

Fly the Tiger

F-5E Tiger II Version 2.00



Add-on for:

Microsoft Flight Simulator FS2004 and FSX

1 Installation

CD-Version (FS2004 and FSX)

Insert the CD-ROM in your CD-ROM drive, the installation start automatically. follow all instructions on your screen.

Download-Version (FS2004 and FSX)

The installation file can be extracted from within the ZIP file that you have downloaded from our Download Shop. After extraction just double click the EXE-file in order to begin with the installation and follow all instructions on your screen.

Requirements for using Fly the Tiger II effectively (FS2004 only):

- The dynamic scenery option must be activated. This will be done for you by the installation programme.
- The scenery density must be set to at least „Dense“. This enables the red border lines for showing the flight path (similar to an EFIS Display) to be displayed. This is also done for you by the installation programme.
- The time must be set to „Flight time“, not System time. This will be set during the installation.
- The dynamic scenery together with the associated flights can be used without the Switzerland Pro Scenery von Flylogic, but really needs this scenery in order to be displayed to its full extent.

Certified Gauges (FSX only)

In case you have installed Version 1 of Flightsimulator FSX including SP1, but without the FSX Acceleration Pack by Microsoft, please consider the following:

As you start FSX the first time after installation of Fly the Tiger X, you will be asked whether you want to run certain Gauges. Open the pulldown window and select „execute always“. Click the OK button. This message will not display again

2 Changes to the previous Fighter Version 1.00

2.1 Version for FS2004 and FSX

- Enhanced INS with manual input of target coordinates
- Large number of repaints: Test version of the Swiss Airforce, Norwegian Airforce, Greek Airforce, U.S.Airforce, U.S.Marines and U.S.Navy
- Dynamic scenery (F-5E Tiger II, F/A-18, Mirage IIIS, Mirage IIIRS, Patrouille Suisse) over the Axalp with associated flights for practising formation flying.
- Traffic Radar in the 2D main panel.
- Auto smoke with hot air effect (FSX only)
- Improved jet sounds
- Various other minor adaptations

2.2 Version only for FSX

- FSX-features and textures with specular maps and self-shadowing
- Improved animations of the visual model and the pilot figure
- Moving drag chute
- Shark nose of the Swiss Airforce Variants
- Jettison of all loadout in case of emergency (Emergency All Jettison)
- Nose gear extension for take off (to be operated from the virtual cockpit (see picture below and chapter 3.2 Animations and external parts and chapter 3.6 Virtual 3D Cockpit))



3 Northrop F-5E Tiger II

3.1 Aircraft Selection

IMPORTANT:

Aircraft Selection if FS2004 and FSX

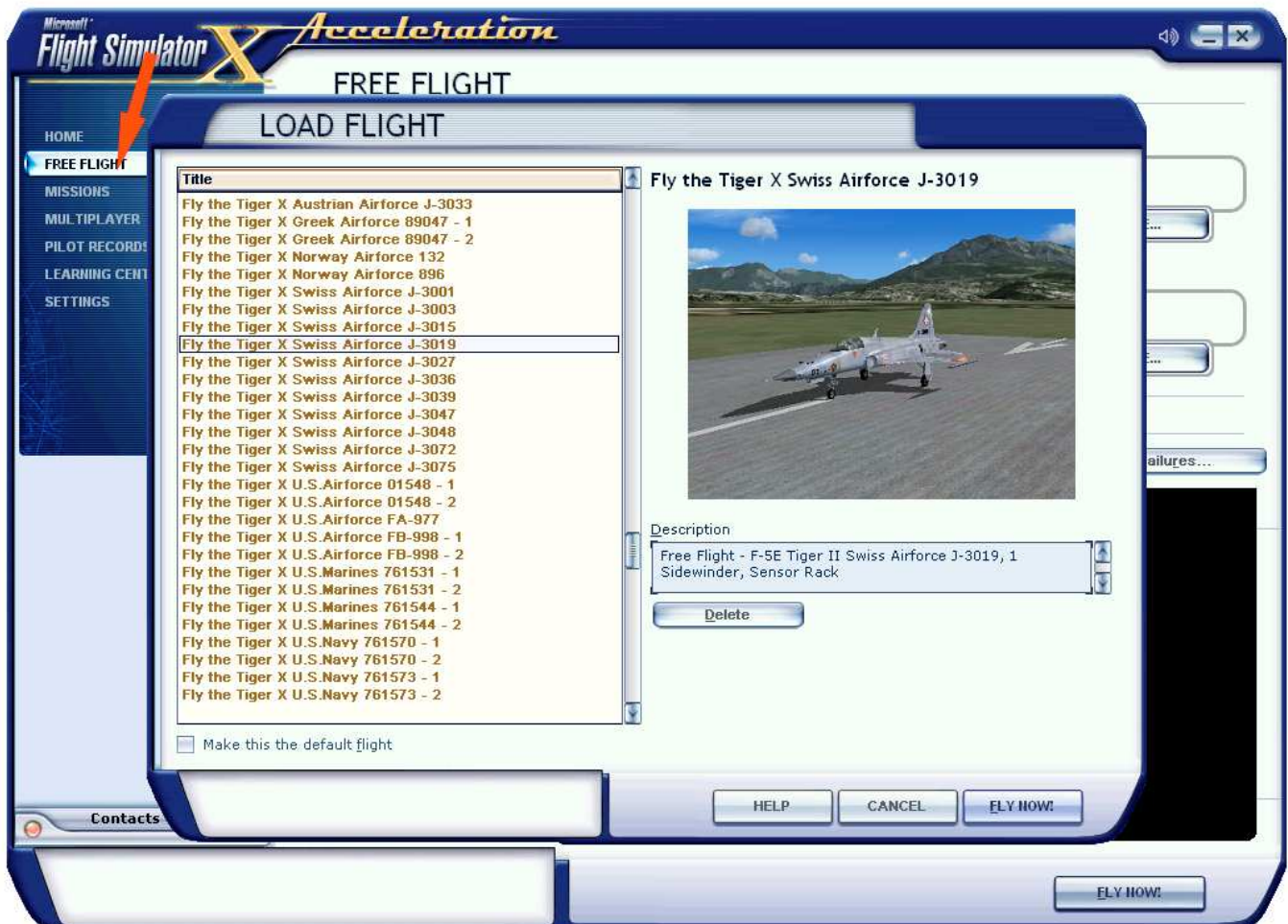
Until now: If you had installed the Fighter Version of the F-5E Tiger from Flylogic, you would find the aircraft in the menu under „Swiss Airforce“,

NEW: You'll find the F-5E Tiger II in the aircraft menu under „Flylogic F-5E Tiger II“. You can then subsequently choose a specific air force variation.

Aircraft selection through a selection of a free flight in FSX

In case you can see the Tiger in the spot view mode only from far away, please proceed as follows:

Remain in the spot view mode and select one of the free flights which were installed automatically. These free flights can be found in the menu to the left under "FREE FLIGHT" (see picture below). The view distance will then be reduced.



3.2 Characteristics of the F-5E Tiger II

3.2.1 Technical Specifications

Length:	14.68 m	Empty weight:	4350 kg
Wingspan:	8.13 m	Take off weight:	7080 kg
Height:	4.06 m	Max. takeoff weight:	11180 kg

Takeoff speed:	145 kts / 327 km/h
Landing speed:	155 kts / 290 km/h
Max. Speed:	M 1.4 / 1460 km/h
Takeoff distance:	610 m

3.2.2 Flight Dynamics

Flaps up stall speed:	80 knots
Full flaps stall speed:	63 knots
Cruise speed:	680 knots

3.2.3 Automatic Flaps

The data for controlling the automatic flaps was taken from the PS documents and programmed into an automatic flaps gauge. Control of the automatic flaps is not just dependant on the IAS (Indicated Air Speed) but also on the AoA (Angle of Attack) and the current position of the flaps. The following table shows how this was implemented:

Current Flap Position	IAS [Kts]	AoA (Angle of Attack) [°]	Flaps Control
1/2, 3/4, FULL	> 550		change to UP
1/2, 3/4, FULL		< 6.6	change to UP
UP, 1/2	< 200	> 6.4	change to 3/4
3/4	< 200	> 8.7	change to FULL
FULL	< 200	< 9.6	change to 3/4
UP	200 - 330	> 6.4	change to 1/2
1/2	200 - 330	> 8.7	change to 3/4
3/4	200 - 330	< 9.6	change to 1/2
UP	330 - 550	> 6.4	change to 1/2

3.3 Animations and external parts

Animation of the control surfaces, cockpit hood, undercarriage etc. conform to FS2004 standards.

The drag chute and tail hook can be activated by clicking on the corresponding switches in the 2D-Cockpit or in the virtual cockpit with the mouse (items 2 and 3 on the illustration in section 3.5.1. Main Panel).

Wheel chocks are displayed when the aircraft is on the ground with engines turned completely off ($N1 = 0$) and the parking brake has been activated. A cockpit ladder will also be displayed under the same conditions after the cockpit hood has been opened.

The protective coverings with the "Remove before Flight" flags are displayed when both the Stowage Box in the 3D Cockpit has been opened and the red strips have been clicked with the mouse. See section 3.6 Virtual 3D Cockpit for more information. Nose gear extension for take off to be operated from the virtual cockpit (see picture below and chapter 3.6 Virtual 3D Cockpit).



3.4 Liveries

The F5-E Tiger II is available in various basic models with further variations and different external loads.

- Swiss Airforce J-3019 with various external loads
- Swiss Airforce J-3001 with special livery – test version
- Swiss Airforce J-3003 in the Tiger livery during the Swiss Armed Forces Competition 2003 in Emmen.
- Austrian Airforce J-3033 with various external loads
- Greece Airforce
- Norway Airforce (two versions)
- U.S.Airforce (two versions)
- U.S.Marines (two versions)
- U.S.Navy (two versions)



Swiss Airforce J-3019



Swiss Airforce J-3047 with auxiliary fuel tank



Swiss Airforce J-3036



Swiss Airforce J-3075 with auxiliary fuel tank



Swiss Airforce J-3003 „Tiger“



Swiss Airforce J-3001 Test-Version



Austrian Airforce J-3033



Greece Airforce



Norway Airforce



Norway Airforce



U.S.Airforce (reflecting chrome textures)



U.S.Airforce (reflecting chrome textures)



U.S.Airforce (matt)



U.S.Airforce (matt)



U.S.Marines



U.S.Marines



U.S.Navy



U.S.Navy

3.5 Effects



Afterburner



Condense trails on the wing tips



Condense trails on the flaps



Automatic smoke



Flares, that are activated from the cockpit (see 2D-Panel)



High altitude contrails

Additional acoustic effects:

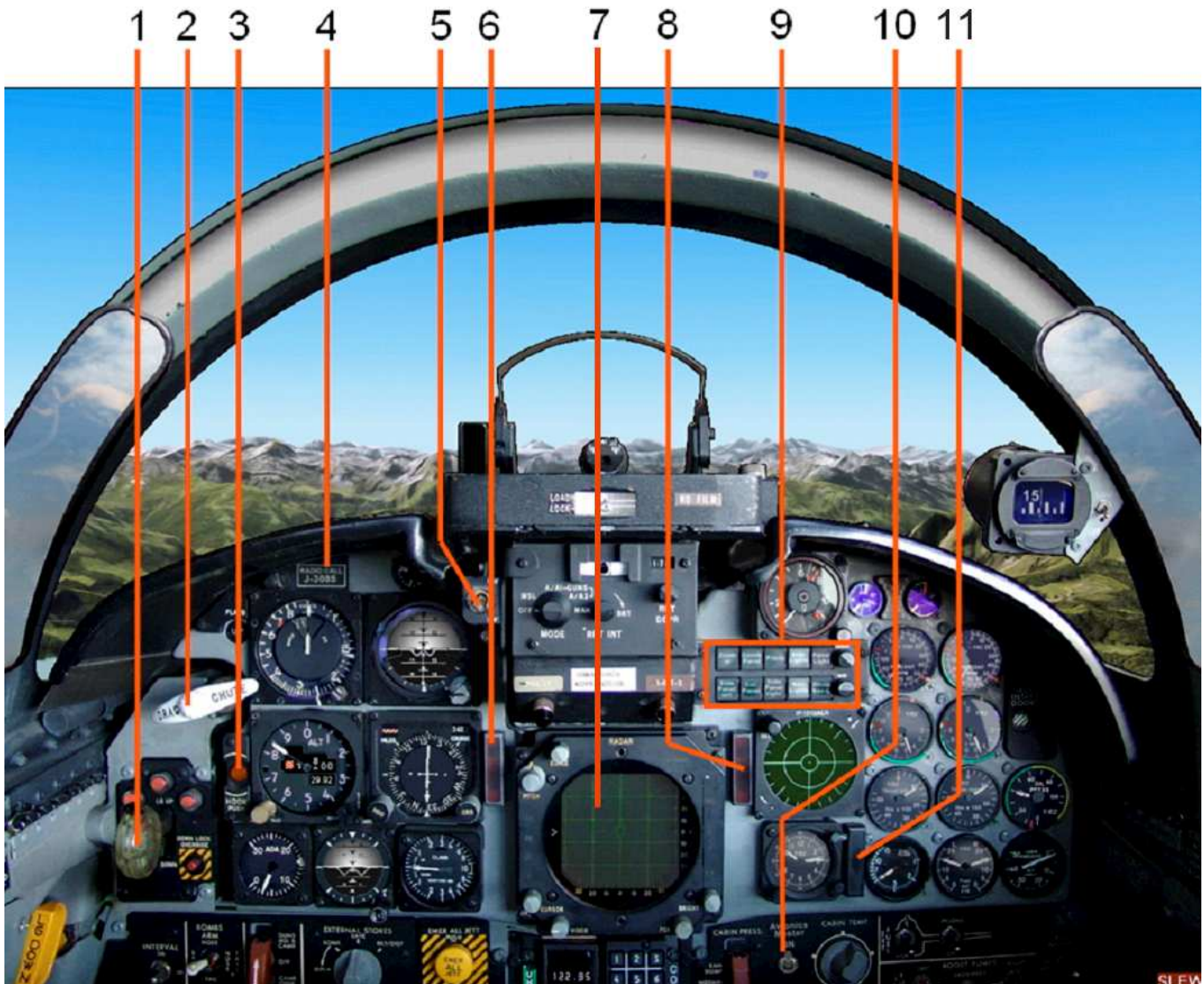
- Sonic boom
- Wind noise when the speed brake is extended

3.6 The 2D-Panel

The 2D-Panel was created using photo material of the original F-5E Tiger II.

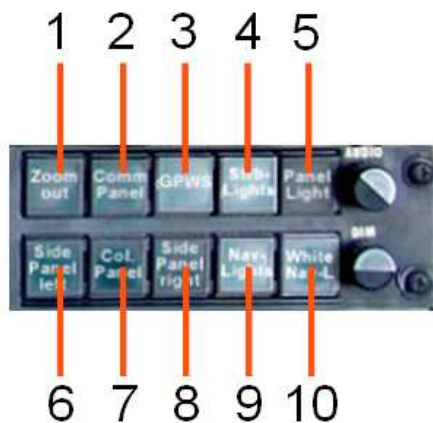
3.6.1 Main Panel

Only the control elements and their individual function on the main panel have been explained. Those instruments that are not described separately correspond generally speaking to the FS standard. The supplementary panels are explained separately.



- 1 Gear
- 2 Braking parachute
- 3 Tail hook
- 4 Radio Call, is different according to the aircraft version
- 5 Opens the Hangar-Box but only in the corresponding aircraft
(see also Compatibility with the Add-On "Patrouille Suisse" from Flylogic)
- 6 Left engine warning light
- 7 Traffic Radar for displaying AI-Traffic (flight movement)
- 8 Right engine warning light
- 9 Panel switch (further details below)
- 10 Avionics main switch
- 11 Master Caution display (click with the mouse to turn off)

Panel switch (Details at position 8 above)



1. Toggle main panel Zoom in / out, so that a section of the panel can be displayed for easier readability
2. Radio panel
3. GPWS switch
4. Strobes
5. Panel lights
6. Left side panel
7. Collective
8. Right side panel
9. Nav lights
10. Recognition lights

3.6.2 Left side panel



- 1 Engine panel
- 2
 1. Landing lights
 2. Engine start switch left/right
 3. Fuel cut off left/right

Side panel



4. Radar main switch
5. Automatic flaps switch (see below for function)
6. Flares main switch
7. Trigger flares
8. Flares are only triggered, when the main switch (7) has been activated and the F5-E Tiger is airborne. The trigger resets itself after 3 seconds automatically.
9. Rudder trim
10. Yaw damper
11. Pitch damper

Automatic flaps (Position 5 above)

For reasons of simplification the chaff deployment switch was used for the automatic flaps control. In reality this switch is in the middle on the right underneath the throttle levers.

Operation of the automatic flaps

Position OFF (only FS):

In this position the automatic flaps are switched off and the flaps can be operated manually.

Position UP:

In this position the flaps are always retracted. It is not possible to operate the flaps manually.

Position FXD:

In this position the flaps are extended by 14°. It is not possible to operate the flaps manually (mostly used for take off).

Position AUTO: (the Patrouille Suisse uses this mode the most):

In this position the flaps are extended and retracted automatically according to speed and AoA (Angle of Attack) of the aircraft. See section 3.1.3 Automatic flaps for a detailed description of this function.

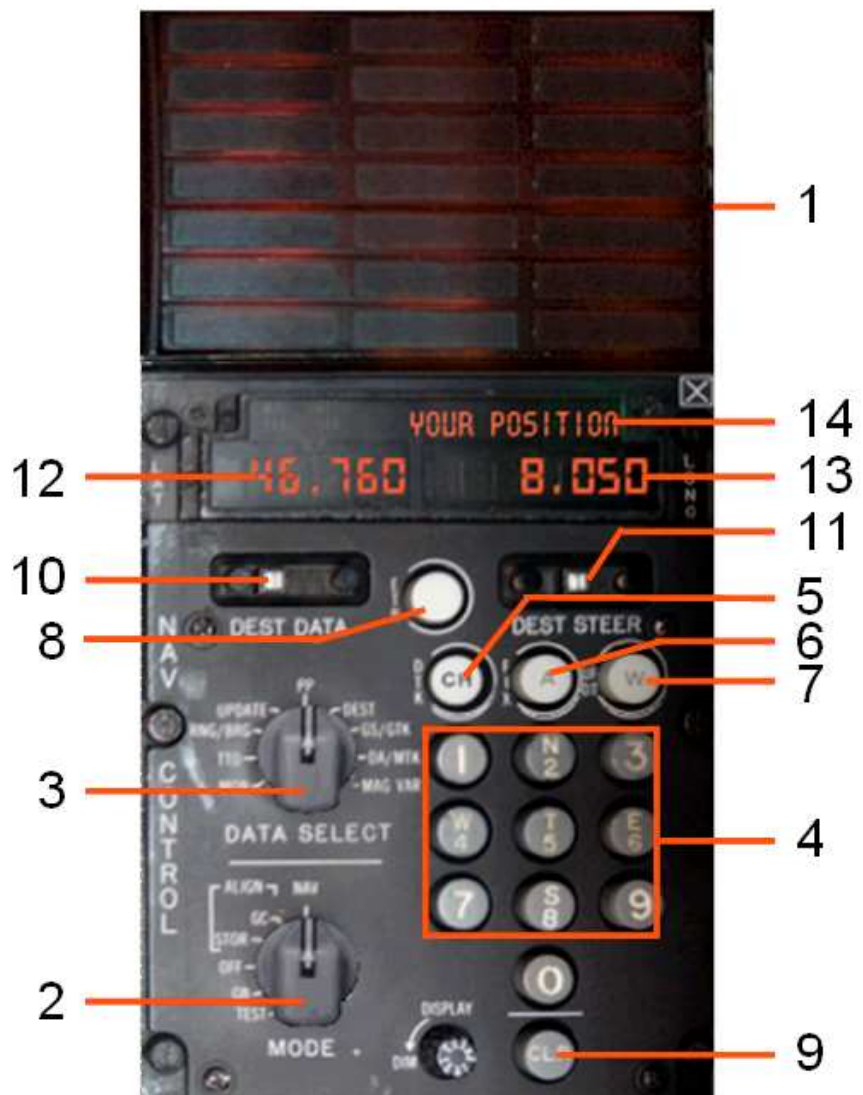
3.6.3 Right side panel

Inertial Navigation System (INS)

The INS is situated together with the Annunciator panel (1) on the right side panel.




The function of the INS is based on the real device in the Tiger, however its usage has been simplified for simulation purposes.

The device is activated by the main switch (2) and selecting the NAV position. The HSI is also switched on at the same time. If the INS has not been switched on (OFF position), a warning lamp is light up on the annunciator panel (1). If the operating switch (3) is in the "PP" (Present Position) position, the current coordinates are displayed in the upper display (12/13). Furthermore „YOUR POSITION" (14) will be displayed in the text field. In reality the pilot has to enter these coordinates manually.



Use the keys CH, A and W (5, 6 and 7) in order to determine what kind of coordinates you would like to enter.

„CH“ button in the INS (5)

This mode enables you to enter a preset destination within Switzerland using the keypad on the right hand side (4) of the INS. „DESTINATION ?“ is displayed in the text field.	
The name of the selected destination (in the example „HOMEBASE EMMEN“) is then displayed in the text field. The destination's coordinates are displayed under LAN / LON (12/13).	
Pressing "DEST DATA" (10) then displays the heading and distance to that destination (12/13). At the same time, the heading is set automatically in the HSI.	

Pressing "DEST DATA" (10) displays the heading and distance the destination (12/13) (image below). At the same time, the heading is set automatically in the HSI.

Preset destinations on the key pad (4) are:

Key 1: Emmen airfield	Key 6: Buochs airfield
Key 2: Payerne airfield	Key 7: Mollis airfield
Key 3: Meiringen airfield	Key 8: Samaden airfield
Key 4: Dübendorf airfield	Key 9: Axalp firing range
Key 5: Sion airfield	

„A“ button in the INS (6)

Pressing the „A“ key enables you to enter a preset destination in Austria. These are:

Key 1: Graz airfield	Key 6: Klagenfurt airfield
Key 2: Linz airfield	Key 7: Salzburg airfield
Key 3: Tulln airfield	Key 8: Wien Schwechat airfield
Key 4: Zeltweg airfield	
Key 5: Innsbruck airfield	

„W“ button in the INS (7)

Pressing the „W“ key enables the pilot to enter all data manually. This is done as follows:

After pressing the „W“ key, „ENTER N/S“ is displayed in the text field. Then press N or S (4).



You will be then required to enter the Latitude coordinates. Example: for 47.513 -> enter 4 7 5 1 3



Now you will be required to confirm your input by pressing ETR (8).



Now press E or W on the key pad (4).



Now you will be required to enter the Longitude coordinates. Example: for 9.514 -> enter 9 5 1 4
Confirm your input by pressing ETR (8).



If your destination is within the Lat/Lon limits and also within the range of the F-5E Tiger II, the text in the text field disappears and the destination coordinates are displayed. Pressing the „DEST DATA“ (10) key then displays the heading and distance.



Should any of the figures entered be out of Lat/Lon range, then „INVALID VALUE“ will be displayed.



Should any of the figures entered be out of the range of the F-5E Tiger II, then „OUT OF RANGE“ will be displayed.



3.6.4 Radio panel

Clicking on X (2) will close the radio panel.

The radio panel is divided into a UHF and a VHF section. UHF and VHF can be turned on separately (6).

The UHF unit contains a COM1 and ADF1 device that are selected with a switch (5).

The ATC windows can be opened by clicking on the key underneath ATC (4).

Preset frequencies can be selected by using the keys on the keypad (3). These frequencies are listed in a table below.

Frequencies can be changed individually by clicking directly on the display (1).

The VHF unit contains a NAV1 and NAV2 section which can be selected by the switch (7). Operation is the same as the UHF unit. If an ILS signal has been tuned on NAV1 (keypad), then the Course Selector on the HSI will be automatically set.

The pre-set frequencies are set automatically according to the position of the aircraft within Switzerland or Austria.

The frequencies are listed below.



Frequencies in Switzerland:

Keypad	COM1	ADF1	NAV1	NAV2
1	120.425 Ground Emmen	326 GRE Grenchen	110.35 IEM ILS Rwy 22 Emmen	110.05 ZUE VOR Zürich Ost
2	128.475 Ground Dübendorf	335 BER Bern	111.15 IDU ILS Rwy 29 Dübendorf	117.45 BLM VOR Basel- Mulhouse
3	128.675 Ground Payerne	312 MUR Muri	109.30 IPY ILS Rwy 23 Payerne	114.60 GVA VOR Geneva
4	121.700 Ground Sion	403 LPS Les Eplatures	116.90 WILL VOR Willisau	116.90 WILL VOR Willisau
5	118.275 Tower Sion	353 BN Basel-Mulhouse	115.45 GRE VOR Grenchen	115.45 GRE VOR Grenchen
6	134.825 Ground Mollis	375 GLA Gland	110.85 FRI VOR Fribourg	110.85 FRI VOR Fribourg
7	119.625 Ground Buochs		112.15 SIO VOR Sion	112.15 SIO VOR Sion
8			115.85 MOT VOR Montana	115.85 MOT VOR Montana
9			113.20 HOC VOR Hochwald	113.20 HOC VOR Hochwald
0			114.85 KLO VOR Kloten	114.85 KLO VOR Kloten

Frequencies in Austria:

Keypad	COM1	ADF1	NAV1	NAV2
1	118.700 Ground/Tower Zeltweg	408 BRK Bruck	110.90 ILS Rwy 35 Graz	116.20 GRZ VOR Graz
2	118.900 Ground/Tower Tulln	426 GBG Gleichenberg	109.30 ILS Rwy 27 Linz	113.10 KFT VOR Klagenfurt
3	118.200 Ground/Tower Graz	290 GRZ Graz	116.20 GRZ VOR Graz	116.60 LNZ VOR Linz
4	118.800 Ground/Tower Linz	420 INN Innsbruck	113.10 KFT VOR Klagenfurt	113.80 SBG VOR Salzburg
5		405 KW Klagenfurt	116.60 LNZ VOR Linz	115.50 SNU VOR Sollenau
6		327 LNZ Linz	113.80 SBG VOR Salzburg	112.90 VIM VOR Villach
7		303 RTT Rattenberg	115.50 SNU VOR Sollenau	112.20 WGM VOR Wagram
8		382 SBG Salzburg	112.90 VIM VOR Villach	109.60 KPT VOR Kempten
9		293 STE Steinhof	112.20 WGM VOR Wagram	113.00 STO VOR Stockerau

3.7 Virtual 3D Cockpit

The virtual 3D cockpit is essential for formation flying training. All gauges in the cockpit are fully functional and all moving parts have been animated.

The protective covers with the "Remove before Flight" flags appear when you open the Stowage Box in the 3D cockpit and click on the red strips (see image).

The flags are stowed back in the Stowage Box by clicking on the protective covers underneath the HUD.



Specifics:

- Stowage box (1 in picture above)
- Switch nose gear extension for take off
- You can test the function and adjust the brightness of the warning lamps.
- The instruments have night displays
- The throttles have a Fuel-Cut-Off lever which can be operated by the pilot.
- Loads of other small goodies like adjustable pedals etc.

3.8 Compatibility with "Patrouille Suisse" Add-On von Flylogic FS2004 only

Further product information is available under www.flylogicsoftware.com

If you have already installed the „Patrouille Suisse“ add-on from Flylogic, you are able to open the hangar box 8 in hangar 6 in Emmen by clicking on switch number 5 on the main panel. You can also open or close the hangar boxes by tuning one of the following frequencies into the NAV2 device.

Frequencies as follows:

Open all doors simultaneously	111.00
Open the doors of hangar box 1	111.10
Open the doors of hangar box 2	111.20
Open the doors of hangar box 3	111.30
Open the doors of hangar box 4	111.40
Open the doors of hangar box 5	111.50
Open the doors of hangar box 6	111.60
Open the doors of hangar box 7	111.70
Open the doors of hangar box 8	111.80

4 Training flights over the Axalp shooting range FS2004 only, for FSX please continue in chapter 5



Virtual comeback of the Mirage IIIS and IIIRS

4.1 Dynamic scenery

I myself have often been a spectator to this yearly show at the Axalp firing range. I am less interested in the firing exercise but more in the spectacular flight manoeuvres of the Tiger and the F/A-18 as well as the special show of the Patrouille Suisse. When I last visited the show in 2005 and went down from the spectator's area in the evening afterwards I had the feeling that something had been missing. I didn't have to think long to realise that it was the Mirage and for this reason I decided to programme the dynamic scenery to contain a spectacular flight with two Mirage IIIRS at very low level. In the second sequence the two Mirage IIIS (image above) overfly the Brienzersee, turn approximately 180° to the left and continue to fly over the Axalp firing range. For each of these there is also a corresponding flight for you to enjoy as well.



Also you are able to accompany 3 F-5E Tiger IIs, two F/A-18 Hornets as well as the Patrouille Suisse during exercises and flights over the Axalp firing range. The corresponding flights are described in section 4.2.

4.2 Associated flights

Click on „Flights“ in FS2004 menu bar and choose „Select a flight“. Scroll down and look for „Flylogic Fly the Tiger II“. The flights will be displayed in the window.

Please pay attention to the following after selecting a flight:

The dynamic scenery aircraft fly at speeds between 250 and 280 Kts.

Therefore you should accelerate using about 40% thrust and keep an eye on the Iah display.

If you happen to overtake the dynamic scenery aircraft, then you can use the red ice-like windows for orientation. Reduce thrust and retract the speed brake if necessary. Use the red window display to keep on the right course and wait until you are overtaken by the dynamic scenery aircraft.

5 Training Mission Emmen-Axalp

FSX only, for FS2004 please continue in chapter 6



Take on the challenge of flying an F-5E Tiger II while following exactly a predefined route and maintaining a prescribed altitude and speed.

5.1 Starting the mission

The Emmen-Axalp training flight mission is listed under „Flylogic Airforce Missions“ in the Flights menu.

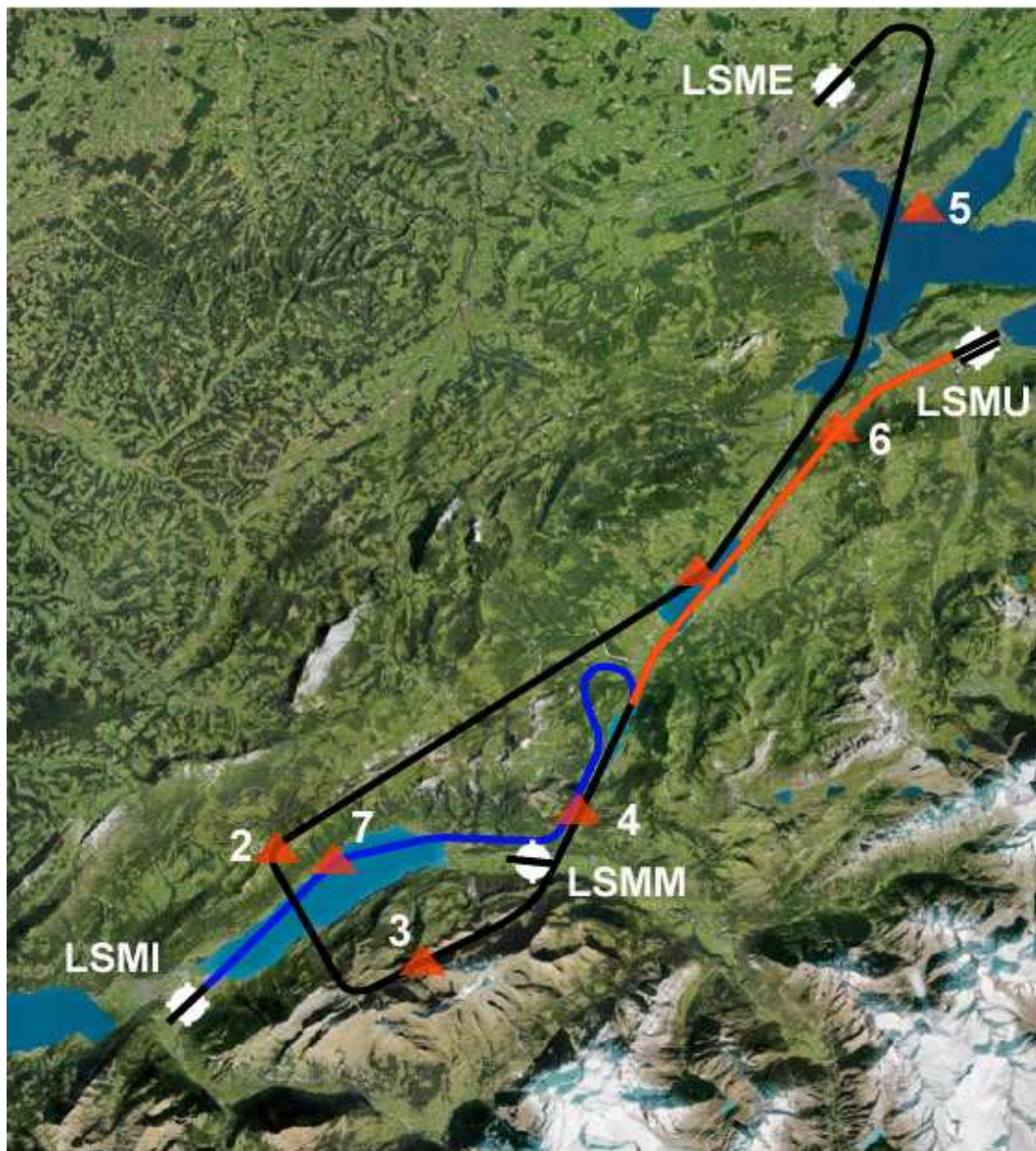
5.2 Mission procedure

- Your F-5E Tiger II is waiting at a parking position on the Emmen military airfield.
- You'll be accompanied by an instructor who will take care of radio communications and issue all necessary instructions during the flight.
- After receiving clearance from the tower, taxi to runway 04 for takeoff.
- Just after takeoff, the instructor will ask you to change your heading to the Axalp gunnery range.
- Follow all subsequent instructions given by the instructor. The waypoints you have to fly to will be optically displayed. A mission compass is also displayed in the top left hand corner of the screen which indicates the direction to the current prescribed waypoint (figure above)
- During the flight you are to maintain the prescribed altitude and speed exactly (see Evaluation below).
- After flying over the Axalp gunnery range, you are to return to Emmen airfield.

However, unexpected reasons will force you to fly to an alternative military airfield. You have the choice of two airfields and your instructor and the tower at the chosen alternative airfield will provide you with all necessary instructions.

5.3 Overview of the flight plan

The route for the flight from Emmen-Axalp and back as well as the alternative airfields are shown in figure 2. You can also click on the MAP tab in order to read the mission debriefing.



Flight path: Emmen-Axalp and back to Lake of Lungern
 Lake of Lungern - alternative Airbase Buochs
 Lake of Lungern - alternative Airbase Interlaken

Airbases:	LSME – Emmen	Waypoints:	1: Lake of Sarnen, 2: Briener Roth. Range
	LSMU – Buochs		3: Axalp, 4: Mountainpass Brunig
	LSMI – Interlaken		5: Meggen, 6: Alpnach (Appr. Buochs)
	LSMM – Meiringen		7: Oberried (Appr. Interlaken)

5.4 Evaluation

Mission accomplishment is evaluated by the following criteria.

- Immediate observation of directions issued by Emmen tower.
- Exactly maintaining altitude
- Exactly maintaining speed.
- Flying over the Axalp gunnery range according to the guidelines
- Approach to the alternative airfield.
- Accurate landing at the alternative airfield.
- Reaching the parking position at the alternative airfield to end the mission.

A summary of the evaluation will be displayed after the mission has been either successfully finished or was cancelled (picture below). During the flight you can display a summary of your current progress in the mission by pressing the „Esc“ key. The mission will continue when you press the the „Esc“ key again.

The screenshot shows a software window titled "END MISSION". It has three tabs: "REWARDS", "LOGBOOK", and "PHOTOS". The "REWARDS" tab is active. Inside the window, there is a section titled "Mission incomplete." followed by a "Goals" table. Below the table, there is a "Reward Category:" dropdown menu set to "(All Rewards)" and the text "No rewards earned". At the bottom of the window, there are three buttons: "Retry Mission", "Continue Flying", and "End Mission". A "View Detail" button is also present near the bottom right of the main content area.

Description	Status
You perfectly landed at the alternative Airbase Buochs	Pending
Maintaining cruising altitude of 7500 feet	Completed!
Maintaining cruising speed of 350 knots	Completed!
You successfully completed this Mission	Pending
Your Fly by over the shooting range Axalp was perfect	Completed!

5.5 Mission End

The mission will cancel, if

- instructions issued by Emmen tower are not followed within the prescribed time.
- you fail to maintain the prescribed altitude more than three times.
- you drop below or exceed the prescribed airspeed more than three times.

The mission terminates automatically when you reach the prescribed parking position and a summary of your accomplishment will be displayed (figure 3 above).

5.6 Scenery used

Development of the mission was based on the standard FSX scenery including the military airfields Emmen, Buochs and Interlaken. You may also activate the add-on Switzerland Professional.

5.7 Notes

- Always fly exactly towards the current prescribed waypoint (visible, figure 1 above) until you receive further instructions.
- It is advised to use the mini panel (figure 4) during flight to enable a better all round view. Switch to the 2D-Cockpit and press the "W" key to switch to the mini panel.



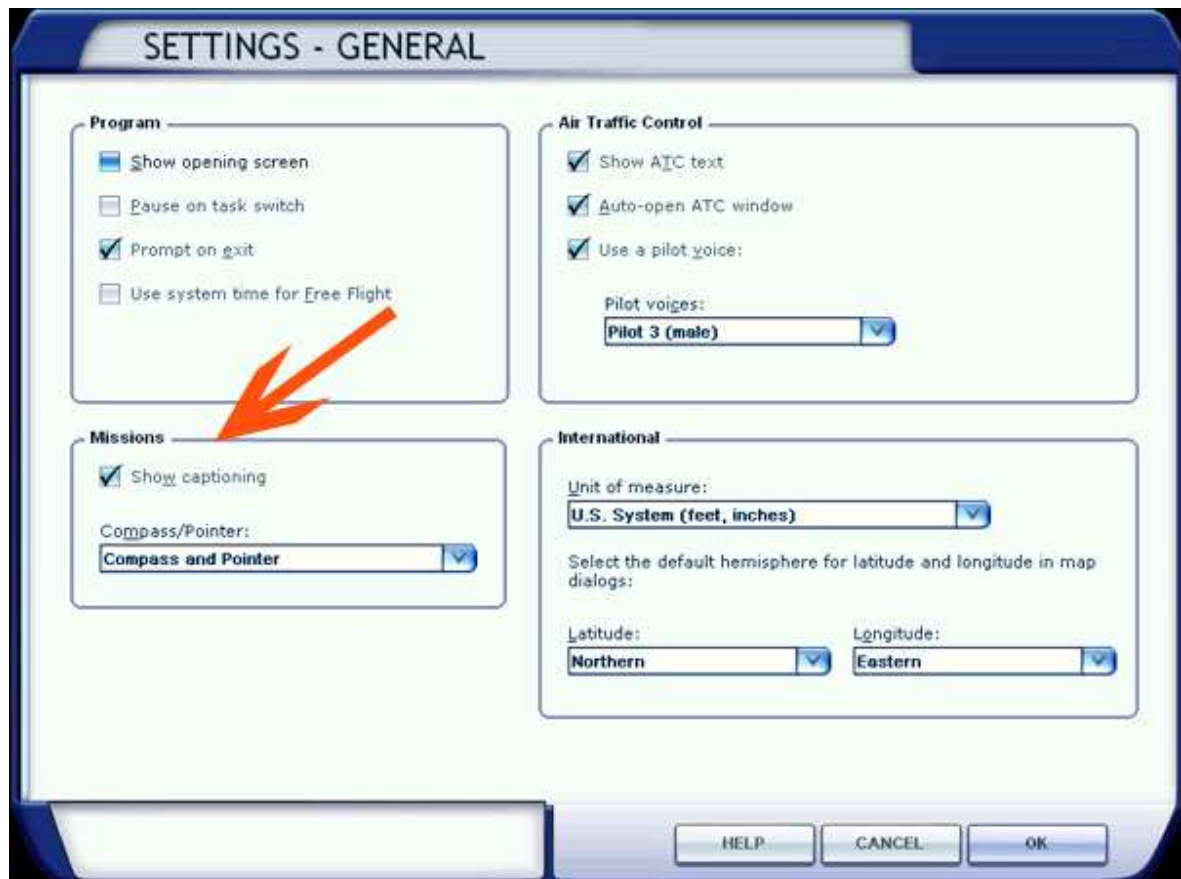
- Ground Proximity Warning System (GPWS). As you will be flying very low during the flight to the Axalp gunnery range, you may find the GPWS annoying. The GPWS can be switched off by pressing the appropriate switch in the 2D cockpit (figure 5).



- In order to show the mission compass on the top left of the screen and to display the instructions as text on the screen, the following settings have to be done in FSX:

General settings in frame "Missions":

- > Show captioning: Checkbox has to be checked
- > Compass/Pointer: Compass and Pointer



6 Development / Copyright

The F-5E Tiger II Fighter Version add-on is based on the Patrouille Suisse add-on as well as the F-5E Tiger II Version 1 from Flylogic and was developed by the following individuals:

- | | |
|------------------|---|
| Kurt Stöckli | - Realisation
- Transformation of Model and Textures to FSX-Version
- 2D panel (including gauges, fotos and panel bitmaps)
- Textures and all repaints
- Effects for the Tiger
- Dynamic scenery of Axalp with associated flights (FS2004)
- Training mission Emmen-Axalp (FSX)
- Manual |
| Marcel Felde | - External loads on the model
- 3D cockpit (including all 3D gauges)
- Numerus reworks of the model for FS2004. |
| Aaron R. Swindle | - Jet sounds |

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