F-117A
User Guide

Version 1.2

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1   End User License Agreement

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Any inquiries regarding commercial, military or academic use of this program should be directed via e-mail to aerialsimulations@gmail.com. Product support is provided by Aerial Simulations via Discord.

https://discord.gg/fkwpKpqfGy[1]

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2 Introduction

Thank you for purchasing the Aerial Simulations F-117A! In this manual you will be able to find out about some of the quirks and features of the simulation of this iconic aircraft.

I recommend you have a quick read-through as there are some extra steps involved in making sure the aircraft does what you expected it to do. If you have any other questions, bug reports, or suggestions, head over to our discord.

https://discord.gg/fkwpKpqfGy[2]

The F-117A is an American single seat, twin engine stealth attack aircraft. It first flew in 1981 and was placed into service in in 1983. It was official retired in 2008 but has since been seen flying as a training aircraft. In total 64 F-117 were built.

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[2]`https://discord.gg/fkwpKpqfGy`

3 Product Features

In this section you will find an overview of the features currently included in the product that are on top of what default aircraft include.

- High Resolution PBR textures and material inside and out
- Detailed animations both inside and out including:
  - Blow-in doors
  - Aerial refuelling door
  - Canopy
  - Glare shields
  - Bomb bay doors, trapeze and payload
  - APU door
  - Tailhook
  - Parachute
  - Antenna
  - Chocks and ladder
- Radar Cross Section monitoring (RCS) system
- Fully adjustable cockpit lighting
- Custom flight model based on F-117A flight manual charts. High approach speeds, high AOA departures, and normal flight envelope all simulated
- Accurate fuel system
- Simulated effect of antenna positions on communication equipment
- Custom Mach Hold simulation
- Custom Drag Chute simulation
- Fully implemented icing system
- Hidedable RCS enhancers and beacon lights
- Easy to use paint system, only single file needed to make most F-117A paint schemes, with 9 already included (PC Only)

4 How To

In this section you will find all the tips and tricks you need to use all the features of this aircraft.

4.1 Startup

Startup can be completed using the in game checklists, but if you are struggling to find switches you can use this guide instead.

1. Turn on the Battery

2. Optionally, turn on the External power

3. Start the APU

4. Engage the right starter, then at 10% core rpm move the throttle to idle

5. Repeat for the left engine

4.2   Engine Fuel Cutoff

To cutoff fuel to the engines, first bring the throttles to idle. Then while holding left click on a throttle, right click and it will move to cutoff.

4.3   Parking Brake

The real F-117A does not have a parking brake, it is just chocked when parking. For convenience I have made the Emergency brake button a parking brake in the simulation.

If it is green, the brake is on.

If no light is visible, then it is off.

4.4   Things to remember while flying

The most important thing to remember while flying this aircraft is to keep your speed up. It flies much more stable and is less likely to depart and enter a spin if your speed is over 250KIAS. You should also remember these other things while in various stages of flight.

Takeoff:

- Before takeoff trim nose down 1 unit to help compensate for the pitching moment that occurs when you raise the aircraft's landing gear.

- During takeoff don't lift your nose till 140KIAS. At 140KIAS lift your nose to 5 degrees and the aircraft will lift off by 160KIAS.

Climb:

- Best climb rate is 340KIAS or 0.74Mach

Decent:

- Descend at 250KIAS and plan for 2 miles travelled for every 1000 feet you need to descend.

Approach:

- Approach at between 160-190KIAS depending on weight. Try and aim for an AoA of 8 degrees. At 9.5 degrees you will lose pitch authority so be sure not to slow too much. It is much safer to keep your speed slightly high.

Landing:

- Touch down at your approach speed and lower the nose as soon as possible. Aero braking is not effective in the F-117. Once the nose is on the ground deploy the drag chute and brake in order to slow down.

High AOA and load factors:

- When pulling fully aft on the stick the aircraft will command 6G's and when pushing forward it will command -2G.

- Max positive AoA is 13 degrees and the aircraft will try and limit you to this. But it is possible to get higher than this. Past 16 degrees AoA the aircraft is at risk of departing and flipping into a flat spin.

- There is no negative AoA limit but avoid anything past -5 degrees. At high negative Angles of Attack the aircraft can lose pitch authority and get stuck pitching down.

4.5 TACAN

The TACAN system will only display direction and distance information on the HSI and steering information on the ADI. No information will display on the HUD or MFDs. To use the TACAN system you must do the following:

1. Tune the TACAN frequency on the TACAN panel on the right console of the cockpit

2. Extend the antennas

3. Make sure the HSI mode select switch is set to TCN

4.6 ILS

The ILS will display localiser and glide slope information on the HSI and ADI, To get glide slope information the landing gear must be extended as the antenna is on the front gear bay door. The ILS system is similar in function to the TACAN system and similar steps must be taken.

1. Tune the ILS frequency on the ILS panel on the right console of the cockpit

2. Extend the ILS antennas

3. Make sure the HSI mode select switch is set to ILS

4.7 RCS Enhancers and Beacon Lights

To hide the RCS enhancers and beacon lights, which is how the aircraft is configured when going into combat, pull the bottom left most breaker on the right side of the cockpit

4.8   Hide Glass Tint

To hide the tinted glass on the interior view, pull the breaker second from the left, on the bottom, on the right side of the cockpit.
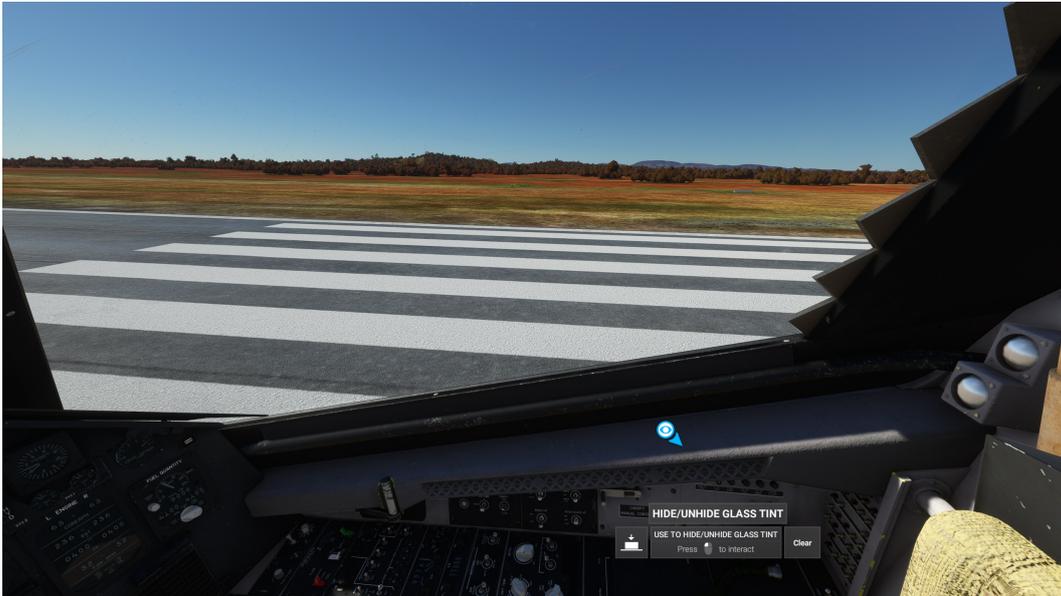
4.9   IRADS

To make the IRADS screen show an image the following conditions must be meet.

- Battery ON

- IRADS Power ON

- FLIR dial moved to IR or IR/LSR

4.10   Autopilot

The Autopilot Modes included are Altitude hold, Mach hold, HDG hold and DEST/NAV hold. This section will explain the usage of each mode.

For any of the Autopilot modes to function, the Autopilot master must be set to "Engage".

Altitude hold can be turned via the Alt/off/Mach 3 position switch on the autopilot panel. When moved to "Alt", the autopilot will set the capture altitude to the altitude the aircraft is currently at. This is best done while flying level. If your climb rate is +-1000fpm or more, the aircraft may pitch sharply up or down and go into a flat spin.

Mach hold is the Autopilot pitch hold mode, when engaged the aircraft will hold your current Mach via changing the pitch of the aircraft. Best rate of climb is at Mach 0.74.

To engage HDG or DEST/NAV hold modes, the NAV master switch on the autopilot panel needs to be turned on.

To follow a flight plan in the simulator, the DEST/NAV hold mode should be used. When engaged the sim will try and go to the waypoint selected on the HSI in the MFD. If you are familiar with the autopilot in the default F/A-18E it functions the same way. To make it follow your flight plan, you need to activate "Auto" mode in the MFD on the HSI page.

HDG hold is much more simple, when first pushed the HDG bug will be set to your current heading and the mode will be activated. You can then turn by moving the heading bug on the main HSI or on the Auxiliary Navigation panel

4.11 Lighting

The exterior and interior lighting panels can be found on the left wall of the cockpit. The top two interior lighting knobs are not visible from the pilot's view but the knobs can still be turned if moused over.

There are also lighting controls on the side of the UFC and on the CDU.

4.12 APU

The Auxiliary Power Unit has a few quirks that might not be obvious to someone unfamiliar with the F-117.

- It will only generate power if the AUX GEN switch on the left side of the APU panel is on

- If turned off a APU OFF annunciation will appear on the annunciator panel on the lower right hand side of the front panel. To remove this the APU fuel valve needs to be closed, this can be done by using the guarded switch on the APU panel, or by pushing the APU FUEL CUTOFF switch light on the right hand glare shield.

- The APU only draws fuel from the right feed tank, so if it is left on for a long time a fuel imbalance will occur between the right and left sides of the aircraft. This can be fixed with the fuel crossfeed switch on the fuel panel, which will turn off the pumps on the side fuel is being transferred to.

4.13   Fuel

When changing the level of fuel using the payload manager the tanks fill in pairs, they then move the fuel to the correct tanks. This can take a minute to occur so CG will change a bit after changing the fuel level. In most circumstances this won't matter as the fuel will be in the right places by the time the aircraft is in the air.

4.14   Radar Locator System

This section will explain the Radar Locator System switches and their function.

If the antenna switch is moved to 'Extend', the RLS will extend regardless of the power switch position.

If the antenna switch is in 'Auto', the RLS will extend if power is on, and retract if power is off.

4.15   Radar Cross Section Monitoring System

On the Master Test panel on the left cockpit wall there is a switch label RCS MON. When this is on, lights on the left glare shield will come on if the blow in doors are open, any antenna is out or the RLS is out.

4.16   Glare Shields

Both the left and right Glare shields are moveable, but only when the cockpit is more the 37% open. If left up when closing the canopy, they will be crushed down underneath it. The clickspots for them are the entire length of the bar below them.

4.17   Drag Chute

To activate the Drag chute pull the large lever on the front left panel. It can be reset by clicking it again. Its effectiveness is affected by throttle percent and aircraft weight.

The Drag Chute can also be bound to the "deploy water rudder" key bind. This will only deploy the chute, to reset or detach it still need to be clicked from inside the cockpit.

4.18   Canopy

To move the canopy it first needs to be unlocked. Do this by moving the lever on the right side of the cockpit.

Next use the switch on the right wall labelled "Canopy" to move it. Hold the switch in the direction you want the canopy to go.

4.19   Bomb Bay

The bomb bay doors can be opened in two ways.

To open both at the same time you need to use the 'GND CONT DR" switch located on the Master Test panel. It is hidden from the pilot's point of view so you will have to move your camera to access it.

Under the cover is a 3 position switch, "Close" "Off" and "Open". Move the switch to the desired position.

The other method of opening the bomb bay doors is by using the selector on the Armament panel at the front of the cockpit. This selector can only open 1 door at once.

4.20 Payload

In the marketplace version of the aircraft you can equip travel pods in the bomb bays. This is done by putting more than 100lbs and less than 500lbs of weight in the payload station you want the pods to appear

You can also jettison the payload using the jettison select on the Armament panel. First rotate the bomb bay select dial to the selected store then push the jettison button. This will remove the payload and weight.

On PC, you can download a mod on our discord which will enable weapons

to appear on the aircraft. Once the mod is placed in your community folder, input the following weights into the payload station to make each weapon appear

- 750lbs or 340kg = B61 Nuclear Bomb

- 2000lbs or 908kg = GBU-10

- 2010lbs or 912kg = GBU-31 BLU109

- 2020lbs or 917kg = GBU-31 MK84

- 2030lbs or 921kg = GBU-27

4.21   Ground Equipment

When on the ground it is possible to make chocks and a ladder appear, and also make the pilot disappear. To do this follow these steps:

Chocks:

- To make the chocks appear the aircraft needs to have the engines off and the parking brake on.

Ladder:

- For the ladder to appear the aircraft needs to have the engines off, parking brake on, and the canopy open more than 90%.

Pilot:

- The pilot will hide if the aircraft's engines are off, parking brake is on and the battery is off. To make the pilot appear in a C&D cockpit, the battery needs to be turned on.

5   Support

The quickest way to receive any product support would be to go to the Aerial Simulations discord at https://discord.gg/fkwpKpqfGy[3]. Otherwise email aerialsimulations@gmail.com but support may be a bit slower as this mailbox is not checked often.

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[3]https://discord.gg/fkwpKpqfGy