



Boeing AH-64D Apache Longbow™

USER MANUAL



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Notes on sim limitations & noteworthy features

Whilst the Apache Longbow™ has been made to take full advantage of every current technology available to the sim, we at Virtavia have still had to contend with the hard coded limitations of the sim engine.

Noteworthy features:

- The cockpit is modelled in ultra-realistic detail and features full night lighting textures & effects.
- Included are 9 model variants.
- The cockpit features realistic and high-resolution textures.
- The FSX version includes high-detail specular and bump maps for EVERY part of the VC and exterior.
- Each variant features customised flight crew.
- Pilot visibility can be toggled using the water rudder command.
- 6 interior and 4 exterior pre-set camera views
- FSX DX10 compatible model complete with interior self-shadowing, realistic spec and shine, and custom bump mapping to bring every rivet and surface to *life*.

Limitations in FSX:

- Lights can appear to differ in position when viewed from different viewpoints, such as the tower view. This is a known FSX issue, and not an issue with the model.

Notes regarding the AH-64D™:

- Whilst one of the main features of the AH-64D is the Longbow radar atop the rotor mast, not all variants carry Longbow.



Introduction

The Longbow™ is a modern development of the unrivalled Apache™ design. Longbow is characterised by its AN/APG-78 "Longbow" radome installed atop the rotor. The aircraft features more powerful engines in the form of the T700-GE-701C, as well as a glass cockpit and modern systems. The Apache Longbow has also been built by Westland for the British Army, in the guise of the WAH-64 Apache AH Mk 1. The Apache Longbow is operated by many of the world's major air arms, including the US Army, British AAC and the Israeli Air Force.



Credits & Thanks

The visual model, cockpit and textures were created by Virtavia.

The flight model was expertly crafted by **Michael Davies**.

The sounds were created by **Turbine Sound Studios**.

Updated cockpit texture text was drawn by **Toby23@gmx.net**.

Our thanks extend to the dedicated beta testers that scanned various versions with their trained eyes!



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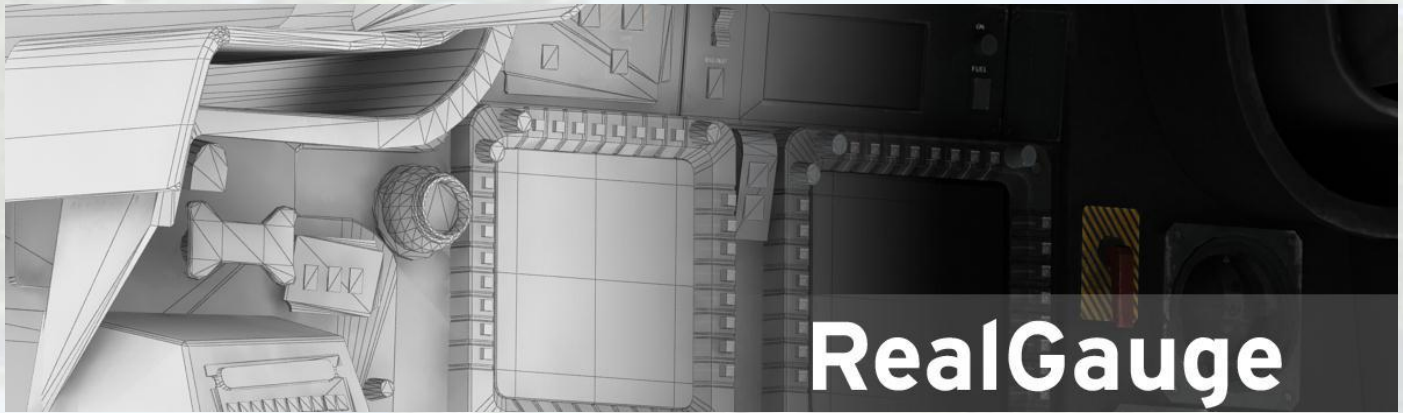
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Package Information



RealGauge Technology & the 2D panel

“RealGauge” is Virtavia’s own version of the seldom used, but very impressive 3D gauge technology. Each gauge is crafted in 3D and uses high resolution textures in order to create a level of immersion not possible with conventional 2D gauges. “RealGauge” creates very little overhead in the sim, allowing both your processor and graphics card to concentrate on providing a totally fluid sim experience. FPS with RealGauge technology is often *higher* than with less detailed conventional 2d cockpits.

Due to the complexity of the RealGauge technology, and the guaranteed frame rate increase, this product is designed to be completely flown from the Virtual Cockpit. A basic 2D panel is included with a GPS pop-up.



3D Virtual Cockpit Night Lighting

The virtual cockpit of the Apache comes equipped with realistic and high-definition night lighting effects and textures. Flood lighting can be toggled using the cockpit lighting controls.



Model Variants

In total there are **NINE** different model variants depicted. The models are documented below.

Each variant features customised flight crew and interiors.

Model variants:

AH-64D Apache Longbow

- Clean
- 8x Hellfire RF & 2x Hydra pods
- 8x Hellfire RF & 2x Hydra pods (with no Longbow radome)
- 8x Hellfire RF, 2x Hydra pods & 4 AIM-92 Stinger
- 16x Hellfire RF
- 16x Hellfire RF & 4 AIM-92 Stinger
- 4x Hydra pods
- 4x Hydra pods (with no Longbow radome)
- 4X Hydra pods & 4 AIM-92 Stinger

FSX Camera Views

Camera views are unique to the FSX version of this product. They allow the virtual pilot to move the viewpoint into a number of unique and helpful viewpoints. To change the camera *mode* use the 'S' key. To change *cameras*, use the 'A' key. Alternatively, clicking the main Flight Simulator window will bring up a quick and easy to use menu system.

Exterior Cameras

Camera 1 – Tailplane



Camera 2 – Right Side



Camera 3 – Left Side



Camera 4 – Top



Interior Cameras

Basic 2D Panel



Virtual Cockpit



Camera 1 – Gunner's Seat



Camera 2 – Radio Control



Camera 3 – Left MFD



Camera 4 – Right MFD



Camera 5 – Back-up Gauges



Camera 6 – Whiskey Compass



Aircraft General Arrangement

(W)AH-64D Apache Longbow

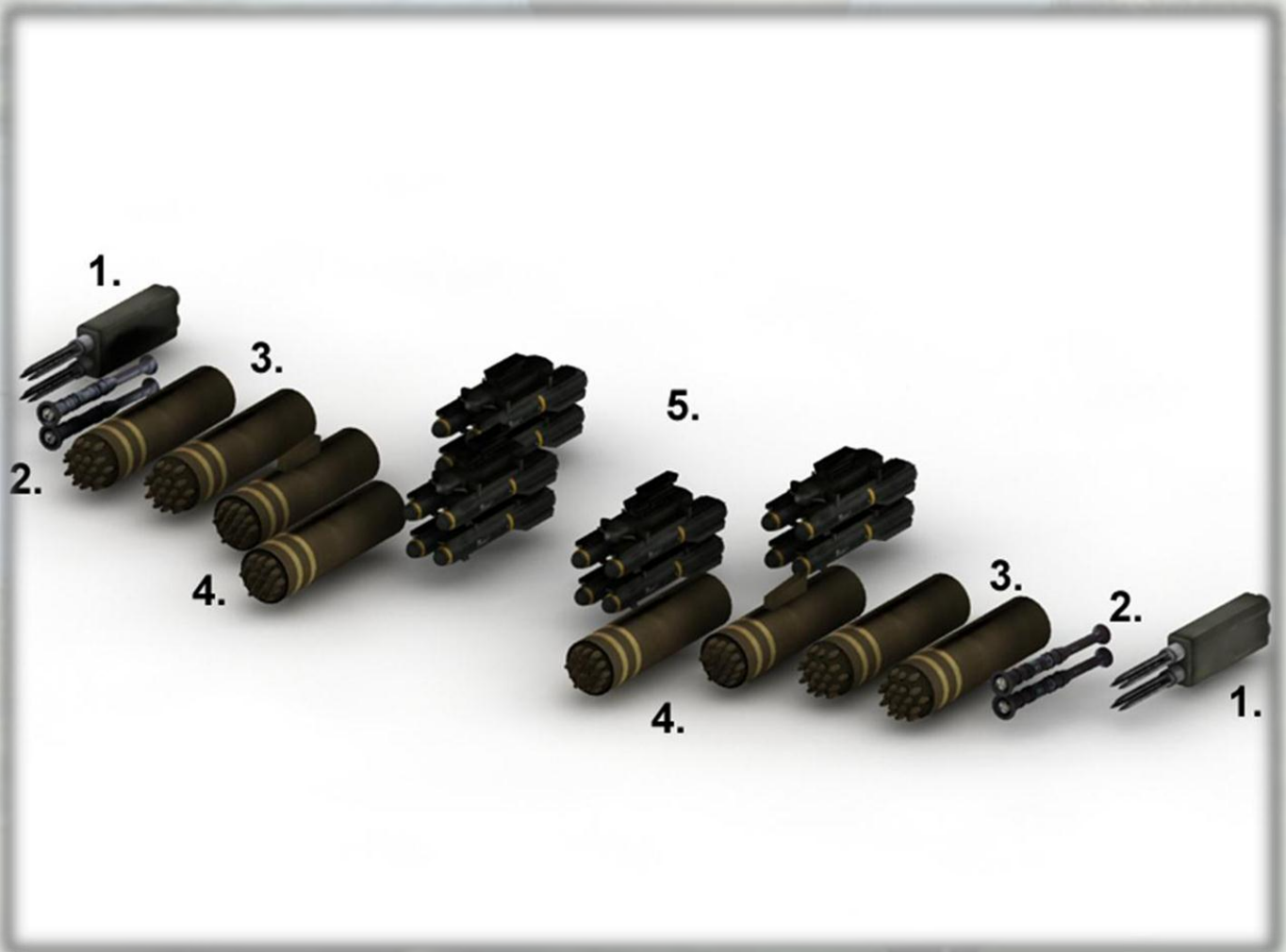


Weapons

Only the British AAC WAH-64D is currently equipped to carry the Starstreak missile system.

All other Apache can carry AIM-92 Stinger missiles on the wingtip pylons.

All models are interchangeable and can be used with any scheme.



- 1- Starstreak (mounted on wingtip pylon)
- 2- AIM-92 Stinger (mounted on wingtip pylon)
- 3- CRV7 (British AAC only)
- 4- Hydra rocket pods
- 5- Hellfire RF missile rack

Aircraft Information and Specifications

From Wikipedia:

The **AH-64D Apache Longbow**, is equipped with an improved sensor suite and weapon systems. The key improvement over the A-variant is the AN/APG-78 Longbow dome installed over the main rotor which houses a millimetre-wave Fire Control Radar (FCR) target acquisition system as well as the Radar Frequency Interferometer (RFI). The elevated position of the radome allows detection and (arcing) missile engagement of targets even when the helicopter itself is concealed by an obstacle (e.g. terrain, trees or buildings). Further, a radio modem integrated with the sensor suite allows a D-variant Apache to share targeting data with other AH-64Ds that do not have a line-of-sight to the target. In this manner a group of Apaches can engage multiple targets but only reveal the radome of one D-variant Apache. Apaches that include all of the improvements of the Longbow Apache, with the exception of the Fire Control Radar are still designated as "AH-64D Apache Longbows", as the radome is removable and interchangeable between aircraft.

Specifications

Cruise speed: 143 knots

Max speed: 197 knots

Service ceiling: 21,000 ft

Typical empty weight: 11,387 lbs

MTOW: 21,000 lbs

Crew: Two

Cockpit general arrangement

Over the next few pages are several diagrams designed to aid in cockpit familiarisation. Whilst the exterior aeroplane may differ in configuration, the cockpit is uniform throughout.

All systems that are labelled may be operated by clicking them with your mouse. Please read the descriptions carefully in order to fully understand what each switch, button, or lever, does.



Virtual Cockpit

Main (forward) panel



Key

- 1. Left MFD
- 2. Whiskey Compass
- 3. CDU
- 4. Right MFD
- 5. Airspeed Indicator
- 6. Artificial Horizon
- 7. Altimeter

Left console



Key

1. Fuel tank system control panel
2. Fuel control panel
3. Master system switches
4. Engine throttle levers
5. Ignition and starter controls
6. Fuel cross feed controls
7. Exterior and interior lighting controls
8. Icing controls & windscreen wiper control
9. Collective control
10. Engine throttle control

Right console



Key

1. Master MFD power switch
2. COMM1 controls and radio display
3. NAV1 controls

Individual Gauge Diagrams



Altimeter

1. Kollsman calibration knob at bottom right.
2. Kollsman display window in centre.



Airspeed indicator (ASI)

Displays air speed in knots.
VNE at 190 knots.



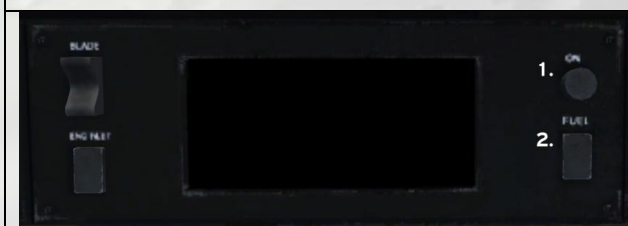
Attitude display

Displays pitch and roll information.



Master MFD control switch

Turns MFD system on or off.



CDU panel

- 1. Power switch
- 2. Mode switch

Multi-Function Display 1 (Left)

Unfortunately, information regarding the AH-64D cockpit systems is impossible to find. They have however been recreated as accurately as possible.

The MFD system defaults to the OFF state. To turn it on, use the power switch on the MFD master control panel.

When turned ON, the display will show mode 1. This is the only mode of operation for the left display.



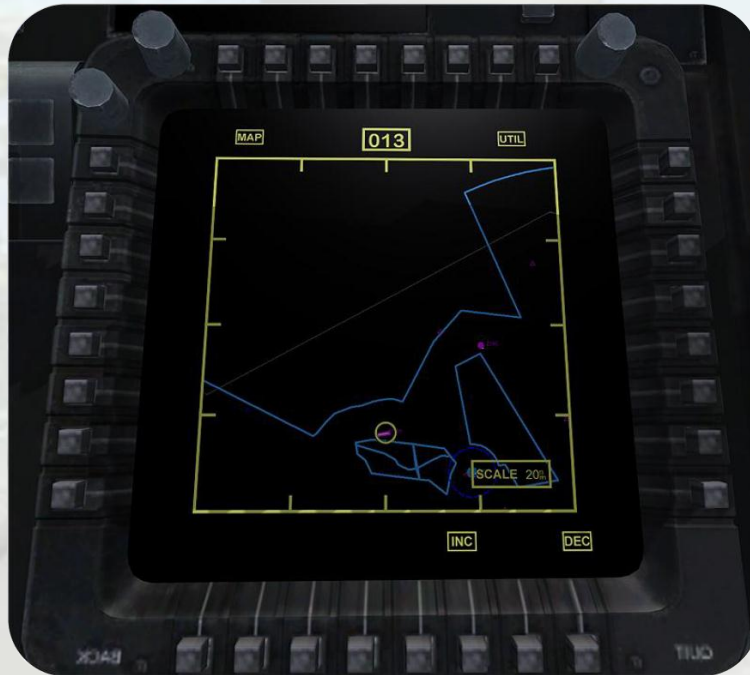
The MFD displays standard flight data:

- Airspeed in knots at the top left.
- Current heading at the top centre.
- Altitude in feet at the top right.
- An artificial horizon is represented in the main area, with a roll indicator atop.
- A VSI is on the left of the horizon plane.
- A turn and slip indicator is located at the bottom of the display.

Multi-Function Display 2 (right)

The right MFD displays two modes- MAP and UTIL.

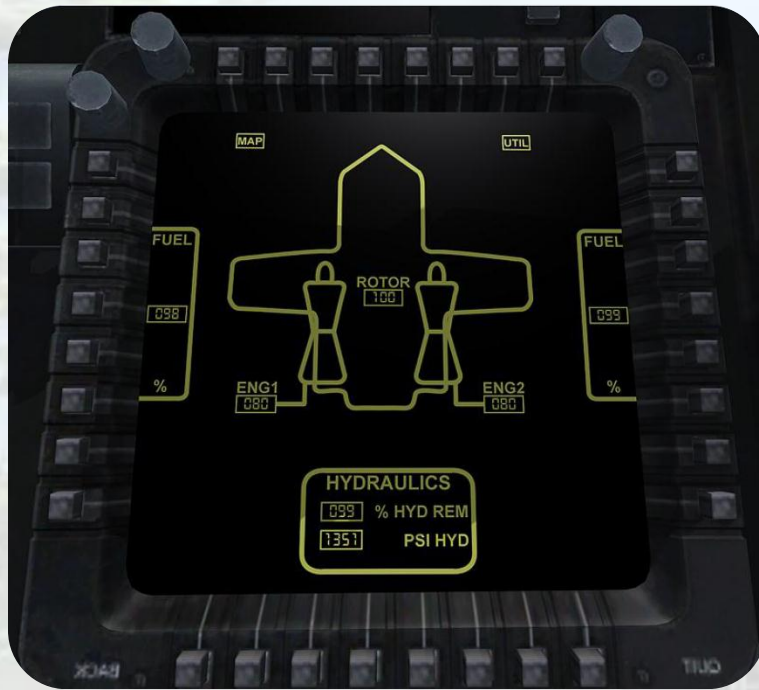
The system defaults to MAP when turned on. Modes can be switched by clicking the appropriate buttons.



The map can be scaled using the INC or DEC keys on the bottom of the display. Current scale is shown at the bottom right of the screen.

A digital heading readout is shown atop the moving map display.

Loaded flight plans are automatically displayed.



UTIL mode displays information with regards to helicopter systems.

Fuel remaining is shown in percent remaining at the sides of the monitor.

Rotor RPM is shown in a percentage value in the centre of the display

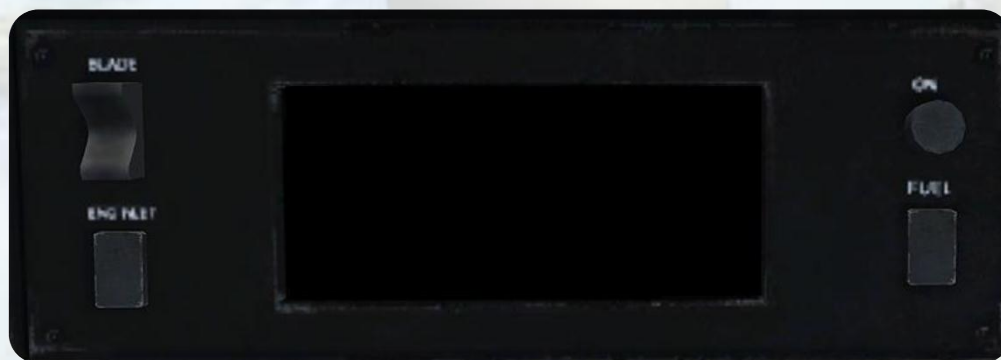
Engine RPM is shown at the bottom of the helicopter outline.

Hydraulic system information is shown in the box at the bottom of the display.

Central Display Unit (CDU)

The CDU also displays basic flight and system information.

It can be powered up using the switch on the top right of the display. The CDU has two modes that can be toggled using the switch below power.



Mode 1 shows fuel system data, including:

- Fuel remaining, in percent.
- Total fuel remaining in pounds.
- Total fuel used, in gallons.
- Fuel system pressure, in psi.



Mode 2 shows system and flight data, including:

- Local time
- Local date
- GPS Position
- Current heading
- Current airspeed
- Current altitude

