



### Lesson Title

Avionics Introduction V1.0.

### Aim

To give pilots an introduction to the avionics functions of the F-16 ie, ICP & DED, HUD, MFD and Radar. This lesson will not teach pilots how to be an expert in every single area, but will merely enable them to find and enable a particular function and understand any symbology used, so they can move onto more advanced lessons on how to employ these modes.

### Time Required

2.5 hrs. (2 hrs flying, 15 mins setup and intro, 15 mins de-brief). This lesson is all carried out in-cockpit. You should note that you will not have time to explain every function in huge detail. It is enough for pilots to know how to find a function and roughly what it is used for. Future lessons, such as weapons training will explain how to employ a particular function.

You should note that this is a subject where you really need to know your subject material as an instructor. There is a wide variety of topics to be covered and several of the functions described are rarely used during normal flying. Therefore instructors should take the time to refresh themselves on each of the functions prior to the lesson and it recommended that they print out the FreeBirds presentation for reference.

### Topics to be Covered

1. All the buttons, switches and dials on the ICP. Emphasise the master modes, DCS and next/previous areas (10 mins).
2. All DED pages and how to use the ICP to navigate them. Point out the not implemented (N/I) pages but do waste any time explaining them. (30 mins).
3. The physical layout of the MFD (including the option select button (OSB) numbering as this will make it easier when asking them to select a specific function) and each of the MFD pages, excluding radar modes (30 mins).
4. The radar, including a quick overview of air-to-air and ground radar and their various sub-modes. Also explain very briefly when each mode might be best employed and the advantages/disadvantages of each. (30 mins).
5. The HUD symbology in various modes (30 mins). You will find that this part speeds up as you go through the modes listed below, as much of the symbology is common across them:
  - a. Nav.
  - b. MRM.
  - c. SRM.

- d. Guns (including EEGS, LCOS, Snapshot).
- e. Dogfight.
- f. Missile Override Mode.
- g. ACM (inc. 30x20, Slew and boresight).
- h. CCRP.
- i. CCIP.
- j. DTOS.
- k. LLDD (Low-level Drogue Delivery) designed for air burst munitions such as napalm. N/I in Falcon, although the mode is selectable.
- l. HARM.
- m. Maverick (most of the A-G missile modes offer the same HUD symbology so just explain this and the HARM).

#### Briefing Material

<http://www.freebirdswing.org/downloads/TrainingLibrary/Lesson3v7.30.zip>

Detailed information for further reading:

SP3 manual:           Page 47 – 57 for ICP.  
                               Page 58-72 for MFD.  
                               Page 73-76 for radar.  
                               Page 66-80 for HUD.

Falcon 4.0 manual:   Page 18-3 to 18-36 for HUD.  
                               Page 19-2 to 19-18 for MFD.  
                               Page 20-2 to 20-12 for ICP & DED.  
                               Page 21-2 to 21-32 for radar.

<b>Avionics Introduction V1-0.tac</b>	
By Vosene	

<b>Human Package</b>	4x F16C-52 training           Package 3688 4x F-16C-52 training       Package 3688
<b>Mission Success Criteria</b>	Cowboy 1: Complete Training. Falcon 1: Complete Training.
<b>Mission Partial Success Criteria</b>	<b>N/A</b>
<b>Air to Air Weapon Load out</b> (Free or Fixed)	<b>Fixed</b>
<b>Air to Ground Weapon Load out</b> (Free or Fixed)	<b>Fixed</b>
<b>Mission Flight plan</b> (Free or Fixed)	<b>Fixed</b>

Package Information					
Takeoff time	Call sign	Task	Target	Package # <sup>(1)</sup>	AC # & type
10.40	Cowboy 1	Cockpit training	N/A	3688	4x F16C - 52
10.42	Falcon 1	Cockpit training	N/A	3688	4x F16C - 52
<sup>(1)</sup> Blue colour indicates for human use. Red colour indicates for AI only.					

### Briefing Notes

The mission starts at Seosan airbase on the taxiway and soon after take-off the instructor will order to freeze the simulation (SHIFT P). While you are frozen he will explain the avionics functions, as necessary he should unfreeze the simulation for example to get the student to lock his aircraft up in order to see the A-A missile symbology such as the DLZ. The students have the opportunity to ask questions if something is unclear and the instructor can test if everything is clear by asking questions to the students. It is not strictly necessary to perform a landing afterwards.

Aids to Instruction 1: Still on runway heading, the flight should have A-A Radar contacts on the side of the scope. Use these to demonstrate locking up targets and the HUD symbology available.

Aids to Instruction 2: Around Steerpoints 4, 5, 6, 7, 8, 9, 10, and 11 there are ground radar contacts. At 30 miles out from these steer-points set Radar to A2G, slave the cursors to the steer-points (be sure to cursor zero), and explain how to use the radar, including the additional definition in DBS1 and 2. It will be necessary to reduce to Azimuth scan to 3 or even 1 to get an updated picture on DBS2.