was adopted by the British military and the US Marines in the 70s. You can see four rotating nozzles under the wings that direct exhaust from the engines down for vertical flight. The silver plane in the middle of the row is one of the experimental Kestrel prototypes and the other planes, all of which were built in England served in the British Navy and Air Force or with the US Marines.



This building is the **390th Memorial Museum**. It has a restored B-17 Flying Fortress displayed inside, as well as artifacts from the 390th Bomb Group of WWII.





## OUTSIDE - BEHIND HANGARS 4 AND 5



The **McDonnell Douglas DC-10** was borne out of the same request by the Air Force that gave us the 747. After losing the contract, Douglas redesigned the DC-10 as an airliner. An unusual design feature is the engine located on the tail. The last passenger DC-10 was retired in 2014, but many are still in use as cargo planes and the Air Force operates the aerial refueler, the KC-10. This plane was sold to Orbis, who converted it to a flying eye hospital with a surgical suite and classrooms.



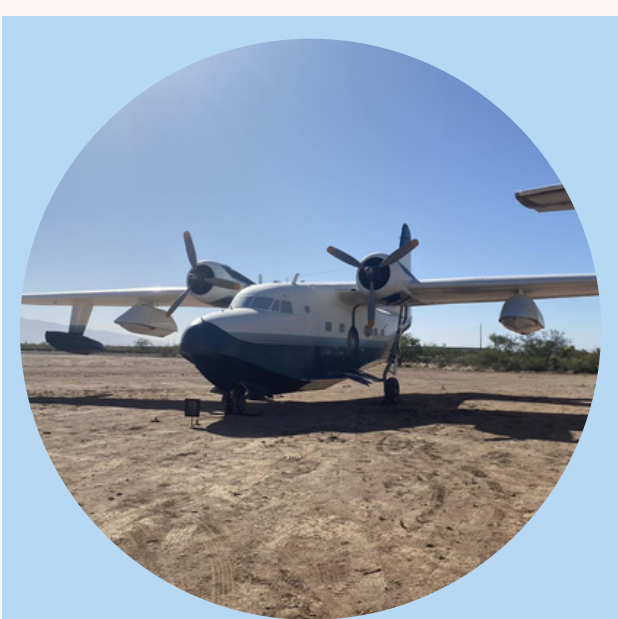
This plane is the **de Havilland DHA-3 Drover**, a small airliner that began flying in 1946. 20 of these planes were built the plane served with several airlines in Australia and some were sold to private pilots. The plane was most long-lived in its role with the Flying Doctor Service, from 1952 to the mid sixties, whose aim was to deliver medical supplies and treatment to isolated communities in Australia. The Flying Doctor Service still provides medical service and transport today.



The Coast Guard plane is the the **HU-25 Guardian**. The Guardian was a business jet that was adopted by the US Coast Guard in 1982. It was the only pure jet powered aircraft to ever serve with the Coast Guard and was used to search for survivors of accidents at sea, anti-drug patrols, and marine environmental protection. There is a large viewing window on the right side of the cabin to aide in those missions. They served until their retirement in 2014.



The Boeing **YC-14** was designed in the early 70s as a possible replacement for the C-130 Hercules, however, C-130s underwent upgrades instead, and the Hercules is still in use today. The most noticeable design feature of the YC-14 is the location of the engines, which go over the top of the wing. Only two were ever built (this is the first), and the other one is in storage across the street at AMARG ("the Boneyard") on Davis Monthan Air Force Base.

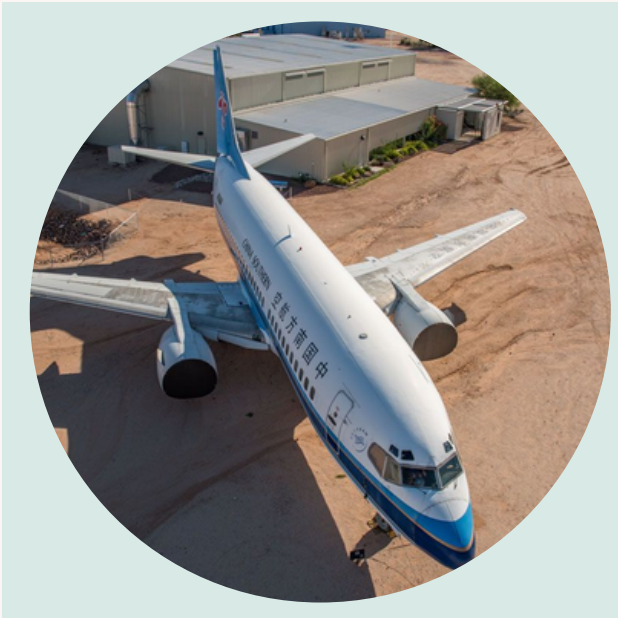


This plane is the **HU-16 B Albatross**. It was designed in 1944 to meet a Navy requirement for an amphibious utility aircraft that could also use skis to take off and land on snow and ice. The Air Force and Coast Guard also ended up using them, primarily for search and rescue, and general maritime patrol. They served into the 70s, and some can still be found flying in private hands. This one was eventually issued civilian registration and you can see jet skis that were attached underneath the wings

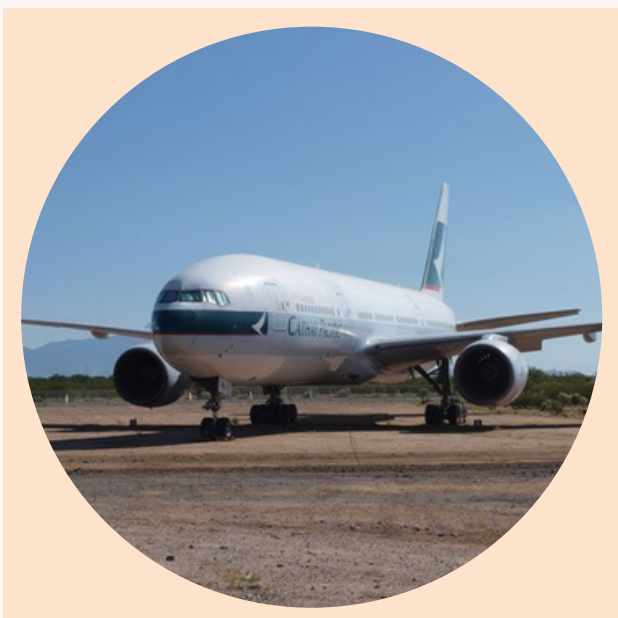




## OUTSIDE - BEHIND HANGARS 4 AND 5



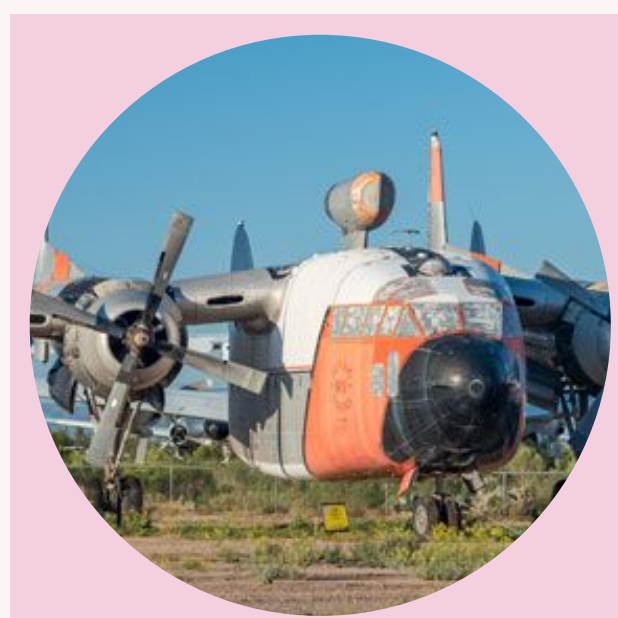
The **Boeing 737** is the most produced jet airliner in the world, with over 10,000 built as of 2018 and more on order. It was designed as a small, short-range airliner in 1964, and while that is the most common role, others have been made into military cargo planes, and the Navy anti-submarine patrol plane, the P-8 Poseidon. It is estimated that there are 1,000 737s in the air at any given moment, and that two take off or land somewhere in the world every second of the day.



The first flight of the **Boeing 777** (Triple 7) was in June 1994 and it began its career as a commercial airliner with United Airlines in 1995. It remains the largest twin-engine long range airliner and can carry almost 400 passengers and fly for 5,240 miles. As of 2018, 1,988 had been ordered by airlines, making them the most successful long-range airliner. This 777 is the first one ever built and flew during the testing and certification process. It later flew with Cathay Pacific from 2000-2018.



While the **Boeing 747** is one of the most iconic commercial airliners ever flown, it was designed as a cargo plane for the US Air Force. The Air Force chose another design, so Boeing made it into a commercial airliner. The first flight occurred Feb 1969 and the first commercial flight was later that year. They could carry more than 500 passengers. The days of jumbo jets are coming to an end, replaced by more fuel efficient, twin engine airliners. This one was used by General Electric to test different engines.



The **C-119 Flying Boxcar** was larger and featured strengthened wings and more powerful engines than the C-82s they were based on and first flew in 1949. C-119s were the primary medium cargo plane for the Air Force during the Korean War. They served with the Air Force until the 70s. Many retired C-119s were converted to aerial fire fighters in the 60s and 70s. In addition to tanks for fire retardant, some were also fitted with jet engines on the top to provide extra power while flying low over fires.



The **P2V Neptune** was designed beginning in WWII as a Navy land-based patrol plane. The first flight was in 1945, and despite the end of WWII, the Navy accepted the first delivery of Neptune in 1946. The P2V-7, like this one is the last version and included two small jet engines in addition to the propellers. After military service, many Neptunes were converted into firefighting aircraft, like this one, and some served in that role through 2016.