

BAe146 Panel Version 2.0 for MS FS2002

Panel Manual



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Contents

1	Some words about the Bae146 Version 2.0 Panel	1
2	Installation	2
2.1	Installation of the Panel files.....	2
2.2	Preparing your Aircraft for this Panel.....	3
2.3	Preparing the Flightsimulator for this Panel.....	3
2.4	Using the alternative Panel.cfg.....	4
3	Panel Description	5
3.1	Main Panel	5
3.1.1	Main Overhead Panel	6
3.1.2	The Bae146 Autopilot.....	7
3.1.3	NAV-1 Radio	9
3.1.4	Additional Instruments and Warning lights in the Main Panel.....	10
3.1.5	The primary flight instruments	11
3.1.6	The Engine Instruments	12
3.1.7	The Bae146 GPWS.....	13
3.1.8	The Bae146 Annunciator Panel	17
3.2	The Bae146 Pedestal Panel.....	18
3.3	The Bae146 Overhead Panel.....	20
3.3.1	The Fuel Unit.....	21
3.3.2	The Electric Unit.....	22
3.3.3	APU, Starters, ICE Protection and Pressurization.....	24
3.3.4	The Lights and Air Condition Unit.....	26
3.3.5	The Misc and Hydraulic Unit	27
3.3.6	Additional Switches in the Overhead Panel	29
3.4	Bae146 Panel Lights	30
3.4.1	Main Panel Lights.....	30
3.4.2	Overhead Panel Lights.....	32
4	The Bae146 start up procedure.....	33
4.1	Start up checklist.....	33
4.1.1	After take off and climb procedures.....	34
4.2	Complete Panel Checklist	35
5	Known Bugs and FAQ's	39
6	Credits.....	40
7	What's next?.....	40

1 Some words about the Bae146 Version 2.0 Panel

Thank you very much for download this Panel and using it in the Flightsimulator. When I start with it I just want to make a small update of my FS2000 Panel for FS2002. But this rework was not very good and you always recognize that it is just an updated Panel so I decide to create a completely new one for FS2002.

Some months ago I've learned to program Flightsim Gauges. This was very helpful for designing the new Panel because I could realize some things which are not possible with the yet existing Freeware Gauges.

It was a lucky chance, that Bob Ward contacted me some weeks ago. At this time my Panel was almost finished. After I've talked to Bob he sent me a lot of Information about the real Bae146 Cockpit and Aircraft. After I got those papers I saw that I still have to change things in my Panel. But this was the chance for me to make a better one which based completely and in almost all parts of the Panel on the real Bae146 Cockpit. With all Cockpit information and checklists for the real start up procedure I had now, I went on and tried to realize those things. The result of this work is what you've downloaded.

Because of the limitations of the Flightsimulator it was not possible to realize everything. The most bad thing is, that the Flightsimulator didn't support an APU. With some simple tricks I could program one, but it is no real APU. If you read the Start up section of this Manual you will know why.

Why are there so much dummies in the Overhead Panel? The answer for this question is very easy. Have you ever heard about Framerate problems? If you take a look at the Overhead Panel you will see, that there are a lot of switches and Annunciators. I could realize all of them (some with functional dummy switches). But then you have more than 400 Gauges (to compare – at the moment I'm using about 220 Gauges!) you should know that every Gauge brakes the Framerate (if it has a real function or not) so I decide to realize just those Instruments which will be supported by the Flightsimulator and make sense when flying the Bae146.

I know very well, that the letters in the Overhead Panel are very small and not easy to read. It was not possible to enlarge those letters without loosing the impression to see the real Bae146 Overhead Panel. Also there is not enough room for it. If you couldn't read the letters the only thing I could advise you is to print this Manual and to learn where the switches and Instruments are. Please do not ask me to enlarge the letters in the Overhead Panel.

Well, there are also some other minor Bugs in the Panel yet (nothing really serious). However I hope that you like the Panel. It was a lot of fun designing it and it will be more fun if you like it too.

2 Installation

Like with all other Flightsimulator Add-ons it's very important, that you exactly follow this Installation description step by step. When you start an Aircraft with this Panel and something didn't work it's mostly the reason of an overlooked part of the installation manual.

Another reason is, that this Panel has a lot of special functions which just could be used when you change some parts also in the Aircraft.cfg. Everything you have to do is precisely described in this section.

The Bae146 Panel is a real FS2002 Panel so it works with or without FSUIPC.dll. With the yet uploaded FS2002 Aircraft I've recognized, that the Hydraulic only works with an installed FSUIPC.dll. I do not know why, because the source code I've used for the Hydraulic meters are correct FS2002 codes. Maybe it's because the Aircraft are not really FS2002 Models. I don't know. So if you want a functional Hydraulic section you should install FSUIPC.dll.

Do not install the Panel and all files of this Panel when the Flightsimulator is running. First exit FS2002 and then follow the next steps!

2.1 Installation of the Panel files

- Unzip all files of the Panel.zip into the Panel folder of your Bae146 Aircraft.
- Unzip Gauges.zip into the Gauges folder of your FS2002.
- Unzip Sounds.zip into the main Sound directory of the Flightsimulator. **Do NOT use the Sound folder of the Aircraft!**
- Unzip FSSound.dll into the Modules folder of FS2002

If you maybe have one or more of the files you do not need to delete or overwrite them because they should be the same.

2.2 Preparing your Aircraft for this Panel

As written above it's necessary to make some changes in the Aircraft.cfg to bring all functions to work with this Panel. To edit the Aircraft.cfg you need the Microsoft Editor. Open the file with it and make the following changes:

In the section [Fuel] add or change the following line:
number_of_tank_selectors=2

In the section [Autopilot] add or change the following line:
flight_director_available=1

2.3 Preparing the Flightsimulator for this Panel

The last thing to do before you could start FS2002 again is to make a minor change in the FS2002.cfg. If you would like to you can make a Backup of this file before changing it.

You will find the file FS2002.cfg directly in the Main folder of FS2002. Open this file also with the Editor and add search for this section:

[OLDMODULES]

If you don't have this section in the FS2002.cfg please add the following lines to it:

[OLDMODULES]
fssound.dll=1

If you found the section it's just necessary to add:

fssound.dll=1

to it.

If you want to use FSUIPC.dll unzip this file to the Modules folder of FS2002. If you still have it you don't need to overwrite it. I'm not sure if my file is the newest Version of FSUIPC.dll so you can search the Internet for a newer one if you like.

That's it. Now you can start FS2002 again.

2.4 Using the alternative Panel.cfg

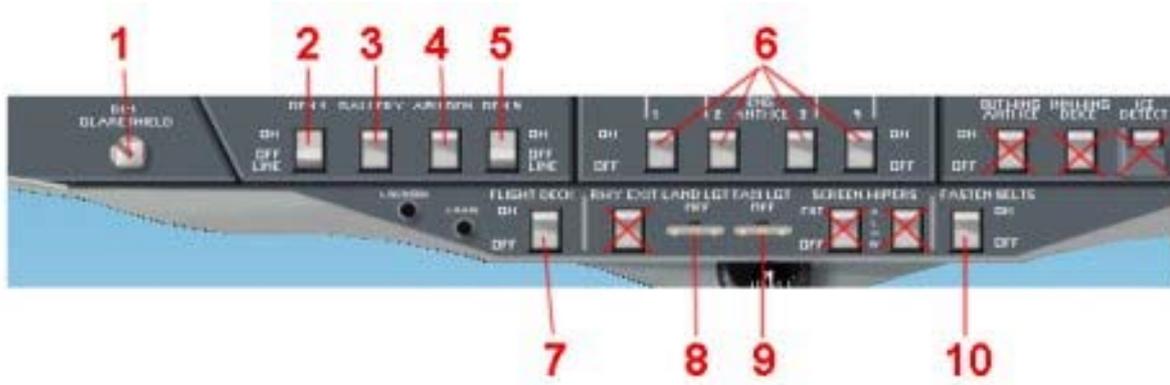
Version 2.0 of the Bae146 Panel contents a second Panel.cfg for those Flightsimmers who want to use it without some parts of the GPWS (please read also about the known bugs). The second Panel.cfg (Alternate Panel.cfg) deletes the Sink rate and acoustic Glide sloop Warning. To install it just delete the original Panel.cfg (you can make a Backup if you want) and rename the file Alternate Panel.cfg in Panel.cfg.

3 Panel Description

3.1 Main Panel



3.1.1 Main Overhead Panel



1	Switch for Glareshield (AP) and Overhead letter lights (see also the Light section)
2	Switch for Engine Generator 1
3	Switch for Cockpit and Instrument lights (see also the Light section)
4	Switch for APU Generator
5	Switch for Engine Generator 4
6	Engine Antiice switches for Engine 1 – 4
7	Switch for Panel spotlights (see also the Light section)
8	Landing Light switch
9	Taxi Light Switch
10	Fasten Seat Belts Switch

The red crossed Switches are just dummies without any Function (I hope you read the first section of this Manual).

3.1.2 The Bae146 Autopilot



11	Autopilot Main switch
12	Mach switch for Autothrottle
13	IAS switch for Autothrottle
14	Autopilot Course selector
15	Autopilot Heading selector
16	Autopilot Altitude Hold switch
17	Autopilot Altitude Selector
18	Vertical Speed adjust knob
19	Heading Hold switch
20	Selected Course (NAV) switch
21	Autopilot Turbulence Mode switch
22	Autopilot Back Course Hold switch
23	Main Autothrottle switch
24	Autopilot Approach switch
25	Second Autopilot Altitude Hold switch
26	Vertical Speed Hold switch
27	Flight Director switch
32	Autopilot Altitude Warning Light. This light goes on when you are +/- 100 ft. above or below the Altitude set in the Autopilot and in a range of 600 ft. before and after the selected Altitude.
33	Below Glidesloop Warning Light. This light goes on when VOR-1 receives an ILS Signal with Glidesloop and the actual position of your plane is below this Glidesloop.
34	Autopilot Annunciator. (from left to right: AP-Main, Autothrottle, Altitude, HDG, NAV, Approach, Yaw Damper, IAS, LVL).

Additional Notes

The red crossed Switches are just dummies without any Function (I hope you read the first section of this Manual).

Except the Autothrottle it's not possible to activate the Autopilot when the Aircraft is on Ground. As soon as you climb you can switch the AP on. However it's possible to set all necessary Autopilot parameters like Altitude, HDG or NAV.

You will find the Yaw Damper switch and a second Autopilot Master Switch in the Overhead Panel. (please take a look at this section).

When setting the Altitude in the AP take care that there is no zero point in this Gauge. When you decrease the value of the Altitude it will not stop at "00000". Unfortunately the Gauge don't show negative numbers. This is a bug in the Gauge but I'm currently working on it.

When activating an Altitude the selected vertical speed is the speed programmed for the Aircraft in the Aircraft.cfg. However it's possible to select another Vertical Speed with the Button Pos. 18. Like in the real Bae146 you do not have a digitally readout for the selected vertical speed. Please use the tiptext of the mouse when you want to see the chosen VS. Of course you can also take a look at the VSI.

Additionally to the Altitude Warning Light Pos.32 you can hear a Warning Sound (a short beep) 1000 feet below and above reaching the selected Altitude in the Autopilot.

3.1.3 NAV-1 Radio



28	Active Nav1 Frequency
29	Standby Nav1 Frequency, active Nav1 Ident, active Nav1 DME
30	Radio Mode button. This Button changes the Display of the standby Frequency to active Frequency identification and active Frequency DME.
31	Swap button for changing active and standby Frequency of Nav1.

3.1.4 Additional Instruments and Warning lights in the Main Panel



35	Stall Warning light
36	Brake Pressure (Yellow for left and right Parking Brakes)
37	Brake Pressure (Green) for left and right Brakes
38	Radio Altimeter up to 4500 feet
39	Decision Height Selector
40	Engine Vibration
41	Brake Pressure left and right
42	Flaps
43	Gear lights

Additional Notes

The Radio-Altimeter shows just two or three digits when below 1000 ft. However the Radioalt shows the correct Altitude. I'm working currently at the Gauge to have always 4 digits.

It's funny and I do not know why bit the decision height selector just steps in 33 gradu-als. I'm also working on this problem at the moment and hope I could solve it.

3.1.5 The primary flight instruments



44	Knob for choosing Autothrottle Airspeed
45	Setting knob for the pitch display of the Attitude
46	Attitude Warning Light. Lights up when the Attitude is off or if there is any fault with the Attitude (Pitot, Pressure,)
47	Flight Director Bars (could be switched on with switch Pos. 27)
48	Decision Height Warning Light. Lights up when the Aircraft reaches the decision height selected with Pos. 39
49	Attitude Test knob
50	Autopilot Altitude Warning Light. Lights up when Altitude Hold is active (AP) and the Aircraft is below or above this selected Altitude.
51	Barometer setting knob
52	GPS / NAV selector
53	DME 2 (Nm)
54	DME 1 (Nm)

3.1.6 The Engine Instruments



Engine Oil Gauge (Pressure / Temperature

Engine N1 (see also the additional notes!)

Engine EGT / TGT

Engine N2

Engine Fuel Flow

Additional Notes

Below those Engine Instruments you will find three Instruments for the Tanks. The left one shows the filling of the left wing tank in percent, the right one shows the filling of the right wing tank in percent and the centre shows the filling of the centre tank in percent.

The upper left Warning light of the N1 Gauge lights up when the corresponding Engine is on Fire or there is a fault with this Engine.

3.1.7 The Bae146 GPWS

Except the Overhead Panel and Start-up procedure, the GPWS system of the Bae146 is one of the most complex parts of this Panel. The GPWS is fully automatic in operation and requires no pilot input. It contains a lot of different functions which are also used in the real Aircraft. These functions are:

- GPWS Callout at about 400 ft. above Ground when landing
- Decision Height Warning Lights (see section primary flight instruments)
- Acoustic Sink rate Warning (just when using the Standard Panel.cfg)
- Pull up Sound in combination with the terrain and sink rate warning (just when using the Standard Panel.cfg)
- Don't sink warning in combination with the terrain warning (just when using the Standard Panel.cfg)
- Acoustic Too Low Gear Sound (just when using the Standard Panel.cfg)
- Acoustic Too Low Flap Sound (just when using the Standard Panel.cfg)
- Acoustic Minimum warning in combination with the decision height (just when using the Standard Panel.cfg)

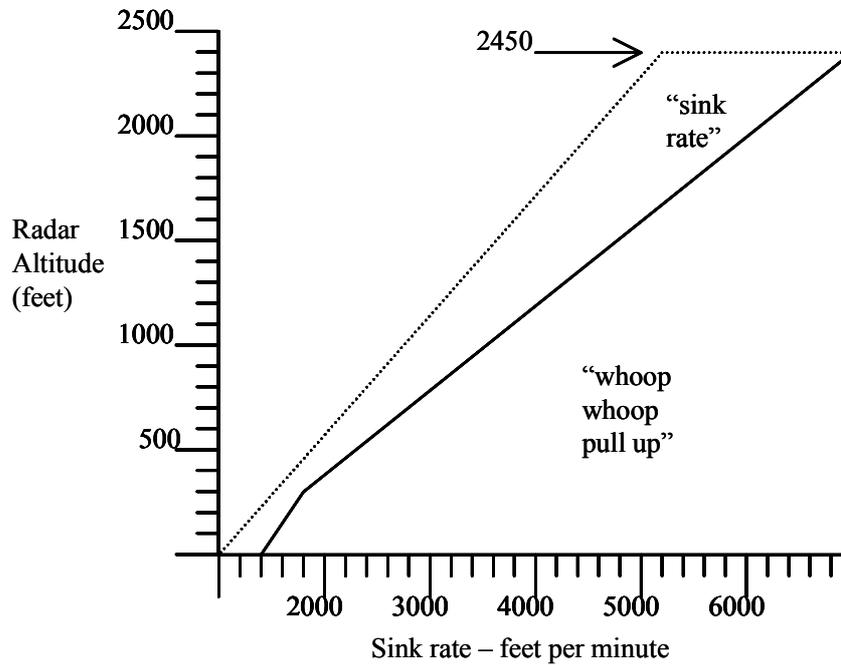
Operation of the GPWS (extract from Dai Griffiths Readme file)



GPWS Self-Test

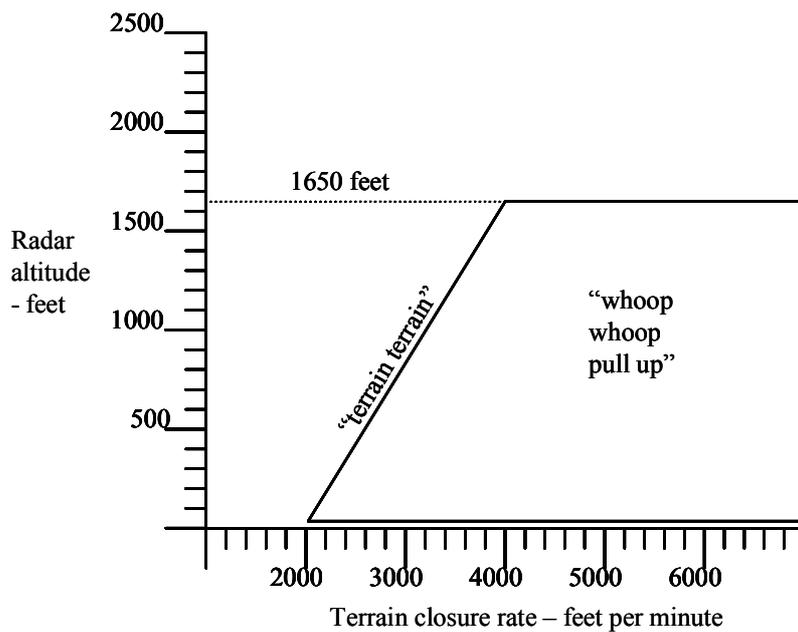
On the ground and above 1000 feet pressing the Test button (Pos. 56) will cause "Glide slope" followed by "Whoop! Whoop! Pull Up!" to sound.

Mode 1 – Excessive Sink Rate



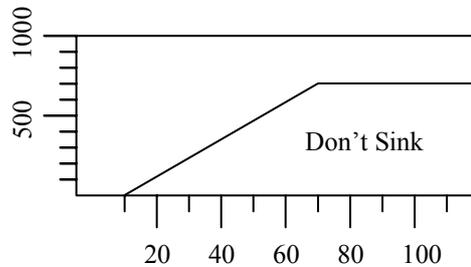
When the aircraft penetrates the outer warning boundary "Sink Rate" sounds. If the inner boundary is penetrated "Whoop! Whoop! Pull Up!" sounds. Mode 1 is reset by returning vertical speed to a positive climb rate. Mode 1 may be over-ridden by a Mode 2 warning but will resume if the condition still exists after the Mode 2 warning is cancelled.

Mode 2 - Excessive Terrain Closure Rate



When the aircraft penetrates the warning boundary, “terrain, terrain” will sound followed by “whoop! whoop! pull up!”. When “pull up” ceases “terrain” will continue to sound until the aircraft has gained 300 feet of pressure altitude.

Mode 3 – Descent After Take-Off



When the aircraft penetrates the warning boundary "Don't Sink" sounds. Mode 3 is reset by a positive climb rate.

Mode 4A – Proximity To Terrain, Gear Not In Landing Position

When the aircraft penetrates the warning boundary (500 feet AGL) with the landing gear not in the down and locked position, "Too Low – Gear" sounds. Mode 4A is reset by climbing above the boundary height. Mode 4A may be over-ridden by a Mode 2 warning but will resume if the condition still exists after the Mode 2 warning is cancelled.

Mode 4B – Proximity To Terrain, Flaps Not Full

When the aircraft penetrates the warning boundary (150 feet AGL) with the landing gear down and flaps not fully down, "Too Low – Flaps" sounds. Mode 4B is reset by climbing above the boundary height. Mode 4B may also be inhibited if you are making a flapless approach by operating the Flap Inhibit switch. Mode 4B may be over-ridden by a Mode 2 warning but will resume if the condition still exists after the Mode 2 warning is cancelled.

Mode 5 – Descent Below Glide slope

Below 1000 feet "Glide slope" will sound if you are one dot or more below the glide slope indicator and will repeat faster and faster as radar altitude decreases. Mode 5 is reset by re-acquiring or rising above the glide slope.

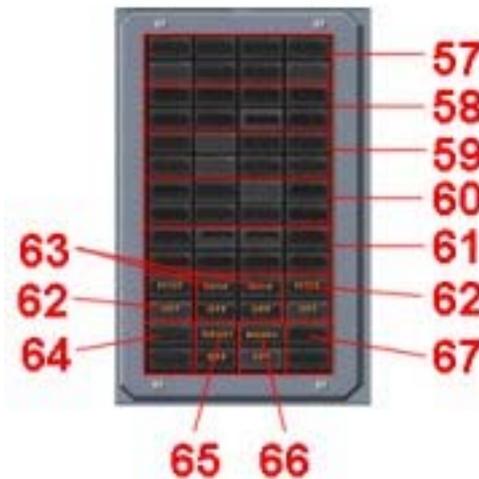
(This is a slight modification of the real Mk11 GPWS – at 400 feet the announcement should increase by 6db).

Mode 6 – Descent Below Preset Radar Altitude

When the aircraft descends below the preset radar altitude (decision height) "Minimums – minimums" sounds. To reset Mode 6 the aircraft must climb 1000 feet above current altitude and the landing gear must be cycled – this may include a landing and subsequent take-off.

3.1.8 The Bae146 Annunciator Panel

The functions of the Bae146 Annunciator are not like in the real one. Thanks Bob Ward (please see also the credit section) I have all Information about the real Annunciator but however I decide to change it for a better use of the Panel in the Flightsimulator.



57	Engine Warning lights for Engine 1 to 4. They light up when there is a fire on the corresponding Engine or those Engine has a malfunction.
58	Low Oil Pressure Warning Lights for Engine 1 to 4.
59	Engine Valve Lights for Engine 1 to 4.
60	Warning Lights for Low Fuel. The lift and right lights are or the left and right tank. The both centre lights are for the centre tank. All lights come up when you reached about 10% of the corresponding tank.
61	No Thrust Warning Lights. Both rows have the same function. The lights goes on if the Thrust Lever's pushed completely back (idle Thrust) and the Gear is not down. The lights goes also on while the gear moves out or in or if the Engine is off.
62	Warning light for the Pitot heater. Lights up when the Pitot heater is off.
63	Warning lights for the Engine Antiice. Lights up when Engine Antiice is switched off.
64	Spoiler Warning light. Lights up when the spoiler is set.
65	Autopilot Warning light. Lights up when the Autopilot is switched off.
66	Autothrottle Warning light. Lights up when the Autothrottle is switched off.
67	Warning light for the Brakes. Lights up when the brakes are in use.

3.2 The Bae146 Pedestal Panel

Version 2.0 of the Bae146 Panel contents some new functions in the Pedestal Panel. The Pedestal Panel could be opened and closed with the corresponding window toggle on the left side of the Main Panel. You will find some further Radios in the upper side of the Pedestal Panel. Here are the Comm2, Nav1, Transponder and Audio Gauges. I don't explain the Radios here because the functions of them should be clear.



68	Trim Wheel
69	Spoiler Lever
70	Throttles for Engine 1 to 4
71	Flap Lever
72	Rudder Trim Gauge
73	Parking Brakes handle
74	Valve for the right Fuel Pumps
75	Valve for the left Fuel Pumps
76	Elevator Trim position indicator

Additional Notes for the Pedestal Panel

The red crossed Switches are just dummies without any Function (I hope you read the first section of this Manual).

The Fuel Valves just works correct if you exactly follow the Installation instructions. It's important to add a second tank selector which is explained in the installation section of this Manual.

3.3 The Bae146 Overhead Panel



The Bae146 Overhead Panel is the most complex part of the Bae146 Cockpit. Almost all of the working Instruments there have to be programmed completely new and it was my goal to realize it as it is in the real Bae146 Cockpit. As written in the entry of this Manual not all of the switches do have functions. But the functions of the switches which works are correct and almost like it is in reality

When you start the Overhead Panel for the first time in your Flightsession it's necessary to press the key "I" (for the lights) two times. This is to refresh the Overhead Panel. Otherwise you see the Overhead Panel with all Annunciators and the Instruments didn't show the actual value. After you've done this it's not necessary to do it again. The Panel will now be refreshed automatically.

3.3.1 The Fuel Unit



77	Left and right fuel tank content for X-Feed operating
78	Left Warning light for low fuel, X-Feed to left is not possible
79	Right Warning light for low fuel, X-Feed to right is not possible
80	Left Tank selector (down = both, up = feed left tank to right)
81	Right Tank selector (down = both, up = feed right tank to left)
82	Lights up when left X-Feed function is active
83	Lights up when right X-Feed function is active
84	Fuel Temperature
85	Warning Lights for Fuel Pumps of Engine 1 to 4
86	Fuel Pump switches for Engine 1 to 4

Additional Notes

The red crossed Switches are just dummies without any Function (I hope you read the first section of this Manual).

Take care to read the Start up procedure before changing anything in the Fuel Unit.

3.3.2 The Electric Unit



87	TR2 Amperemeter set to Engine 4 Generator
88	Battery Amperemeter
89	Battery Main Switch
90	Main Frequency
91	Warning Light for Battery 1. Lights up when Battery 1 is switched off.
92	DC Bus Tie switch (Position auto and open)
93	Amperemeter for APU Generator
94	Amperemeter for Engine 4 Generator
95	Warning Light for Engine 4 Generator. Lights up when the Generator did not work or is switched off.
96	Warning Light for APU Generator. Lights up when the Generator did not work or is switched off.
97	Warning Light for Engine 1 Generator. Lights up when the Generator did not work or is switched off.
98	Amperemeter for Engine 1 Generator
99	AC Bus Tie Warning Light. Lights up when AC Bus Tie is switched to open.
100	DC Bus Tie Warning Light. Lights up when AC Bus Tie is switched to open.
101	Main Bus Amperemeter

102	Main Bus Voltmeter
103	TR2 Amperemeter set to Engine 1 Generator
104	AC Bus Tie switch (Position auto and open)

Additional Notes

The red crossed Switches are just dummies without any Function (I hope you read the first section of this Manual).

Take care to read the Start up procedure before changing anything in the Electric Unit.

When opening the Bae146 Panel and your Engines are already running, it could be that some of the Instruments and the Main Battery switch are off. Take care that everything is set correctly and no Annunciator light in the Overhead Panel is on (except the green APU light when the APU is running).

3.3.3 APU, Starters, ICE Protection and Pressurization



105	Invisible Emergency Button for Reloading the Aircraft when the Battery is empty.
106	APU RPM Gauge
107	APU Main Switch
108	APU TGT Gauge
109	APU activation light. Lights up when the APU is available.
110	Single needle Altimeter for Pressurization
111	Pitot Heat switch
112	Engine Selector
113	Engine Master switch
114	Starter Annunciator Lights (Lights up when one of the Engines is starting)
115	Engine Starter

Additional Notes

The red crossed Switches are just dummies without any Function (I hope you read the first section of this Manual).

You could not compare this APU with the real APU of the Bae146 because of the limitations of the Flight simulator. Please take care to read the Start up procedure to find out why.

3.3.4 The Lights and Air Condition Unit



116	Switch for Wing Lights
117	Switch for Logo Lights
118	No Smoking switch
119	Rotary Beacon Light switch
120	Strobes switch
121	Navigation Light switch
122	Air Condition switch
123	Outside Air Temperature (normally here is the Duct Temp)

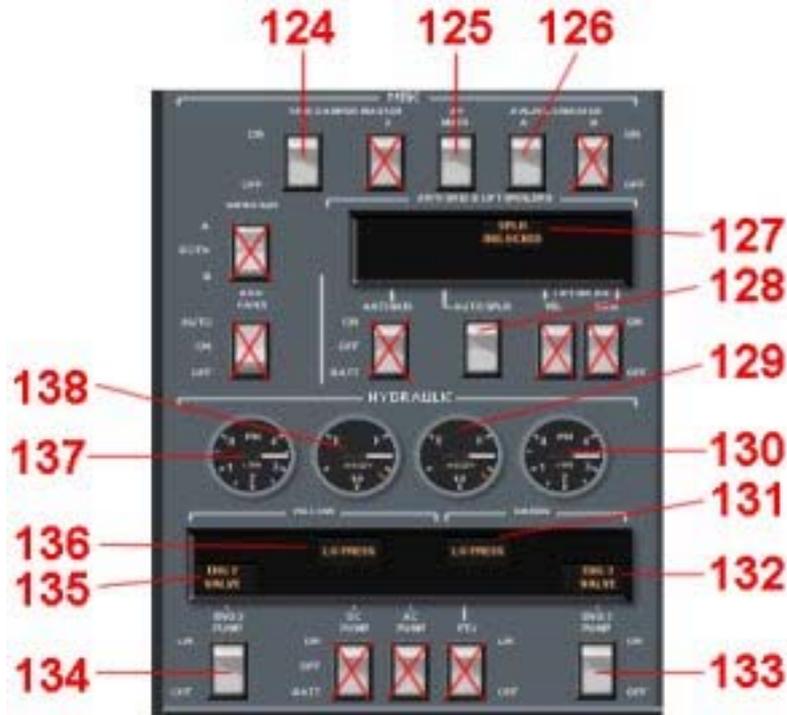
Additional Notes

The red crossed Switches are just dummies without any Function (I hope you read the first section of this Manual).

The Lights and Notices Unit is the only part of this Panel which is not at the right place. On this place are normally the Ground Test lights and buttons. The light switches are right beside them. Because of the free space I have I decide to place them here as they are more important in the Flightsimulator as the Ground Test Unit.

Not every FS2002 Aircraft has Logo- and Wing Lights. However those switches based on the correct function of the corresponding Light switches of FS2002. If you ever fond an Aircraft with those lights the switches will work.

3.3.5 The Misc and Hydraulic Unit



124	Yaw Damper Main switch
125	Second Autopilot Master switch
126	Avionics switch
127	Spoiler Warning light. Lights up when spoiler is set or armed.
128	Spoiler arm switch
129	Engine 3 Hydraulic Quantity
130	Engine 3 Hydraulic Pressure
131	Engine 3 Low Hydraulic Pressure Warning light
132	Engine 3 Hydraulic Pump Warning Light. Lights up when the Hydraulic Pump is off.
133	Engine 3 Hydraulic Pump switch
134	Engine 2 Hydraulic Pump switch
135	Engine 2 Hydraulic Pump Warning Light. Lights up when the Hydraulic Pump is off.
136	Engine 2 Low Hydraulic Pressure Warning light
137	Engine 2 Hydraulic Pressure
138	Engine 2 Hydraulic Quantity

Additional Notes

The red crossed Switches are just dummies without any Function (I hope you read the first section of this Manual).

Not every FS2002 Aircraft supports Hydraulic. The complete Hydraulic Section did not work if you're using an converted FS2000 or FS98 Flightmodell.

3.3.6 Additional Switches in the Overhead Panel



139	APU Air switch
140	Overhead letter lights switch (see also the Light section)

Additional Notes

The red crossed Switches are just dummies without any Function (I hope you read the first section of this Manual).

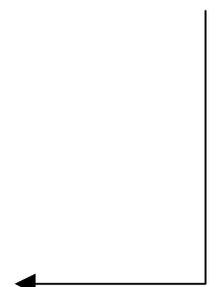
3.4 Bae146 Panel Lights

3.4.1 Main Panel Lights

The Bae146 Panel has a couple of different Light switches. In this section you will find out what switch turns on or off what illumination effect of the Panel.



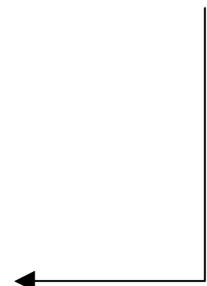
Light switch Pos. 3



Turns on/off



Light switch Pos. 1



Turns on/off



Light switch Pos. 7



Turns on/off

3.4.2 Overhead Panel Lights



Light switch Pos. 3



Turns on/off



Light switch Pos. 140



Turns on/off

4 The Bae146 start up procedure

One of the most changes to the former Bae146 Panel is the new Overhead Panel. This Overhead Panel is designed exactly after the real one and so it's just logical also to realize a real start up procedure. The start up procedure now corresponds to the real one much better than with my older Panel. Because of the limitations of the Flight simulator not everything was possible but all steps which are realized now are like in the real Cockpit.

4.1 Start up checklist

1. Switch on the Main Battery 1 (Pos. 89)
2. Switch on the APU Generator (Pos. 4)
3. Switch on the APU (Pos. 107)
4. Check APU Generator Amperemeter (Pos. 93), APU RPM and TGT (Pos. 106 and 108) and Main Bus Voltmeter (Pos. 102)
5. Set AC and DC Bus Ties to Auto (Pos. 104 and 92)
6. Annunciator for Bus Ties (Pos. 99 and 100) go off
7. Switch on the Avionics (Pos. 126)
8. Open the Fuel Valves in the Pedestal Panel (Pos. 74 and 75)
9. Switch on the Fuel Pumps for the Engines (Pos. 86)
10. Fuel Pump Annunciator Lights (Pos. 85) go off.
11. Switch on the Start Master (Pos. 113)
12. Select Engine 4 with the Engine selector (Pos. 112)
13. Press the Starter for a few seconds
14. Starting Annunciator Lights (Pos. 114) go on
15. The Annunciator Lights go out when N1 is at about 50%
16. Select next engine with the selector (Pos. 112) (Engines 3 than 2 than 1)

17. Same starting procedure like Engine 4 for all other Engines
18. Switch off the selector (Pos. 112) after the last engine is running
19. Switch off the Start Master (Pos. 113)
20. Switch on APU Air (Pos. 139)
21. Switch on Generator 1 and 4 (Pos. 2 and 5)
22. Check Engine Generator Lights (Pos. 95 and 97) Both lights should go off now
23. Switch on the Hydraulic Pump of Engine 2 and 3 (Pos. 134 and 133)
24. Check Hydraulic Warning Lights (Pos. 131, 132, 135 and 136) All Lights should go off now
25. Check all Warning Lights in the Overhead Panel. Only the green APU light should be on now

4.1.1 After take off and climb procedures

26. Switch off APU Air (Pos. 139)
27. Switch off APU (Pos. 107)

Additional Notes

ATTENTION

The Bae146 Panel APU don't work like a real APU. Unfortunately Microsoft forget to realize an APU in the Flight simulator. There's also no Source Code for it, so I have to use a dummy APU which based on the Master Battery switch. What means this exactly for you? Normally you have enough time and power for starting the Engines when a real APU is running. This is not possible with this Panel. After you have started the APU you just have a few minutes to start the Engines. As soon as the Engines are running and you've switched on Generator 1 and 4 you have all time you want. I know that this is not easy when you're starting the Engines for the first time because you have to search for the necessary switches. It's the best thing you print out this manual, commit the position of the switches and make some trainings before starting your real virtual flight. If you still lost the electrical power when starting you can press the invisible button pos. 105 in the Overhead Panel. This button reloads your Aircraft and have completely filled up your Battery.

4.2 Complete Panel Checklist

Based on the real Bae146 Checklist but with some changes for the use with this Panel in the Flightsimulator.

Safety Check before A/C Power on

- Circuit Brakers Set
- Battery on and Checked
- APU Generator On
- APU Start

Flight Deck Safety Check

- Brakes Park
- Bus Ties Auto
- Avionics On
- Generator 1 and 4 Off
- Gear Indicator 3 Greens
- Overhead Annunciators Tested
- Air Conditioning As required
- Engine Antiice Off
- Flight Deck Lights Checked
- Glareshield Lights Checked
- Flight Instruments Checked
- Centre Panel Checked
- Yaw Dampers Off
- Autopilot Checked/Off
- Avionics Checked

Before Start

- Hydraulics Off
- Fuel Valves Open
- Fuel Pumps On
- Fuel Panel Checked
- Fasten Seat Belts On
- Fuel Contents Checked

Starting

- Beacon On
- APU Air Off
- Engine Antiice On
- Start Master On
- Start Selector Engine No.....
- Engine Start

After Start

- Start Selector and Master Off
- APU Air On
- Engine Antiice As required
- Generator 1 and 4 On
- Hydraulics On

Taxi

- Taxi Lights On
- Brakes Green and Yellow checked
- Flaps Set and checked
- Flight Instruments and YD Checked
- Altimeters QNH Set and Checked
- Trims Set for Take off
- Nav Aids and Flight Director Set
- Transponder Set Code / Standby
- Speed Checked

Runway

- Transponder On
- Lights and Strobes On

After Take off

- Gear Up / Lights out
- Flap Up and Indicated
- APU Air Off
- APU As required

Climb

- Altimeters 1013 Set and checked
- APU Stop
- Lights Off at FL100
- Fasten Belts As required

Descent

- Fasten Belts As required

10.000 FT

- Fasten Belts On
- Lights On

Approach

- Altimeters QNH Set and checked
- APU Start
- Fuel Panel Checked and set

Landing

- Altimeters QNH Set and checked
- Gear Down – 3 Greens
- APU Air APU running – On
- Lights As required
- Flaps Set for Landing

After Landing

- Lights / Strobes On
- Taxi Lights On
- Airbrakes/Spoilers In
- Flaps Selected up
- Brakes Checked
- Transponder Off / Standby
- Engine Antiice As required
- Flapd Indicated up

Shutdown Checklist

- Brakes Yellow / Park
- Hydraulics All off
- Generator 1 and 4 Off
- Thrust Levers Fuel off
- Fasten Belts Off
- Taxi Lights Off
- Fuel Pumps Off
- Engine Antiice On
- Beacon Off
- Fuel Valves Shut

Leaving Aircraft

- Avionics Off
- Bus Ties Off
- APU Air Off
- Lights Off
- APU Off
- Battery Off

5 Known Bugs and FAQ's

Well, it was my goal to design this Panel without any Bugs. A lot of the known problems with the older Panel were solved. The reason for this older problems were the combination of FS98 and FS2000 Gauges. Now everything is designed and programmed for FS2002. However there are still some minor things which should not be concealed.

- The letters in the Overhead Panel are very small and not good readable. For a better handling I recommend to print this Manual.
- The Overhead Panel shows strange values and all Annunciators are on. The reason for this is the Light Gauge in the Overhead Panel. To solve this, just press "I" (for he lights) two times or switch on and off the Panel Lights. After that the Overhead Panel is refreshed and you don't have to do this again.
- The Hydraulic section didn't work with all Aircraft. The reason is, that older FS98 and FS2000 Flightmodels don't have a hydraulic area in the Airfile. Also some FS2002 Aircraft didn't accept the hydraulic. You could solve this problem with using real S2002 models and installing FSUIPC.dll.
- The GPWS sound "Sink rate" didn't stop. Yes, this is a real problem. There are two ways to solve it. After the VSI shows a positive climb the sound stops automatically. The second ways is to use the alternative Panel.cfg. This file didn't include those sounds.
- Sometimes when switching on the Panel spotlights (switch Pos. 7) at night some of the Gauges are gone. This is also a problem of the illuminated Gauges. To solve it just press the "I" key two times or switch off and on the Panel light. After that all instruments are back.
- The decision height selector just makes "33" steps. At the moment I do not find the problem in m source code but I'm currently working on it.
- The Altimeter selector goes lower than "00000" without showing the value. I'm currently working on this problem and I'm sure that I can solve it within the next weeks.
- Where is the vertical speed readout for the Autopilot? There is no readout in the real aircraft so don't search for it. You can select the vertical speed value with the knob (Pos. 18) below the Altimeter selector. The Mouse-Tiptext shows you the selected value.

6 Credits

First of all I would like to thank Bob Ward! Without his help this Panel won't look like it is now. He sent me a lot of Information (Cockpit posters, descriptions, photos, checklists,) about the real Bae146 and Avro ARJ Cockpit, so the only thing I had to do was to program the Gauges. THANKS BOB!

Also a lot of thanks goes to some Freeware Gauge programmers:

The HGHB Team for the Spoiler Warning Annunciator.
The FPDA Team for the Callout and Air Conditioning Gauge
Christian Koegler and John Hirsch for the Stall Warning.
Andreas Jaros for some of the Warning Lights.
Dai Griffiths for a lot of the used Gauges.
J.L. Stubbs for the Engine Vibration (once Oil-) Gauges.

If you are not listed above and you have programmed a Gauge which I've used in my Panel please forgive me for this mistake. Just send me an Email and I will correct this.

7 What's next?

Of course this is not the last Version of the Bae146 Panel because I have a lot of ideas. As written above I've learned to program Gauges some months ago but I'm still a beginner in Gauge programming. With every Gauge I made I learned more and so it's possible for me to realize more things. I also hope, that someone makes it possible to get a real APU in FS2002. Unfortunately it doesn't look like at the moment. However, the next Version will (hopefully) have the following things:

- Correction of the still existing bugs
- Full working MWS
- Several working Standby Instruments
- Functional Split mode in the Autopilot
- Working Flow meters with reset
- Full working TMS
- Roll displays

And now have fun flying the Bae146!