Review of

## Douglas A-4 Skyhawk

Produced by Virtavia

The Douglas A-4 Skyhawk is a single seated, one engine ground attack, fighter and adversary aircraft built by Douglas Aircraft Company (later McDonnell Douglas). Designed for the US Navy with capability to land and take-off on carriers, and with the possibility to deliver nuclear weapons on enemy targets. It was the replacement of the Douglas AD (A-1) Skyraider.

The original A-4 flew its first flight back in 1954 and started service in 1956. The Skyhawks played key roles in wars as the Vietnam War, the Yom Kippur War and the Falklands War, and now after more than 50 years, the aircraft is still in active service of non-US users but has been retired from the US Navy since 2003.

### <u>Specs:</u>

- **Produced by** *Douglas Aircraft Company*
- First Flight 1954 (org. A-4)
- Introduction 1956 (org. A-4)
- Role Ground-Attack, Fighter & Aggressor
- Status US Navy Retired
- Primary Users US Navy
- Built +2,900
- Unit Cost US\$ 860,000 (first 500)



I received this add-on aircraft directly from Virtavia and after the download had completed I started the installation process which is very user friendly. All that needs to be done is to activate the installation wizard and that will take care of the rest.

The installation did not take more than half a minute or so, and when completed I opened up my FSX folders to verify that the installation process had completed successfully. Of course it had and I found the A-4 files perfectly placed in my FSX SimObjects Aircraft library.

Hereafter I opened up my FSX and went into my virtual hangar. I found the Skyhawk perfectly placed together with other add-on aircrafts that I have from Virtavia. I quickly discovered that this add-on actually consists of several versions as the E and F model and also included are various liveries to make it perfect. One thing was a superb surprise and that was the liveries of the Skyhawk used in the movie Top Gun as the adversary aircraft flown by Tom Skerritt – nick name Jester. This was a very nice surprise because I often link this aircraft to that specific movie and now I suddenly had the opportunity to actually fly the aggressor aircraft – Cool!



The base models used are the A-4E and A-4F together with sub-variants and in regards to liveries you have both USN, USMC, two versions of the adversary, a Blue Angel and the RAN. The package also includes several different loadouts as bomb, missile and tank versions and to spice this all up to the next level, Virtavia have actually created tailored flight dynamics for 22 specific loadouts. The various loadouts can be toggled off using the "Jettison" switch in the cockpit to simulate weapons used when returning back to base. E.g. the rocket pods will still appear but with the nose cone gone and the rocket absent. This is really impressive and now the simmer has the opportunity to actually feel the difference of flying a clean aircraft compared to e.g. a fully loaded aircraft with heavy bombs and fuel tanks.

Together with this add-on aircraft is also included a 44-page manual which is very well written and to get the most out flying and understanding the Skyhawk, I would of course suggest to read or skim the manual. There are quite a few tips and descriptions that I found useful as e.g. how to get the APG-53A Radar to work. Virtavia have created a fully working APG-53A Radar with multiple modes and functions which is a really good feature.





I started my test with a tour around the aircraft just to get a feeling of the model. The model is indeed very well made with a huge number of details. The textures used are high quality textures of 2048 pixel bump-mapped and the finish of the aircraft was really stunning. Complete clean, sharp and very realistic modeling.

I compared the model to pictures that I could find on the internet of the real Skyhawks and the resemblance was remarkable. Virtavia has nailed this aircraft spot-on and it is really very impressively made. Very realistic looking with various characteristically features as e.g. the very tall nose wheel gear.

The model features furthermore several animations such as nose wheel steering, suspension, wheels turning, flaps, control surfaces, gear, canopy, speed brake and much more. Together with all this the model also features some effects as a really nice lighting with clean, clear and bright lights placed very accurately in accordance with the real Skyhawks and also a good smoke effect which I find to be very important in such an old military jet – that just contributes to create the best realism.

The Skyhawk also features an accurate paint-chipped Skyhawk access ladder that appears on shutdown and wingfold keypress, with a custom aluminium ladder for the Blue Angels model. As extra Virtavia has also created a fully working auto-spoiler on the later variants, which would be used when landing on a runway, but not on a carrier and also a fuel dump feature which causes a faint fuel trail to emit from the fuel dump vent.



Going from the outside to the inside of the Skyhawk I now found a stunning virtual cockpit. The virtual cockpit is completely made with all details, clickable switches and buttons that actually are linked to the various systems as e.g. a switchable gunsight. Virtavia has also included a high quality sound set for these switches and buttons that are very realistic. Multiple animations as e.g. the controls, very impressive and smooth 3D gauges and instruments that are super realistic and again very high quality textures are used to create a perfect looking virtual cockpit.

A superb depth is created in the virtual cockpit and I am very impressed by the quality of the details that Virtavia has included here. The finish is absolutely awesome and the feeling that I got when sitting in this virtual cockpit was truly very realistic. The atmosphere was very realistic both when preparing the aircraft for flight, when starting up the aircraft and also when flying the aircraft.

I was very curious about one specific thing that I find very important when using a virtual cockpit and that was the view of the wings from the cockpit. This was of course also created to a high perfection. I could easily see the wings when turning my head towards them and this really increases the overall realism greatly in my opinion.



A 2D panel is not included but I don't think that simmers would need it anyway since this virtual cockpit is so very well made. As extra the Skyhawk also features a fully working catapult bridle and hold back assemblies, but to use this you will need the FSX Acceleration Pack.

The sound set included is very realistic and I of course compared it to various sound files that I could find on the internet. I actually also discovered that Virtavia has included a sound file for the wheel brakes which are very well made and really gives the simmer that extra experience of being in a real Skyhawk. I tested the sound set in both stereo, 2.1 and 7.1 surround sound and it all worked perfectly.

The flight dynamics are all very realistic as far as what I could imagine, this even though that I haven't flown this aircraft in real life, but in accordance with standard aerodynamics and the specs on the datasheet for this aircraft, I would say that they are very realistic.

Overall this is an aircraft add-on of very high quality that features a huge number of details, a very realistic and accurate model(s) and a superb virtual cockpit with an awesome finish. Great depth and super smooth 3D gauges and instruments just to spice it all up. Virtavia has with this add-on really focused on the details and provides the simmer with a monster of an aircraft that are made with the eye for the details and to a high level of perfection.

I rate this add-on aircraft with 5/5-stars and awards it with the Rays Aviation Gold Award. I thank Virtavia for contributing to the flightsim community with this excellent old classic bird that they have created to this high level of perfection.

#### **Rays** Aviation



























# A-4 Model History (Real-Life)

XA-4D-1	Was the prototype
YA-4D-1	Flight test prototypes and pre-production aircrafts – later known as YA-4A and A-4A
A-4A	Initial production version (A-4D-1) – 166 built
A-4B	Strengthened aircraft and added air-to-air refueling capabilities, improved navigation and flight control systems, provision for AGM-12 Bullpup missile (A-4D-2) – 542 built
A-4P	Remanufactured A-4Bs sold to Argentine Air Force known as A-4B by the Argentines
A-4Q	Remanufactured A-4Bs sold to Argentine Navy
A-4S	50 A-4Bs remanufactured for Republic of Singapore Air Force
TA-4S	Seven trainer versions of the above. Different from most TA-4 trainers with a common cockpit for the student and instructor pilot, these were essentially rebuilt with a 28 in (710 mm) fuselage plug inserted into the front fuselage and a separate bulged cockpit (giving better all round visibility) for the instructor seated behind the student pilot
TA-4S-1	Eight trainer versions of the above. These were designated as TA-4S-1 to set it apart from the earlier batch of seven airframes
A-4D-3	Proposed advanced avionics version, none built
A-4C	Was the A4D-2N - Night/adverse weather version of A4D-2, with AN/APG-53A radar, autopilot, LABS low-altitude bombing system. Wright J65-W-20 engine with 8,200 lbf (36 kN) of takeoff thrust - 638 built
A-4L	100 A-4Cs remanufactured for Marine Corps Reserves and Navy Reserve squadrons. Fitted with A-4F avionics (including the fuselage "hump") but retaining J-65 engine and three-pylon wing
A-4S-1	50 A-4Cs remanufactured for Republic of Singapore Air Force

A-4SU	ST Aerospace Super Skyhawk extensively modified and updated version of the A-4S, exclusively for the Republic of Singapore Air Force (RSAF), fitted with a General ElectricF404 non-afterburning turbofan engine, and modernized electronics.
TA-4SU	Super Skyhawk extensively modified and updated version of the TA-4S & TA-4S-1 to TA-4SU standard.
A-4PTM	40 A-4Cs and A-4Ls refurbished for Royal Malaysian Air Force, incorporating many A- 4M features (PTM stands for Peculiar to Malaysia)
TA-4PTM	Small number of trainer versions of above
A-4D-4	Long-range versions with new wings cancelled. A-4D designation skipped to prevent confusion with A4D
A-4E	Was the A4D-5. Major upgrade, including new Pratt & Whitney J52-P-6A engine with 8,400 lbf (37 kN) of thrust, strengthened airframe with two more weapon pylons (for a total of five), improved avionics, with TACAN, Doppler navigation radar, radar altimeter, toss-bombing computer, and AJB-3A low-altitude bombing system. Many later upgraded with J52-P-8 engine with 9,300 lbf (41 kN) thrust - 499 built
TA-4E	Two A-4Es modified as prototypes of a trainer version
A4D-6	Proposed version, none built
A-4F	Refinement of A-4E with extra avionics housed in a hump on the fuselage spine (this feature later retrofitted to A-4Es and some A-4Cs) and more powerful J52-P-8A engine with 9,300 lbf (41 kN) of thrust, later upgraded in service to J52-P-408 with 11,200 lbf (50 kN) - 147 built. Some served with Blue Angels acrobatic team from 1973 to 1986
TA-4F	Conversion trainer - standard A-4F with extra seat for an instructor - 241 built
OA-4M	23 TA-4Fs modified for Forward Air Control duties for the USMC
EA-4F	Four TA-4Fs converted for ECM training
TA-4J	Dedicated trainer version based on A-4F, but lacking weapons systems, and with down-rated engine - 277 built new, and most TA-4Fs were later converted to this configuration

A-4G	Eight aircraft built new for the Royal Australian Navy with minor variations from the A-4F. In particular, they were not fitted with the avionics "hump". Subsequently, eight more A-4Fs were modified to this standard for the RAN. Significantly the A-4G were modified to carry four underwing Sidewinder AIM-9B missiles increasing their Fleet Defense capability
TA-4G	Two trainer versions of the A-4G built new, and two more modified from TA-4Fs
A-4H	90 aircraft for the Israeli Air Force based on the A-4F. Used 30 mm (1.18 in) DEFA cannon with 150 rpg in place of US 20 mm (.79 in) guns. Some A-4Es later locally modified to this standard. Subsequently modified with extended jet pipes as protection against heat-seeking missiles
TA-4H	25 trainer versions of the above. These remain in service, and are being refurbished with new avionics and systems to keep them in service
A-4K	10 aircraft for Royal New Zealand Air Force. In the 1990s, these were upgraded under Project KAHU with new radar and avionics, provision for AGM-65 Maverick, AIM-9 Sidewinder and GBU-16 Paveway II Laser-guided bomb. The RNZAF also rebuilt an A- 4C and 10 A-4Gs to A4K standard
TA-4K	Four trainer versions of the above. A fifth was later assembled in NZ from spare parts
A-4M	Known as the Skyhawk II. Dedicated Marine version with improved avionics and more powerful J52-P-408a engine with 11,200 lbf (50 kN) thrust, enlarged cockpit, IFF system. Later fitted with Hughes AN/ASB-19 Angle Rate Bombing System (ARBS) with TV and laser spot tracker - 158 built
A-4N	117 modified A-4Ms for the Israeli Air Force
A-4KU	30 modified A-4Ms for the Kuwaiti Air Force. Brazil purchased 20 of these second-hand and redesignated them AF-1. Now used by the Brazilian Navy on carrier duty
TA-4KU	Three trainer versions of the above. Brazil purchased some of these second-hand and redesignated them AF-1A
A-4AR	Known as the Fighting Hawk was 36 A-4Ms refurbished for Argentina
OA-4AR	Refurbished two-seat training version for Argentina

A-4Y Provisional designation for A-4Ms modified with the ARBS. Designation never adopted by the US Navy or Marine Corps

## Specifications A-4F



Douglas A-4E/F Skyhawk

## <u>In General</u>:

Crew	One (Two in OA-4F, TA-4F, TA-4J = Trainer versions)
Length	40 ft 3 in (12.22 m)
Wingspan	26 ft 6 in (8.38 m)
Height	15 ft (4.57 m)
Wing area	$259  \text{ft}^2  (24.15  \text{m}^2)$
Airfoil	NACA 0008-1.1-25 root, NACA 0005-0.825-50 tip
Empty weight	10,450 lb (4,750 kg)
Loaded weight	18,300 lb (8,318 kg)
Max weight	24,500 lb (11,136 kg)
Power plant	l × Pratt & Whitney J52-P8A turbojet, 9,300 lbf (41 kN)

### Performance

Maximum speed	585 knots (673 mph, 1,077 km/h)
Range	1,700 nmi (2,000 mi, 3,220 km)
Combat radius	625 nmi, 1,158 km ()
Service ceiling	42,250 ft (12,880 m)
Rate of climb	8,440 ft/min (43 m/s)
Wing loading	70.7 lb/ft² (344.4 kg/m²)
Thrust/weight	0.51
G-limit	+8/-3 g

#### Armament

Guns	2× 20 mm (0.79) Colt Mk 12 cannon - 100 rounds/gun
Hardpoints	4× under-wing & 1× under-fuselage pylon stations holding up to 9,900 lb (4,490 kg) of payload
Rockets	4× LAU-10 rocket pods (each with 4× 127 mm Mk 32 Zuni rockets)
Missiles	<ul> <li>Air-to-air missiles</li> <li>4× AIM-9 Sidewinder</li> <li>Air-to-surface missiles</li> <li>2× AGM-12 Bullpup</li> <li>2× AGM-45 Strike anti-radiation missile</li> <li>2× AGM-62 Walleye TV-guided glide bomb</li> <li>2× AGM-65 Maverick</li> </ul>
Bombs	6× Rockeye-II Mark 20 Cluster Bomb Unit CBU 6× Rockeye Mark 7/APAM-59 CBU Mark 80 series of unguided bombs (including 3 kg and 14 kg practice bombs) B57 nuclear bomb B61 nuclear bomb
Others	Up to 3× 370 US gallons (1,400L) Sargent Fletcher drop tanks (pylon stations 2, 3, 4 are wet plumbed) for ferry flight/extended range/loitering time

#### Avionics

Bendix AN(APN-141 Low altitude radar altimeter (refitted to C and E, standard in the F)

Stewart-Warner AN/APQ-145 Mapping & Ranging radar (mounted on A-4F, also found on A-4E/N/S/SU)