FSX: Acceleration
“Unofficial”
F-18 Cockpit Manual

by K. Copeland (a.k.a. RxWookie)

Dedication: This manual is dedicated to my father who used to take me flying in a Cessna 172 on the weekends. Thanks for being my best friend and for always challenging me to do better. I miss you everyday.
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1.) Introduction

So you decided to buy the FSX: Acceleration Expansion. After getting everything installed, you finally have the program up and running. It’s not a hard decision which plane you’re going to try out first... the F/A-18, of course! The load screen takes forever, or at least it seems that way, and suddenly you are sitting in one of the meanest, fastest, and toughest aircraft ever built. I mean, come on, its nickname is ‘Hornet’, what else would you expect? You smile involuntarily and then look around the beautifully rendered virtual cockpit and suddenly realize, “I have no idea what these displays, switches, and readouts mean!”

If you are like me, you shrug, open the throttles to full, and take off... relying on previous flight experience to guide you through. Somehow, after a lot fun (including barrel rolls, inverted loops, and a blistering supersonic ride), you find your way back to an airport and land. What an exhilarating ride! This aircraft is simply fun to fly. After a few flights like this, you begin to get a feel for some of what you are seeing in the cockpit, mainly the HUD. But, you wonder... is there a guide out there to help you understand what all these controls and readouts actually mean? After a few, frustrating hours on the internet, you realize that there is very little available, especially in condensed and printable format. The only real exception is the fsdreamteam.com forum where you can find some useful information from the guys and gals who worked their tails off to bring you one of the best aircraft for the MS FlightSim series, ever.

So, I set out to create this document to help others who want to get everything they can out of this amazing aircraft. Even if you never use the navigational aids to make an authentic cross-country trip, I hope that this information helps you in some small way. I know that understanding all of the readouts in my HUD and virtual cockpit was the difference between only occasionally (and successfully) landing on a carrier to consistently snagging a ‘3-wire’ with a textbook approach. It also helped me appreciate just how hard the design team must have worked on this amazing virtual cockpit.

Please note: In order to allow you to visualize what you will actually be seeing in FSX, most images are taken from actual screen shots. I hope you enjoy!
Let’s fly!

F-18 taking off from a carrier at full military power.
Photo courtesy U.S. Navy
(public domain)
2.) Getting Oriented

While your first experience with the F-18 cockpit is likely to leave you bewildered, once you get oriented it’s actually a very nice layout. If you look out the front canopy, you will see the Head-Up Display (HUD) which gives flight data such as speed, altitude, etc.

Looking down into the cockpit, you will see three large displays. The one on the upper-left is known as the Master Monitor Display (or MMD) and serves as a primary monitor for the pilot. The one on the upper-right is known as the Multifunction Display (or MFD) and is generally tasked out to radar, though it is constantly changed as the situation dictates. The final large display is located in the bottom-center of the cockpit and is called the Horizontal Situation Display (HSD) and is primarily used for navigation. The beauty of this design is that the displays all have the same root menu and submenus available which gives triple redundancy in the event of a system failure. It also means you can configure the displays to your personal preferences.

In between the two upper displays is a number pad and row of displays showing several letters known as the Up-Front Control Panel (UFC). This controls communication and NAV / Auto-Pilot functions. To the left and right of the lower display (HSD) are a small set of standard instruments intended solely for use as a backup system. If you pan left and right in the cockpit, you will see lots of switches and knobs, many of which are useable.
What do all those knobs and switches do again?

F/A-18 cockpit.
Photo courtesy U.S. Navy
(public domain)
3.) Using the Head-Up Display (HUD)

The HUD on the F-18 was one of the first developed to serve as a ‘Primary flight display’ and as such provides the majority of information you will need to visually fly the F-18 in FSX. Switching the cockpit to 2D mode causes the HUD to be superimposed over the screen.

At the very top of the display is a digital heading and tape. In the center of the display, and moving around, is the flight path vector. Wherever the flight path vector sits in the HUD is where the aircraft is headed regardless of pitch, attitude, etc. There are several horizontal lines representing the pitch ladder. At the bottom is a bank indicator.

To the left you will find airspeed in kts, angle of attack (α) in degrees, current mach speed (M), acceleration/gravitational forces (G) you are experiencing, and peak aircraft G’s. On the right, you will find the ascent/descent rate in ft per min, current altitude, and altitude barometer setting.

Just outside of the glass portion of the HUD is a visual angle of attack indexer. This is used in setting up the aircraft for landing. If you see an arrow pointing up, you need to reduce thrust (or pull back on the stick). If you see an arrow pointing down, you need to add thrust (or push the stick forward). If you see an orange donut, the angle of attack for landing is ideal.
Ready for the ride of your life?

Front canopy view of F-18 sitting on carrier deck, attached to catapult.
Photo courtesy U.S. Navy
(public domain)
4.) Using the Head-Down Displays

There are three large digital display screens (DDIs) that provide information. They are surrounded by twenty softkey push-buttons and all have the same menus and displays available.

*Root Menu* – The root menu is the top-level option where all other display menus can be selected.

*SMS (Stores Management System)* – SMS controls armament. Since weapons are not implemented in FSX, this screen is blank and the ‘GUN’ submenu is inoperable.
RDR – The A/A Radar screen is used in finding and intercepting aircraft. The first thing to realize is you need targets around you to see anything... so turn up the air traffic sliders.

It is important to understand that the radar is ‘forward looking’ only. Targets appear on the screen as little squares. When you select a target, using TUP and TDN, it will be enclosed by two vertical lines. Numbers will appear to the left and right of the vertical lines indicating target Mach speed and target altitude respectively. The straight line leading off the target indicates their direction of travel relative to your own. If it points to the right, they will be heading from your left to your right as you look out the canopy. If you want to know their exact heading, check the upper left corner for target heading in degrees. In the left-center of the display is an '<' icon and a number (either + or -). This is your altitude differential from the target in thousands of feet. So... if it reads -30.5, you are 30,500 ft higher than the target; and, if it reads 9.5, you are 9,500 ft below the target (if it’s positive the target is higher than you).

Okay, I’ve got a target... how far away are they? Remember, the radar is ‘forward looking’ so the higher up the screen they are, the further away they are. That doesn’t help you much, though. So, look on the right side for a '>' icon. This is a visual representation of your distance to target relative to scale. Your scale is denoted by the number in the top right of the display. In the example below, the scale is 40 nm. This means each individual hash mark represents 10 nm.

Take a look at the two screen shots below. On the left, you will see the radar screen. Notice the target is at the bottom-center of the radar screen. He is traveling at Mach 0.6 at roughly 3,000 ft. He is approximately 700 feet above me and his true heading is 267 degrees. The '>' icon (on the right) is at the very bottom indicating the target is less than 1 nm in front of me. The radar also shows that I am turning to the left (represented by the center horizontal line that is shifted up on the left... which is actually an artificial horizon). In fact, I am turning to place the target square in my sights. Essentially, this target is in perfect ‘kill position’ if we were dogfighting.
Now that we understand target acquisition and tracking, let's see what else is displayed. On the top left, there is a number (‘2B’) that designates the vertical beam pattern. You can change it with the softkey next to it, but it has no effect on the operation of the radar. The term RWS is an indication of the radar mode (Range While Scan). In the lower left corner, you will find your current speed in kts with your Mach speed just below it. In the lower right corner is your current altitude in thousands of ft. To the right of your current speed is the beam width in nautical miles. Correspondingly, on the upper right hand corner is the radar range in nautical miles. These can be changed using the softkeys near them. Lowering these numbers narrows the radar range providing extra detail. Raising these extends the radar range for a broader view. In the example above, each section of the radar represents 10 nm for a total scan of 40 nm by 40 nm. The bottom-right softkeys (TUP & TDN) are used to cycle between targets. The toggle dial at the top cycles through day/auto/night modes, change it by clicking and dragging with mouse. Finally, you can adjust brightness and contrast by dragging the appropriate dials with the mouse.

Practice your technique by assessing the target selected in the screenshot above. Find the one that is selected. He is traveling Mach 0.3 at approximately 2,000 ft (0.3 | 0.3 | -2--). Look to the left to see he has a true heading of 354 and is roughly 8,200 ft below me (< -8.2). His position on the screen tells me he is off to my left, traveling from my left to my right. He is approximately 38 nm in front of me (found using the ‘>’ icon on the right-hand side and seeing the radar is set to sweep both 40 nm wide and 40 nm ahead).

In fact, this target is a Cessna Caravan who is flying through an active MOA that I have been dispatched to intercept in the mission “Rocket Launch Air Cover”.

I am traveling 351 kts (Mach 0.6) at a height of 10,259 ft and flying relatively level (artificial horizon is level). This means to intercept him, I need reduce throttle to zero and push the aircraft into a dive to shed ~8,000 ft. Once I hit the 2,000 ft mark, I need slow down to around 180 kts (Mach 0.3) and scan for an aircraft in front of me traveling from left to right. Once I have him spotted, I can make a lazy right hand, circular turn, match his speed (plus a few kts), and overtake him from his left side. 
**HUD** – The HUD display functions exactly the same as the one in your canopy.

**HSI (Horizontal Situation Indicator)** – The icon in the center of the screen represents your aircraft. Select TCN / ILS modes using the keys on the upper left. The lower left number is your heading selection and the lower right number is your course selection for NAV1. Adjust the information displayed using the lower left softkey. If ‘AUTO’ has a box around it, the HSI is in auto-waypoint mode. To the right is SEQ which places the HSI into route mode. WPT places it into waypoint mode. Pressing the DATA key takes you to a screen where waypoints are displayed. CSEL displays current course. To the left of this is the Map Scale (in nm). Pressing the GPS softkey will take you into the FlightPlan screen.
**FUEL / FPAS (Flight Plan Analysis Screen)** – Moving to the bottom row of softkeys on the main menu is the FUEL and FPAS keys.

The FUEL screen displays current fuel levels as well as your BINGO amount. The FPAS screen displays your current usage of fuel as well as current aircraft weight (which can be used for calculating speed and angles for takeoff and landings). It adjusts in real-time based on current fuel stores and flight parameters.

**E/W** – The E/W button brings up the Electronic Warfare screen. Since weapons are not implemented in FSX, this screen simply brings up an inoperable display.
ADI – ADI brings up an ‘artificial horizon’ that gives current speed on the left and height on the right.

ACL (Automated Carrier Landing) – The ACL screen provides commands from a carrier during your approach for landing. What is displayed depends on if you are manually landing the aircraft or not. In FSX, it is more often used to provide information while the aircraft is in autopilot mode. You can adjust the scale of the map using the softkey at the top of the screen to change the scale (SCL) in nautical miles.
S/A – The S/A option is intended to bring up the Situational Awareness screen. Again, since weapons are not implemented in FSX this simply brings up an inoperable display.

ENG – The display on the left of the cockpit is set to the Engine (ENG) screen by default. When you start the engines, these displays will begin to reflect the change in engine status. The primary information you will want from this screen is ENG STATUS. When the engines are fully operational, this should read NORMAL for both LEFT and RIGHT.
**CHK** – The CHK button brings up a list of checklists and controls and is the starting display for the bottom-center display. This is simply a reminder of what you need to do on landing and takeoff.

![CHK Menu](image)

**BIT** – These menus bring up the Built-In Test pages. Of particular note is the GDI+ menu you can access on the lower right side. This allows you to adjust how the displays appear and their refresh rate. If you are getting 50-60 fps, you may want to consider upping the refresh rate to 4 or 5. Be aware that this will impose a hit on your FPS, but will result smoother displays.

![BIT Menu](image) ![GDI+ Menu](image)
Summary

That is a lot of information, so here’s a quick look at how I set up my displays for flight. I begin by changing using my left display to adjust the GDI+ to fit my style. When I get it tweaked, I switch over to A/A Radar (RDR) to allow me to monitor all traffic around me. I will change this display to any other screen as the situation dictates. On the right, I leave the display in HSI mode and adjust the NAV display (lower-left softkey) to read ‘ALL’. Finally, I set the bottom-center display to show the FPAS screen.

This set-up works for me as the display to my right shows my course, glideslope, waypoints, etc. at all times. It is the default setting for that display and is where most users are familiar with it being. I like the ‘ALL’ function, though it does tend to clutter up the display a bit (I’m used to it!). The display on my left functions as a supplemental one that I change as often as needed, though I do like the radar function. Finally, the bottom-center display of fuel status is out of the way, but available quickly should I need it.

Now that you understand the screens a little better, experiment until you have a set-up that works for you. It makes flying much more enjoyable.
Things you don’t see everyday...

Simultaneous F-18 launches from catapults
Photo courtesy U.S. Navy
(public domain)
5.) Using the Up-Front Control Panel (UFC)

The Up-Front Control Panel (UFC) of the F/A-18 can be quite difficult to grasp, because it deviates from a civilian A/P quite a bit. The majority of this chapter was written by Virtuali, an administrator for the FSDreamteam.com forums and remains copyright for him. I have taken the liberty of updating and collating some information and screenshots.

COM Mode
The first thing to be noted is the UFC has basically two “levels” of operation. The “top” level is the COM mode. This is the mode the UFC is in by default, you know you are in this mode, because the indications will read:

![FSX F/A-18 UFC in COM Mode](image)

This mode is simplified compared to the real one, since we don’t obviously have the capability to encrypt ATC communications in FSX. Several options “act” like the real ones, but will not have any impact on operation.

- GRCV (Guard Receive) – Aircraft emergency frequency reserved for emergency communications. The frequencies are 121.5 MHz for civilian and 243.0 MHz for military, no impact in FSX
- SQCH (Squelch) – Tone squelch allows audio only in the presence of the correct code, no impact in FSX.
- CPHR (Cipher) – Enable encryption of communications, no impact in FSX
- AM (Frequency) – Enable frequency for communication (AM/FM/AJ), no impact in FSX
- MENU – Enter UFC Menu, no impact in FSX

The most important controls in COM mode are the two channel selectors under the “1” and “2” Windows at the lower left and right of the UFC. These will control COM1 and COM2, respectively. In the real F/A-18, these knobs can either be pulled or rotated. Pulling them places the UFC into “Manual” mode allowing for a direct COM frequency selection; while rotating them, not implemented in FSX, selects preset channels.
Pull the selector and the corresponding radio will go into Manual mode, showing an “M” in its window and the current COM frequency in the UFC Scratchpad (which is the readout just above the numberpad). Now, the COM radio is ready to accept input from the keypad. The input system is smart enough to allow to use shortcuts so, for example:

to select 128.375, dial 1-2-8-3-7-5-ENT on the keypad  
to select 128.35, dial 1-2-8-3-5-ENT  
to select 128.3, dial 1-2-3-3-ENT  
to select 128.00, dial 1-2-8-ENT

Illegal input will be flagged with a flashing “Error” message, and you can correct an input by pressing the CLR button.

By using the two “VOL COMM1” and “VOL COMM2” knobs on the left and right, you can select which COM you are transmitting to. When you click on one of the knobs, it activates that COM channel and silences the other. The active COM is signaled by the “ON” indication on the UFC Scratchpad, when the frequency is displayed.

To resume normal operation, pull/push the Channel selector knob again.

It’s important to note that all the other modes are sub-menus of the main, top-level COM mode. You ‘enter’ a mode pressing the relevant mode key, and you ‘exit’ from it, by pressing the same button again, thus returning to the top-level COM mode.
Pressing the A/P button will enter into Autopilot mode. The UFCPanel will now show:

It’s important to note that, unlike civilian autopilots, the F-18 will immediately turn on and engage the A/P when the mode is selected. Of course, you can always manually turn on/off the A/P, by using the ON/OFF button when in Autopilot Mode. To better learn autopilot modes, I suggest putting the left DDI screen on the ACL page, so you will be able to see all the Autopilot Annunciators, and the right DDI screen on HSI mode (which should be there default).

- **ATTH** (Attitude Hold) – Maintain current Attitude
- **HSEL** (Heading Select) – Maintain the Heading selected with the HDG selection bug. The HDG and CRS selection bugs are just under the Fuel selector. You can check the current selected heading on the HSI under the HSEL readout, and there’s a bug displayed on the HSI as well. Note also, on the HSI, a “CPL HDG” readout will appear close to the airplane symbol.
- **BALT** (Barometric Altitude Hold) – This will set Altitude Hold mode at the CURRENT Altitude. There’s no way to manually pre select a different altitude, Altitude mode here will always lock at your current altitude.
- **RALT** (Radar Altitude Hold) – Not implemented
- **CPL** (Coupled mode) – This mode is a generic way to name all modes that are Coupled to something (TACAN, ILS or WAYPOINT). What you are coupled to depends on the mode that has been selected on the HSI screen. To change Coupling mode, select either “TCN”, “ILS” or “WPT” on the HSI, to toggle between modes. NOTE: Of course, to use WPT mode, you first have to create a flight plan! Without a flight plan, the only modes available for coupling will be TCN and ILS.

Note the “CPL TCN” or “CPL ILS” on the airplane symbol. To select a Steering Course towards the station, use the CRS bug, and check the small “CSEL” readout on the HSI. By pressing the “CSEL” button on the HSI, instead, you can toggle on/off the visualization of the CRS indication for the HSI.

Pressing A/P button again, will exit from the Autopilot mode.
**IFF Mode – Identification Friend or Foe**

This is a cryptographic identification system that enables military aircraft to distinguish friendly aircraft, boats, and vehicles from enemies and to determine their bearing and range. Cryptographic services are not implemented in FSX so this has no effect.

**TCN Mode – VOR (TACAN) Navigation**

TACtical Air Navigation, or TACAN, is a more accurate version of VOR/DME navigation that provides range and bearing information for military aviation. TCN Mode places the UFC into a screen where you can enter VOR frequencies as either standard frequencies or TACAN channels. The radio is smart enough to figure out your intentions. FSX doesn’t use TCN information, so all information is relayed in standard VOR/DME format.

To set a VOR frequency of 110.5 via TACAN, look at the chart in the appendix for a list of TACAN channel frequencies. You will see that 110.50 equals a TACAN channel of ‘42X’. Begin by setting the UFC in TCN mode. Press 4-2-ENTER on the UFC keypad and then select ‘X’ by pressing the little button to the left of the ‘X’ display. It should become active with a ‘:’ symbol.

If you want to set the VOR frequency of 110.5 manually, just press 1-1-0-5-0-ENTER and it will automatically translate the frequency into the appropriate TACAN channel if you enter a recognized frequency. If you are having difficulty, try entering 5 full digits instead of 3 or 4.

To set course, you need to use the CRS knob close to the Fuel indicator in the lower left of the cockpit. It can be scrolled with the mouse wheel. To check the CRS, open the HSI screen on one of the displays and look at the CRS readout.

Notes: It is important to note that the F-18 only has one VHF radio so you can either use it for VOR or ILS navigation. There is no OBS2. You will also note that you cannot receive TACAN/VOR/ILS channels while on the ground, so the display will read ‘OF’ until you get airborne.
**ILS Mode – Instrument Landing System**

ILS consists of two independent sub-systems, one providing lateral guidance (Localizer), the other vertical guidance (Glideslope or Glide Path) to aircraft approaching a runway. Generally, the pilot will get the localizer lined up so they are flying the correct heading to land on the designated runway. They will then fly level until they intercept the glideslope and then begin descending toward the runway.

**Rate-of-descent formula**

\[
\text{Rate of Descent} = \text{Glideslope Angle} \times \left( \frac{\text{Groundspeed}}{60} \right) \times 100
\]

* Rate of Descent is in feet per minute,
* Glideslope angle is in degrees from the horizontal (Usually 3 degrees)
* Groundspeed is in knots

If the glideslope is the standard 3 degrees then the formula can be further simplified to:

\[
\text{Rate of Descent} = 5 \times \text{Groundspeed}
\]

You set the ILS frequency the exact same way as you do the TCN/VOR. Here is an example ILS approach: Runway 2 at Maui (PHOG) has an ILS approach frequency of 110.10 MHz on a course of 024 degrees. **By the way, you can find the most current ILS, VOR, & GPS approach plate online for free at http://www.airnav.com/airport.**

Press the ILS key, then press 1-1-0-1-0-ENTER. Set the proper course using the CRS switch in the bottom left of the cockpit near the fuel displays. Bring up the HSI screen on one of the displays (the left one is standard) and press the ‘ILS’ button. Check the actual course setting on the lower right of that display under the ‘CSEL’ text. You can adjust the HSI display with the upper left control on the center DDI display (lower-center of cockpit, in front of the flight stick) to either NORM or D-CTR. Fly to the CAMPS intersection and set up your approach at 3000 ft on a heading of 024, following the ILS approach plate. Intercept the localizer and glideslope and fly down to the runway and land.
Potential Problems & Fixes

Some people have noticed they still have problems tuning with the plane selecting the wrong TCN channel no matter how they input the channel. While this is rare, it can occur. If you get truly frustrated, one work around is to adjust the F-18 panel file to include a Cessna 172 Nav Radio stack. You can do this by:

1. Exit FSX
2. Navigate to the ‘FSX/SimObjects/Airplanes/FA-18/panel’ folder and open the ‘panel.cfg’ file with notepad.
3. At the top of the file, add the term:
   Window04=Radio Stack
4. Scroll down to [Window 03] and find the end of this section.
5. Add the following section:

   [Window04]
   BACKGROUND_COLOR=2,2,2
   size_mm=156,308
   position=8
   visible=0
   ident=RADIO_STACK_PANEL
   zorder=3
   gauge00=Bendix_King_Radio!Bendix-King Radio Audio,   0, 0,156,31
   gauge01=Bendix_King_Radio!Bendix-King Radio Nav-Comm 1,   0, 29,156,59
   gauge02=Bendix_King_Radio!Bendix-King Radio Nav-Comm 2,   0, 86,156,59
   gauge03=Bendix_King_Radio!Bendix-King Radio ADF,       0,142,156,41
   gauge04=Bendix_King_Radio!Bendix-King Radio DME,        0,180,156,41
   gauge05=Bendix_King_Radio!Bendix-King Radio Xpndr,      0,217,156,49
   gauge06=Bendix_King_Radio!Bendix-King Radio AP,         0,262,156,48
   windowsize_ratio=1.000
   window_pos=0.756,0.358
   window_size=0.243,0.641

6. Save the file (Ctrl + S) using the original file name.
7. Restart FSX

Now, when you are flying the F-18, you can bring up a Radio Stack window that allows you to set the frequencies using a more familiar set of radios. This is a low-tech way of getting around this problem. Please note, you can also take the Radio Stack information from another aircraft’s panel file (such as the Lear45 or one of the jumbo jets) if you want a more modern look and feel. Just copy over the pertinent information from their panel file.

You can also pause, switch planes in mid-flight, set the NAV radio, switch back to the F-18 and un-pause.
**D/L Mode – Data Link**

Data Link is used to securely upload & download navigational data. Since cryptographic services are not implemented in FSX: Acceleration, this button has no effect (it cannot even be pressed).

**BCN Mode – NDB (Beacon) Navigation**

A non-directional beacon (NDB) is a radio transmitter at a known location, used as an aviation navigational aid. As the name implies, the signal transmitted does not include inherent directional information (in contrast to VOR and TACAN). NDB signals follow the curvature of the earth, so they can be received at much greater distances at lower altitudes, a major advantage over VOR. However, the NDB signal is affected more by atmospheric conditions, mountainous terrain, coastal refraction and electrical storms, particularly at long range. NDBs operate on a frequency between 190 kHz and 1750 kHz (190 kHz and 535 kHz in North America). Each NDB is identified by a one, two, or three-letter Morse code call-sign.

ADF equipment determines the direction to the NDB station relative to the aircraft. When tracking to or from an NDB it is expected that the aircraft track on a specific bearing. This is most commonly done using a Radio Magnetic Indicator (RMI) which combines a relative bearing indicator (RBI) with a compass card.

Enter an appropriate NDB frequency using the keypad on the UFC.

![FSX F/A-18 UFC in BCN Mode](image)

**Summary**

Confused yet? It’s okay, just keep this section handy and refer back to it as often as needed. I’ve taken the liberty of including a sample flight plan example written by Virtuali. It is reproduced in the next chapter to give you concrete example of using the F-18 avionics.
Someone is about to have a very bad day!

Stealth Bomber escorted by eight F-18 Hornets.

Photo courtesy U.S. Navy

(public domain)
6.) A Sample Flight Plan – by Virtuali

Let’s start with a short test flight from Area 51 to Nellis AFB. As you can see, the flight goes through KINS, BESSY, PAIGW, BRENS, and ends at Nellis. Here’s our plan in FSX...

![Sample Flight Plan – Setup Using FSX Flight Planner](image)

Load the F/A-18 and select the HSI on any of the displays. Press the WPT softkey (to activate Waypoint mode) and activate the SEQ options to display the route on the HSI screen. The screen should look like the one below, with KINS being the next active waypoint.

![HSI Showing Flight Plan](image)
By pressing the GPS softkey (at the top), a page will appear listing all the waypoints in the current flight plan with a > sign next to the active one. It’s possible to cycle waypoints by using the UP/DOWN softkeys to the right.

GPS Mode Showing Waypoints

The HUD will also repeat waypoint information when the HSI is in Waypoint mode.

HUD – Flying Enroute to Waypoint KINS
When a waypoint is active, and the airplane is flying, it’s possible to check for a fuel prediction on the FPAS page. Select the FPAS page on another display (upper left is recommended). In the image below, the FPAS is on the left display and the HSI is on the right. Also note that the HIS has been put into ARC mode (done by rotating the small knob on the top left of the center display to the D-CTR position). The active waypoint is labeled with a filled circle. Finally, note that we enabled visualization of all kinds of navaids by using the lower left softkey on the HSI display and setting it to read “ALL”. This cycles between OFF, TCN, NDB, FIX, APT, and ALL.

Note the FPAS screen which gives a useful prediction on the airplane’s endurance to reach Bingo (set with the appropriate Bingo knob), to reach 2,000 lb of fuel and to reach zero fuel. Also, we get information about the Estimate Fuel on Board at the next waypoint, together with some information about fuel consumption.
Now we can turn the Autopilot on to follow the route automatically. Press the A/P button on the UFC Panel and press BALT to hold the current altitude. Press CPL to automatically follow the route. Since we are in Waypoint mode on the HSI the Autopilot will understand we are going to follow a waypoint. Since the SEQ button is turned on, the “Coupling” will be to the route in our plan. Note the HSI showing CPL SEQ. If SEQ is turned off, and WPT on, the HSI will show CPL WPT meaning it will follow a waypoint directly. What is the difference? In CPL WPT the Autopilot will fly straight/direct to the next waypoint. In CPL SEQ mode, it will intercept the planned route first, and then fly to the waypoint.

You can get additional information on an active waypoint by pressing the DATA softkey button.
At this point, we’ve reached the KINS waypoint. Since the AUTO option is selected, the airplane will automatically make the next waypoint (BESSY) active and turn toward it. If AUTO is turned off, we are free to select any waypoint and follow it.

The autopilot will progress through the entire flight plan until reaching the last waypoint. Please be aware that this tutorial is only valid for LATERAL navigation. You will be responsible to climb/descend according to the flight plan.

Congratulations on successfully entering and following a flight plan in the F-18. Once you get used to all of the additional information and the intricate displays, it’s difficult to go back to OBS and RMI for cross country flights.

No matter what, you will find that a better understanding of the displays and navigation in the F-18 will make your flights more enjoyable, even if you are just sightseeing... supersonic and inverted!
Is that my house down there?

Getting disoriented with the pilots of the “Blue Angels”.

Photo courtesy U.S. Navy
(public domain)
7.) Standby / Backup Systems

The F-18 has several layers of safety built in. In addition to the triple redundancy for digital displays, there are two banks of standard instruments in the event of a catastrophic failure of the primary displays. These are located at the bottom of the cockpit.

On the left, the displays primarily deal with engine and fuel status. Beginning with the far left is a JETT Station panel. This is not implemented in FSX, but in real life it serves to provide a means to jettison stores, fuel tanks, etc. To the right of this is a panel that has engine information and includes: % Max RPM, Temperature, FF RPM, Nozzle position, and Oil Pressure. To the right of this is a Fuel Qty panel that shows current fuel stores and has a selector to set BINGO fuel notification. Just below this panel are two switches that activate selected Heading and Course.

On the right are located standard pneumatic gauges including an ADI with artificial horizon and slip indicator, Airspeed (in Kts x100), Altimeter (calibrated by barometric pressure), and Vertical Speed indicator. Below this is a Radar Altimeter with height provided in ft x100.
Um, how long did you say it would be for clearance?

Aircraft from the flight group pack the deck of a carrier at the end of the day.

Photo courtesy U.S. Navy

(public domain)
8.) The Rest of the Interactive Cockpit

Besides the various displays and dials visible in the front of the cockpit, there are numerous buttons, switches, and knobs on the left and right sides of the cockpit. Pan your view to see them. We will briefly discuss each interactive option. The remainder of the graphics serve only to improve realism. Each of the images below have the interactive portions circled in green.

Left Side

Beginning at the forward and top left, you will find the Landing Gear lever (up/down). On the panel below this, you will find Launch Bar (retract/extend), Flaps (Auto, Half, Full), and Emergency/Parking Brake (on/off).

![Interactive Cockpit, Left Side](image)

Below this, you will find a series of panels. The first one back contains the interactive Throttle Controls for the left and right engines. These can be slid forward and back by clicking and holding the mouse cursor and dragging them in the desired direction. At the very front of the panel is a little switch labeled Test A/Test B (Test A/ Test B/ off) which is clickable, but I have no idea of its function. Moving the throttles fully forward reveals two more that control Strobe Light (on/off) and Rotating Beacon Light (on/off).

Moving to the next panel back, you will find Refueling probe (extend/retract), and Fuel Dump (on/off). Below this is a panel with Rudder trim (left/neutral/right). To the left of these panels is one that has APU (on/off), and Engine starter (left/right/off). Moving to the last panel, you will find two options for communications. These include TCN/ILS volume (low/high) and an Audio
Control Panel (comm1/comm2/off). The remainder of the left side is non-interactive graphics placed there for realism.

Right Side

On the right side, there are very few interactive options. Forward and top, you will find the Arresting/Landing Hook lever (up/down) and Wing Fold lever (open/folded).

Interactive Cockpit, Right Side

Below this is a panel with three switches. These are the Left Alternator (on/off), Battery (on/off/override), and Right Alternator (on/off). To the right of this panel is a small switch against the side of the cockpit which is the Canopy switch (open/closed).

Moving down one panel, you will find two options for Anti-Ice measures... the Pitot Heat (on/off) and De-Ice (on/off). The third panel down contains knobs that control Instrument Panel Lighting (on/off) and Cabin Lighting (on/off). There is a switch for Light Test (test/off) which has no useful function in FSX that I know of. The remainder of the right side is non-interactive graphics placed there for realism.
9.) Appendix - TACAN Frequency Chart

<table>
<thead>
<tr>
<th>CHAN</th>
<th>FREQ MHz</th>
</tr>
</thead>
<tbody>
<tr>
<td>17X</td>
<td>108</td>
</tr>
<tr>
<td>17Y</td>
<td>108.05</td>
</tr>
<tr>
<td>18X</td>
<td>108.1</td>
</tr>
<tr>
<td>18Y</td>
<td>108.15</td>
</tr>
<tr>
<td>19X</td>
<td>108.2</td>
</tr>
<tr>
<td>19Y</td>
<td>108.25</td>
</tr>
<tr>
<td>20X</td>
<td>108.3</td>
</tr>
<tr>
<td>20Y</td>
<td>108.35</td>
</tr>
<tr>
<td>21X</td>
<td>108.4</td>
</tr>
<tr>
<td>21Y</td>
<td>108.45</td>
</tr>
<tr>
<td>22X</td>
<td>108.5</td>
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<td>110.4</td>
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<tr>
<td>41Y</td>
<td>110.45</td>
</tr>
</tbody>
</table>

This information was taken from the US DoD Flight Information Handbook. Channel 1 X until 167 and Channel 60X until 97 are not held.
### FSX w/ Acceleration Pack – Keyboard Commands

**SIMULATOR**

<table>
<thead>
<tr>
<th>Control</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>P or BREAK / PAUSE</td>
<td>Pause</td>
</tr>
<tr>
<td>ALT + ENTER</td>
<td>Full Screen Mode</td>
</tr>
<tr>
<td>ALT</td>
<td>Menus (display/hide)</td>
</tr>
<tr>
<td>CTRL + ; (Semicolon)</td>
<td>Reset Current Flight</td>
</tr>
<tr>
<td>ESC</td>
<td>Save Flight</td>
</tr>
<tr>
<td>CTRL + C</td>
<td>Exit Flight Sim (Normal)</td>
</tr>
<tr>
<td>CTRL + BREAK / PAUSE</td>
<td>Exit Flight Sim (Immediately)</td>
</tr>
</tbody>
</table>

**Select Item**

- Item 1
- Item 2
- Item 3
- Item 4

**Select Time Compression**

- R

**General**

- Brakes (Apply/Release) Num Pad * (Star)
- Brakes, Right (Apply/Release) Num Pad – (Minus)
- Brakes, Parking (Set) CTRL + . (Period)
- Landing Gear (Extend/Retract) G
- Landing Gear (Manual Extend) CTRL + G
- Floats (Extend) * not set by default
- Floats (Retract) * not set by default
- Tail Wheel (Lock/Unlock) SHIFT + G
- Pushback (Start/Stop) SHIFT + P (then 1 or 2 R/L)
- Fuel Truck (Request) SHIFT + F
- Doors – Select (Open/Close) SHIFT + E
- Jetway (Attach/Detach) CTRL + J
- Tow Plane (Request) CTRL + SHIFT + Y
- Tow Plane (Release) SHIFT + Y
- Fuel Dump CTRL + SHIFT + D
- Kneeboard (display/hide) SHIFT + F10
- Flying Tips (display/hide) CTRL + SHIFT + X
- Flying Tips Action Trigger CTRL + X
- Release Dropable Objects SHIFT + D
- Aircraft Labels CTRL + SHIFT + L
- Aerobatic Smoke (On/Off) I
- Slew Mode (On/Off) Y

**Mission Commands**

- Compass Pointer (On/Off) U
- Compass Objective (Next) K
- Compass Objective (Previous) SHIFT + K

**Control Surface**

- Ailerons (Bank Left) Num Pad 4
- Ailerons (Bank Right) Num Pad 6
- Aileron Trim (Left) CTRL + Num Pad 4
- Aileron Trim (Right) CTRL + Num Pad 6
- Rudders (Yaw Left) Num Pad 0
- Rudders (Yaw Right) Num Pad ENTER
- Rudder Trim (Left) CTRL + Num Pad 0
- Rudder Trim (Right) CTRL + Num Pad ENTER
- Flight Controls (Center All) Num Pad 5
- Elevator (Pitch Down) Num Pad 8
- Elevator (Pitch Up) Num Pad 2
- Elevator Trim (Down) Num Pad 7
- Elevator Trim (Up) Num Pad 1
- Flaps (Retract Fully) F5
- Flaps (Retract Incrementally) F6
- Flaps (Extend Incrementally) F7
- Flaps (Extend Fully) F8
- Arm Spoolers (Autosteer on Landing) SHIFT + Z (Forward Slash)
- Spoolers (Extend/Retract) I (Forward Slash)
- Water Rudders (Up/Down) CTRL + W
- Joystick (On/Off) CTRL + K
- Sound (On/Off) Q

**Engine**

- E = engine number (1-4)
- Engine Auto Start CTRL + E
- Throttle (Cut) F1
- Reverse Thrust (Turbojet/Jet) F3 (press and hold)
- Throttle (Decompress) F3 (press and release)
- Throttle (Increase) F3
- Throttle (Full) F4
- Propeller (Low RPM) CTRL + F1
- Propeller (Decompress RPM) CTRL + F2
- Propeller (Increase RPM) CTRL + F3
- Propeller (High RPM) CTRL + F4
- Mixture (Idle cutoff) CTRL + SHIFT + F1
- Mixture (Low rich) CTRL + SHIFT + F2
- Mixture (Enrich) CTRL + SHIFT + F3
- Mixture (Full rich) CTRL + SHIFT + F4
- Carb Heat/Anti-Ice (On/Off) H
- Magnets (select) M
- Master Battery/Alternator (select) SHIFT + M
- Cow Flaps (Open incrementally) CTRL + SHIFT + V
- Cow Flaps (Close incrementally) CTRL + SHIFT + C
- Nitrous Oxide (On/Off) NUMPAD 6
- Reheat/Afterburner (On/Off) SHIFT + F4
- Anti-detonation Tank Valve SHIFT + X

**Aircraft Carrier Operations**

- Launch Bar (Extend/Retract) SHIFT + U
- Attach to Catapult (Arm/Disarm) SHIFT + I
- Fire Catapult (Trigger) SHIFT + SPACEBAR
- Tail Hook (Up/Down) SHIFT + Q

**Helicopter Operations**

- Helicopter Rotor Clutch (On/Off) SHIFT + . (Period)
- Helicopter Rotor Gov’r (On/Off) SHIFT + , (Comma)
- Helicopter Rotor Brake (On/Off) CTRL + B
- Hover Arm (Extend/Retract) CTRL + U
- Hover Cable (Lower) J
- Hover Cable (Raise) K
- Hover Hook (Attach/Release) O

**Instruments/Panels**

- Virtual Cockpit F9
- 2D Cockpit (Cycle Panels) W or SHIFT + W
- Snap to Panel View SHIFT + Num Pad 0
- 2D Panel Transparency CTRL + T + T (then + or –)
- Panel Window # SHIFT + Number (0-9)
- Heading Indicator (Reset) B
- Altimeter (Reset) SHIFT + H
- Pitot Heat (On/Off) SHIFT + H

**Radio**

- ATC Window (Display/Hide) SCROLL LOCK or “ (Accent)
- VOR 1 (On/Off) CTRL + 1
- VOR 2 (On/Off) CTRL + 2
- MKR Beacon (On/Off) CTRL + 3
- DME (On/Off) CTRL + 4
- ADF (Select) CTRL + SHIFT + A
- Standby Frequency (Swap) X
- COM Radio (Select) C
- NAV Radio (Select) N
- OBS Indicator (Select) SHIFT + V
- Transponder (Select) T

**Autopilot**

- Autopilot Master (On/Off) Z
- Flight Director (On/Off) CTRL + F
- Wing Lever Control (On/Off) CTRL + V
- Yaw Damper (On/Off) CTRL + D
- Attitude Hold (On/Off) CTRL + 2
- Attitude Bug (Select) CTRL + SHIFT + Z
- Heading Hold (On/Off) CTRL + H
- Heading Bug (On/Off) CTRL + SHIFT + H
- Approach Hold (On/Off) CTRL + R
- Mach Hold (On/Off) CTRL + M
- Autothrottle (Arm) SHIFT + R
- Autothrottle (Engage) (TOGA) CTRL + SHIFT + G
- NAV 1 Hold (On/Off) CTRL + N
- Approach Mode (On/Off) CTRL + A
- Back Course Mode (On/Off) CTRL + B
- Localizer Hold (On/Off) CTRL + O
- Autopilot (On/Off) CTRL + SHIFT + U

**Lights**

- Aircraft Lights, All (On/Off) L
- Panel Lights (On/Off) SHIFT + L
- Landing Lights (On/Off) CTRL + L
- Landing Lights (Tilt Down) CTRL + SHIFT + Num Pad 2
- Landing Lights (Tilt Up) CTRL + SHIFT + Num Pad 8
- Landing Lights (Tilt Left) CTRL + SHIFT + Num Pad 4
- Landing Lights (Tilt Right) CTRL + SHIFT + Num Pad 6
- Landing Lights (Center) CTRL + SHIFT + Num Pad 5

**Views**

- Locked Spot View F11
- Top Down View F12
- View (Next Category) S
- View (Next Within Category) A
- View (Previous Within Category) SHIFT + A
- View (Previous Category) SHIFT + S
- View (Previous View Toggle) CTRL + S
- Look (Snap to Direction) SHIFT + Num Pad Number
- Look (Default Forward View) Shift + Num Pad Delete
- Look Using Mouse (On) SPACEBAR or SHIFT + O
- Zoom (In) V (Equal)
- Zoom (Out) V (Hyphen/Minus)
- Zoom (Default – 1x) BACKSPACE
- Chase Distance (Increase) CTRL + (Equal)
- Chase Distance (Decrease) CTRL + (Equal)
- Eyepoint (Move Back) CTRL + ENTER
- Eyepoint (Move Forward) CTRL + BACKSPACE
- Eyepoint (Move Up) SHIFT + ENTER
- Eyepoint (Move Down) SHIFT + BACKSPACE
- Eyepoint (Move Left) CTRL + SHIFT + BACKSPACE
- Eyepoint (Move Right) CTRL + SHIFT + ENTER
- Eyepoint (Reset) SPACEBAR
- Window (Open New) [ (Left Bracket)
- Window (Open New Top-Down) SHIFT + ] (Right Bracket)
- Window (Select Next) CTRL + TAB
- Window (Select Previous) CTRL + SHIFT + TAB
- Window (Bring Selected to Front) * (Apostrophe)
- Window (Close Selected) ] (Right Bracket)

**Multiplayer**

- Chat Window (Display/Hide) CTRL + SHIFT + ENTER
- Chat Window (Make Active) ENTER
- Voice (Start Transmit) CAPS LOCK
- Voice (Stop Transmit) ^ CAPS LOCK
- Voice (Start Transmit to All) SHIFT + CAPS LOCK
- Voice (Stop Transmit to All) ^ SHIFT + CAPS LOCK
- Transfer / Accept Control SHIFT + T
- Follow Other Player CTRL + SHIFT + F
- Cycle Through Other Players CTRL + SHIFT + O

*Make sure NUM LOCK is OFF before using this chart.*
10.) Conclusion & Credits

I hope that this brief manual is able to help you begin to understand the intricate systems and cockpit of the FSX F/A-18 aircraft. I want to take a moment to applaud and thank the designers at Microsoft and FSDreamteam.com for providing an amazingly realistic (and fun) experience. This aircraft must be flown to be appreciated, and you can be certain that I will be appreciating it for a long time.

Credits: First off... I'd like to thank my Savior and Lord, Jesus Christ, for giving me the time and ability to do this daunting and time consuming task. I'd also like to thank my wife and children for indulging the hours I've spent flying in FSX.

I'd also like to thank the FSDreamteam administrators and programmers for doing myself and the rest of the FSX community a great service in bringing one of the best aircraft for the MS Flight Sim series in a long time!

I have taken information from so many sources... it is impossible to thank everyone by name. The vast majority of this information was taken from the FSDreamteam forums and the wonderful people who post there. There is a fountain of knowledge to be had and I want to thank each and every one of you who have extended gracious assistance to others in learning about the F/A-18 aircraft. The closeness of the FSX community is an amazing thing. Thank you for sharing.
FSX: Acceleration
“ Unofficial ”
F-18 Cockpit Manual

by K. Copeland (a.k.a. RxWookie)

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