

LTV A-7 Corsair II

A-7 Corsair II



U.S. Navy A-7E from Attack Squadron 46 (VA-46)

Role	Attack aircraft
Manufacturer	Ling-Temco-Vought
First flight	26 September 1965
Introduction	February 1967
Retired	1991 (USAF, USN); 1993 (ANG) 1999 (Portuguese Air Force)
Status	Active (Hellenic Air Force)
Primary users	United States Navy (historical) United States Air Force (historical) Portuguese Air Force (historical) Hellenic Air Force
Number built	1,569
Unit cost	US\$2.86 million
Developed from	Vought F-8 Crusader
Variants	Vought YA-7F

The **Ling-Temco-Vought A-7 Corsair II** is a carrier-based subsonic light attack aircraft introduced to replace the United States Navy's Douglas A-4 Skyhawk, initially entering service during the Vietnam War. The Corsair II was later adopted by the United States Air Force, to include the Air National Guard, to replace the Douglas A-1 Skyraider, North American F-100 Super Sabre and Republic F-105 Thunderchief. The aircraft was also exported to Greece in the 1970s, and Portugal and Thailand in

the late 1980s. The A-7 airframe design was based on the successful supersonic Vought F-8 Crusader. It was one of the first combat aircraft to feature a head-up display (HUD), an inertial navigation system (INS), and a turbofan engine.

Compared to the F-8 fighter, the A-7 had a shorter, broader fuselage. The wing had a longer span, and the unique variable incidence wing of the F-8 was omitted. To achieve the required range, the A-7 was powered by a Pratt & Whitney TF30-P-6 turbofan producing 11,345 lbf (50.5 kN) of thrust, the same innovative combat turbofan produced for the F-111 and early F-14 Tomcats, but without the afterburner needed for supersonic speeds. Turbofans achieve greater efficiency by moving a larger mass of air at a lower velocity.

The aircraft was fitted with an AN/APQ-116 radar, later followed by the AN/APQ-126, which was integrated into the Integrated Light Attack Aircraft System (ILAAS) digital navigation system. The radar also fed a digital weapons computer which made possible accurate delivery of bombs from a greater stand-off distance, greatly improving survivability compared with faster platforms such as the F-4 Phantom II. It was the first U.S. aircraft to have a modern head-up display, (made by Marconi-Elliott), now a standard instrument, which displayed information such as dive angle, airspeed, altitude, drift and aiming reticle. The integrated navigation system allowed for another innovation – the projected map display system (PMDS) which accurately showed aircraft position on two different map scales.

The A-7 had a fast and smooth development. The YA-7A made its first flight on 27 September 1965, and began to enter Navy squadron service late in 1966. The first Navy A-7 squadrons reached operational status on 1 February 1967, and began combat operations over Vietnam in December of that year.

The A-7's integrated weapons computer provided highly accurate bombing with Circular Error Probable (CEP) of 60 ft. (20 m)

regardless of pilot experience. When Vought technical representatives were available to "tweak" the inertial systems, the CEP was often less than five meters for experienced fleet aviators. The inertial navigation system required a mere 2.5 minutes on the ground for partial (coarse) alignment, a big improvement over 13 minutes required in F-4 Phantom II. For newly manufactured E models, the A-7 required only 11.5 man hours of maintenance per mission resulting in quick turnaround and high number of combat-ready aircraft. However, after several years of exposure to the harsh marine conditions aboard aircraft carriers, the maintenance hours per sortie were often twice this amount.

The A-7 offered a plethora of leading-edge avionics compared to contemporary aircraft. This included data link capabilities that, among other features, provided fully "hands-off" carrier landing capability when used in conjunction with its approach power compensator (APC) or auto throttle. Other notable and highly advanced equipment was a projected map display located just below the radar scope. The map display was slaved to the inertial navigation system and provided a high-resolution map image of the aircraft's position superimposed over Tactical Piloting Chart/Jet Navigational Chart (TPC/JNC) charts. Moreover, when slaved to the all-axis auto pilot, the inertial navigation system could fly the aircraft "hands off" to up to nine individual way points. Typical inertial drift was minimal for newly manufactured models and the inertial measurement system accepted fly over, radar, and Tactical Air Navigation system (TACAN) updates.



YA-7D-1-CV AF Serial No. 67-14582, the first USAF YA-7D, 2 May 1968. Note the Navy-style refueling probe and the modified Navy Bureau Number used as its USAF tail number.

On 5 November 1965, the USAF announced that it would purchase a version of the A-7, designated the A-7D, for Tactical Air Command. The Air Force ordered the A-7D with a fixed high speed refueling receptacle behind the pilot optimized for the KC-135's flying boom rather than the folding long probe of the Navy aircraft. The most important difference from the preceding Navy versions was the adoption of the Allison TF41-A-1 turbofan, a license-built version of British Rolls-Royce Spey. With 14,500 lbf (64.5 kN) of thrust, the engine offered a considerable boost in performance. The M61 Vulcan cannon was selected in place of the twin single-barrel 20 mm cannon. In addition, avionics were upgraded. The YA-7D prototype with TF30 flew on 6 April 1968, with the first TF41 aircraft taking to the air on 26 September 1968. The aircraft were later updated to carry the Pave Penny laser spot tracker to add the capability to drop guided bombs. A total of 459 were built and assigned to tactical fighter wings of the Tactical Air Command (TAC).

The Navy was so impressed with the performance gain of USAF A-7D that they ordered their own version with the TF41 engine and M61 cannon, the A-7E, to go along with the new continuous solution weapon systems and sophisticated avionics that were developed in the A-7C model that was highly advanced for that era. The first prototype flew on 25 November 1968. A-7Es were built in 1970s with outstanding mission success in the fleet. In 1979 the first around-the-clock night-attack Forward Looking Infrared Radar (FLIR) -capable aircraft were delivered to VA-81 at NAS Cecil Field, Florida and VA-22 at NAS Lemoore, California. These aircraft were fitted with a non-jettisonable FLIR pod on the right inboard wing station which broadcast temperature discriminating images through the (heads Up Display) HUD. During the 1980s, when defense budgets finally allowed, funding for various system upgrades and engineering change proposal mods were incorporated to increase reliability, safety and mission effectiveness. Several squadrons of Navy A-7Es received night attack capability in early 1980s.

Production of Corsairs continued through 1984, yielding a total of 1,569 aircraft built. The A-7 Corsair has the distinction of being the only United States single seat jet fighter-bomber of the 1960s that was designed, built, and deployed directly into the Vietnam War.

In 1986, 231 A-7Es were equipped to carry the Low-Altitude Night Attack (LANA) pod, which projected amplified light image on the HUD and, in conjunction with radar, provided terrain following down to 460 mph (740 km/h) at 200 ft (60 m). A total of 529 examples were modified (not counting 67 A-7Cs).

The ANG A-7D/K Replacement Inertial Measurement System (RIMS) in late 1980s resulted in one of the first aircraft to employ a Ring Laser Gyro (RLG) and a more modern Tactical Mission Computer. Two prototypes of the supersonic YA-7F deep strike version was tested at Edwards AFB, before being canceled in 1990.



VA-147 was the first operational U.S. Navy A-7 squadron, in 1967.



A-7E from VA-72 flying over the Saudi desert during Operation Desert Shield.



MAPS A-7E – Bureau Number 159268



The airframe at the MAPS Air Museum is an A-7E version carrying the Bureau Number of 159268. It was built at the LTV Aviation facility in Dallas, Texas and officially delivered to the United States Navy on 21 March 1974.

The initial assignment for this Corsair was Attack Squadron (VA) 66 then stationed at the Naval Air Station (NAS) Cecil Field, Florida. Cecil Field would be “home” to 159268 for a majority of its service life. During this initial assignment, 159268 was deployed aboard the U.S.S. Independence (CVA – 62) to the North Atlantic and aboard the U.S.S. Eisenhower (CVN-69) to the Mediterranean and to the Indian Ocean.

In April of 1981, the Corsair was detailed to the Naval Air Rework Facility in Jacksonville, Florida.

In August of 1982, the A-7E was reassigned to Attack Squadron 174 again located at Cecil Field Florida. During this assignment, the aircraft was deployed aboard the U.S.S. Eisenhower to the Mediterranean. In August of 1984, the aircraft was reassigned to Attack Squadron 105 and in June of that year moved to Attack Squadron 15, both at Cecil Field. It was during the aircraft’s

time with VA-15 that it was once again deployed aboard the U.S.S. Independence, this time the Indian Ocean.

Upon the return to Cecil Field in October of 1984, 159268 was assigned to Attack Squadron 82 and quickly redeployed aboard the U.S.S. Nimitz (CVN-68) to the North Atlantic.

In February of 1985, the A-7E was assigned to Attack Squadron 46 at Cecil Field. During this assignment, 159268 was deployed aboard the U.S.S. America to the North Atlantic.

The airframe's last active duty assignment was with Attack Squadron 105 at Cecil Field.

In January of 1980, 159268 was dropped from the active inventory and transferred to the Aerospace Maintenance and Regeneration Center at Davis-Monthan Air Force Base, Arizona.

Fortunately, the aircraft's stay at Davis-Monthan was short as in June of 1991 it was transferred to the U.S.S. Intrepid Sea, Air and Space Museum in New York City. While in this museum, 159268 was featured in a scene from the movie "National Treasure" starring Nicholas Cage.

In late September of 2004, a team arrived in New York City for a visit to the U.S. Naval Museum on the decommissioned aircraft carrier/museum U.S.S. Intrepid. Disassembly of the Ling-Temco-Vought A-7E Corsair II (Bureau # 159268) and a Grumman F-11F Tiger (Bureau # 141783) started on September 28, 2004. Slowed by difficulty preparing the F-11 for transport, the arrival of these two aircraft at MAPS was delayed until November 2004. On 19 November of 2004, Corsair 159268 arrived at MAPS on indefinite loan from the United States Navy.

After restoration, the A-7E was dedicated on November 11, 2010 at Faircrest Memorial Middle School to the memory of two Navy pilots from VA-105 based on the U.S.S. Saratoga that were

killed in Vietnam in 1972 and whose names are memorialized on the cockpit of the aircraft.

Variants

A-7A

First production version. Early USN Corsair IIs had two 20 mm Colt Mk 12 cannons with 250 rounds per gun. Maximum ordnance, carried primarily on the wing pylons, was theoretically 15,000 lb. (6,804 kg), but was limited by maximum takeoff weight, so the full weapon load could only be carried with greatly reduced internal fuel; Equipped with AN/APN-153 navigational radar, AN/APQ-115 terrain following radar, and a separate AN/APQ-99 attack radar; 199 built.

A-7B

Upated TF30-P-8 engine with 12,190 lbf (54.2 kN) of thrust. In 1971, surviving A-7Bs were further upgraded to TF30-P-408 with 13,390 lbf (59.6 kN) of thrust; AN/APQ-115 terrain following radar in earlier A-7A is replaced by AN/APQ-116 terrain following radar; 196 built.

A-7C

First 67 production A-7E with TF30-P-408 engines.

TA-7C

Two-seat trainer version for U.S. Navy, 24 converted from A-7B, 36 from A-7C. In 1984, 49 airframes, including the 8 EA-7Ls, were re-engined with the TF41-A-402 and upgraded to A-7E standard.



TA-7C of VA-174 in 1988

A-7D

Version built for the USAF, with one Allison TF41-A-1 turbofan, and a single 20 mm M61 Vulcan Gatling cannon; AN/APN-153 navigational radar in earlier models is replaced by AN/APN-185 navigational radar, AN/APQ-116 terrain following radar in earlier A-7B/C is replaced by AN/APQ-126 terrain following radar; 459 built.

A-7E

Naval carrier-capable equivalent of the A-7D; AN/APN-185 navigational radar in earlier A-7D is replaced by AN/APN-190 navigational radar, AN/APQ-126 terrain following radar in earlier A-7D is replaced by AN/APQ-128 terrain following radar; 529 built.

YA-7F Strikefighter (A-7D Plus)

Stretched, supersonic version of A-7 powered by an F100, optimized for interdiction role, but cancelled after two prototypes were built.

A-7G

Proposed version for Switzerland, none built.

A-7H

Modified A-7E for Greece without air-refueling capability, 60 built.

TA-7H

Two-seat trainer version for Greece.



Greek Air Force TA-7H

EA-7L

8 TA-7C modified into electronic aggressor aircraft used by VAQ-34, upgraded to A-7E standard while retaining twin seats in 1984.



EA-7L of VAQ-34 in 1987

A-7K

Two-seat trainer version for Air National Guard, 30 built.

A-7P

Ex-US Navy A-7A rebuilt for Portugal, 44 refurbished with TF30-P-408 engines and an avionics fit similar to the A-7E.



A-7P of the Portuguese Air Force

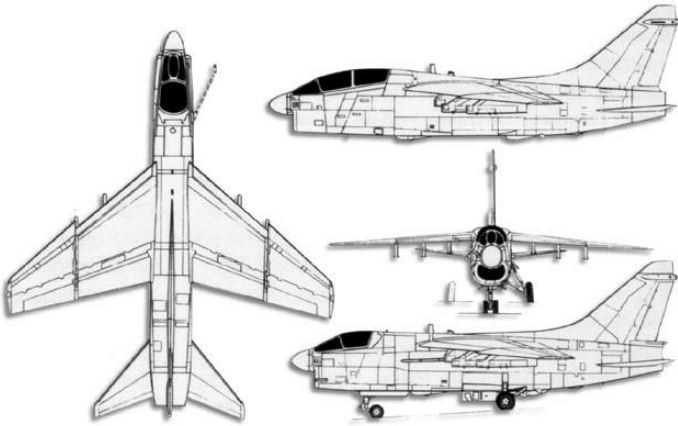
TA-7P

Two-seat trainer version for Portugal; six converted from ex-US Navy A-7A.

YA-7E/YA-7H

Two-seat prototypes built by Ling-Temco-Vought as a private venture.

General characteristics (A-7)



- **Crew:** 1
- **Length:** 46 ft. 1.5 in (14.06 m)
- **Wingspan:** 38 ft. 9 in (11.81 m)
- **Height:** 16 ft. 0.75 in (4.90 m)
- **Wing area:** 375 ft² (34.8 m²)
- **Airfoil:** NACA 65A007 root and tip
- **Empty weight:** 19,490 lb. (8,840 kg)
- **Max takeoff weight:** 42,000 lb. (19,050 kg)
- **Power plant:** 1 × Allison TF41-A-2 turbofan, 14,500 lbf (64.5 kN)
- **Performance**
- **Maximum speed:** 600 knots (698 mph, 1,123 km/h) at sea level
- **Combat radius:** 621 nmi (700 mi, 1,127 km)
- **Ferry range:** 2,485 nmi (2,860 mi, 4,600 km) with external fuel tanks

- **Wing loading:** 77.4 lb./ft² (379 kg/m²)
- **Thrust/weight:** 0.50
- Armament
- **Guns:** 1× 20 mm (0.787 in) M61 Vulcan 6-barreled Gatling cannon with 1,030 rounds
- **Hardpoints:** 6× under-wing and 2× fuselage pylon stations (for mounting AIM-9 Sidewinder AAMs only) with a capacity of 15,000 lb. (6,800 kg) and provisions to carry combinations of:
 - Rockets:**
 - 4× LAU-10 rocket pods (each with 4× 127 mm Mk 32 Zuni rockets)
 - Missiles:**
 - 2× AIM-9 Sidewinder AAM
 - 2× AGM-45 Shrike Anti-radiation missile (ARM)
 - 2× AGM-62 Walleye TV-guided Glide bomb
 - 2× AGM-65 Maverick
 - 2× AGM-88 HARM
 - 2× GBU-8 electro-optically guided Glide bomb
 - Bombs:**
 - Up to 30× 500 lb. (227 kg) Mark 82 bombs or Mark 80 series of unguided bombs (including 3 kg and 14 kg practice bombs)
 - Paveway series of laser-guided bombs
 - Up to 4× B28 nuclear bomb/B57 nuclear bomb/B61 nuclear bombs
 - Other:**
 - up to 4 × 300/330/370 US gallon drop tanks
 - Avionics**
 - Texas Instruments AN/APQ-126 terrain following radar