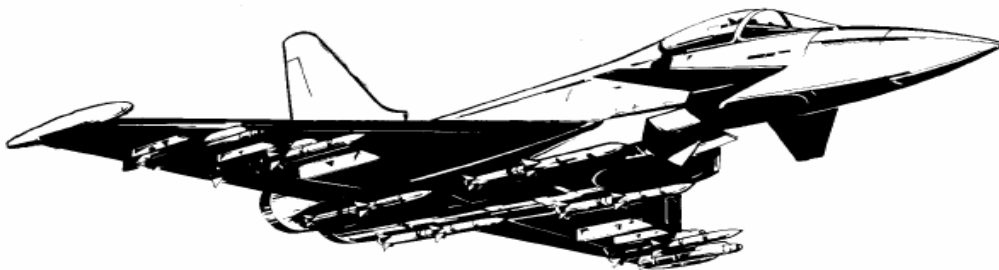


Eurofighter Typhoon X Panel

**for
Microsoft Flight Simulator X SP1/2
Version 1.0**



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0. Preface

The first flight of the prototype Eurofighter Typhoon took place on March 27, 1994, when Messerschmitt-Bülow-Blohm (MBB) chief test pilot Peter Weger took the prototype on a test flight around Bavaria.

The Eurofighter is the product of a consortium of British Aerospace, Deutsche Aerospace (Germany), Alenia (Italy), and CASA (Spain), with the United Kingdom and Germany providing technological leadership.

The STOL (Short Take-Off and Landing) aircraft has a fundamentally unstable aerodynamic design; while this requires computer assistance for stable flight, gives the Eurofighter superior agility. Two Eurojet EJ200 advanced technology turbofans each provide 20,250 pounds of afterburning thrust; with a maximum take-off weight of 37,480 pounds fully loaded, this means the Eurofighter has power to spare. Although it's not actually a stealth aircraft, careful shaping and use of composites and low-detectability technologies (the airframe surface is only 15 % metal) means the Eurofighter is extremely light and has a much smaller radar profile than 1980s-era fighters.

The cockpit environment is one of the most advanced in the world using digital fly-by wire and multi-function displays.

For more information see :

http://www.fighter-planes.com/info/eurofighter_ef2000.htm

<https://www.eurofighter.com/>

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This gauge is distributed as free-ware. All rights are reserved and no part of this package may be duplicated or distributed without the expressed and written consent of the author. Use this panel at your own risk. The author cannot be held responsible for any damages, directly or indirectly, caused by the use of this free-ware.

Credit goes out to : The virtavia Alpha team for the permission to use the great Eurofighter model for other freeware packages. I am full of respect of the quality of the aircraft model being developed by the Alpha team.

In addition credit goes out to all of the unknown people who spent time an effort to report stories, photos and other graphical pictures from the Eurofighter in the internet.

Thanks to Bob Famlton for a short initial review and installation test on FSX acceleration.

1. Introduction

The panel has been developed for FSX Flight Simulator SP1 or SP2. It has also been tested with Microsoft Acceleration, but compatibility is not guaranteed by the author. This panel has been designed according to a large number of technical documents, descriptions, and pictures out of the Internet. The design goal was to develop a panel and gauges as close as possible to the original aircraft. It was, however by far not possible to programming all the functions and displays, because of the complexity of the real Eurofighter panel, and also because of limitations in FSX.

However, I believe, that the panel with the MFD displays, HUD, radar functionality, weapon simulation and indicators gives a good impression on how the real Eurofighter cockpit looks inside. The panel is a 2D panel. The panel has been developed from scratch as well as all the gauges. The gauges are programmed in XML with the ACE tool from the MS SDK package.

The aircraft model, development by ALPHA/VIRTAVIA, has been used as the base for this panel development. The aim was to go with one model version only , the two seater air to air model. A number of parameter of the aircraft.cfg have been modified to achieve a best possible result of the flight dynamics for the model. It is up to the user to use any other model as this one, and use this panel for it.

For this package, panel and model, I decided to call it the **X -Version** which shall be seen as an experimental military test version or, if you like, a " Proof of Concept " version. So, you will see a neutral paint with just the Typhoon letters on the aircraft tail. This approach allows to go with deviations and differences to the current technical implementations for the cockpit displays and functions for the Eurofighter.

This panel development includes gauges for the afterburner effects, sonic sound effect, callout sounds, weapon explosions effects, and a full functioning TCAS gauge (A future requirement for the Eurofighter), A2A fuel functions, target radar tracking functions and more. The panel has been developed for wide screen monitors only. No VC panel is part of this package.

Eurofighter Typhoon Panel for Microsoft Flight Simulator X SP1/SP2

2. Main Panel Arrangement Overview

Panel at day time



Panel at night time



2.1. Miscellaneous Displays and Buttons



- | | |
|---|--|
| 1: Day/Night Panel ONOFF | 2: Bright Display ONOFF |
| 3: Right Console Window ONOFF | 4: Call Refuel Truck |
| 5: Canopy Open/Close (Watch the colored glass view) | |
| 6: Flight Control System (Not Animated) | |
| 7: HOOK Down/Up | 8: SHOOT Button |
| 9: General Warn Sound ONOFF | 10: Radar ALT Clearance Info. Std Value =1230. Not used. |
| 11: TACAN Channel Number and Type Info., Not used | |
| 12: Keypad, Not Animated | |
| 13: Destination Way Point | 14: Fire Warning, Not Animated |
| 15: Standby ADI | 16: Atmos. Press. (Hg/mbr) . |

Note on (10) : The value can be changed via mouse wheel/click on the knob on the right side of the display.

3.1 Multi Functional Displays (MFD)

The click spots on the left/right/bottom of the screen indicating if the screen is ON/Active or OFF. The screen is selected and On if the two green dashes on the top and bottom of the click spot are displayed. In order to change the screen display you must click on the button of the screen you like to see. For example click on the ADI spot to select and display the ADI screen. In order to select another display like the STO screen, you must turn off at first the current - in this example the ADI screen - before selecting the STO screen. This is the general operational procedure for all the MFD displays.

3.1.1 Left Multi Functional Display

The left MFD Display includes the following screens:

- ACU Screen,
- ADI Screen,
- ATK Screen,
- HYD Screen,
- STO Screen,
- TCA Screen.

3.1.1.1 ACU Screen



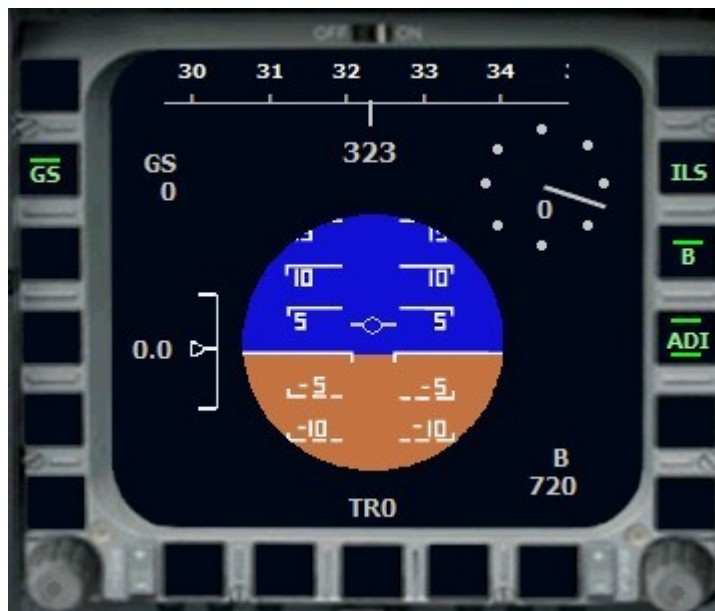
AUTOCUE FORMAT

The Autocue (ACUE) format, supports preflight activities by presenting the information necessary for safe preparation of the aircraft for its intended task. The following types of data are presented for example:

- Flight control system status
- TCAS system status
- GPWS status
- GPS status
- Canopy status
- Park brake status with the SAVE display,
- XFEED Status (Fuel cross feed), etc..

The ACU screen will be displayed and can be **active only, if the aircraft is on ground**. The display will be automatically closed, if the aircraft takes off. So, it is a good practice to select the ADI screen before take off.

3.1.1.2 ADI Screen



ATTITUDE DIRECTOR INDICATOR FORMAT

The display supports the normal well known attitude display as for any other aircraft. On top of the screen the HDG readout and scale. On the top left the speed readout. On the left side the VS indicator with a little scale and a pointer which indicates if the VS is minus or plus. On the top right the altitude indication with readout and a round scale. On the bottom right the altitude display. On the bottom (TR0) the trim indicator readout in percent. Range is from 100 to -100.

Clickspots:

- ILS: Turns on the ILS symbols GS/LOC during landing approach.
- B : Switch from Baro Altitude to Radio Height display.
- GS : Switch from GPS Ground Speed to Airspeed Mach.

3.1.1.3 ATK Screen



ATTACK FORMAT

The Attack (ATK) format enables sensor contacts to be displayed, tracked, interrogated or nominated for attack supporting the following subsequent selections and controls:

- Radar displays and control,
- Radar Air Combat Tracking Mode,
- Air-to-Air Target Select,
- Air to Air fuel procedure.

Screen displays: Top left readouts for indicated airspeed and GPS ground speed, top center HDG readout, top right the altitude readout. Right middle side the zoom selected distance and in the screen center the wind direction and speed and the Track Angle Sector. The yellow square indicated a existing air target (AI object).

Clickspots:

MAG/TRU: HDG selection for MAG or TRUE navigation display.

TRK/NTH: Track or North orientation screen display.

COM: Inserts the compass rose .

MAP : Turns the MAP display on/off.

ZI/ZO: Map display Zoom IN/Zoom OUT.

TRN : Turns on the terrain display. The MAP function must be ON.

GRD : Turns the grid on/off.

RDR: Turns on the radar sub screen.

3.1.1.3.1 RDR Screen



RADAR FORMAT

The Radar System includes the following features, functions and displays:

- AI traffic display for air targets and boat/ship targets.
- Different screen presentations for air and boat targets.
- A2A re-fuel support function.
- Air target tracking function, which allows to follow a selected air target automatically in terms of course, speed, and altitude. In this mode the radar system is coupled with the autopilot of the aircraft. The radar feeds the autopilot with the target AI information like heading, speed, and altitude. The tracking mode can be controlled by selecting the click buttons CPL, TRK and ASP.

All displays – for air, or boat/ship traffic – can be selected in a range of 5, 10, 20, and 40 miles. An AI aircraft will be represented by an orange square and an associated heading indicator. Each individual air target can be selected by a switch in order to get information about his heading, distance, altitude, speed, the ATC model, and the ATC ID. An arrow symbol indicates whether the air AI is in climb or in decent mode.

A boat/ship target will be represented with a cyan square and an associated heading indicator. Information for boat targets can be displayed per click button to get information about heading, distance, and speed of the target.

Boats/Ship Traffic Screen

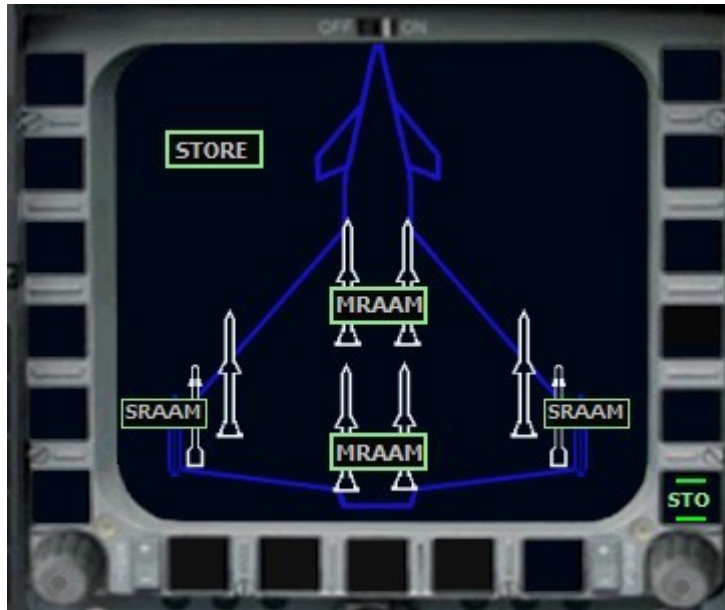


An air fuel function is also included in the radar gauge, which allows performing an air re-fuel procedure for the aircraft. An air refueling can be done from each AI aircraft if decided to use it as a tanker. The decision will be done via extra click buttons and is supported by a dedicated A2A fuel window.

Clickspots:

- AIR: Select air traffic mode or boat/ship mode display .
- CPL: Turns on coupled mode for target auto tracking.
- TRK: Turns on auto tracking for a selected target.
- ASP: Turns on auto speed control during auto tracking.
- ID: Displays the a unique target ID number.
- COM : Inserts a compass rose into the screen display.
- RNG : Turns on the ring and sector display.
- TRN: Turns on the terrain background display.
- A2A: Turns on a dedicated display on the HUD to support air to air fuel.
- SLI, SLO: The two buttons allowing to step through the displayed targets. For each selected target the radar will display the AI flight info.
- SEL: With this button a target will be selected for a potential auto tracking. It turns on a little sub screen with the flight info for the selected target.
- IFO: Turns on info display for all targets on the screen.
- ZI/ZO: Zoom IN, Zoom Out buttons.
- SHP : Switches back to air traffic display.

3.1.1.4 STO Screen



STORES FORMAT

The STO screen displays a diagrammatic representation of weapon system status and current stores configuration. Stores are represented by white outlined symbols at positions relative to their host store station. For the current model simulations one format only will be used. The screen displays the missile configuration for 4 MRAAM and 2 SRAAM (IRIS missiles). The configuration cannot be changed.

Clickspots:

STO: Turns off the current store screen.

3.1.1.5 HYD Screen



HYDRAULICS FORMAT

The HYD format displays a diagrammatic representation of the left and right hydraulic systems. The display shows the status of the valves and reservoirs along with associated information e.g. pressures, levels and temperatures. For this simulation a readout for the hydraulic pressure only will be displayed (253 PSI means 2530 PSI. All other values and information are being seen as standard given figures.

Clickspots:

HYD: Turns off the current hydraulic screen.

3.1.1.6 TCA Screen

3.1.1.6.1 TCAS General Description

This Eurofighter model simulation is equipped with a Traffic Alert and Collision Avoidance System (TCAS) . The actual current Eurofighter aircraft do not have a TCAS system however, it is in discussion to install such a system for this aircraft in the future also.

The Traffic Alert and Collision Avoidance System (TCAS) alerts the pilot in case of potential conflicts with other aircraft in the vicinity. TCAS tracks these other aircraft, if equipped with an Air Traffic Control Radar, or a Beacon System. TCAS provides two types of collision avoidance alerts. They are:

- Traffic advisory (TA)
- Resolution advisory (RA)

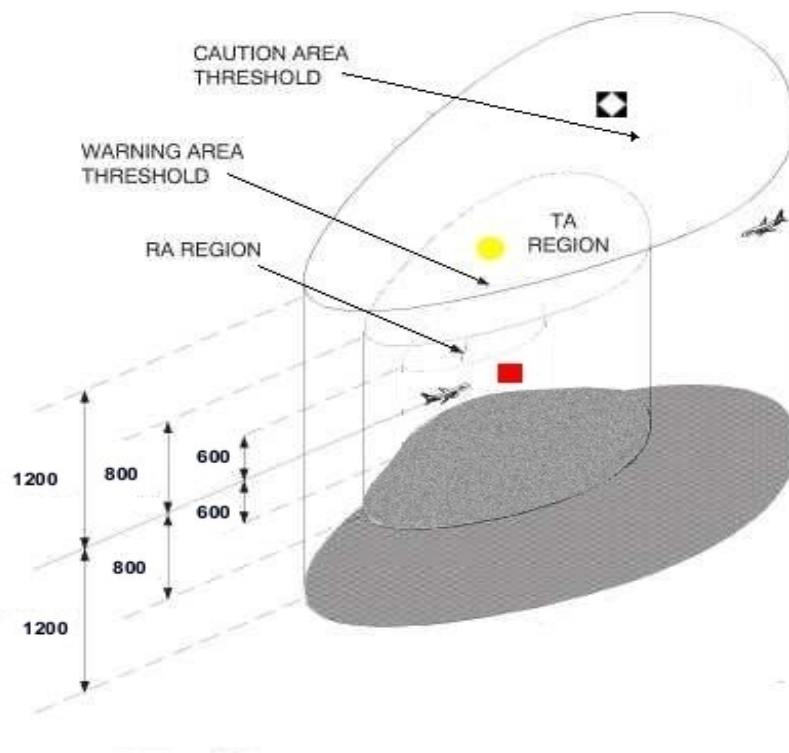
A potential collision will warn the pilot with an audible voice recording. The system issues the following advisories:

TA Traffic advisory

RA Resolution advisory

Clear of conflict

The drawing below show the altitude threshold settings for the TCAS gauge. The distance rings are in range 0-5nm (red), (yellow), and 6 nm (white-filled diamond).



As long as the aircraft is outside the corridor of the defined distance and altitude in relation to the AI aircraft, you will see the white open diamond.

If the aircraft is on ground, or below 3000 feet radio altimeter height, the TCAS system is not in function for this aircraft.

TCAS Displays

Non-Threat Displays

An open white diamond indicates that an intruder's relative altitude is greater than ± 1200 feet, or its distance is beyond 6 nm range. It is not yet considered a threat.

Proximate Traffic

A white filled diamond indicates that the intruding aircraft is within ± 1200 feet and within 6 nm range, but this is still not considered a threat.

Traffic Advisory (TA) Traffic

A symbol that converts into a filled yellow circle indicates that the intruding aircraft is considered to be a potential hazard. The intruder is 800 ft below/800 ft above your own altitude. The TCAS will now generate this audible : "TRAFFIC, TRAFFIC."

Resolution Advisory (RA) Traffic

A solid red square indicates that the intruding aircraft is considered to be a collision threat. The intruder is 600 ft below/600 ft above of your own altitude TCAS will now generate this audible :
"CLIMB, CLIMB," or "DESCEND DESCEND".

CLEAR OF CONFLICT

In connection with a TA situation only. If the intruder (AI) distance is close to 1 nm to your own position TCAS will generate this audible:
"CLEAR OF CONFLICT".

Vertical Motion Arrow

An arrow pointing up or down in the same color as the traffic symbol, is placed on the right side of the symbol to show if the AI aircraft is either climbing or descending at a rate greater than 500 f/m.

The logic behind the advisories is :

RA CLIMB : If the AI altitude relative to your AC is equal or below .

RA DESCEND: If the AI altitude relative to your AC is above.

If the AI is in climb mode the RA will always be : DESCEND regardless whether the altitude is above or below.

If the AI is in DESCEND mode the RA will always be : CLIMB regardless whether the altitude is above or below.

The altitude indication is a two digit number and is on top of the symbol if the altitude is above, and is below the symbol if the altitude is below. If the value is below, a minus sign is associated with the number. If the value is above, a plus sign is associated with the number.

If the altitude below/above exceeds 1,200 ft, no numbers are displayed along with the symbol.



TCAS FORMAT

The TCAS screen will be displayed on the left MFD of the panel by a click on the TCA button. The status of the TCAS system will be displayed by the TCA button on the glareshield. The colors of the TCA letters on the glareshield button are green, if no warnings exist.



They are switching to white, if an aircraft is in the caution area.



They are switching to yellow, if a aircraft is in the traffic warning area.



They are switching to red and blinking, if a potential conflict exist.

Note: TCAS is out of function below 3000 ft radio height, if switched off by clicking on the glareshield TCA button (TCA letters color switches to gray) , and if the radar system is turned on !!

Clickspots:

TCA: Turns off the current TCAS screen.

0.5, 10, 20, 40 : Range level in nm.

TA: Audible advisories will be issued only in case of a conflict situation.

TRA: TA or RA audible advisories will be issued in case of a conflict situation.

FL : Turns on the real flight level (in hundreds of feet) display of the AI on the screen. The Info. will be displayed on the right side of the traffic symbol for all AI's on the screen, and will stay on for 25 seconds.

Important Operational Information

- > Please notice that TCAS TA/RA_audibles are only active when you are above the 3000 ft radio altimeter height.(AGL)
- > You must follow the command CLIMB or DESCEND in order to solve the conflict situation. Be aware that the audible will be generated only once.
- > Make sure that your FSX traffic slider is **NOT** set to zero. With no FSX traffic you will never have any conflict situation.
- > The CLEAR OF CONFLICT audible will be generated if the AI is below 800 ft (yellow) or above at 600ft, 1nm distance and decreasing. (Your aircraft will not be able to descend or climb fast enough to create a collision threat within 1nm)

3.1.2 Center Multi Functional Display

The center MFD Display includes the following screens:

- PA Screen,
- HSI Screen.

3.1.2.1 PA Screen



PILOT AWARENESS FORMAT

The Pilot Awareness (PA) format, displays navigational information in plan form. The symbology can be displayed against a map and one of the selectable grids, range, flight plan and FLIR. The PA format also presents track/target data and a amount of miscellaneous information to assist in the safe management of the aircraft. The display is active and therefore gives an up-to-date representation of aircraft positioning at all times.

The following types of data are presented on the screen:

- On the top left : Airspeed and ground speed.
- Top left BRG: : HSI/ADF Bearing.
- Top center: HDG display (magneto).
- Top right: Altitude display.
- Center screen: Wind information. Speed and direction.
- Center right: Zoom display.
- Bottom right: GMT time.
- Bottom left: DWPD, Destination Way Point : Distance to the destination according to the flight plan.

Clickspots:

PA: Turns PA screen on/off.

HSI: Turns the HSI screen on.

MAG/TRU: HDG selection for MAG or TRUE navigation display.

TRK/NTH: Track or North orientation screen display.

COM: Inserts the compass rose .

MAP : Turns the MAP display on/off.

ZI/ZO: Map display Zoom IN/Zoom OUT.

TRN : Turns on the terrain display. The MAP function must be ON.

GRD : Turns the grid on/off.

FLP : Turns the flight plan route display on.

FLIR: Turns the FLIR screen on.

3.1.2.1.1 FLIR Screen



FLIR stands for : Forward Looking Infra Red. On the top center the HDG will displayed, and on the top right side the current selected zoom value.

Clickspots:

FLIR: Turns FLIR screen on/off

ZI/ZO: Display Zoom IN/Zoom OUT.

3.1.2.2 HSI Screen



HORIZONTAL SITUATION INDICATOR FORMAT

The Horizontal Situation Indicator (HSI) format displays the following navigation system data:

- Compass Rose
- ADF Bearing Pointer
- Course Readout
- Course Pointer
- Heading Marker
- Current Aircraft Track Pointer
- Lateral Deviation and Scale
- VOR 1, VOR 2 distance information.

Clickspots:

HSI: Turns HSI screen on/off

MAG/TRU: HDG selection for MAG or TRUE navigation display.

3.1.3 Right Multi Functional Display

The right MFD Display includes the following screens:

- ENG Screen,
- FUEL Screen,
- ADI Screen,
- FRQ Screen.
- CKL Screen,

3.1.3.1 ENG Screen



ENGINE FORMAT

The Engine (ENG) format, displays engine low pressure turbine speed (N1) with Turbine Blade Temperature (TBT) Important values are displayed by either digital or analogue readouts. Each display has an alphanumeric value corresponding to the analogue data presented, except for high pressure turbine speed which is represented by two separate rolling digit type displays. The fuel flow is indicated in digital form at the top of the display. The throttle lever position in percent is indicated in digital form at the left side for engine one, and on the right side for engine two. Warning captions related to the engines are also shown on this format, when applicable. N1 and N2 are displayed in percent, TBT in Celsius and Fuel Flow in pounds per hour.

Clickspots:

ENG: Turns engine screen on/off.
FUEL: Turns fuel screen on/off.
CKL: Turns the checklist screen on/off.
FRQ: Turns the frequency screen on/off.

3.1.3.2 FUEL Screen



FUEL FORMAT

The FUEL format, displays the internal and external fuel tank contents pictorially. Each tank has a digital readout corresponding to the fuel remaining. The status of the low pressure fuel cocks is indicated by two colored circle symbols. Yellow is low fuel, red is empty. Engine feed lines are shown between the boost pumps. Other information displayed on the FUEL format includes a fuel total readout and warnings.

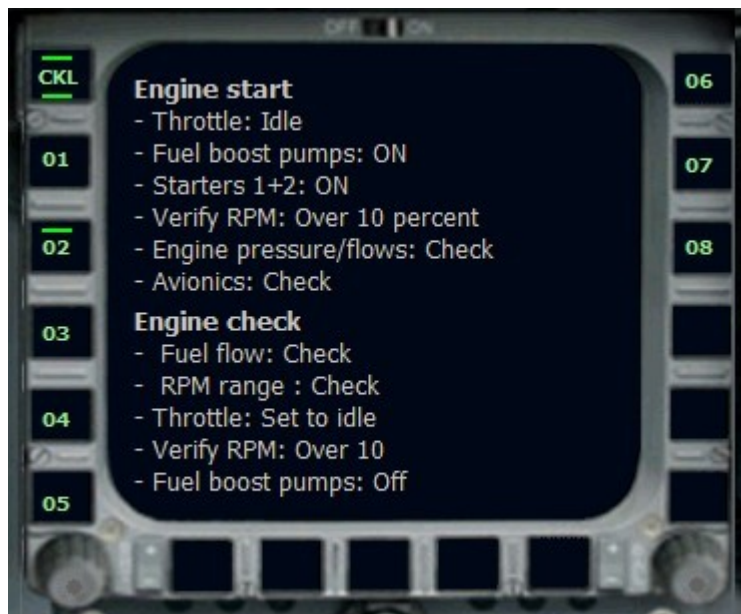
Clickspots:

FUEL: Turns fuel screen on/off.
The other click spots are for info only and not animated.

3.1.3.3 ADI Screen

Same format as the ADI screen for the left MFD.

3.1.3.4 CKL Screen



CHECKLIST FORMAT

The Checklist (CHKL) format provides the aircrew with a list of standard and emergency checklists from which the required drill can be selected.

Clickspots:

CKL: Turns the checklist screen on/off.

01 to 08: Checklist display list one to eight.

3.1.3.5 FRQ Screen



RADIO FORMAT

The Radio (FREQ) format, displays the V/UHF frequencies for the manual channel radios COM 1 and COM 2, the selected frequencies for NAV 1, NAV 2, ADF 1 and transponder (XP).

In addition on the top of the screen the frequencies of the destination airport, if a flight plan is loaded.

4. Left Glareshield

The manual functionality select elements/buttons are located on the left glareshield. They are part of the other displays and control systems. It is used for moding and data entry to several avionic systems like the MFD's and other subsystems. The glareshield is divided into two panels. The left side (marked in red) includes the subsystem keys, the right side (marked in yellow) the moding keys. The moding keys including sub-functions for a selected sub-system key.



4.1. Subsystem Keys

4.1.1 Auto Pilot Keys

Clickspots:

AP: Autopilot Master on/off.

AT : Auto Throttle on/off.

HDG: Heading hold on/off.

TRK: Track hold on/off (Represents the FSX NAV/GPS switch)

ALT: Altitude hold on/off

APP: Approach on/off

Subsystem Clickspots:

A/F: Toggles the display on the top center panel for frequency selection, or autopilot control for heading, airspeed, vertical speed, altitude and course select.

AIDS: Not simulated.

XMT: Radar transmitters. Not simulated.

RD1,RD2: Turns on/off com1 ,com 2 radio displays.

DAS: Defensive aids. Not simulated.

MISC: Miscellaneous subsystems like GPS, Gear etc. (see moding Keys)

NIS: NATO Identification System. Not simulated.

INT: IFF interrogator. Not simulated.

XPDR: Transponder Mode1 -3. Mode 1 is supported only.

NAV: Navigation display select.

LITS: Aircraft lights select.

4.2. Moding Keys

Moding Clickspots and displays for the:

MISC Subsystem

CLM: Not simulated.

ATK: Attack key. Turns on weapon selection for Gun, Missiles.

APP: Not simulated.

GEAR: Displays gear status. Red=Gear is up, Yellow=Gear in transit, Green=Gear is down.

ABRK: Airbrake status display. Green=Airbrake is off, Yellow=Airbrake is activated.

FLPS: Flaps status display. The flaps are auto controlled based on the speed of the aircraft. The display will show the 3 different flaps positions by a number on a yellow background.

GPWS: Status display of the Ground Proximity Warning System. It can be turned on/off

CA: Status display of the callout function. The function can be turned on/off.

FUEL: Status display of the fuel situation. Will be turned to yellow if the overall fuel is below 10 percent.

GPS: Status display of the autopilot TRK hold function. Light green if the the TRK is selected.

TCA: TCAS status display. (See above of the TCAS chapter).

REV: Reverse status. Turns on in red, if activated after touch down.

AB: After burner status. Turns on in blue, if afterburner is active.

AAR: Air to air fuel probe status. If green the probe is on.

Moding Clickspots and displays for the:

NAV Subsystem



The NAV subsystem provides additional information displays on the center MFD map display. By default the AI traffic is always displayed (A/C) button. Additional info on the map will be displayed if ILS, VOR, NDB, APT, and BDR is selected.

ILS: Turns on the ILS RWY symbols.

VOR: Turns on/off the display of the VOR nav aids.

NDB: Turns on/off the display of the NDB nav aids.

APT: Turns on/off the display of the airport symbols.

BDR: Turns on/off the display of the border of a country.

A/C: Turns on/off the display of the AI traffic.

Moding Clickspots and displays for the:

LITS Subsystem



The LITS subsystem provides status and control for the aircraft external lights.

NAV=Navigation lights, BCN=Beacon lights, LDG= Landing lights. A click on it turns the lights on/off.

5. Autopilot Control

The autopilot can be controlled by click spots on the top center area of the panel. The display can be turned on/off by the A/F button on the glareshield panel.



Clickspots:

HDG: Move the mouse to the digits. Use the mouse wheel to select a new value.

ALT: Move the mouse to the digits. Use the mouse wheel to select a new value.

CRS: Move the mouse to the digits. Use the mouse wheel to select a new value.

VS: By default 1800 is selected and will be displayed. Move the mouse to the digits. Use the mouse wheel to select a new value.

APP: A green dash will be shown, if APP is selected on the glareshield.

AT: A green dash will be shown, if AT is selected on the glareshield.

Move the mouse to the digits. Use the mouse wheel to select a new value.

6. Radios Control

The radio frequencies can be controlled by click spots on the top center area of the panel. The displays for NAV 1, NAV 2, ADF, and XP can be turned on/off by the A/F button on the glareshield panel. The displays for the radios Com1 and Com 2 can be turned on/off by the buttons RD1 and RD2 on the glareshield panel too.



Clickspots:

- NAV 1: Move the mouse to the digits. Use the mouse wheel to select a new value.
- NAV 2: Move the mouse to the digits. Use the mouse wheel to select a new value.
- ADF 1: Move the mouse to the digits. Use the mouse wheel to select a new value.
- XP : By default 1200 is selected and will be displayed. Move the mouse to the digits. Use the mouse wheel to select a new value.
- C 1 : Move the mouse to the digits. Use the mouse wheel to select a new value.
- C 2: Move the mouse to the digits. Use the mouse wheel to select a new value.

A green dash will be shown on the label, if a frequency is active.

In addition to the com radio displays above, the selected values are displayed also on the little screen of the keypad panel:



The keypads are not animated. The little window under the label DWP (Destination Way Point) shows the destination airport if a flight plan is being used. Here it is LOWS. CHD means "Change Destination". This is not supported. SWP means "Set Way Point". This is not supported. MB=Millibars, displays the Kohlsman setting.

1: Knob to switch from MB to Hg and to adjust the value.

7. Head Up Display (HUD)

The HUD is on the center main instrument panel. The HUD is used as a primary flight instrument, weapon status, and weapon delivery display for the aircraft under all conditions. The Head Up Display (HUD) consists of computerized flight information projected onto an eye-level sheet of specially coated glass at the front of the cockpit. It's designed to keep the pilot from having to constantly look down at his instruments (hence the name "head-up") for flight and combat information.

The following describes the HUD symbology as related to navigation, steering, course line ILS, and advisories for landing.



1:Heading Scale: Displays your current heading. The Heading Scale is basically a digital compass laid out on a horizontal tape. The heading numbers are displayed every 10 degrees. A total of 40 degrees is displayed at one time on the moving tape.

2:Heading Bug: The heading bug indicates the bearing to the currently selected course.

3:Wind Indicator: The wind indicator displays the wind direction and the wind speed. In addition a wind direction arrow will be displayed also.

4:True Heading: Is the true heading indicator.

6,7:Course Line Arrow and Dots: Steering Arrow. Oriented top-down, the arrow shows the aircraft's position relative to the selected course (CSEL).

steering Dots: The dots represent the cross track error, or distance in degrees the aircraft position differs from the intersection of the aircraft heading and the course.

8:Vertical Speed: Readout of the vertical speed. Displays the rate of climb or decent.

9:Airspeed: Displays your current indicated airspeed.

10:Pitch Ladder: The Pitch Ladder lines are drawn every five degrees. The 5 degrees ladder will be displayed only, if the gear is down. Lines are drawn every ten degrees if the gear is up..

11:Altitude: Displays either the barometric or radio altitude depending on the selection on the HUD panel. Radio height display is indicated by an R next to the altitude.

12:Angle-of-Attack (AOA) Bracket: The AOA Bracket displays adjacent to the left of the Velocity Vector. It's in addition to the normal digital AOA. The center of the bracket represents the optimum approach angle-of-attack. The bracket moves lower than the Velocity Vector as AOA increases; it moves higher as AOA decreases. The bracket will be displayed during landing approach only.

13:ILS Glide slope Bar: It's a "fly-to" symbol linked to the Velocity Vector that displays aircraft position above, on, or below, the Glide slope when landing. The ILS Glide slope bar is only displayed when the ILS is turned on.

14:ILS Localizer Bar: It's a "fly-to" symbol linked to the Velocity Vector that displays aircraft position left of center, on centerline, or right of center when landing. The ILS Localizer bar is only displayed when the ILS is turned on.

15:Energy Caret: When the energy state of the aircraft is in equilibrium. The energy caret points to the right of the velocity vector and the aircraft neither accelerates or decelerates. With an power deficit, the energy caret moves lower with respect to the velocity vector and the aircraft decelerates. With excess power, the caret moves higher and the aircraft accelerates.

16:Velocity Vector: The velocity vector (also called the flight path indicator) points to the actual direction the aircraft is flying. For example, with heavy rudder use, the nose of the aircraft may point in one direction while the aircraft side-slips in another direction. The velocity vector is limited to an 8° radius circle, so if it reaches this limit during flight, it flashes rapidly denoting it is no longer accurately indicating the flight path.

17:Angle of Attack: Displays your current angle of attack in degrees.

18:Horizon Bar: Extends across the HUD when the gear is down.

19:Waypoint1:NAV1 Ident.(NAV1 frequency), and course (CRS select) readout. CRS in degrees will be the autopilot HDG reference.

20:Waypoint2:NAV2 Ident. (NAV2 frequency) and distance (nm) readout.

21:Clock:Clock time indicator.

23:Bank Angle Scale: Indicates your current bank angle in degrees from the horizontal.

24:Bank Angle Bug:Points to the bank angle scale.

25 : G/S Glide Slope: ILS has glide slope.

26: G, M Weapons : Displays by a yellow background, if gun or missile is selected.

27: M : Mach Speed display, **G :** Displays the maximum attainable G.

28: Altitude: Displays baro altitude. Pointer and scale.

29: Airbrake symbol: Will be displayed if the airbrake is active.

7.1. Head Up Display Panel

The HUD display will be controlled by the little panel below the HUD screen.



Clickspots:

HUD: HUD Master on/off. By default the HUD display is off.

BARO/RAD : Toggles baro/radio height display on the HUD.

DCTL: Not simulated.

GS/M : Not simulated.

TGT: Turns on dedicated HUD display in connection with attack mode and radar active. For detailed info see below under chapter 10. Flight Operations.

8. Right Console

The right console is a separate panel window. It includes various switches and a small display screen which is being used to display various warn messages and status indications.



Switches and displays:

- 1: Warning panel screen. A serious warning will be displayed in yellow text and a warning sound will played. Text in white is for info only and with no sound.
- 2: Engine start switches.
- 3: Fuel cut switch. Will turn off the engines.
- 4: Turns off MFD avionic displays.
- 5: Battery switch. Turns off all panel displays.
- 6: Turns off the master warning system.
- 7: Mission Data Recorder Switch (Not used/simulated)
- X: Window Close click spot

9. Weapons

The Eurofighter carries NATO's best weapons. It has a high load Capacity with flexible missile configurations. A mixture of at least ten ASRAAMs (advanced short range air-to-air missiles) and AMRAAM (advanced medium range air-to-air missiles) can be carried with four of the AMRAAMs housed in low drag, low observability fuselage stations. In addition the aircraft is equipped with 27 mm Mauser cannon.

For this simulation the external model is equipped with two IRIS (ASRAAM) and 4 AMRAAM missiles. In addition the Mauser cannon will be simulated also.

The simulation for shooting missiles is based on the FSX droppable objects which requires two new SIM object models for the IRIS and AMRAAM missiles. Both have been build with GMAX and are part of this panel package.

The biggest limitation of FSX is, that we can only have one object to drop at one time. Means we can have for example the IRIS missile or the AMRAAM missile assigned to our aircraft. However, we can have two different flights saved with one has the IRIS missile and the other the AMRAAM missile configured.

For detailed instructions on how to add weapons to your flight look at chapter 10. Installation.

9.1 GUN Operations

In order to perform a shoot with the gun use the following procedure:

1. Click on the glareshield the ATK button. A G and M button will be shown. Click on the G and look at the HUD. A GUN text will be shown with a yellow background. In addition the red SHOOT button will be flash indicating, that the system is ready to shoot.
2. Click on the shoot button and after about 2 sec a explosion is shown. During the 2 sec wait time the GUN background on the HUD moves to red. After the 2 sec the next shoot can be issued. The number 1.5 nm indicates, that the gun will hit the target at about 1.5 nm.



9.2 Missile Operations

This is in so far different as you need to have a flight plan saved, where the .FLT file has the entries for a droppable object included.

If such a saved flight will be started by FSX, the following displays will be shown:

1. On the top right corner of the panel a little window will be shown, indicating that the weapon is loaded. If you do not want to see this by FSX generated window anymore, right click on it, and select the UNDOCK function. Close the new pup up window and save your flight again. The window will not be showing up again, if you start the flight.
2. Click on the glareshield the ATK button. A **G** and **M** button will be shown. Click on the **M** and look at the HUD. A AMRAAM/IRIS text will be shown with a yellow background (See pic below). The number behind the text indicates how many missiles are loaded. After each shoot, the value will be decreased until it is zero. As with the gun, the red SHOOT button will be flash, indicating that the system is ready to shoot. The missile model includes a contrail and a afterburner fire effect. The effects are part of the model. A explosion will be seen at about 4 nm



A external view will show you, how the missile start looks like. Here a pic:



A explosion effect will be triggered 6 seconds after the shoot which can be observed from the panel view.

The entries for the .FLT file see under chapter **10. Installation.**

Note: A missile shoot can be triggered also in external view by the shift+D key-stroke.

10. Installation

In order to install this package some basic knowledge of handling files and folders in FSX/Windows, and on how to edit existing .cfg files with a text editor are required.

Note: ALWAYS BACKUP A FILE BEFORE EDITING

10.1. General Considerations

When using this aircraft and panel the first time, ensure that in FSX your traffic slider for "Airline traffic density" and "Ships and ferries" are set at 50 % or more. This is in order to get the corresponding radar screens displayed.

In Options/General set "Setting-Realism" to "Ignore crashes and damage".

Note: The panel has been developed for wide screen monitor only !!

10.2. Step by Step Installation Process

1. Unzip the EFTXPANEL_V1.0.zip file in a folder of your choice.
2. Open the EFTXPANEL folder. Open the Documentation folder and read the documentation first before doing any installation. It is extremely important to understand how the panel elements are working !!! Mainly the different radar screens, auto tracking and weapon usage.

10.2.1. Installation of Files and Folders

Aircraft Folder

Open the Aircraft folder and copy the Typhoon_X folder into the FSX...\SimObjects\Airplanes folder. The aircraft and the panel are now installed.

AI K-135 Tanker Folder

Open the "AI K-135 Tanker" folder, unzip the "KC135TAI.zip" file into a folder of your choice, and copy/paste the included "KC-135T_AI" folder into the FSX...\SimObjects\Airplanes folder. The tanker is required for testing the A2A fuel functionality.

AI Traffic Folder

Copy the contents of the "AI Traffic" folder into your FSX ..Scenery\World\Scenery folder.

Note: you may have this traffic file already installed if you have my MECOPS scenery on your system. If so, just over write the file.

Callout\$ Folder

Copy this folder as is into the main FSX Gauges folder.

Effects Folder

Copy the contents of the folder into the main FSX Effects folder.

Select over write if the effects files are already exist.

EFT\$ Folder

Copy the folder into the main FSX Gauges folder.

TCASII\$ Folder

Copy the folder into the main FSX Gauges folder.

Select over write if the folder already exist.

TestFlightFiles Folder

Copy the contents of the folder into the "\\My Documents\\Flight Simulator X Files" folder.

The entries for a .FLT file and for the AMRAAM missiles are this:

```
[DroppableObjects.0]
```

```
ObjectSet.0=AMRAAM, 4
```

The value 4 defines the number of missiles. It can be any number !!

The entries for the .FLT file and for the IRIS missiles are this:

```
[DroppableObjects.0]
```

```
ObjectSet.0=IRIS, 8
```

The value 8 defines the number of missiles. It can be any number !!

Note: When ever you want to see weapons on your flight, you must save a flight first, and then add the entries, as shown above, into the .FLT file. The two test flight files do have the weapon entries included.

Weapons Folder

Copy the contents of the folder into the FSX ... SimObjects\\Misc\\ folder.

To see your weapons on your panel/aircraft, pls make sure that your saved flight has the entries as described above. Only one type of weapons can be defined in a saved flight. Means IRIS or AMRAAM never both of them.

Appendix A

Flight Operations

Please notice that the Eurofighter has very powerful twin reheated turbofans which accelerates the aircraft in less of 8 sec from brakes-off to take-off. So be careful to select full throttle. A Drag Chute is being used for 'reverse thrust'. This can be triggered by pressing and hold the F2 key. F1 key will stop the reheat thrust. However, after a touch down a engine cut and the activation of the airbrake will bring the aircraft very quick to a full stop. It is proposed to assign the airbrake function (Spoilers key : #) to a button on the stick. Be aware that the flaps are controlled automatically also. The flaps position will be shown on the glareshield panel (see above).

Normal Flight

It is a short flight of about 20 minutes. The flight is from the airport EDMA (Augsburg, Germany) to LOWS in Austria. The installation process will include the corresponding FLT file, PLN file and the WX file .

The flight is saved under the name : **Typhoon X EDMA-LOWS** .

The saved flight includes a flight plan and the entries for a weapon load of 4 missiles. Open the flight in FSX and your aircraft will be placed on RWY 07 at EDMA.

Go through following procedure and checks:

>Click on the HUD panel the HUD button and turn the HUD screen on.

> Turn the right console panel on (click on the CR icon bottom right). Check if any yellow warning MSG is displayed. Callouts off and TCAS off should be shown.

>Check left MFD screen. You should see this display:



- Check canopy open/close. Click the CPY button (Bottom main panel) .
- Check airbrake display. Act/Deact the FSX spoiler function.
- Turn on the NAV Lights. To do so, click on the glareshield the LITS button, go in the mode display and turn the NAV, BCN, and LDG lights on.
- Check GPWS on/off. To do so, click on the glareshield the GPWS button which turns GPWS off. The warning sound will played, the master warn lights (on top main panel) do flash yellow, and on the console window the MSG "GPWS OFF" will be shown. Check the warn sound off function by a click on the big green SNDWRN button on the main panel. This will turn off the sound only ! The warn MSG remains active. Turn the function off, and turn GPWS back on again.
- Select and turn on the ADI screen. Check trim (TR) value (%). Should be zero.

>Check center MFD screen. You should see this display:



- Turn terrain display off (TRN)
- Turn grid off (GRD)
- Check DWPD (Destination Way Point) 108 nm. Check the indication under the label DWP on the very left main panel above the key pad. The airport ID LOWS should be displayed.
- Click on the FLP button. The flight plan should be shown.
- ZO to 15 nm.
- Click on the glareshield the NAV button. On the moding section click the buttons ILS, APT and BDR. In yellow you should see the symbols on the center MFD screen.

- Check the compass rose display on/off (COM).
- Check the FLIR display on/off.
- Check the HSI display on/off. Leave the HSI for now off.
- Check the buttons MAG/TRU, and TRK/NTH on/off.

>Check right MFD screen. You should see this display:



- Check engines. Both engines should be up and running.
- Check FRQ screen. On top of the screen you will see the airport frequencies for LOWS and on the bottom the selected frequencies for NAV1, NAV2, ADF, XP, Com1 and Com2.
- Double check the selected numbers on the top center main panel. To do so, click on the glareshield A/F button.
- Check the fuel status. Click the fuel button. The overall fuel should be about 7700 lbs (80 % of total fuel).

>Check weapons:

- Click ATK on the glareshield panel.
- Click the M button. On the HUD the AMRAAM 4 should be shown and the shoot button should flash. Turn M off, turn ATK off.

>Check Autopilot settings:

- Switch autopilot settings display on. Click the A/F glareshield button.
- The following numbers should be shown: HDG= 70 °, ALT= 10000 ft, CRS=156 °, VS= 0, AT= 250 kt.

Ready for Take Off.

>Parkbrake off, set throttle to 50 %.

> Take off at about 180 kt, climb about 10 °, gear up (hit the G key).

> Turn Autopilot ON, Autothrottle (AT) ON, Track (TRK) ON, Approach (APP) ON, Altitude (ALT) hold ON. The aircraft will follow now the route of the flight plan and will climb up to 10000 ft as selected. Airspeed will be auto throttled to the selected 250 kt. TCAS will be activated at 3000 ft radio height.

> Check at 5000 ft baro altitude the warning list by activating the right console window. The warning panel screen must be empty.

>Wait until the cruise level of 10000 ft has been reached.

>Let's now test a missile shoot.

- Turn the FLIR display on the center MFD on.
- Click ATK button on the glareshield.
- Select M, check HUD display. The shoot button flash.
- OK, ready. Click the shoot button and watch the FLIR screen and see the missile. Wait about 6 sec. and watch the explosion effect.
- For the next shoot go in outside view. Adjust the view as shown above under the chapter 9.2 Missile Operations.
- To shoot, Key-In SHFT+D. **Note:** You will not see the explosion effect if in external view, because this effect will be triggered by the panel mouse click only.

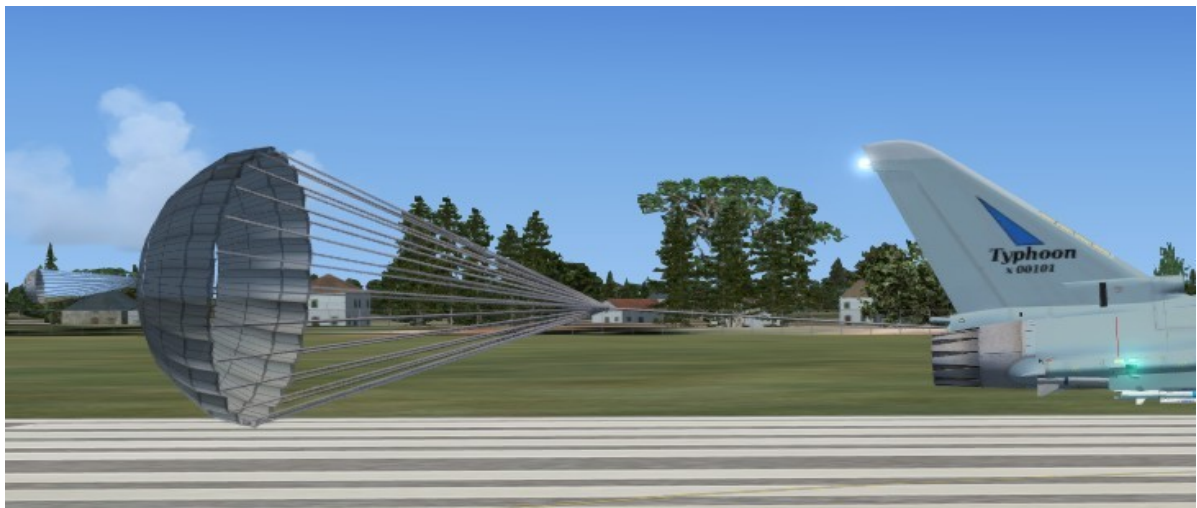
>Let's now test the GUN shoot.

- Keep FLIR display on the center MFD on, keep Zoom=0 also.
- Turn **M** off, and select **G**. Check HUD display. The shoot button flash.
- OK, ready. Click the shoot button and watch the HUD and the FLIR screen. Wait about 2 sec. and see the explosion effect on the HUD and on the FLIR screen also. With the gun you may shoot as much as you want.

Note: In the external view mode you may use the general Lights ON/OFF key "L" which triggers the aircraft lights. So, you will see the explosion effect also, however, with no time delay.

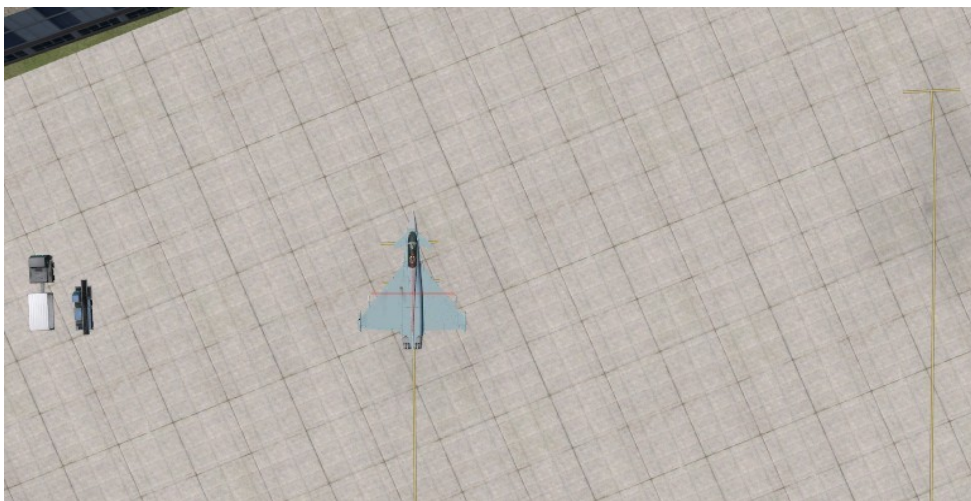
>Let's stop weapon testings and prepare for landing at LOWS.

- Watch the center PA screen. Observe the distance (DYPD) value to LOWS.
- At a distance of 30nm select auto pilots altitude down to 7000 ft.
You descend at a VS of 1800 (default value).
- At 7000 ft altitude the distance is now 22 nm.
- Click the ILS button on the ADI screen
- Select autopilot AT down to 160 kt, which is the landing speed.
- Watch the distance !!!
- At a distance of 20 nm click on the autopilot glareshied TRK button to turn off the track mode (NAV/GPS mode) and click OFF and ON (double click) the APP button. This will right catch the GS mode which will indicated on the ADI screen and on the HUD. The ALT hold button will be turned off automatically after a few seconds. You are now on a perfect landing approach.
- Gear Down. (Press G Key)
 - Watch the callouts, starting at 1000 ft radio height.
- Select radio height mode (BARO/RAD) on the HUD panel.
- At callout 50 switch off auto throttle (AT).
- At touch down cut the engine (F1 key) and turn on the airbrake. Use in addition the normal brake function too, until the aircraft comes to full stop which should be in the middle of the RWY.
- If you use the "Reverse Thrust" function, by pressing and hold F2 key, the Drag Chute will be activated and will stop you very fast. Press F1 to cancel this function.



>Let's now do a refuel by calling a fuel truck. To do so, the aircraft must be on an airport parking spot.

- Taxi to the next available parking spot. Set the throttle to max 11% throttle power (Check the blue value on the engine MFD). This is the best value to allows to taxi with the aircraft.
- You may have selected this parking spot. Set Park brake. Activate ACU screen on the left MFD.



- OK, now call the fuel truck by clicking the RFT button on the bottom of the main panel.
- A FSX MSG will be shown telling you: "Fuel Truck on Route. You are customer Number 1" . On the ACU screen the background for the text "Fuel Truck Request" turns on in orange.
- Go in outside view an wait until the truck shows up.
- Wait until FSX will come up with the aircraft fuel screen. If so, perform your fuel by manual input the fuel you want, and close the screen.
- Stay in external view mode. The Truck will come close to the aircraft and leaves the parking area. Switch off RFT function. Thats it !!

Not a perfect re-fuel simulation however, it works this way.

>Ready for a next flight.

Flight Air to Air Refueling (AAR)

For this test flight we will go to the Middle East. There are two KC-135 air tankers traveling between Kuwait and Doha. Each tanker has a unique ATC ID in order to identify them on the radar screen. One has the **ID N-K135** and the other **ID N-K136**. The route for the AI traffic for both tankers is from Doha (OTBD) to Kuwait (OKBK) and from Kuwait to Doha at preset times.

Description:

The speed of each tanker is 200 kt. The flight level Depends on the direction between 8,000 ft and 11,000 ft. All times are **GMT (UTC) Time !!**

It is a four hour cycle between Doha and Kuwait and between Kuwait and Doha. One plane starts at Doha every 4 hours beginning at 00:00 . Within this 4 hours the flight goes to Kuwait and back to Doha.

A second plane starts at Kuwait every 4 hours beginning at 01:00 . Within this 4 hours the flight goes to Doha and back to Kuwait.

Two planes are always on the way to their destination in each on a 4 hour cycle.

Example:

08:00 Start in Doha (The steps before are : Preflight, Pushback,Taxi,Take Off) So, at about 08:07 we have take off.

09:40 Arriving in Kuwait (The steps before are: Landing, Taxi, Standdown)

09:52 Taxi out in Kuwait and fly back to Doha.

11:32 Back in Doha. Standdown until 12:00

12:00 Start next cycle Doha to Kuwait.

Times of 08:00 to 12:00 is the four hour cycle for plane 1 and 09:00 to 13:00 for plane 2. there will always be a plane in the air.

If you start in Doha with your aircraft at about 08:07 and try to follow the AI KC-135 you will meet the second KC-135 in the air at about 09:20, not far away from Kuwait. Both planes are in the air and enroute to their respective destinations.

Cycles Summary Doha to Kuwait: Cycles Summary Kuwait to Doha:

In 24 hours plane 1: In 24 hours plane 2:

00:00 to 04:00 01:00 to 05:00

04:00 to 08:00 05:00 to 09:00

08:00 to 12:00 09:00 to 13:00

12:00 to 16:00 13:00 to 17:00

16:00 to 20:00 17:00 to 21:00

20:00 to 00:00 21:00 to 01:00 next day.

OK, ready to start the flight.

- > Load the saved flight : **Typhoon X A2A**
- > Close the ACU screen and open the ATK screen.
- > Select and open the ADI screen on the right MFD.
- > On the center MFD ZO to 60 nm.
- > The autopilot settings are: HDG=336°, ALT=10000, AS=500.
- > On both screen you see two targets, where one should be our tanker. The tanker is about 15 minute ahead of us. OK !
- > Parkbrake off, set throttle to 50 %.
- > Take off at about 180 kt, climb about 10 ° , gear up (hit the G key).
- > Turn Autopilot ON, Autothrottle (AT) ON, Heading (HDG) ON, Altitude (ALT) hold ON.
- > Check climb and speed.
- > Select now on the left MFD the radar screen. Click on RDR, and ZO to 40 nm.
- > Click the RNG button.
On top of the screen you will see two targets. One must be the KC-135. Click on SLO and on SEL to check the ID on the little pup up window on the main screen. If it is not the tanker, click SEL off, SLO again to step through the displayed targets. On the second target click SEL again and check the ID. OK, that is our tanker. You should see this display:



If so, we can now start to catch up to the tanker for our re-fuel procedure.

- >To prepare our radar controlled auto tracking, we do this:
 - Autopilot keep the settings as is.
 - On the radar screen click CPL, TRK, and ASP on.
- Now the radar controls the autopilot and will do the catch up phase for us.

- > Check the numbers on the little sub-panel which showing the distance, speed, and altitude of our tanker.
- > OK . Time to learn a new HUD display.
- > On the HUD panel click the HUD button to turn the normal HUD display off.
- > On the radar display click on the A2A button and this screen will be shown on the HUD:



On the left side in white the flight data of the tanker are displayed. On the right side in green the flight data of our aircraft and the fuel volume are displayed. Wait and watch the distance to the tanker. In order to follow the process, select the zoom on the radar accordingly. Same on the center PA screen.

- > Click on the AAR button on the glarshield panel. The fuel probe will be moved out of the aircraft. You will see this only in external view.

> At a distance of < 10 miles you will see on th HUD this screen:



On the center you see a tanker symbol and a green altitude pointer. If the pointer is above the tanker symbol our aircraft is above the tanker. If the pointer is below the tanker symbol our aircraft is below the tanker. In addition watch the yellow direction and distance pointer. The closer we are lining up to the tanker the more the yellow pointer will also move into the centered white box.

So stay cool, wait and do nothing. For a successful refuel, both pointers must be in the white box. The small white horizontal square on the right bottom screen will pop up in full green, if the re-fuel has been performed, and the fuel volume display will show the max fuel level. OK, still about 8 miles to catch up.

>Below we are now at a distance of 0.1933 miles. The pointers are looking OK, and we do see the big tanker in front of us also.



We must come down to a distance under 0.05 miles.



And here we got it !!!!



>Click HDG hold OFF on the autopilot, and move away from the tanker. Done !!!!

>Click on the AAR button on the glarshield panel to retract the fuel probe .

Here the outside view:



Tanker bye, bye !



Note:

You may try to do the fuel procedure also by using the stick. If so, turn HDG hold and ALT hold on the autopilot off, and maneuver with the stick. Try to keep the green and the yellow pointer within the white box as shown above. Be prepared to immediately move away from the tanker, as soon as the refuel is performed. Be aware, you must be below 0.05 miles in distance to the tanker to see the refuel happen.

OK, ready for next mission.

Flight Target Tracking and Attack

Along with the simulation of selecting a AI target and fly a missile/Gun attack, we will learn a new HUD screen display.

So, at first start a flight exactly according to the procedure as described above under the Air to Air Refueling flight.

Go through all the steps up to this one:

">To prepare our radar controlled auto tracking, we do this:

- Autopilot keep the settings as is.

- On the radar screen click CPL, TRK, and ASP on.

Now the radar controls the autopilot and will do the catch up phase for us. "

>Check the numbers on the little sub-panel which showing the distance, speed, and altitude of our tanker. Select ZO 40 nm on the radar screen. The distance to the KC-135 should be about 30 nm.

> Click the RNG button on the radar scree to turn the ring display on.

> OK, Time to learn the new HUD attack display.

> On the HUD panel click the HUD button to turn the normal HUD display off.

> On the HUD panel click the TGT button on. You will see this HUD display:



- On the left side in white color the flight data of our selected target.
 - In the center the horizontal attitude bar in green color.
 - On the right side in green the values for speed, altitude, and AoA for our aircraft. The zoom value and in white the symbol **G** and **M**.
 - The center vertical line represents the HDG marker and the pitch scale for 10,20 degrees.
 - The center marker in cyan represents the aircraft symbol..
 - Rings display in blue, being turned on/of by the RNG button on the RDR screen.
 - On the screen you will see two targets in red. The one, marked with the red circle, is the one we have selected on the radar screen. We are auto tracking now this target, which is our well known tanker. For this exercise he plays the role of a target which we want to attack.
- > Watch the distance. At about 8 nm we preparing the weapons for the attack.
- > Click the ATK button on the glareshield. Select M and the HUD displays we are equipped with 8 IRIS missiles.



- > Watch the distance. At about 4.5 nm (zoom in to 5 nm) we will fire the first IRIS to see what happens.
- > OK, shoot. See the missile burner and the explosion about 6 sec later.
- > Watch the distance. Come close until you see the tanker. Turn on the autopilot HDG hold OFF, and maneuver with the stick the tanker into the center of the screen. Fire the next missile and you should see the explosion close to the tanker. Take it as a hit !!!!



Note: The target will not disappear from the screen. Sorry, we have to compromise on this.

- > Test shooting with the gun.
- > Keep HDG on the autopilot OFF.
- > Maneuver the tanker into the center of the HUD. OK, time for the gun. SHOOT !!
You should see this screen:



That's it with the weapons. Have fun with it !!

Important Note:

Set your "**Airline_traffic_density**" in FSX at least to 50 % in order to see the targets/tanker on the radar screen.