ATR Series Quick Start Guide by DeltaWing Simulations

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WELCOME TO ATR 72 SERIES FOR XPLANE



DeltaWing Simulations team would like to thank all our Advisors and Testers who contributed their time to make our product at the level we offer it.

We would like to give special thanks to Captain Magnar Nordal for his help.
Magnar was flying ATR-72-600 for over 25 years and is an instructor for this aircraft. He helped us develop the package constantly answering questions and correcting things during the developin process.

If you are interested in going deep into ATR exploring, check out Magnar's YouTube channel linked below.

FlywithMagnar

In real life, pilots complete several week trainings and many sessions in simulator and there are two pilots.

In case of the home simulation, we need to do work for both pilots so deviations from FCOM Flight Crew Operating Manual and SOP Standard Operating Procedures will be necessary. Keep in mind that SOPs will differ between airlines as well.

If you've ever watched a small turboprop pull up to a regional terminal and thought "I want to fly that" — this aircraft is for you.

The ATR 72-600 is a twin-engine turboprop that quietly does one of the most important jobs in aviation: connecting smaller cities and communities that bigger jets simply can't serve. It's not glamorous, but it's honest, capable flying — and once you get a feel for it, it's hard not to love.

This manual will help you get comfortable in the cockpit, whether you've never touched a turboprop before or you just want a solid reference to keep nearby. Work through it at your own pace, skip what you already know, and don't hesitate to come back to it any time.

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USING THE QUICK START GUIDE (QSG)

Navigation through this document very easy and convenient.

Contents at the beginning of the QSG have clickable links that will take you to corresponding pages of this document.

While on any page, you can immediately access Contents, simply click on the “Back to Contents” link on Page Footer (the right bottom of each page)

FGCP Flight Guidance Control Panel knobs support fast scrolling via mouse wheel scroll and precise scrolling via left mouse click

Switches (2 states and 3 states) are very easily flipped by pressing Above/Below switch area to flip switch Up/Down respectively

Switches can be also flipped using mouse scroll wheel

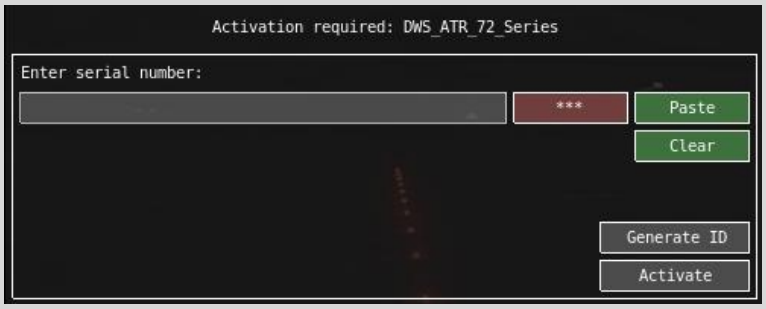
Please read the section called FGCP FLIGHT GUIDANCE CONTROL PANEL that will explain the automatic flight and use of the FGCP

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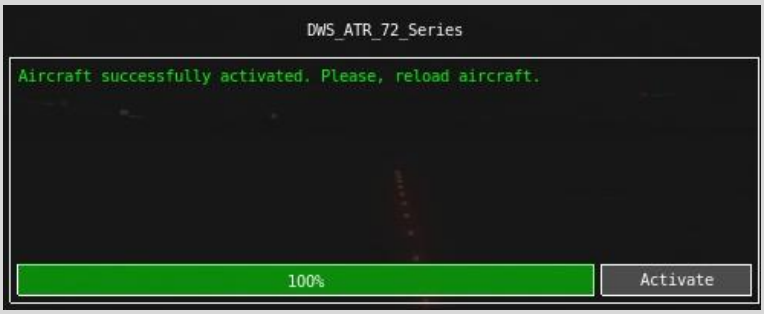
INSTALLING THE PACKAGE

To install the package, simply unzip it and put resulting folder into X-Plane/Aircrafts folder. If you prefer you can create sub-folder called My Aircraft (or any name you like) in X-Plane/Aircraft folder. Activating the Package

After opening the package, you will see Activation Window



Type in or Copy and Paste your serial number you received when you purchased the package, Press Activate and Restart X-Plane



IMPORTANT NOTE: RESTART THE X-PLANE AFTER ACTIVATING THE PACKAGE

XPLANE FORUMS SUPPORT for ATR 72-600 (link below)

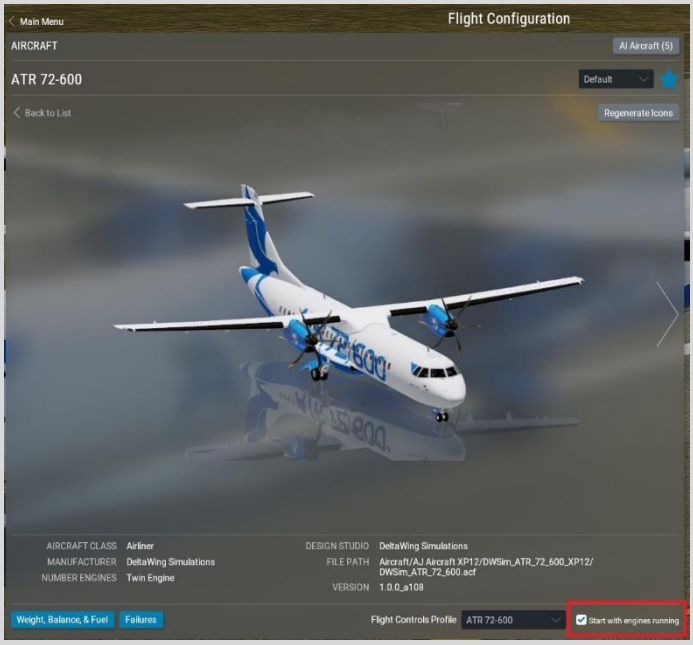
X-Plane.org Forums ATR Series

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INSTALLING AND SETUP IN XPLANE

Please set No Failures in X-Plane (Failures Submenu in AIRCRAFT Menu) by pressing "Fix All Systems" and make sure that "Set mean time between failures" radio box is NOT checked

Select Option "Start with engines running" checkbox. If you want to start Cold and Dark, select that Option in Tablet/EFB



If you crash or something unexpected happens, we recommend reloading the package or better yet, restart X-Plane to make sure all is reset properly

FOV (Field of View), the higher the number, the more distortion BUT also you will see more objects at one in the cockpit. We recommend that FOV in a range 65-70.

Changing the Number of Other Aircraft

One of the settings that impacts the simulator's frame rate is the number of other airplanes. Access this by going to the Flight Configuration screen and clicking the **AI Aircraft** button.

Remove all other aircraft by clicking the 'X' for maximum speed. This means X-Plane will only have to calculate physics on your aircraft, providing a significant speed increase on slower CPUs.

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NAVIGATION DATA

ATR 72-600 package is using default X-Plane navigation data which vast majority of users find totally adequate for flying but you can also use payware sources like Navigraph

See **EFB** (Electronic Flight Bag) section for details

HONEYCOMB BRAVO HARDWARE THROTTLE USERS

- To be determined if any adjustments are needed
- If you have any problems or suggestions, please post in the forums, it is impossible for us to cover all possible hardware setups

HONEYCOMB YOKE USERS

- If you are using Honeycomb Yoke, turn on all avionics switches, otherwise it will not power avionics
- The same as with Throttle Quadrants, please post questions and suggestions in forums

DeltaWing Simulations ATR Series Support Forums

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PACKAGE SPECIFIC NOTES

STOP FLIGHT AT ANY MOMENT AND RESUME ON NEXT X-PLANE RUN

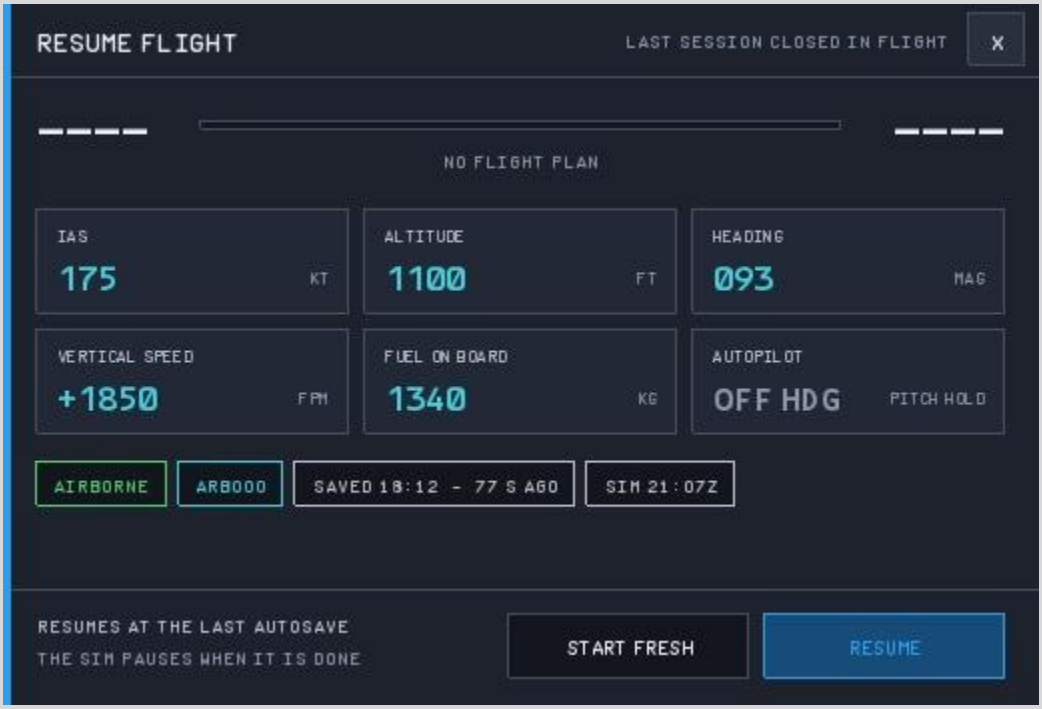
You are in the middle of the flight and want to close simulator

After you open it again, you will have the option to pick up where you left off OR Start New Flight

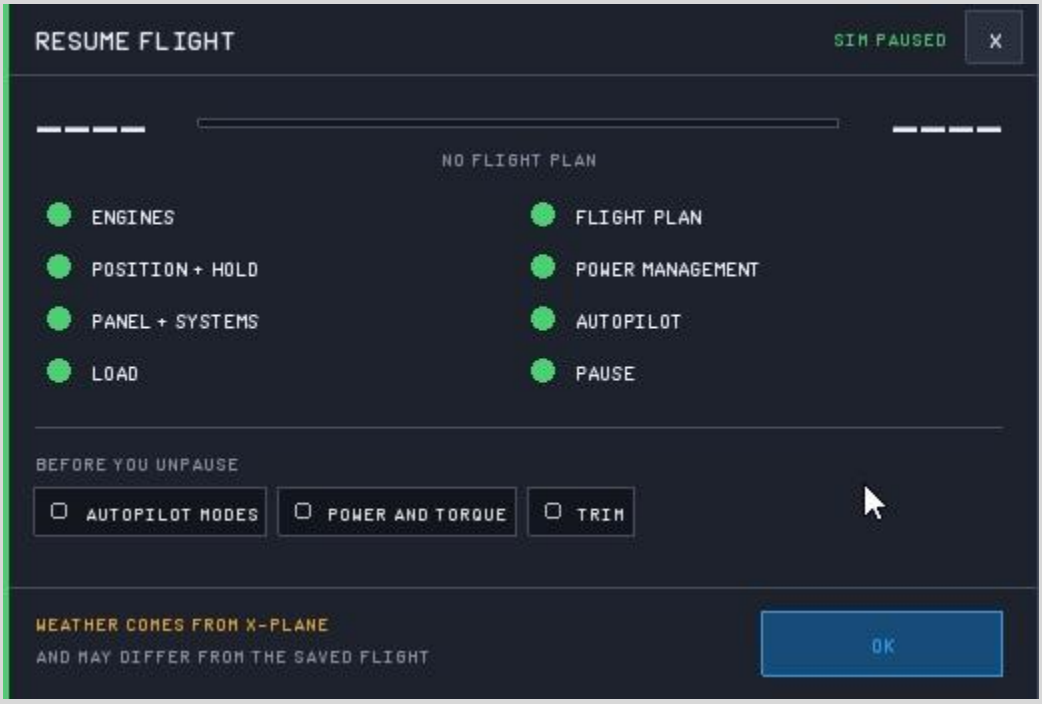
Select RESUME LAST FLIGHT



It will pop up the RESUME FLIGHT window showing the date when you closed the X-Plane



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After you press RESUME, another window will pop up showing more data

After you click OK, X-Plane will be PAUSED as shown on screenshot below

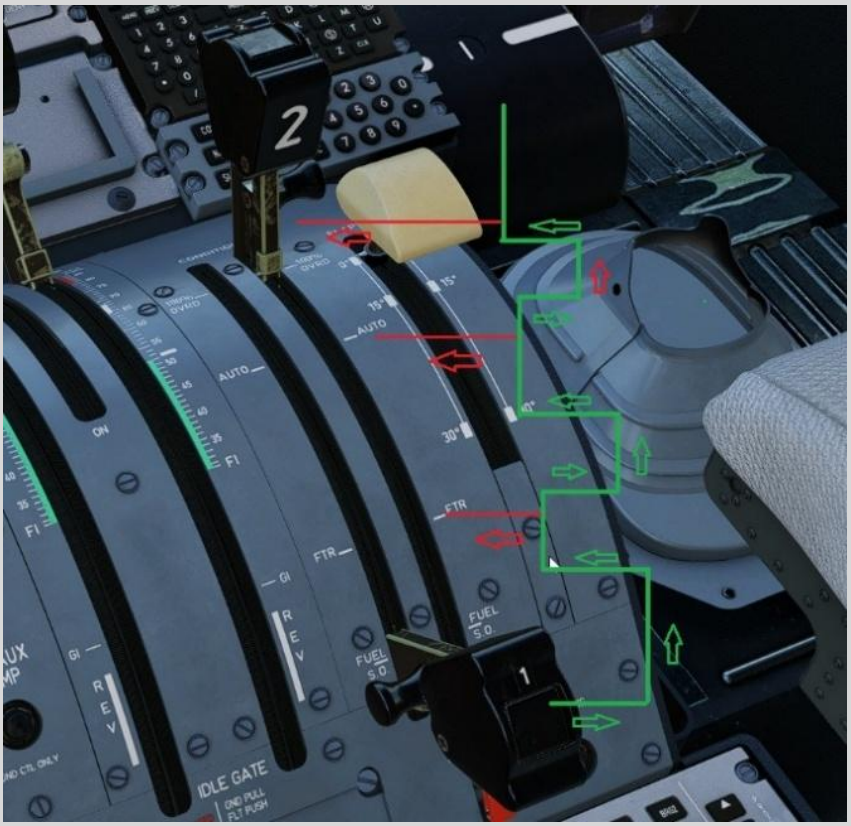


Click on PAUSED symbol and continue the flight.

Remember to check AUTOPILOT MODES, POWER AND TORQUE and TRIM before pressing PAUSED symbol

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CLS (CONDITION LEVERS) OPERATION



We programmed Condition Levers so they will snap (it is also animated) to corresponding positions: **FUEL S.O.** (Fuel Shut Off), **FTR** (Feather), **AUTO** (Automatic) and **100% OVRD** (Maximum Override).

In order to achieve these snapped positions, you need drag Condition Levers with the left mouse button pressed in a particular pattern shown below. While dragging UP/DOWN CLs will snap to the positions described above

Please see EFB section as well for more details

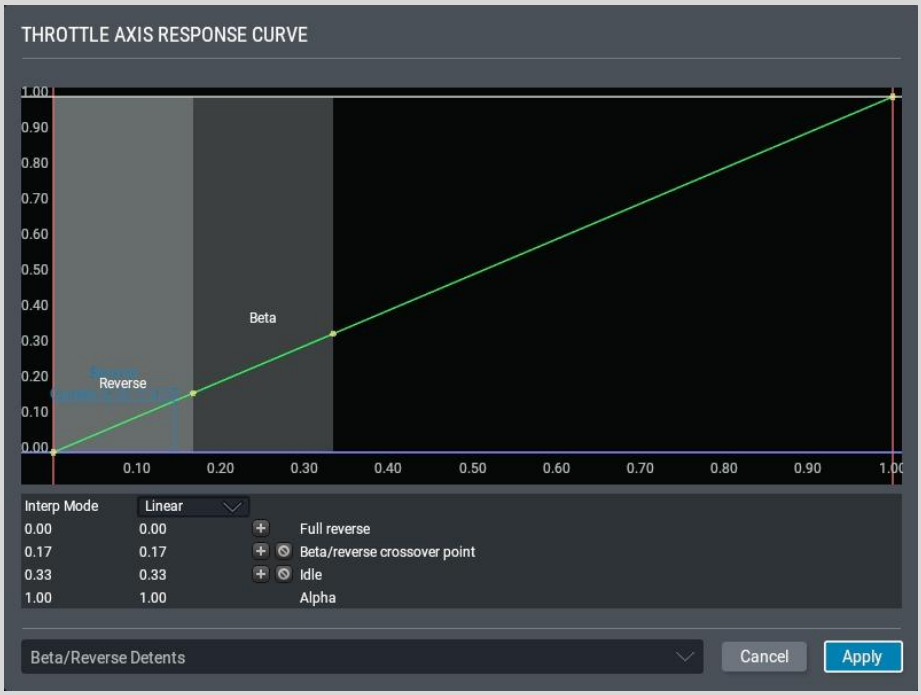
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THRUST REVERSERS

If you want to be able to use Thrust Reversers just in the same axis as other Power Levers positions, just set up Beta/Reverse Detents as THROTTLE AXIS RESPONSE CURVE

Make Interp Mode Linear.

See below



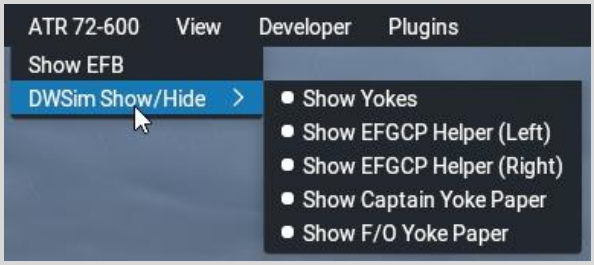
Since there are countless variations of hardware and software setups working with X-Plane, please post questions and suggestions in our Support Forums

We are unable to provide suggestions here because of the number of possible setups, only basic notes on the subject

DeltaWing Simulations ATR Series Support Forums

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SHOW EFB and DWSim Show/Hide Options

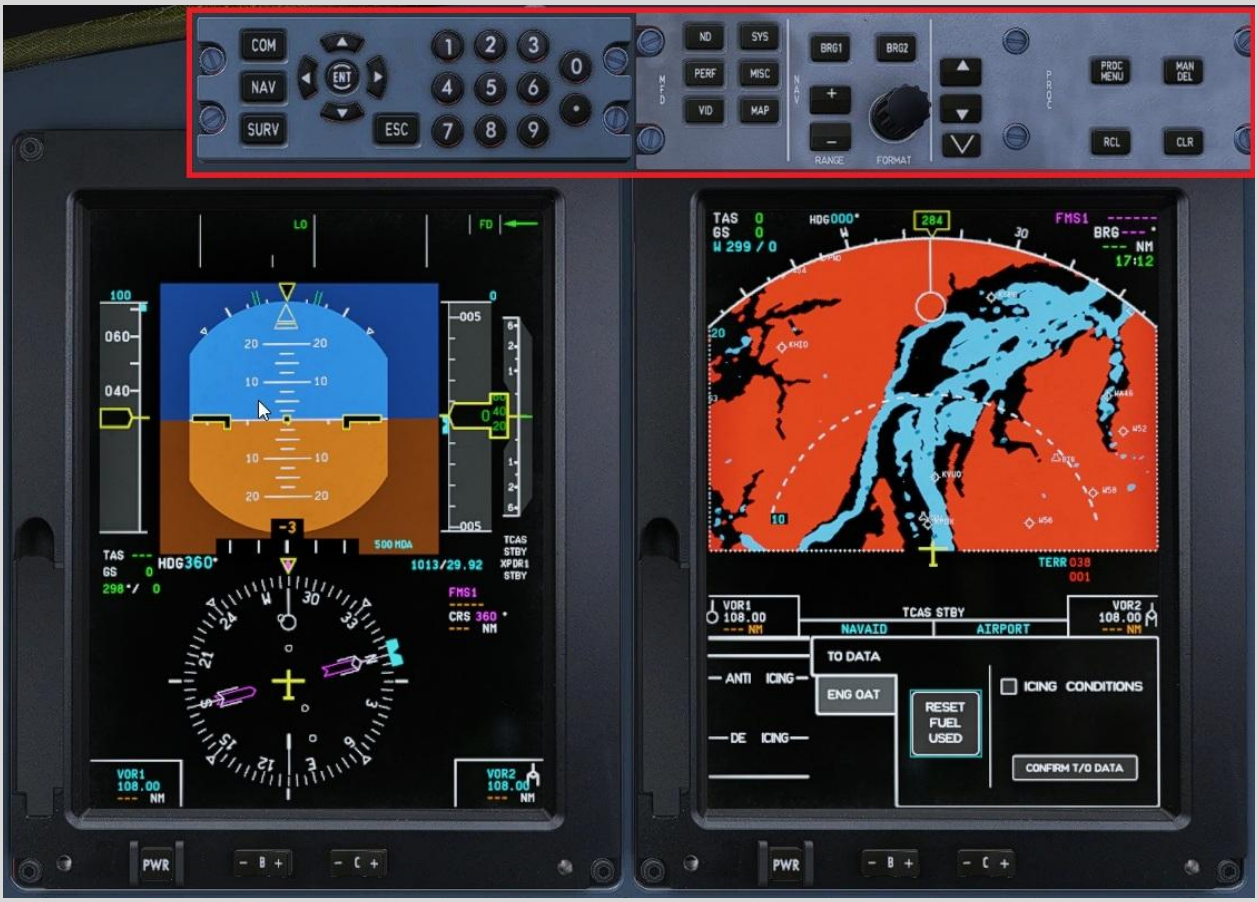


Certain panels that control **PFD** (Primary Flight Display) and **MFD** (Multi-Function Display) are located far away from Display Units which makes them hard to reach and use in simulator

We incorporated EFGCP Helper that can be toggled. It is accessible from ATR 72-600 X-Plane Pull Down Menu in DWSim Show/Hide line along with other Show/Hide Options

In addition, there is also an option to Show/Hide Captain and F/O Paper, Paper is a customizable note you can see on the corresponding Steering Column and Hide/Show Steering Column

When **EFGCP Helper** is **ON**, it will let you adjust/enable/toggle certain parameters on PFD and MFD without changing the view as it is just in front of you to use, see below54



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There are also click spots in the cockpit on glareshield

Clicking on them will **hide/show yokes**





DECREASING VOLUME IN THE COCKPIT WHEN CLICKING ON ANY HEADSET

HEADSETS have assigned click spots

Pressing left mouse button on any headset in cockpit will reduce the volume in the cockpit, just like you were wearing one

USING XCHECKLIST

You can create or used already existing one if anybody made it Xchecklist, link below

Xchecklist (lin+win+mac+32/64) - Utilities - X-Plane.Org Forum

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SEPARATED, INDEPENDENTLY SET CAPTAIN AND FIRST OFFICER DISPLAYS

DeltaWing Simulations ATR 72-600 package has the ability to select different display types and ranges on Captain and First Officer Sides Independently

COCKPIT WINDOW SHADES

Left and Right Cockpit Window Shades are animated and can be lowered/raised per user preference

INSTRUMENT CLICK REGIONS

If you want to see Cockpit, Click Regions and/or Instruments Descriptions, just enable these options from X-Plane Pull Down View Menu

SETTING BUTTONS ON YOKE/JOYSTICK

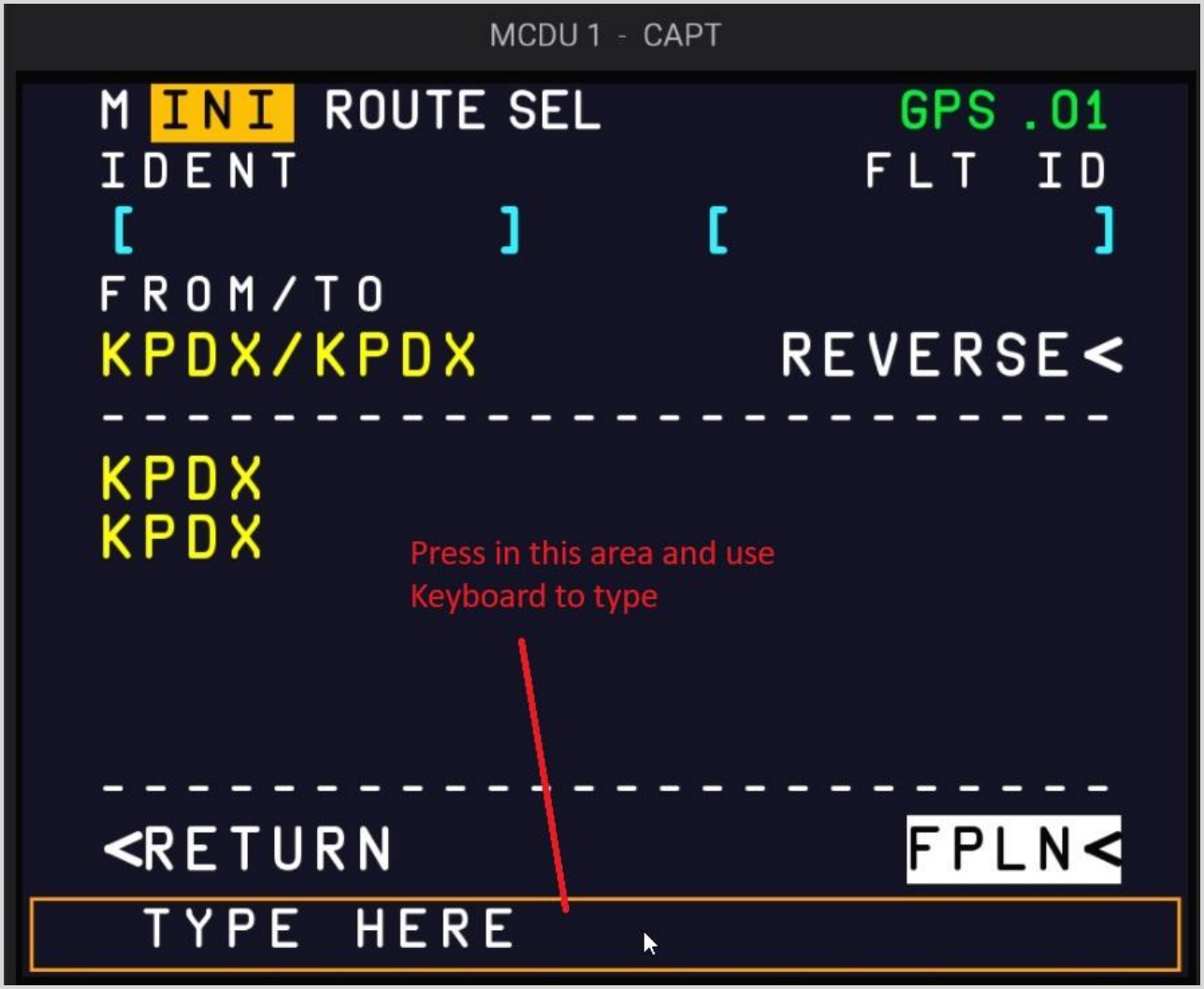
Many users find it very useful to be able to assign certain commands to yoke buttons. It can be easily done by going to Joystick X-Plane Pull Down Menu and assign a command from ATR 72-600 specific Commands

SETTING KEYBOARD SHORTCUTS

Users can assign also certain commands to keyboard shortcuts by going to Keyboard X-Plane Pull Down Menu and assign ATR 72-600 specific Commands

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TYPING USING KEYBOARD IN MCDU



This feature enables you to press in the scratchpad area on MCDU (brown border will appear to indicate Keyboard typing mode) and use Keyboard to type anything you need

You can use virtual MCDUs (in cockpit) as well as Pop Ups

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TABLET/EFB (ELECTRONIC FLIGHT BAG)



EFB (Electronic Flight Bag) also called **Tablet** is available on Captain and FO sides

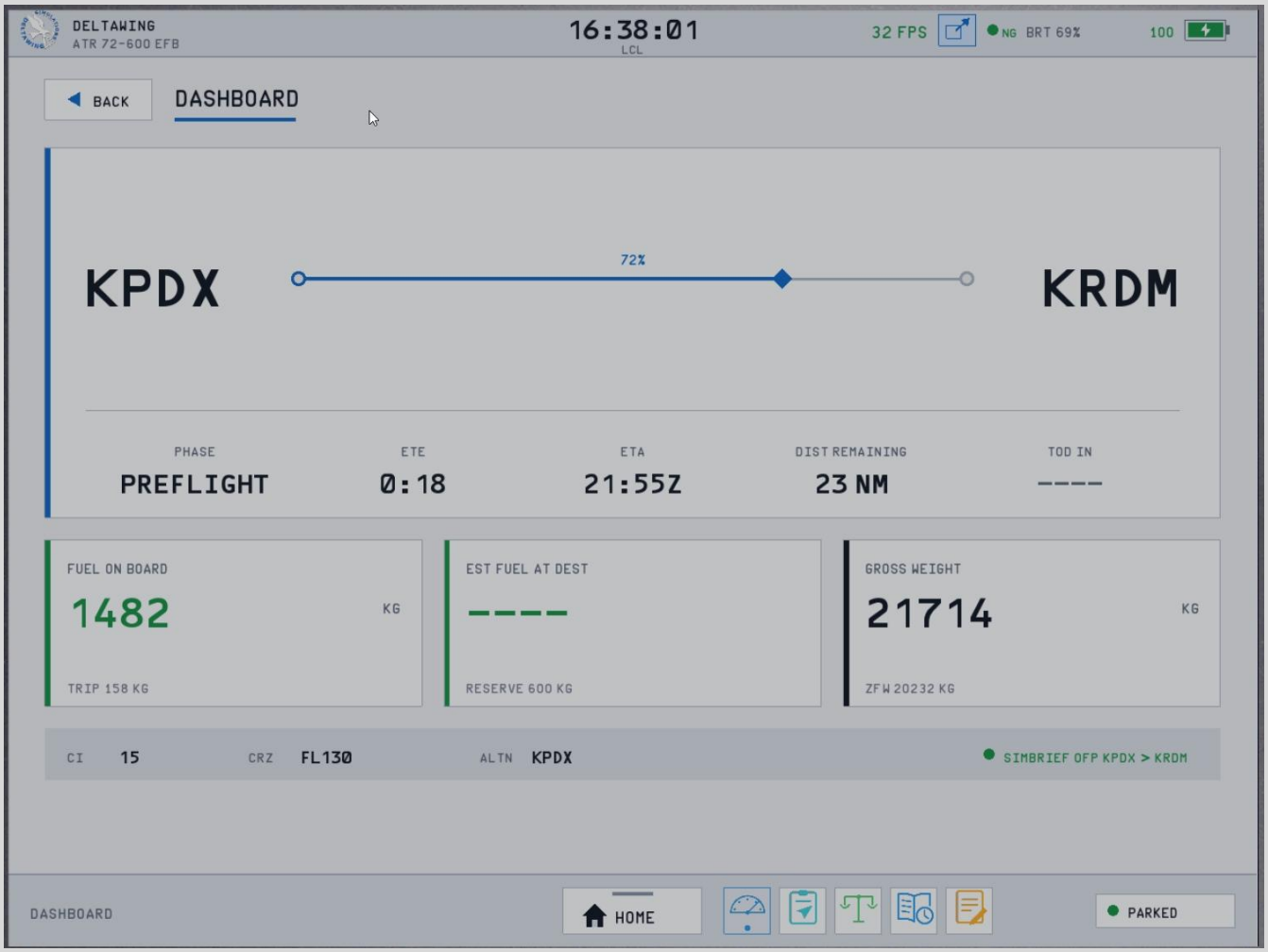
- DASHBOARD
- FPLN
- WEIGHT BAL
- PERFORMANCE
- NAVIGRAPH
- DOCUMENTS
- SIMBRIEF
- WEATHER
- NAV DATA
- HARDWARE
- GROUND
- SYSTEMS
- CABIN
- NOTES
- FAILURES
- AIRCRAFT LOG
- SETTINGS

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DASHBOARD



DASHBOARD will show you active Flight Plan if it is entered or obtained from Simbrief, Fuel on Board, Gross Weight and some active Light Plan data

Clicking BACK tab, will take you to HOME Page of the EFB/Tablet and an icon of the recently opened Page will appear at the bottom

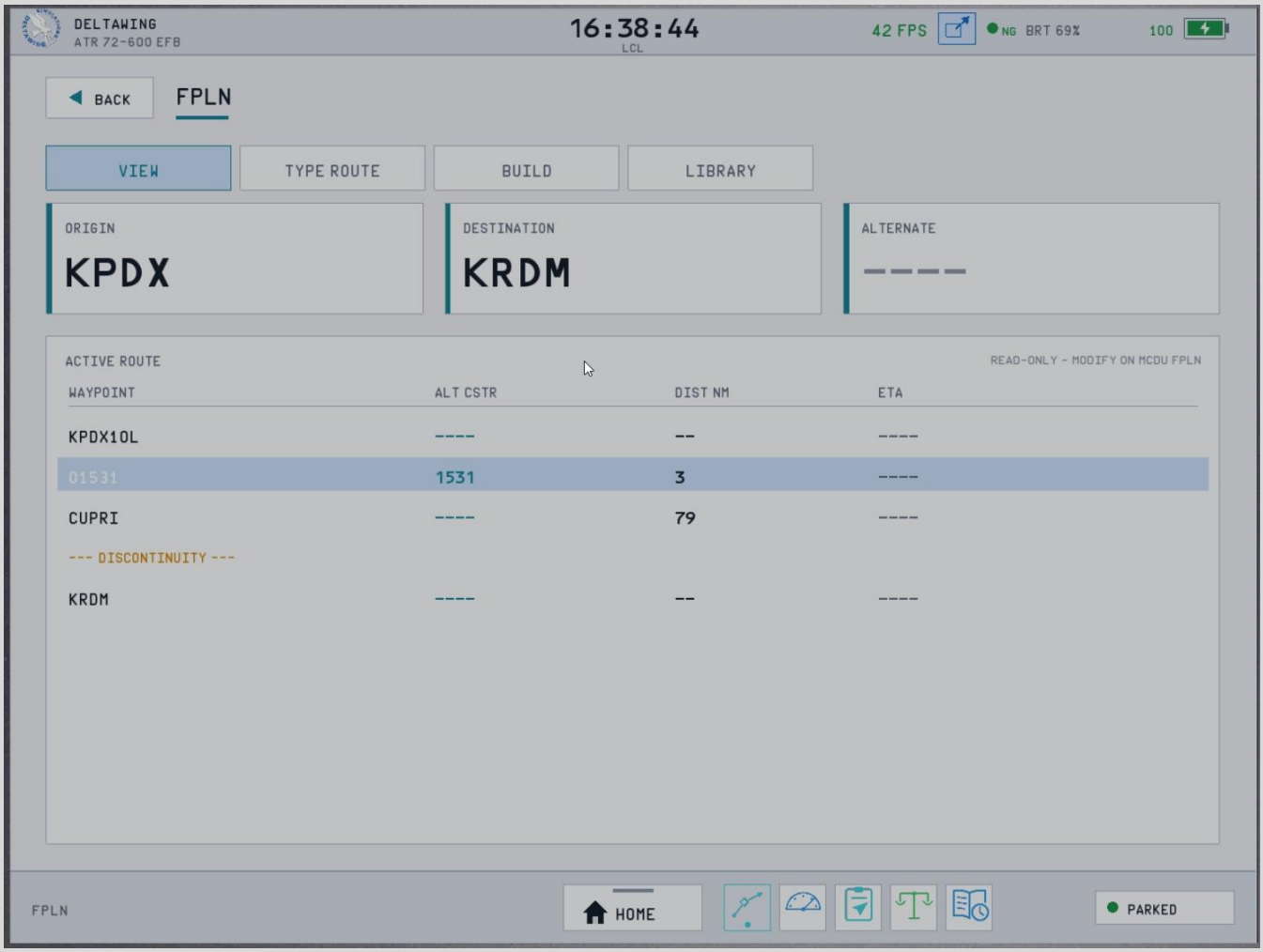
This way you can go directly to previously opened Page without going first to HOME Page.

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FPLN



VIEW is the first Tab for the FPLN Page

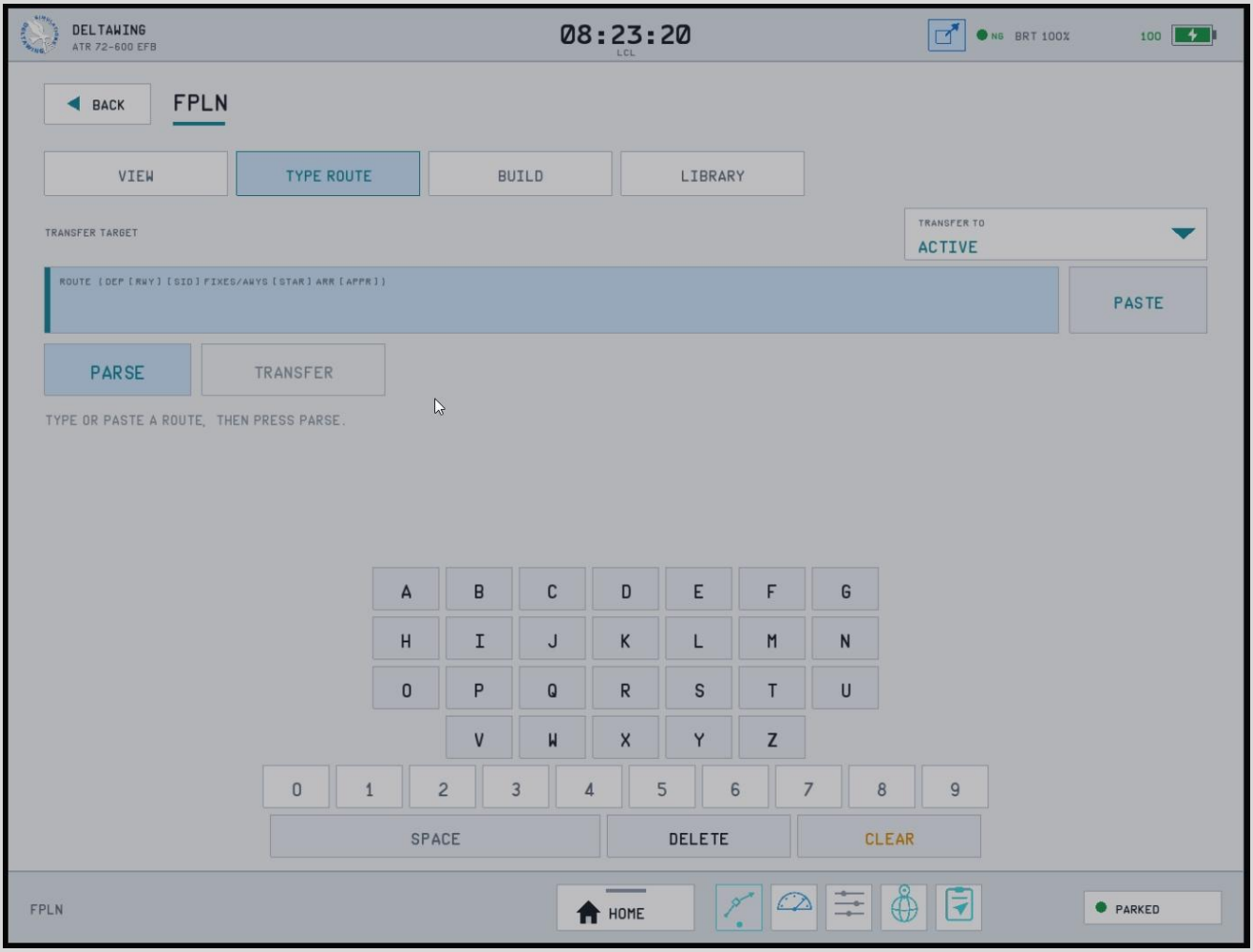
All fields are quite self-explanatory

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TYPE ROUTE is the second Tab for the FPLN Page



TYPE ROUTE Tab as the title suggests, will let you type in the route

You can PASTE the route or type it in in the format shown below (use your keyboard or the one from EFB)

DEP SID FIXES/AIRWAYS STAR ARR

DEP = Departure Airport

SID = Standard Instrument Departure

FIX/AIRWAYS = Fix along the Route or Airway

STAR = Standard Terminal Arrival Route

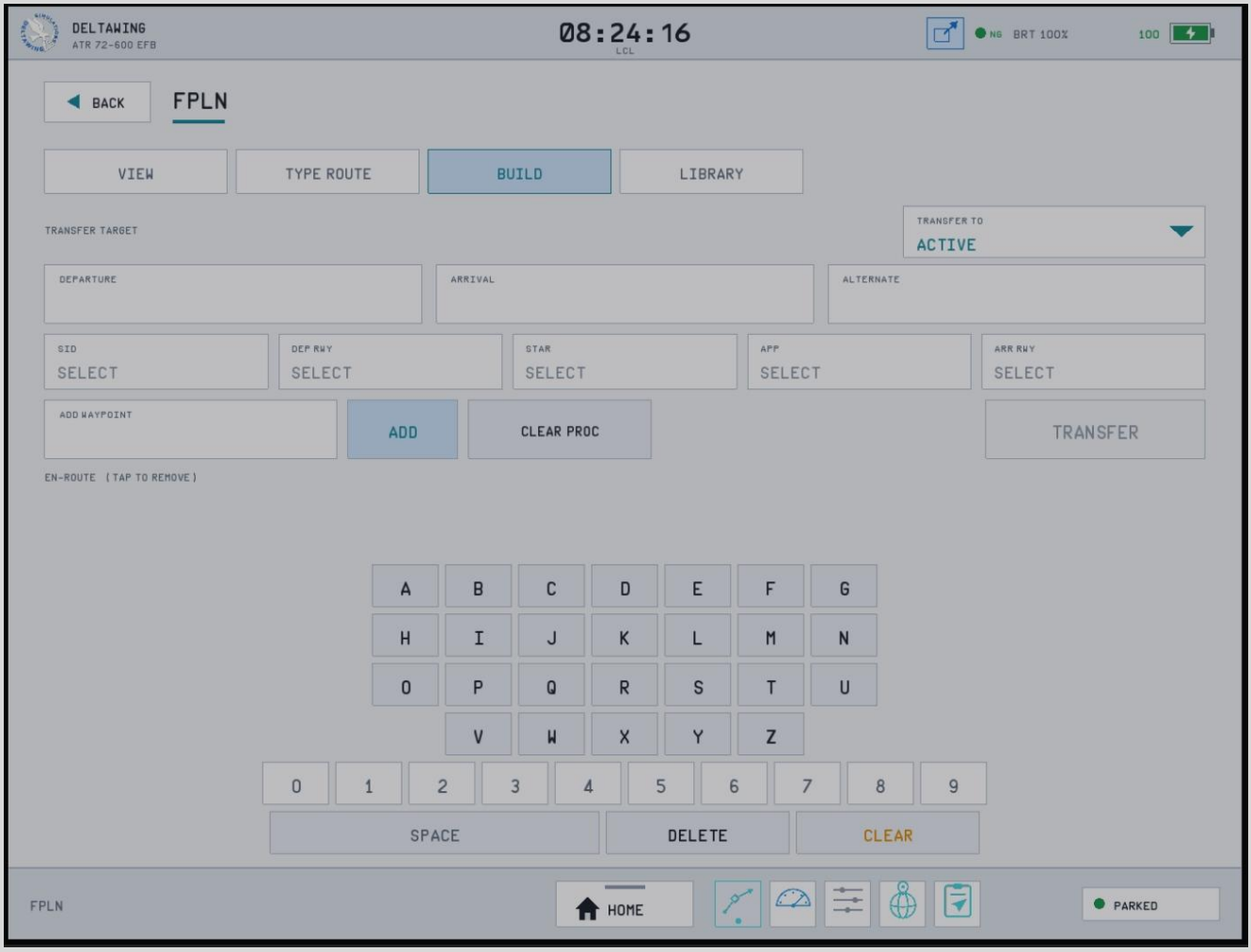
ARR = Arrival Airport

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BUILD is the third Tab for the FPLN Page



BUILD Tab will let you select corresponding parts of the flight plan to build it

- DEPARTURE
- ARRIVAL
- ALTERNATE
- SIS
- DEP RWY
- STAR
- APP
- ARR RWY
- WAYPOINT

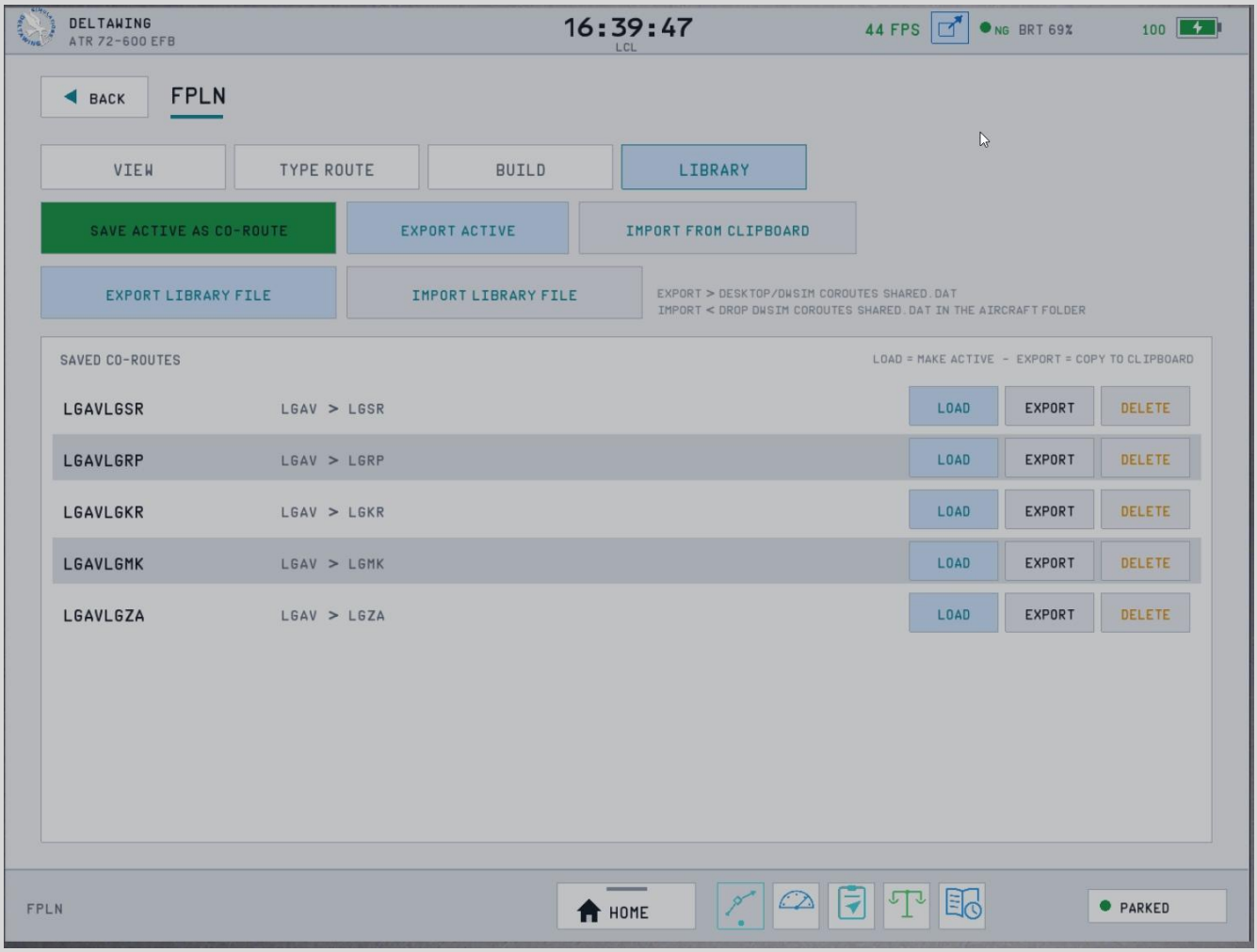
After you enter DEPARTURE AND ARRIVAL Airports, SID, STAR and APP will show corresponding options for these airports

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LIBRARY is the fourth Tab for the FPLN Page



LIBRARY Tab will let you

- SAVE ACTIVE AS CO-ROUT
- EXPORT ACTIVE
- IMPORT FROM CLIPBOARD
- EXPORT LIBRARY FILE
- IMPORT LIBRARY FILE

List shows SAVED CO-ROUTES

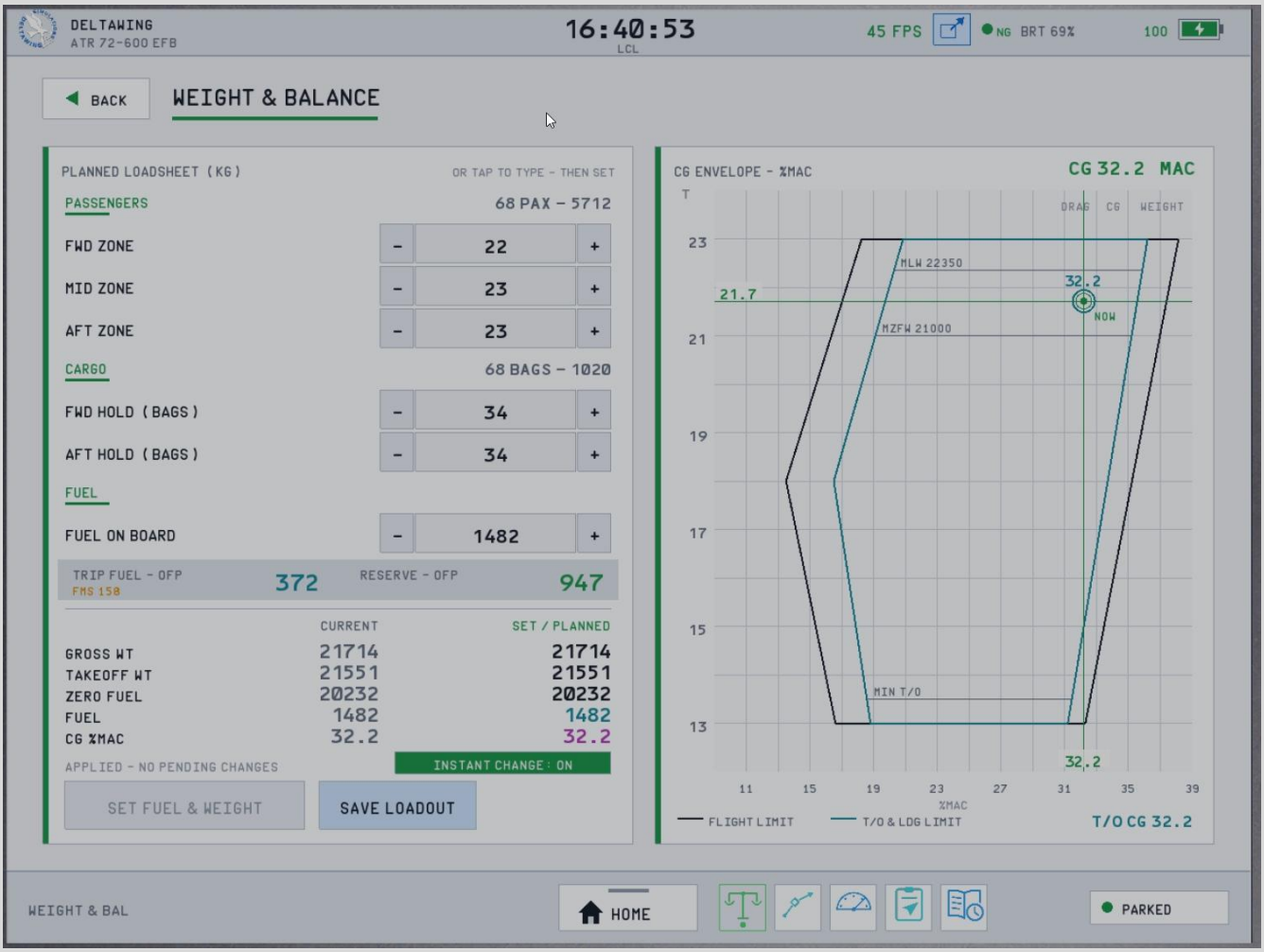
You can LOAD, EXPORT or DELETE Route from the list

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WEIGHT BALANCE



WEIGHT BALANCE will let you set Passengers, cargo and fuel and load it into plane

There is also an option to SAVE LOADOUT which when pressed will auto load the data on next flight (selecting option from EFB)

You can left click in the CG ENVELOPE %MAC (Percentage on Mean Aerodynamic Cord) Window to set new preferred %MAC and Press SET FUEL WEIGHT

Doing that will reconfigure PASSENGERS and BAGS to adjust to new %MAC and after pressing SET FUEL WEIGHT, will adjust the GROSS WT and CG %MAC

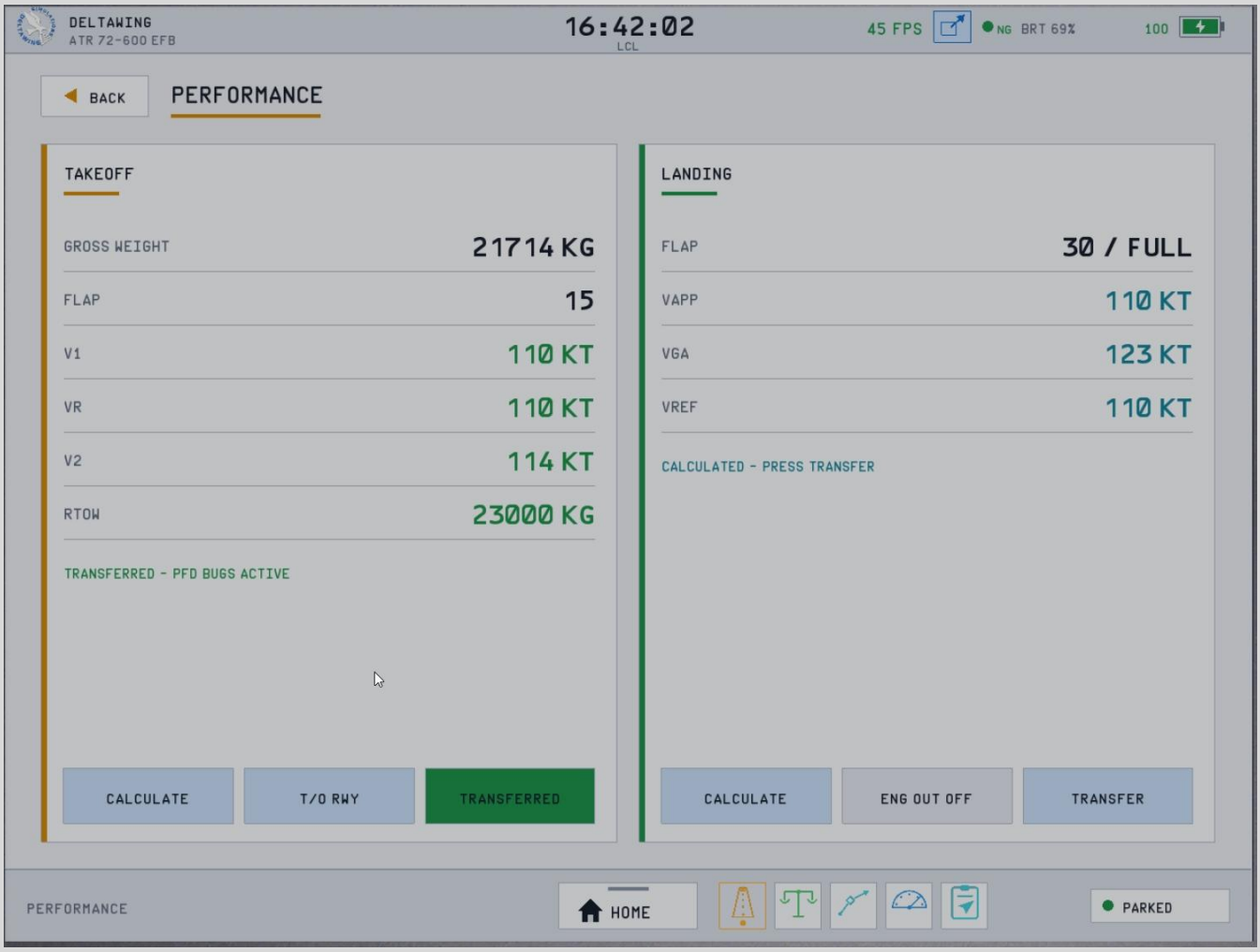
CALCULATED CG%MAC will be used to calculate the Pitch Trim for Take Off

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PERFORMANCE



PERFORMANCE as the name suggests, will calculate TAKEOFF and LANDING Speeds after pressing CALCULATE

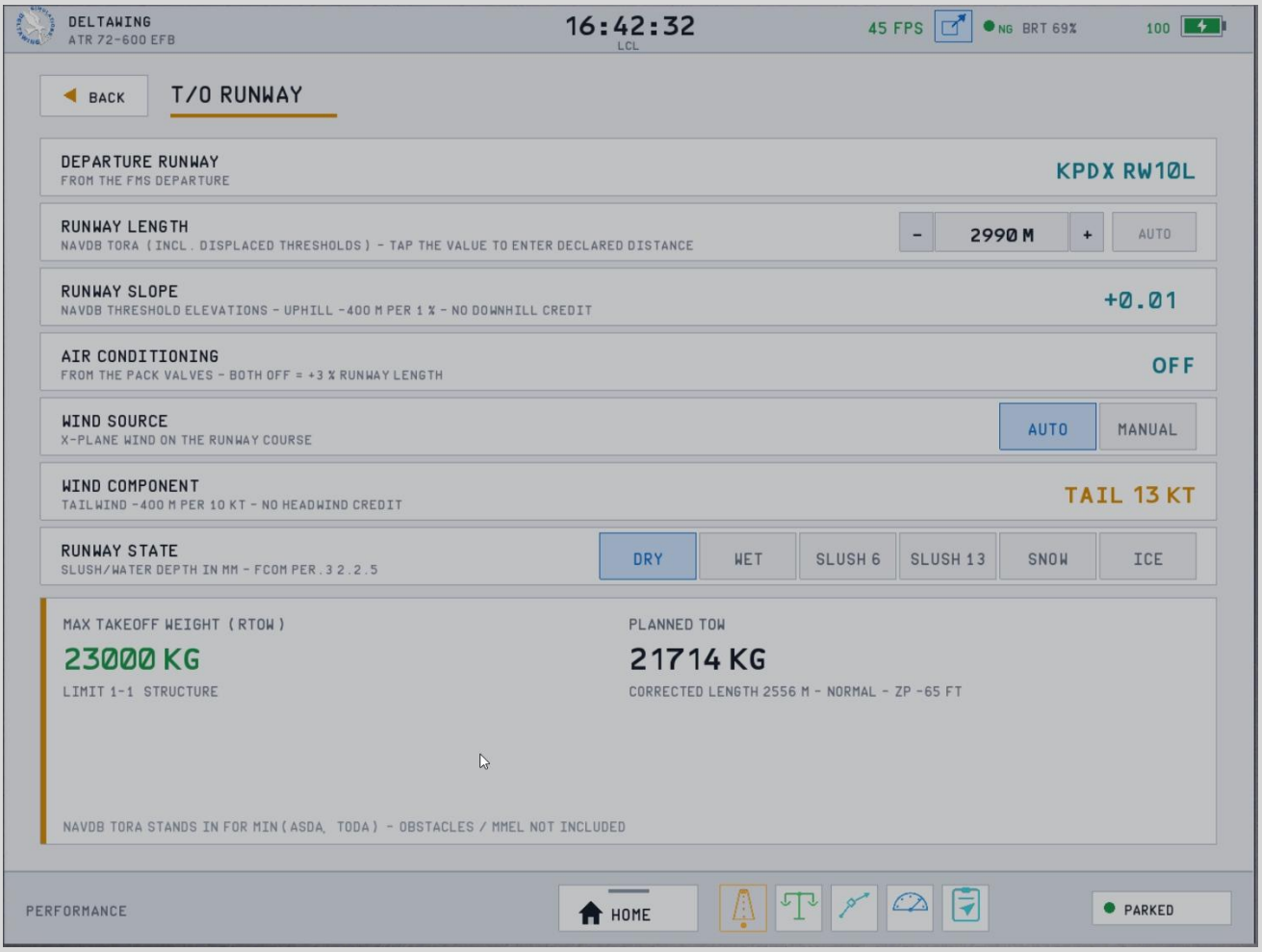
Pressing TRANSFER will transfer the data into MCDU

In addition to calculating Speeds, corresponding GROSS WEIGHT, RTOW and FLAP settings will be shown

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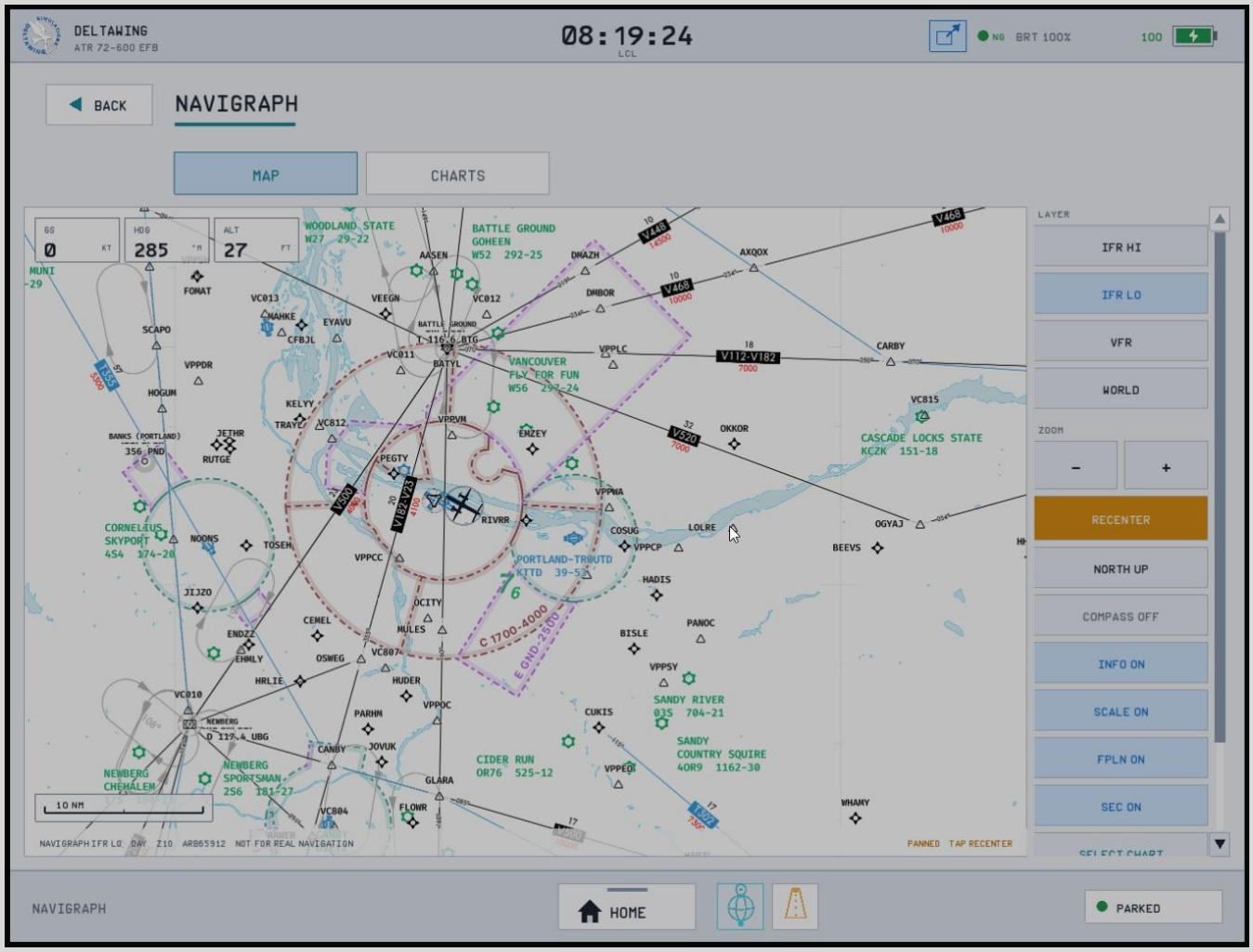


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NAVIGRAPH



NAVIGRAPH is a great way to view MAP and CHARTS directly in EFB. In order to do that you to have a subscription for Navigraph Data

In MAP Tab shown above, you can select different options

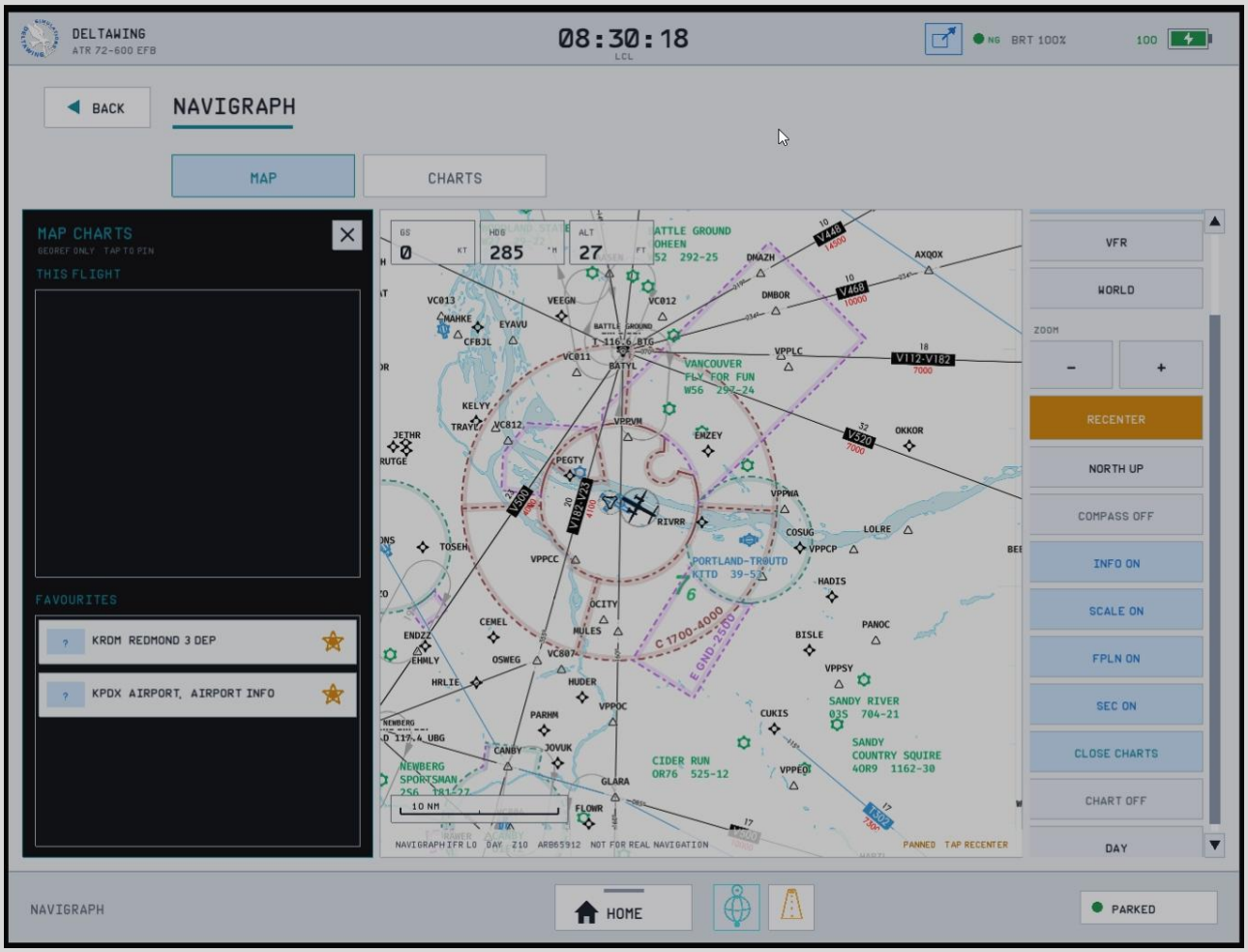
- IFR HI IFR LO
- VFR
- WORLD
- ZOOM and CENTER
- NORTH orientation
- COMPASS ON or OFF
- INFO, SCALE. CHART and FPLN ON or OFF
- SELECT CHART
- DAY/NIGHT Option

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SELECT CHART TAB



SELECT CHART will bring you to window where you can select a chart and overlay it in the MAP Window

Options below still apply when viewing overlayed Chart

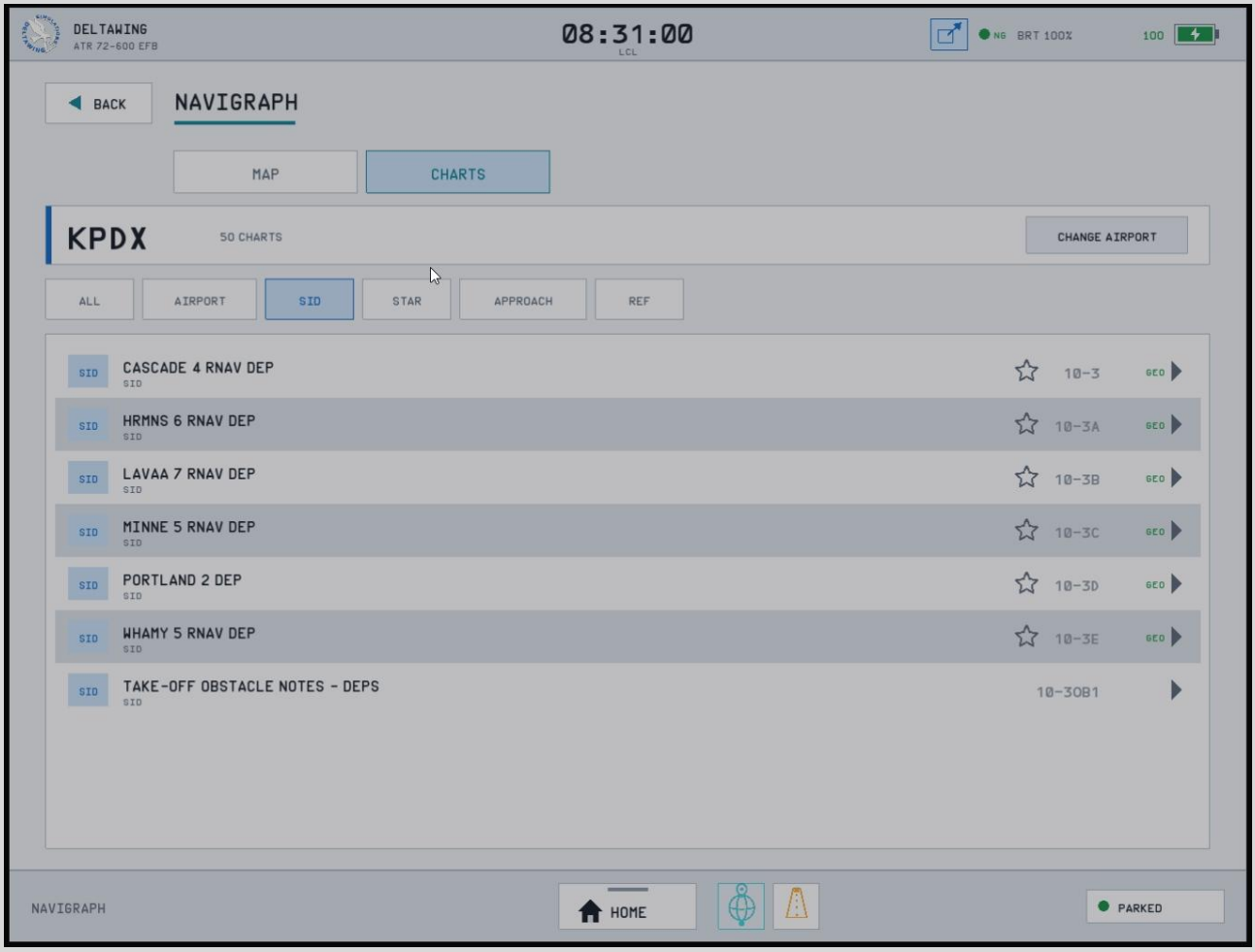
- IFR HI IFR LO
- VFR
- WORLD
- ZOOM and CENTER
- NORTH orientation
- COMPASS ON or OFF
- INFO, SCALE. CHART and FPLN ON or OFF
- SELECT CHART
- DAY/NIGHT Option

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CHARTS Tab



CHARTS Tab will let you select from Departure and Arrival Airport as well as Type in the ICAO of the airport you want Chart to be shown

You can select the Option below for narrowing the list of available charts

- ALL
- AIRPORT
- SIS
- STAR
- APPROACH
- REF

If you want Charts for different airport, press CHANGE AIRPORT to go back to the List

Charts listed with green GEO identifier will be able to show your aircraft on them

You can also press STAR in the selected airport to mark it as Favorite

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SELECTED AIRPORT OR PROCEDURE IN CHARTS TAB



After Airport or Procedure is elected you can use options listed below

- CLOSE
- SAVED
- + Zoom In
- - Zoom Out
- FIT (fits the whole chart in the window)
- N-UP orients the chart so North is UP
- ROT 90 Rotates chart 900 degrees
- DAY

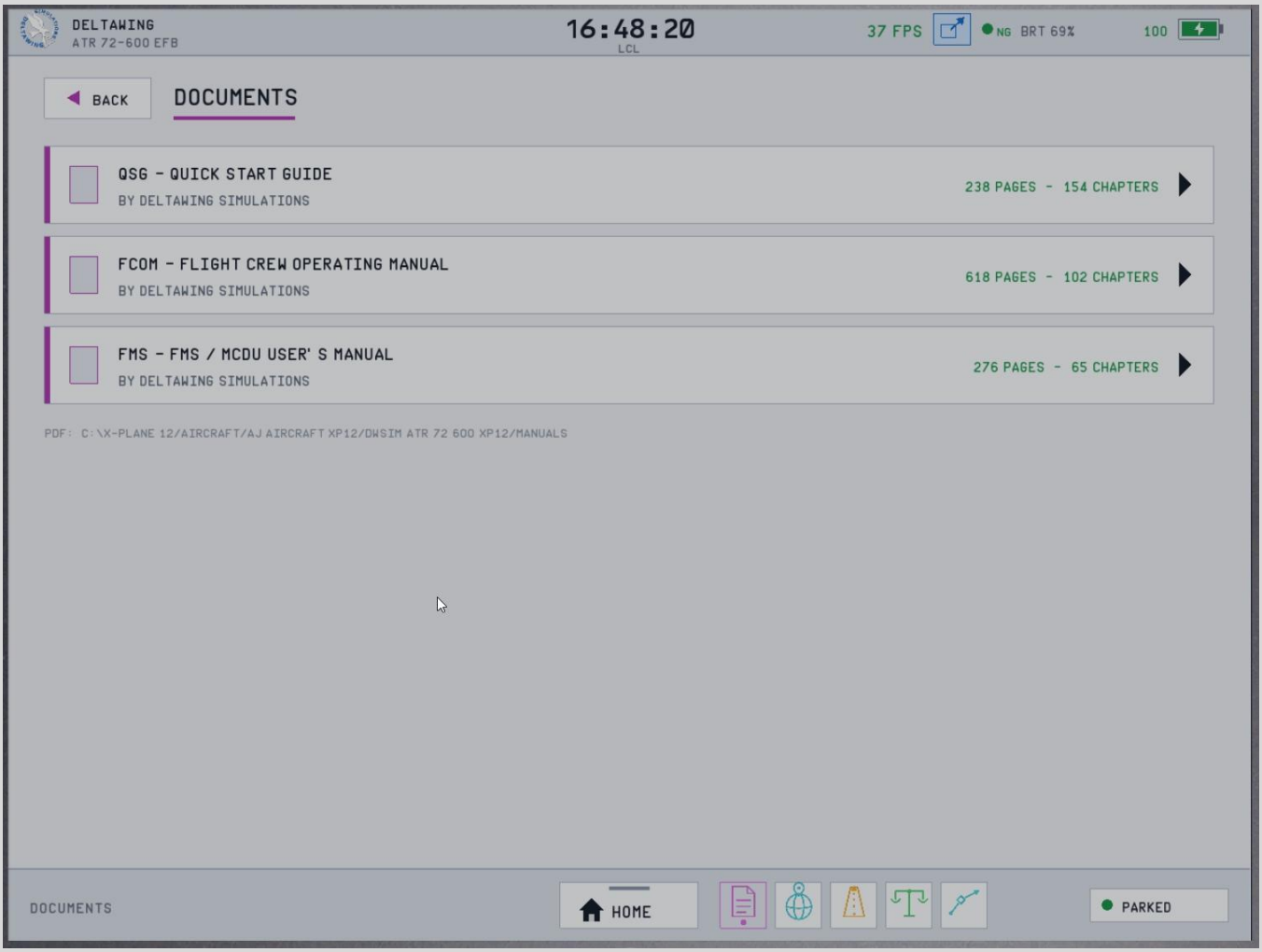
At the bottom of the window, you see you Navigraph data

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DOCUMENTS



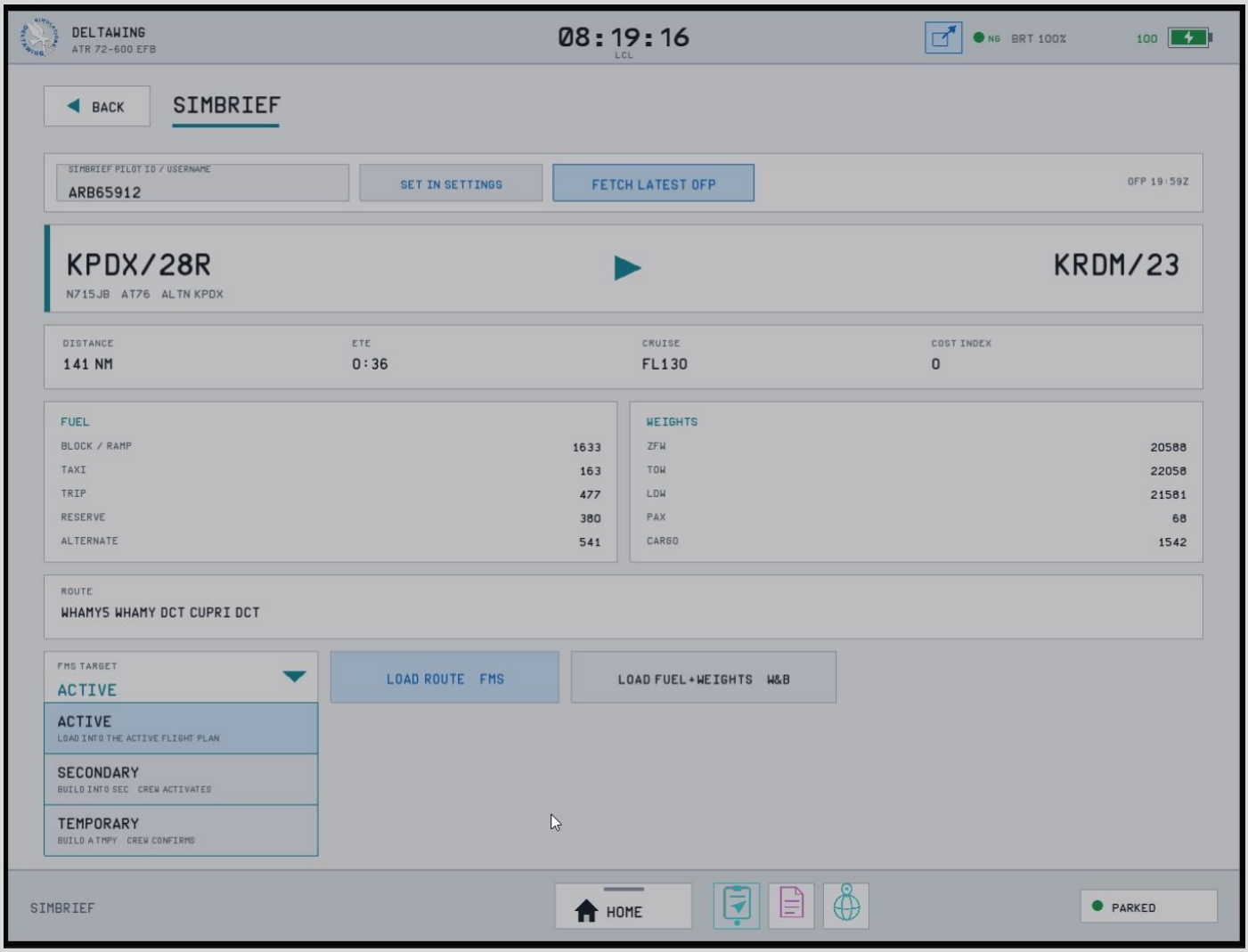
DOCUMENTS will let you view various documents

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SIMBRIEF



SIMBRIEF will let you import Flight Plan directly from Simbrief website

Since it is loaded you can

- Select it as ACTIVE or SECONDARY Flight Plan
- LOAD ROUTE in FMS
- LOAD FUEL + WEIGTS to WEIGHT BALANCE Page

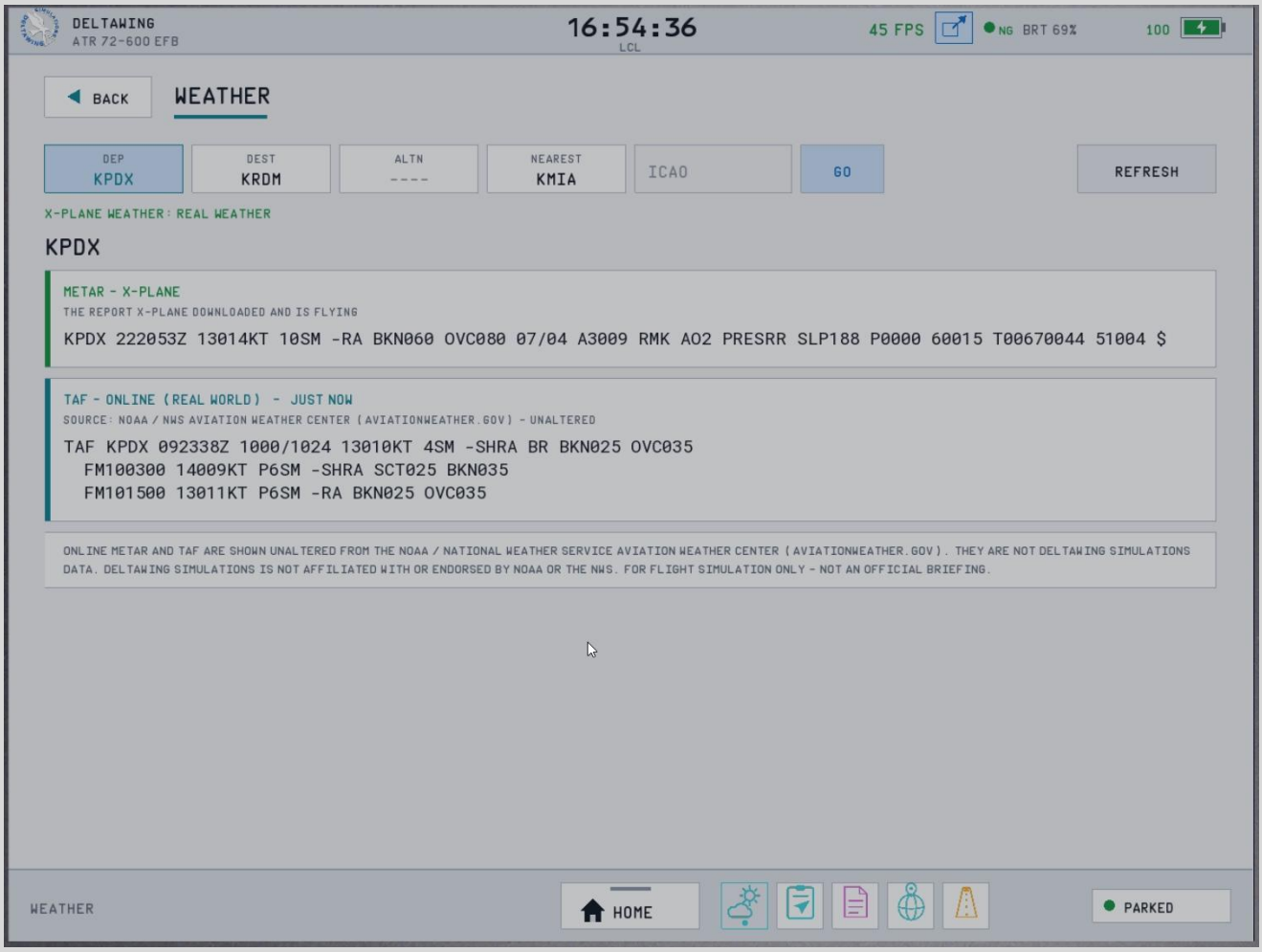
LOAD FUEL + WEIGTS to WEIGHT BALANCE Page will overwrite the data previously entered in EFB WEIGHT BALANCE Page

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WEATHER

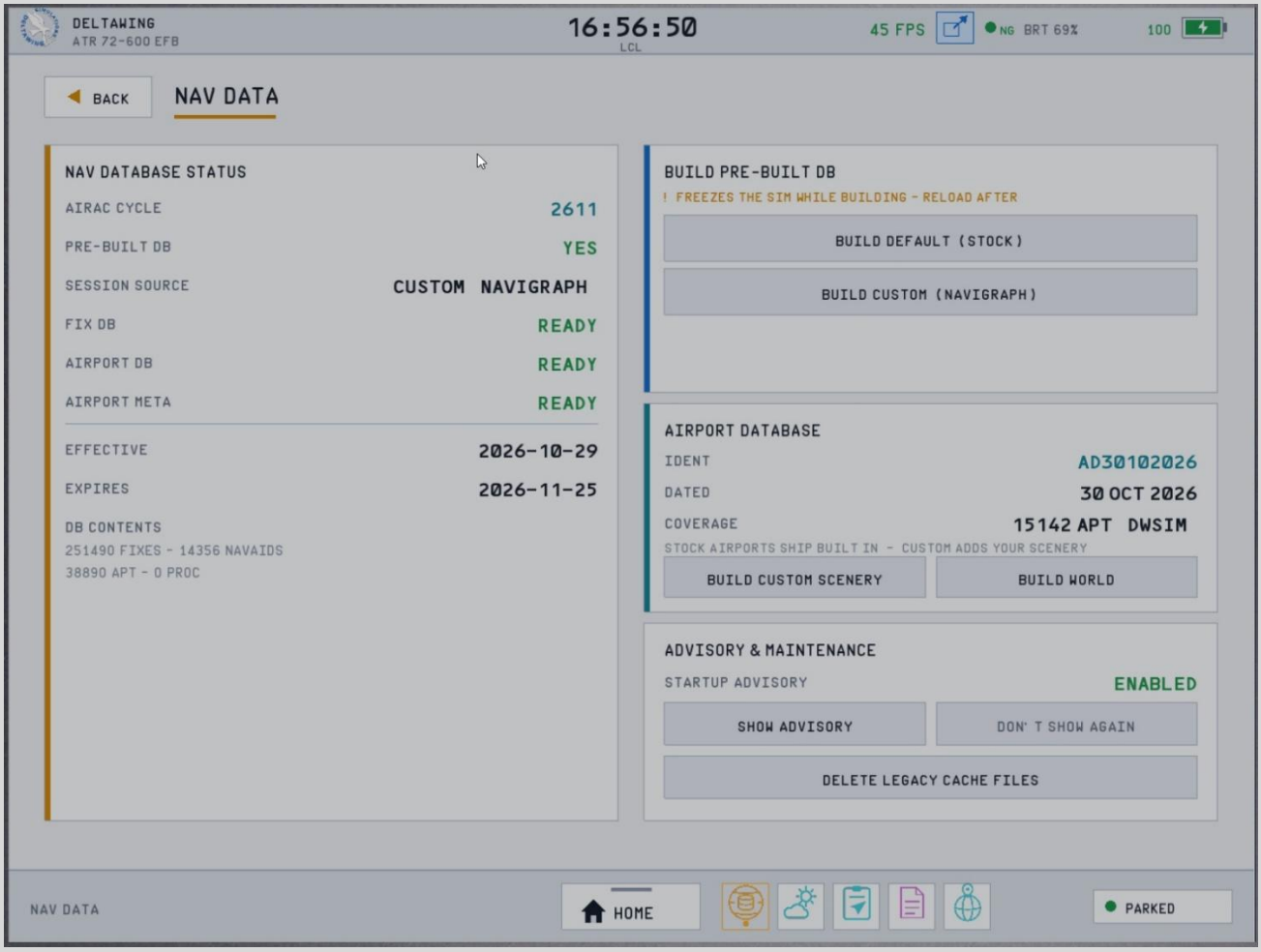


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NAV DATA



NAV DATA will allow you to pre-build the navigation data so it is ready every time you start X-Plane

ADVISORY will show you your current status of the navigation data

You will see NAVIGATION DATABASE STATUS

- AIRAC CYCLE
- PRE-BUILT DB
- SESSION SOURCE
- FIX DB
- AIRPORT DB
- AIRPORT META
- EFFECTIVE
- EXPIRES
- DB CONTENTS

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HARDWARE AXES



HARDWARE AXES is a great feature we developed to save you time setting your hardware Axes

It includes the “magnetic” snap adjustable sensitivity

Options to move Powel Levers and Condition Levers together or independently

JOYSTICK AXES LIVE Window shows dynamically the axes state/position

AXIS OUTPUT selects the state ON or OFF

Corresponding Progress Bars for Axes are showing position along with numerical value

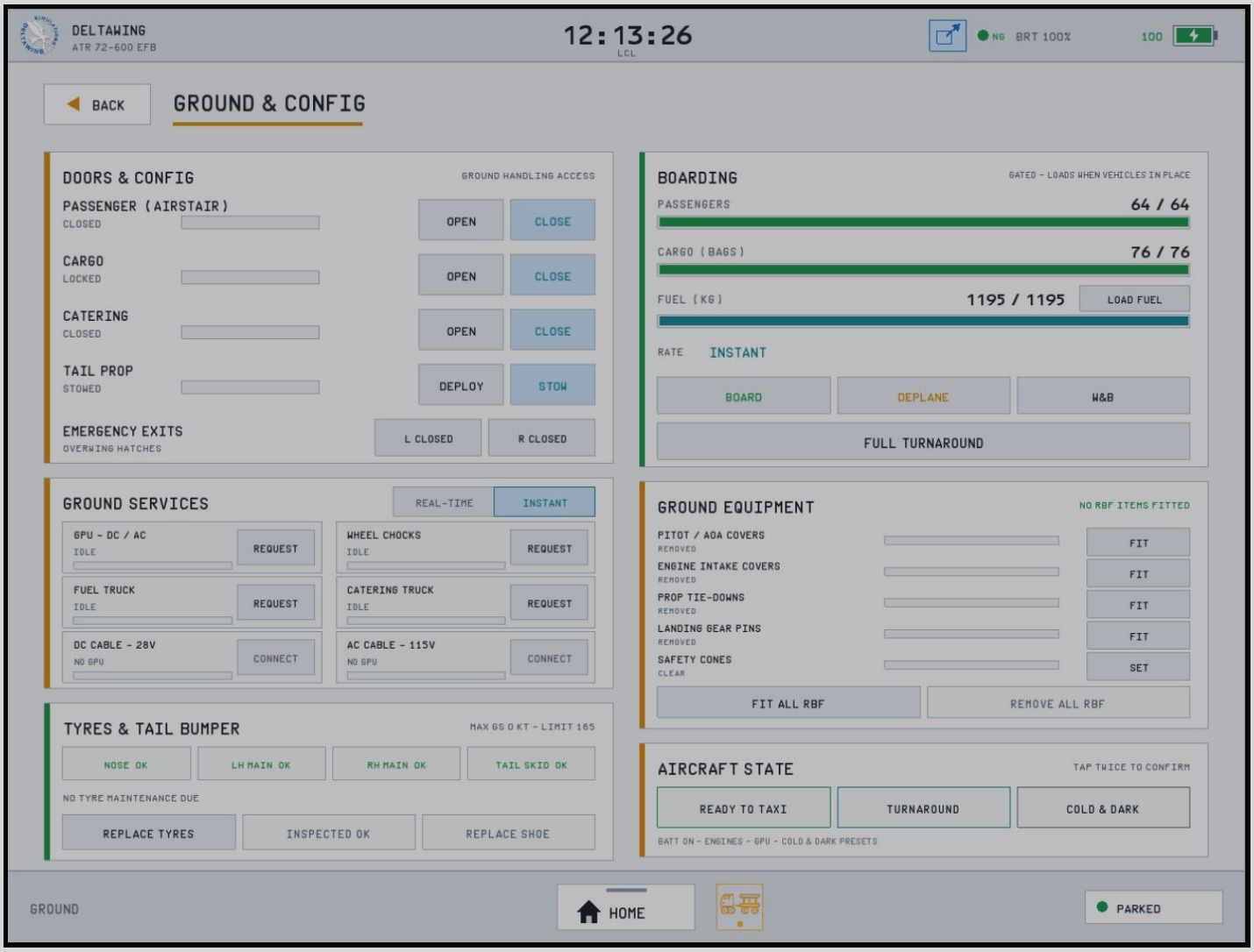
There is also Description in JOYSTICK AXES LIVE Window explaining how to set things up

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GROUND & CONFIG



GROUND & CONFIG will let you set items related to plane itself

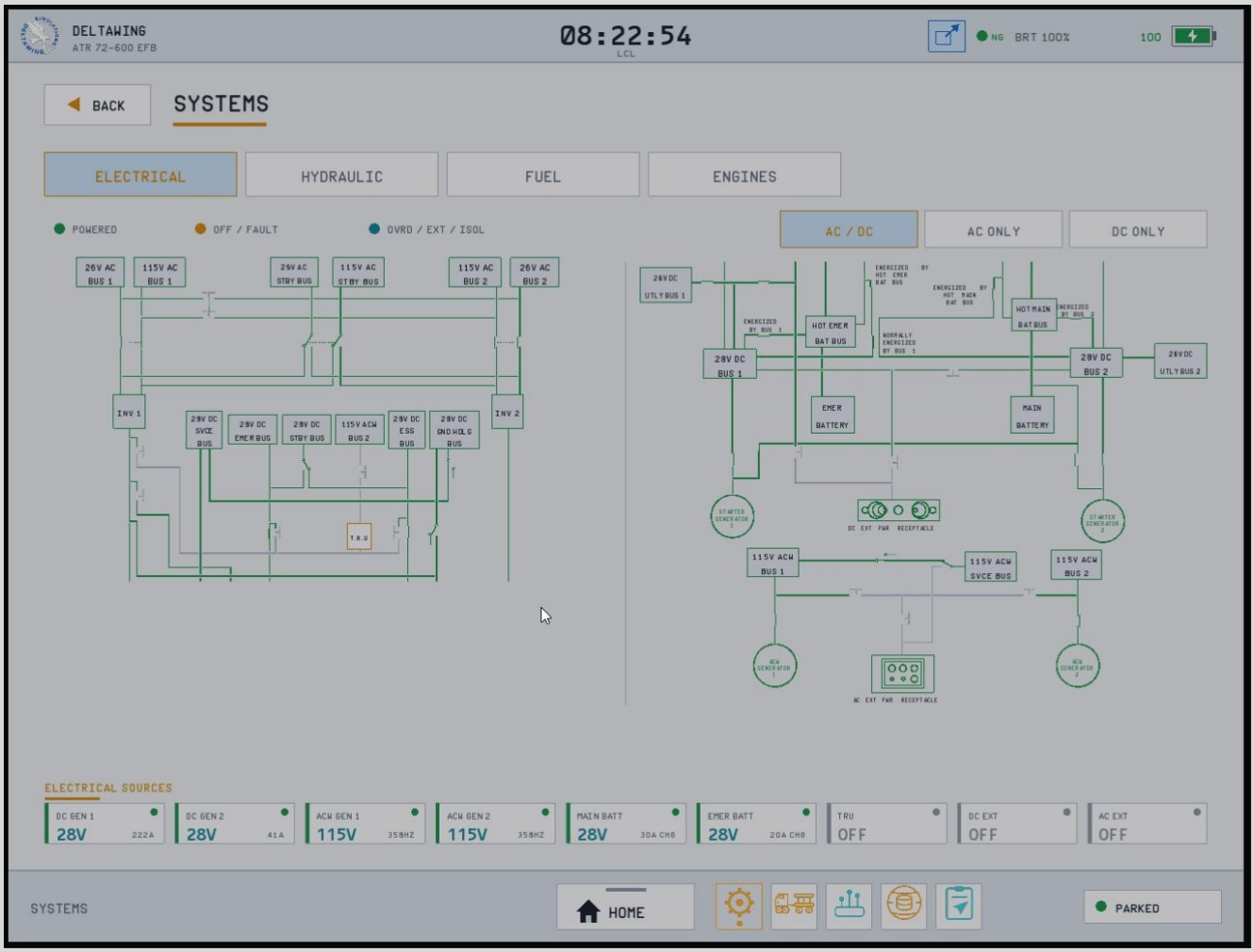
- **DOORS CONFIG** (PASSENGER, CARGO, CATERING, TAIL PROP and EMERGENCY EXITS
- **GROUND SERVICES** (GPU DC, GPU AC WHEEL CHOCKS, CATERING TRUCK, PASSENGER STAIRS, POTABLE WATER, PUSHBACK TUG, FUEL TRUCK, CARGO LOADER, LAVATORY SERVICE, AIR START /ACU)
- **BOARDING** shows Status with RATE set in SETTINGS Page of EFB
  AIRCRAFT STATE:
- **COLD and DARK**
- **TURNAROUND**
- **READY TO TAXI**

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SYSTEMS



SYSTEMS provide a visual and numerical representation of the aircraft systems

- ELETRICAL
- HYDRAULIC
- FUEL
- ENGINES

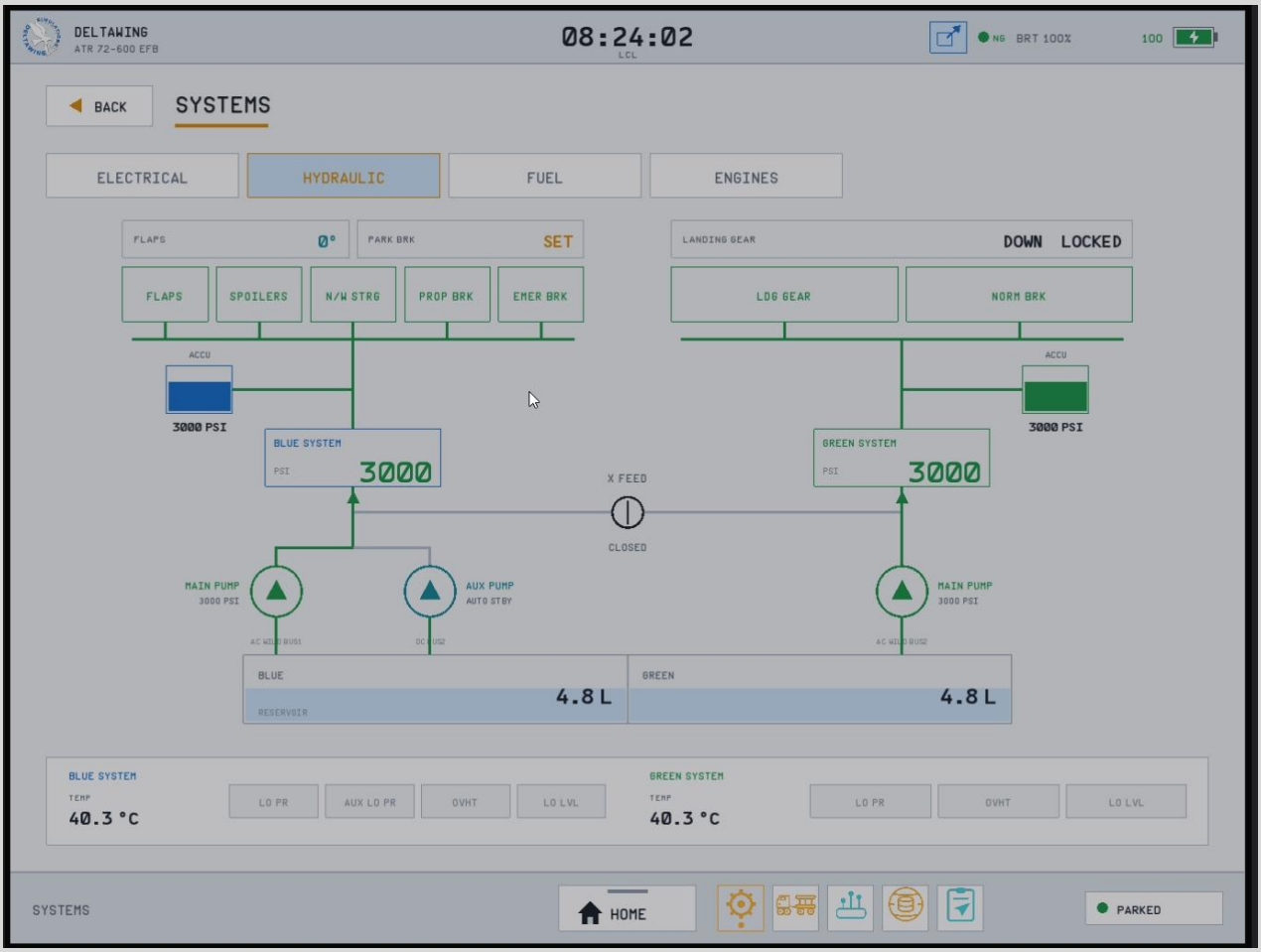
ELECTRICAL Tab has options

- AC / DC
  AC ONLY
- DC ONLY

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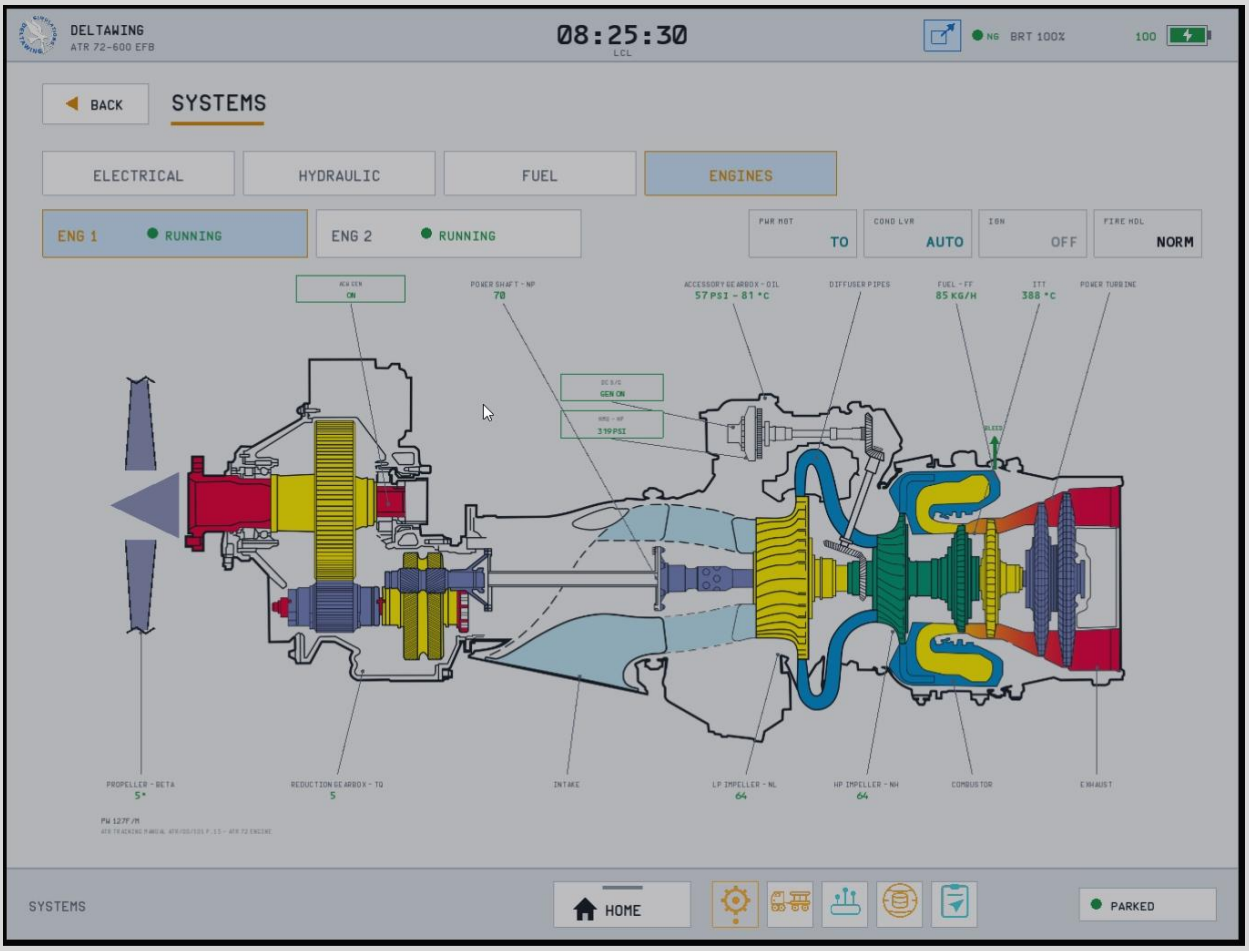
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CABIN



There are two Tabs

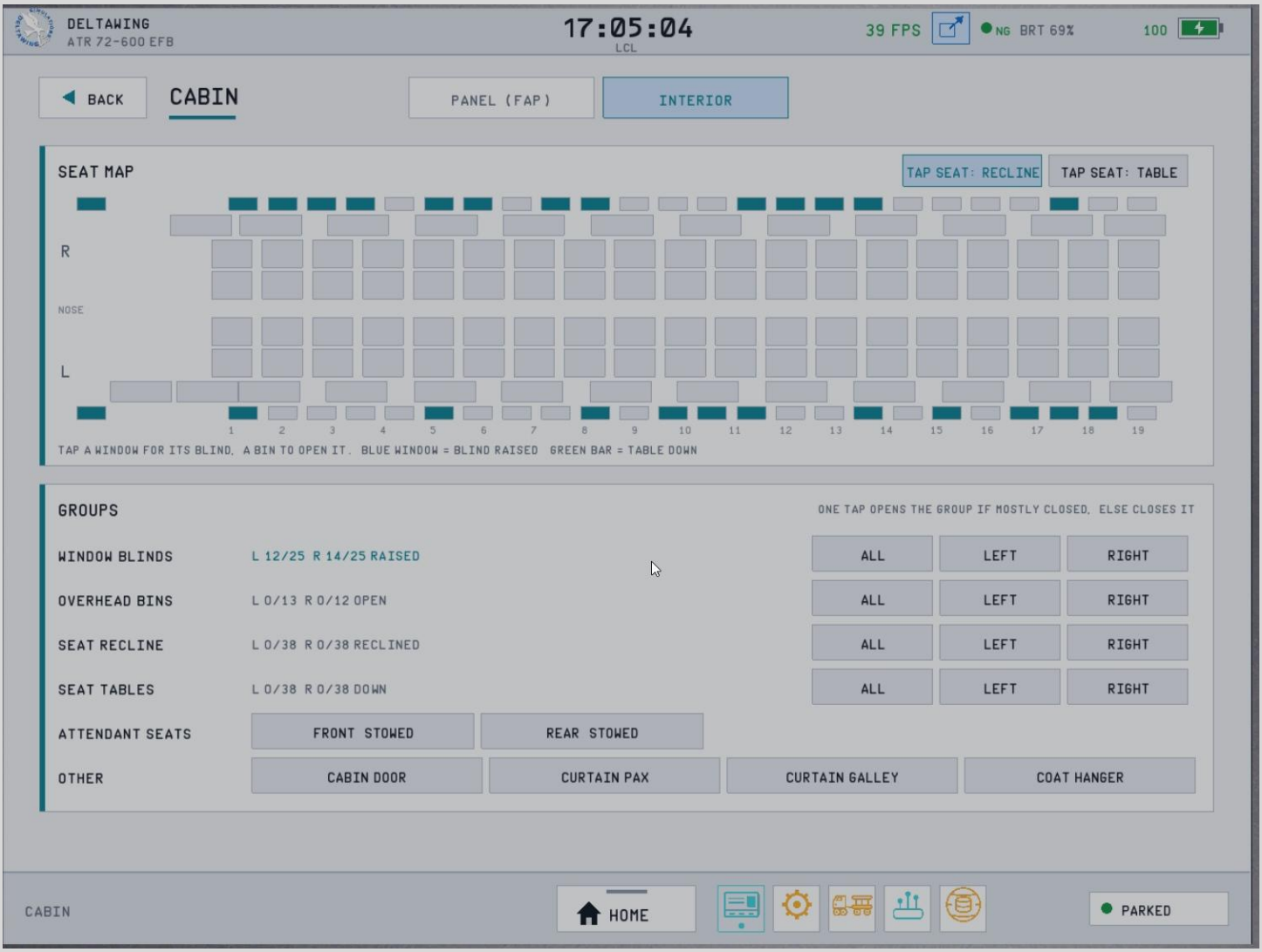
PANEL (FAP) - will let you set and adjust different aspects of the Cabin area

INTERIOR – will let you select mechanical parts of the Cabin Components

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INTERIOR Tab will let you select states of the various components in Cabin

SEAT MAP will let you select Overhead Bin open/closed, Seat recline and seat table

GROUPS will let you adjust with one click ALL/LEFT/RIGHT

WIDOW BLINDS

OVERHEAD BINS

SEAT RECLINE

SEAT TABLES

ATTENDANT SEATS FRONT and REAR DOWN/STOWED

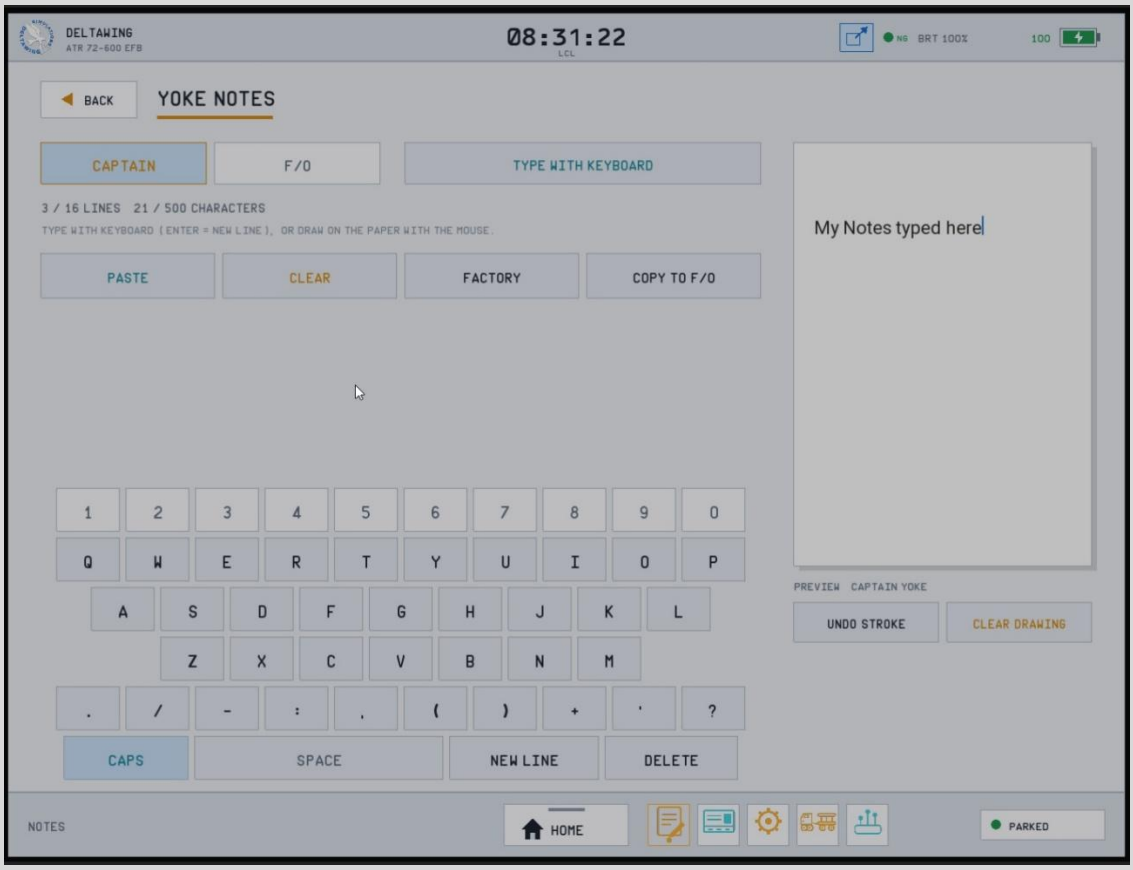
OTHER

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NOTES



YOKE NOTES will let you enter any text you want and it will be clipped into the CAPTAIN or F/O Control Column

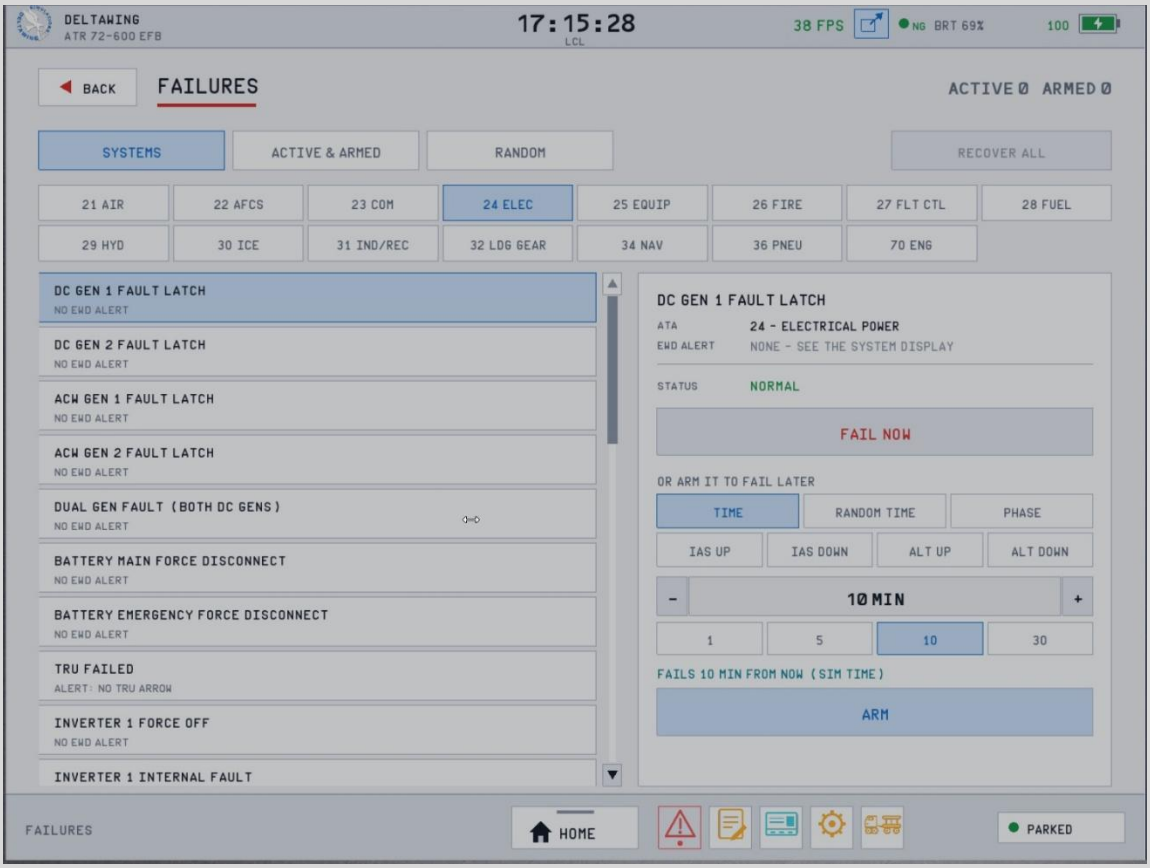


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FAILURES



FAILURES will let you set tons of failures to practice, just like the instructor in simulator would

Sub Tabs in SYSTEMS main Tab are grouping failures in categories depending on the systems they affect

ACTIVE & ARMED tab as the name implies shows what failures you have active and armed

You can also set random failures using RANDOM tab setting various aspects related to failures

FAILURES option in EFB is amazing tool to practice real life failure but we recommend to learn how to fly ATR 72-600 WITHUT setting failures first. As a saying goes walk before run. 😊

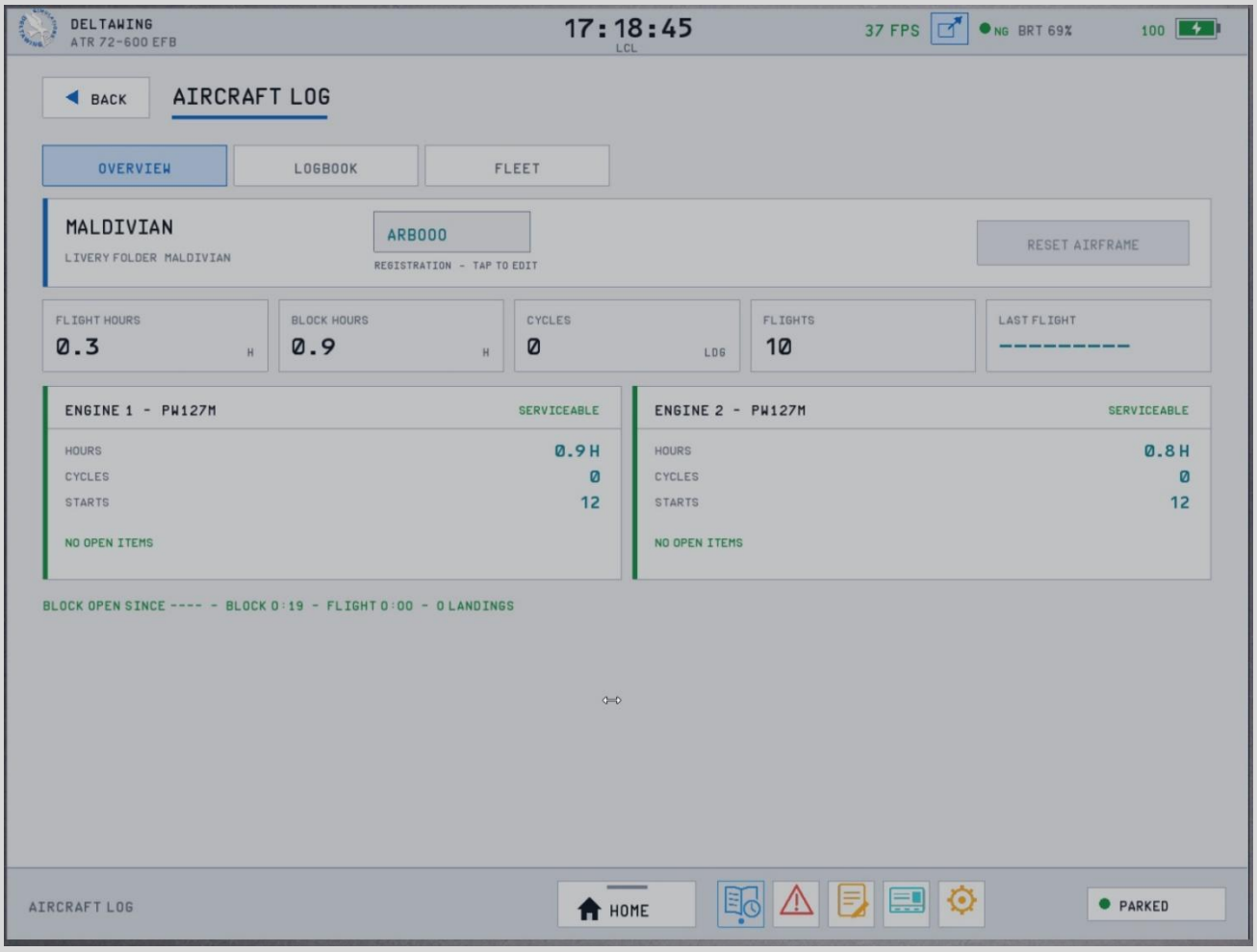
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AIRCRAFT LOG

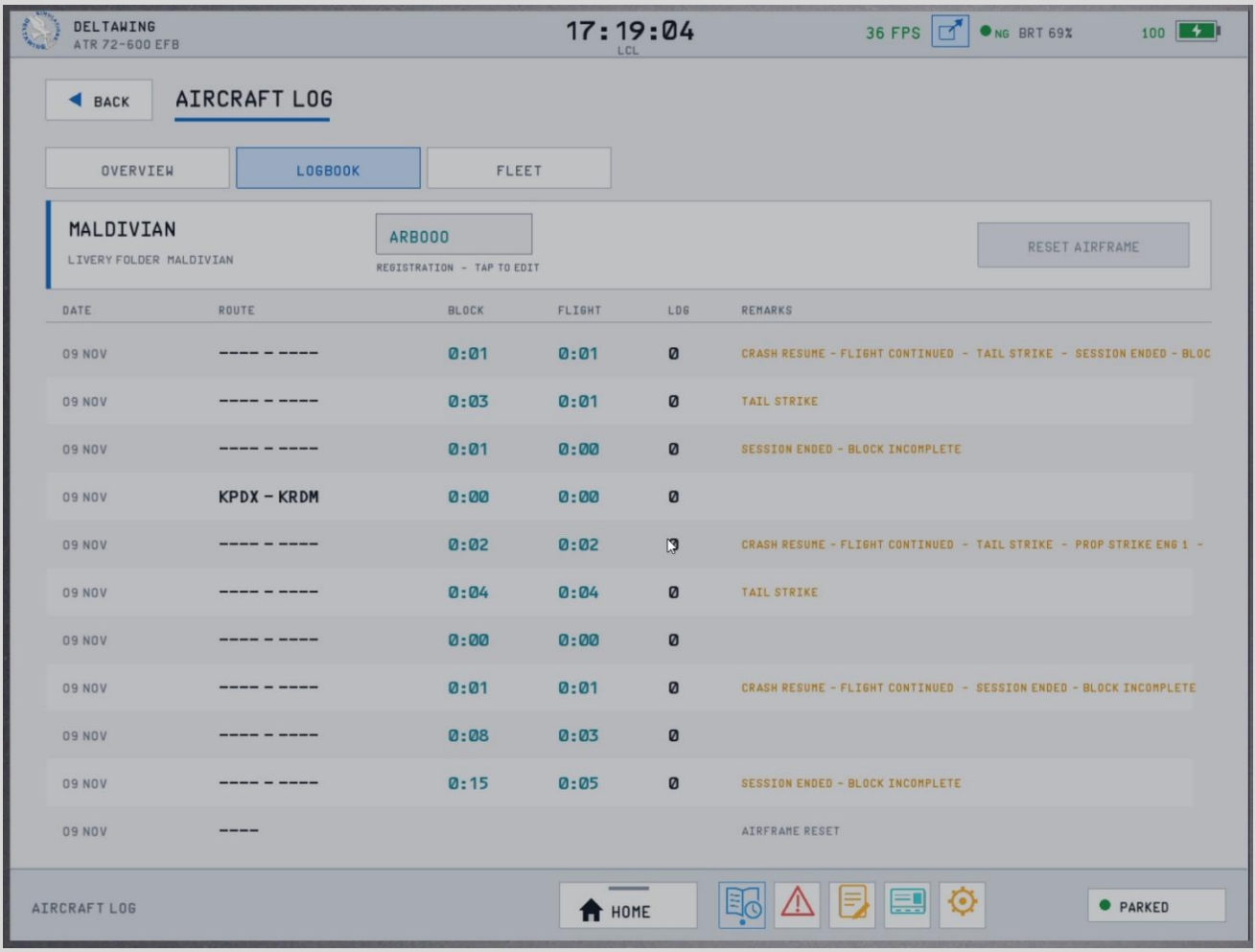
You will be able to create your own registration numbers in different liveries, see LOGBOOK and FLEET



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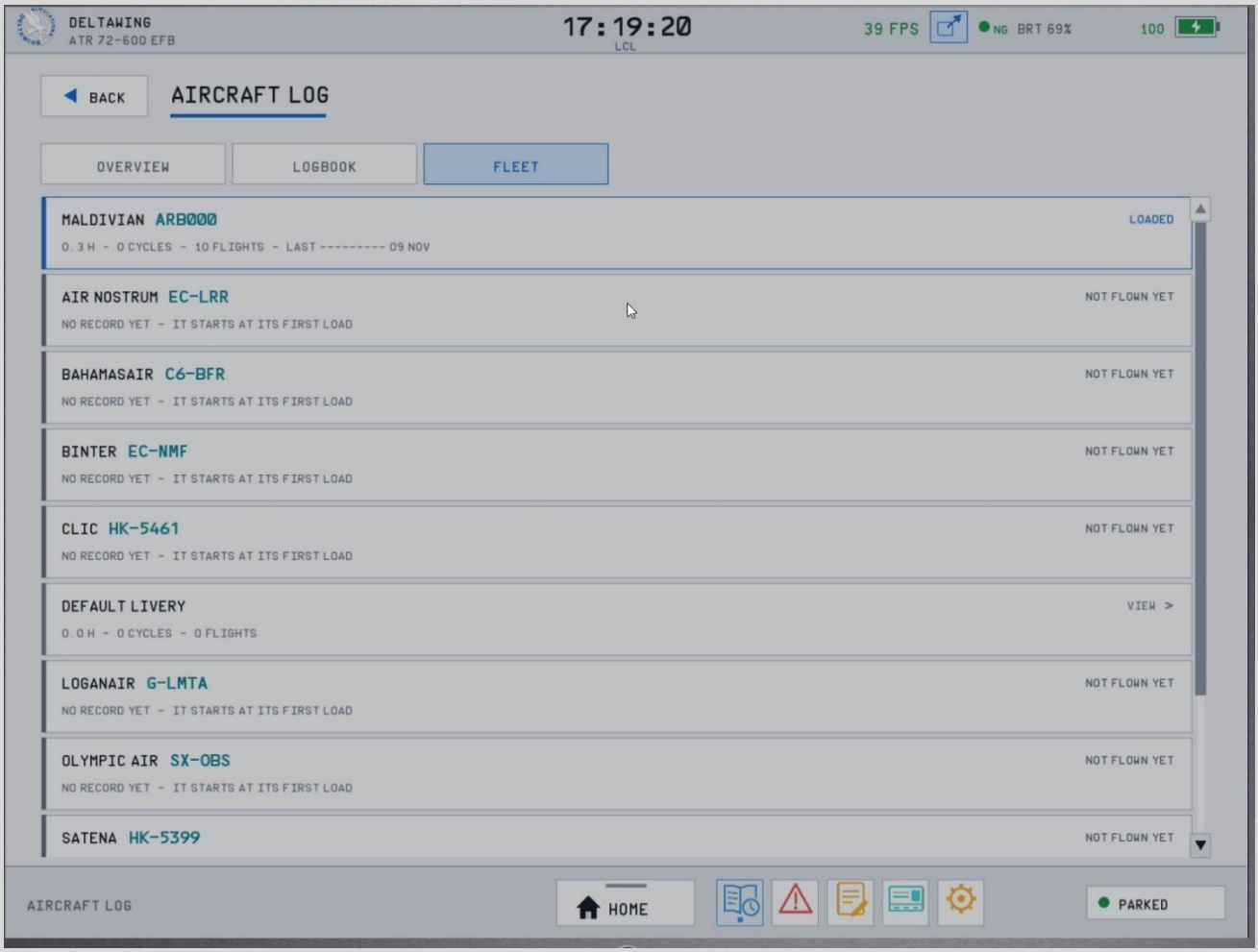
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SETTINGS



SETTINGS Tab will let you set up various items related to the X-Plane and the ATR 72-600 itself

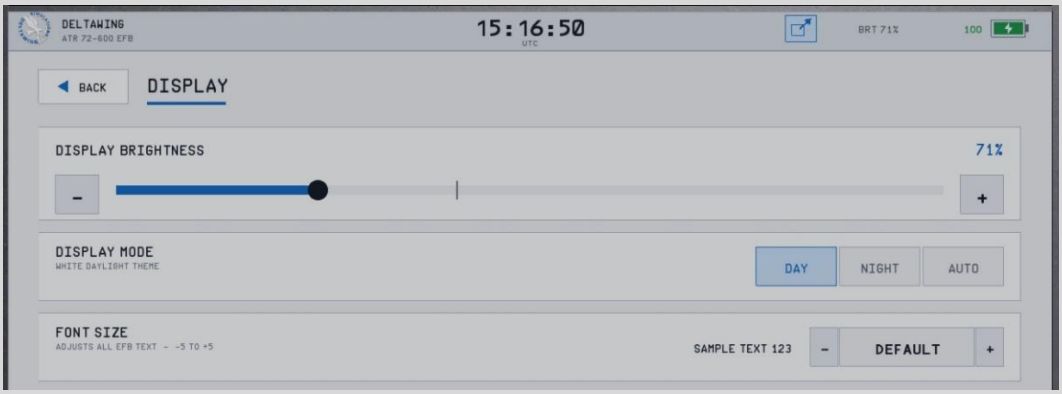
Descriptions are quite self-explanatory but we provided short versions below

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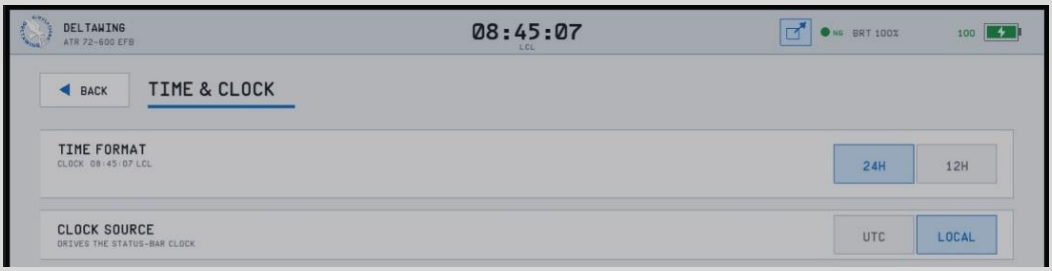
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DISPLAY



DISPLAY let you adjust brightness, select DAY, NIGHT or AUTO mode and adjust font size as well as show/hide YOKE MANIPULATOR and THROTTLE MANIPULATOR for VR flying

TIME & CLOCK



TIME & CLOCK let you select time format (24 or 12 hours) and select Clock Source (UTC or LOCAL)

UNITS



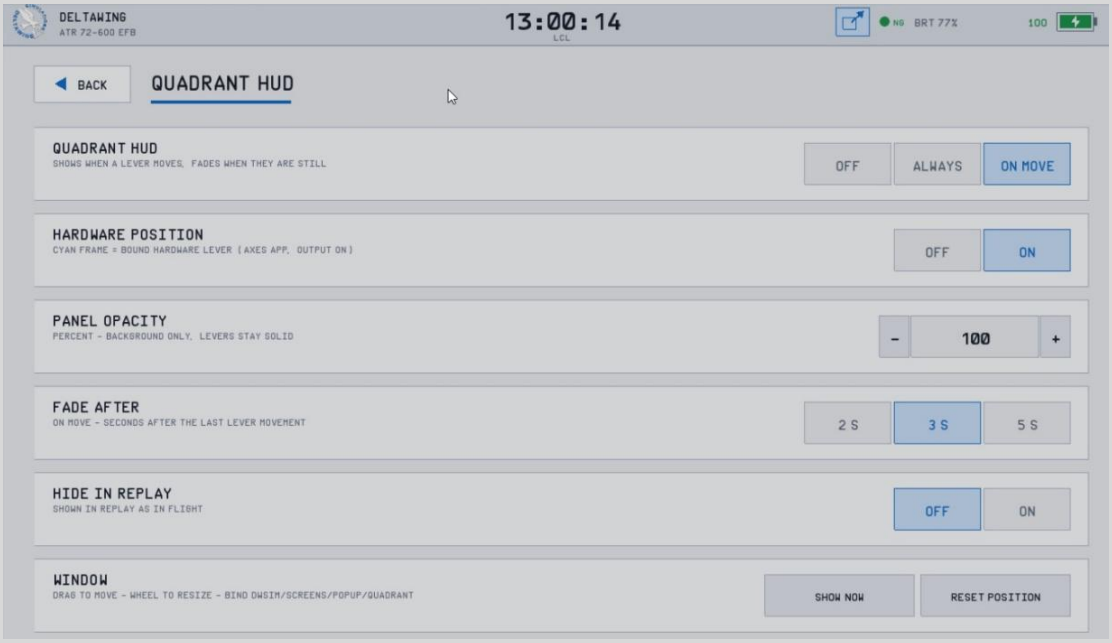
UNITS will let you set units and option in WEIGHT, BARO REF, CAP/FO BARO SYNCH, TEMPERATURE and HDG/ALT/DIST. Some options will need to be set via MCDU

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QUADRANT HUD



QUADRANT HUD will let you set parameters related to the THROTTLE QUADRANT Popup

QUADRANT HUD state: OFF, ALWAYS and ON MOVE

HARDWARE POSITION ON /OFF will show/hide HARDWARE axes

PANEL OPACITY as the name suggest will adjust opacity of the QUADRANT HUD

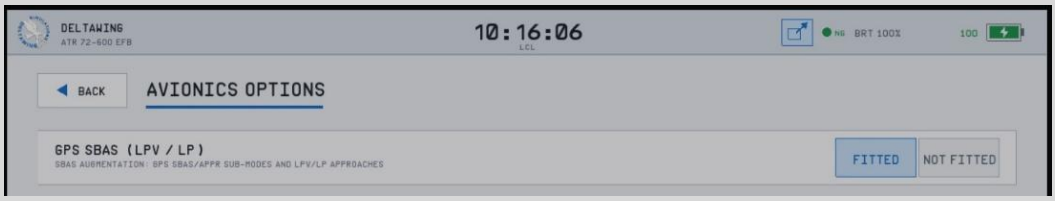
FADE AFTER will set number of seconds until QUADRANT HUD disappears

HIDE IN REPLAY will hide/show the THROTTLE QUADRANT in X-Plane Replay

WINDOW will let you reset position of the QUADRANT HUD; it also tells you that it can be resized using mouse wheel

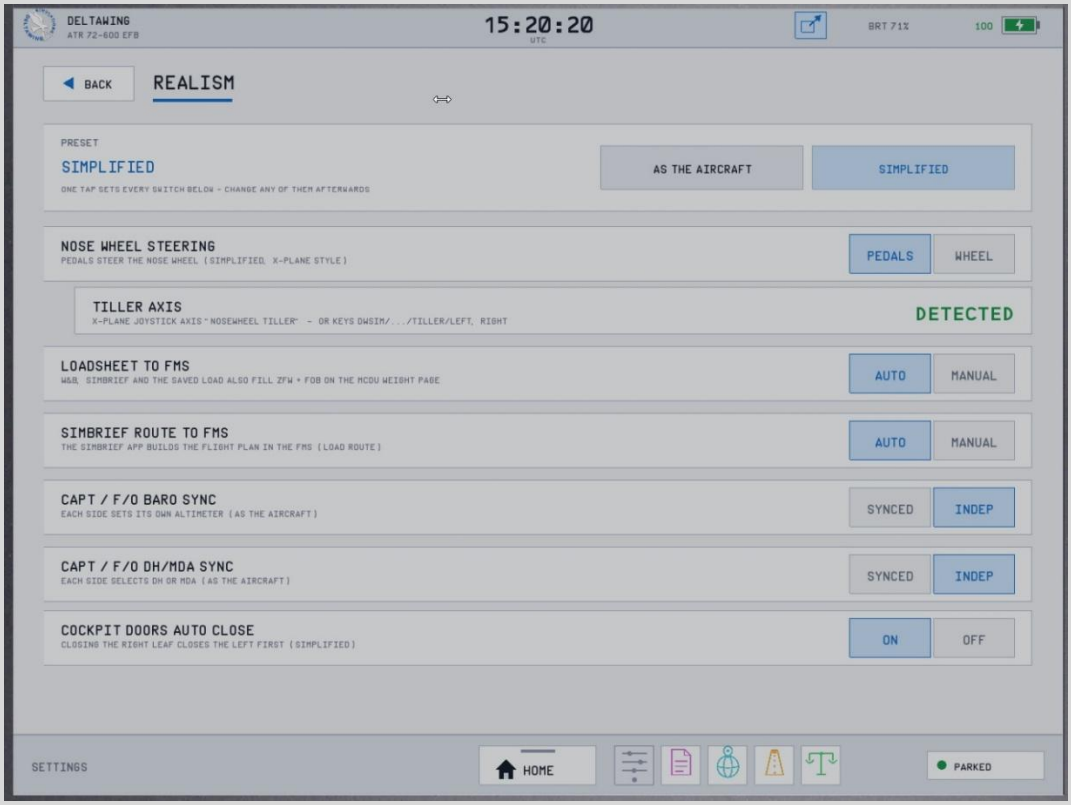
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AVIONICS OPTIONS



AVIONICS OPTIONS will let you make aircraft fitted with GPS SBAS (LVP / LP) or not

REALISM



REALISM let you set various options related to aircraft behavior and related components

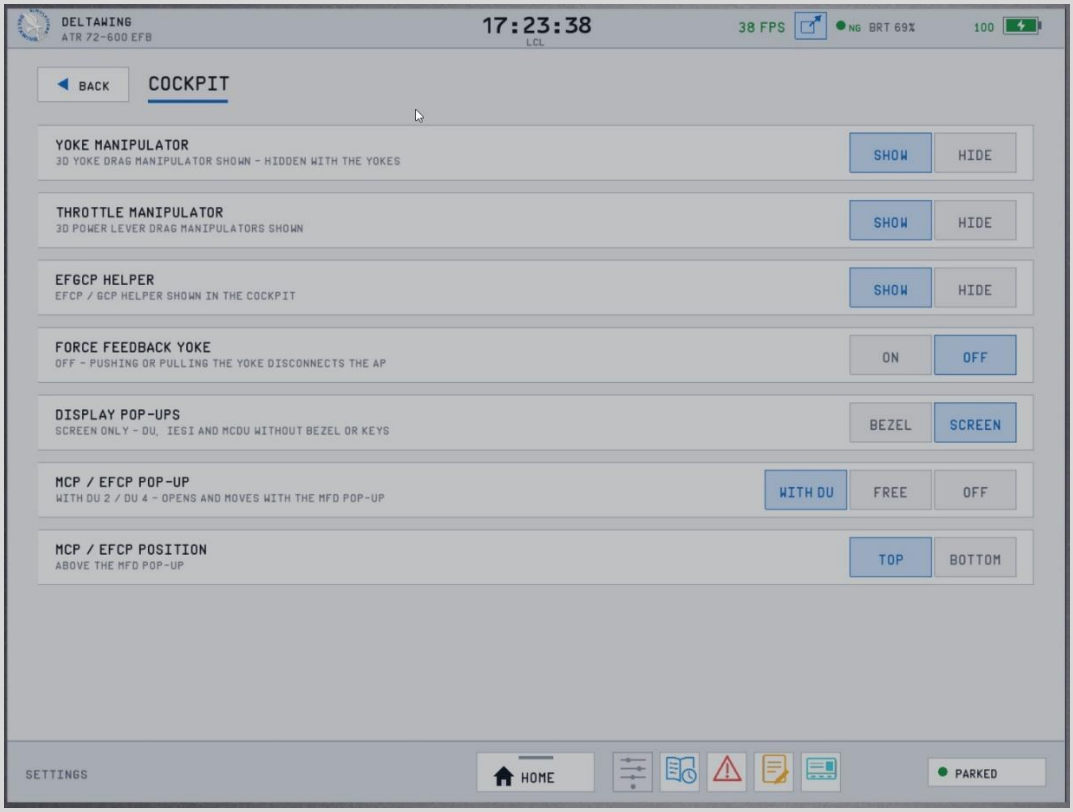
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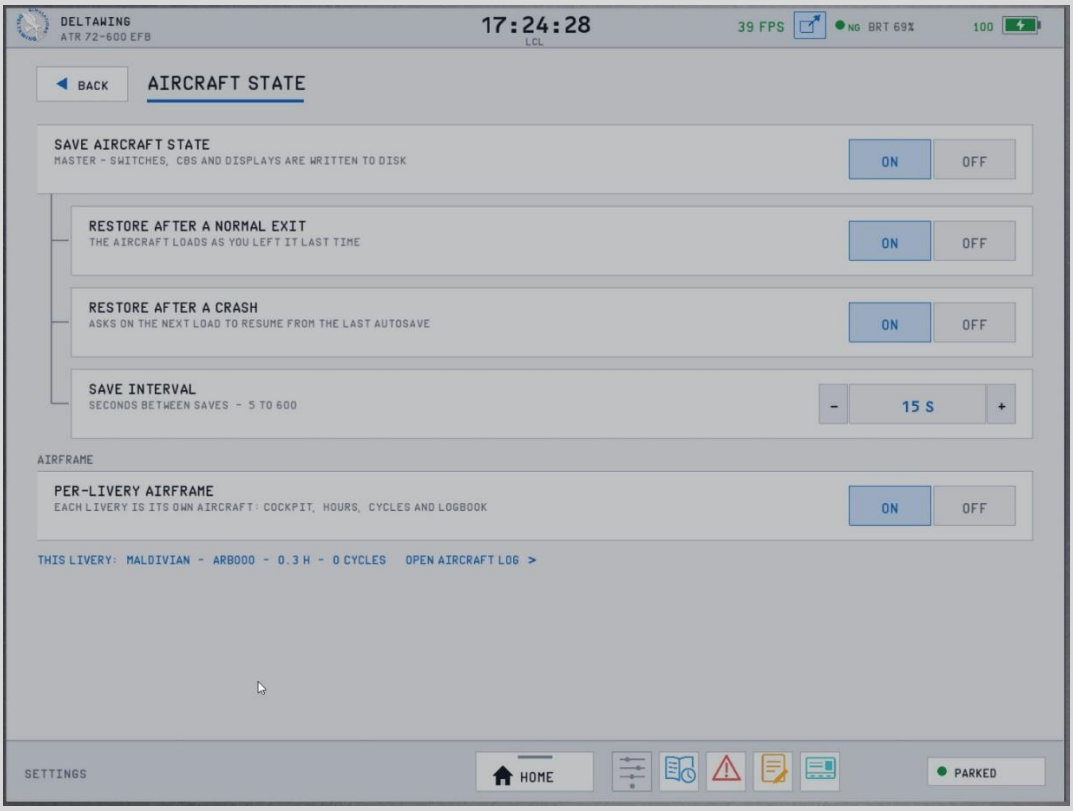
COCKPT

COCKPIT Will let you HIDE/SHOW YOKE MANIPULATOR, THROTTLE MANIPULATOR and EFGCP HELPER



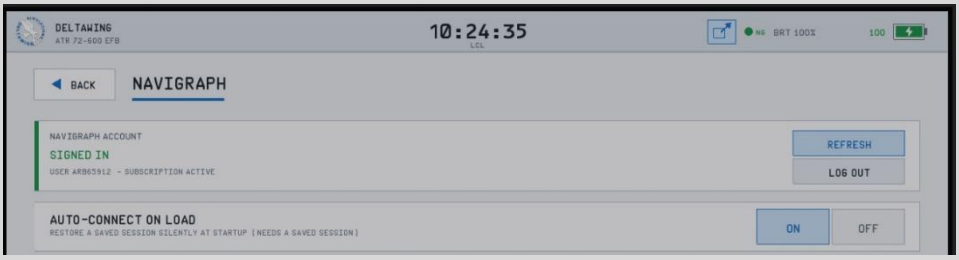
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AIRCRAFT STATE



AIRCRFAT STATE will let you set various aspects related to normal exit or crash as well as interval of saving state

NAVIGRAPH



NAVIGRAPH will let you set up options related to Navigraph account

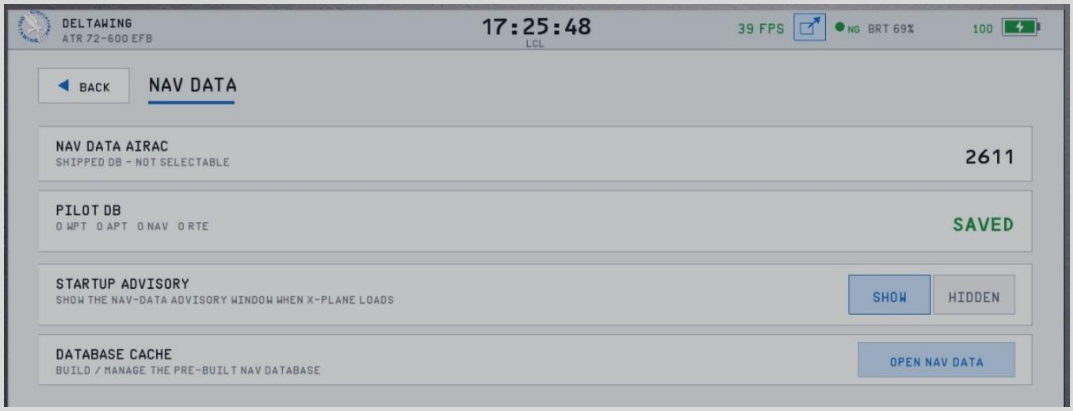
FOR FLIGHT SIM USE ONLY – NOT TO BE USED IN REAL LIFE OPERATIONS!

NAV DATA



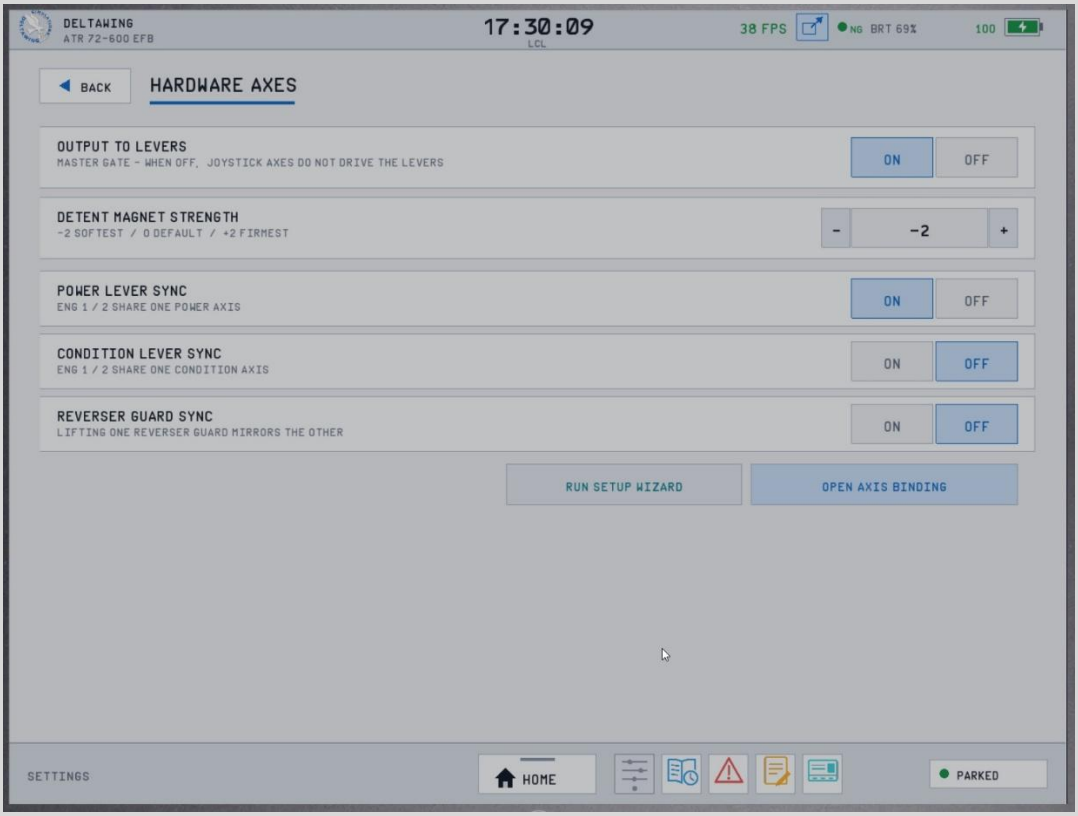
NAV DATA will let you set parameters associated with navigation data

SIMBRIEF



SIMBRIEF will let you set your Simbrief Pilot ID or User name

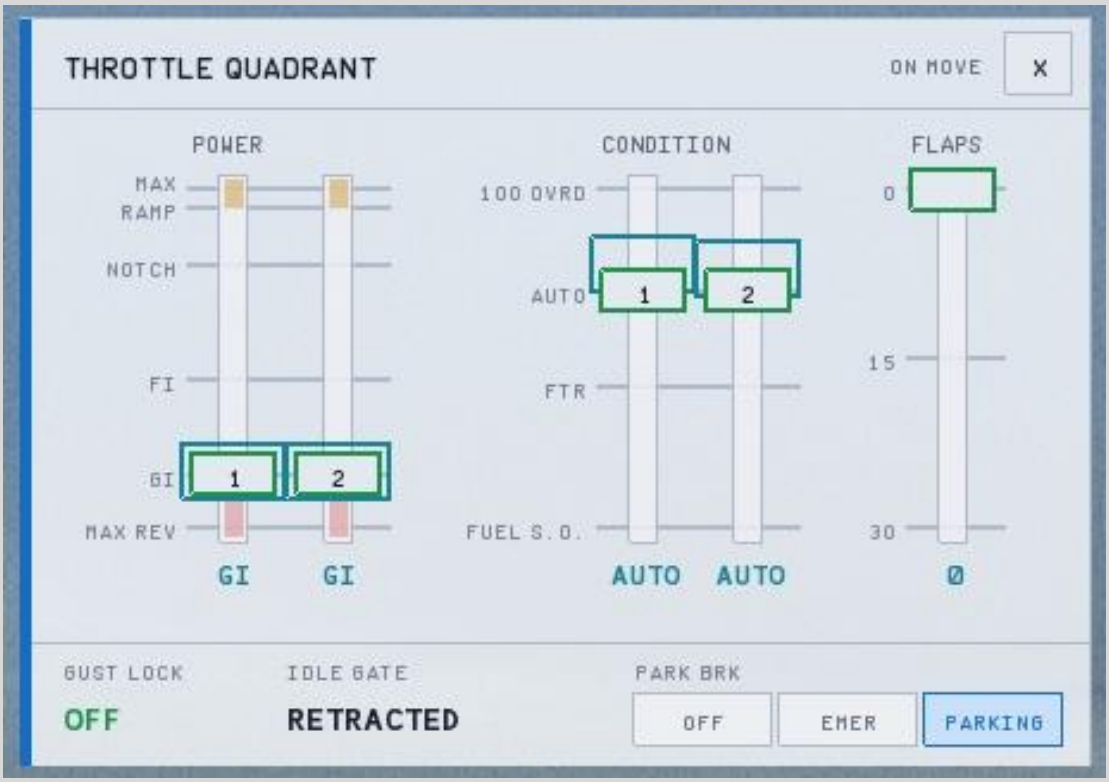
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HARDWARE AXES will let you set parameters related to your axes binding, Detent strength, synching Power, Condition Levers and Reversers

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THROTTLE QUADRANT WIDGET



THROTTLE QUADRANT widget will appear for few seconds when you move any Power Lever, Condition Lever or Flaps

It will also show the state of the GUST LOCK, IDLE GATE and PARKING BRAKE

After few seconds it will disappear so it is not in the way in the cockpit

SOUNDS FMOD

Custom sounds are implemented using FMOD

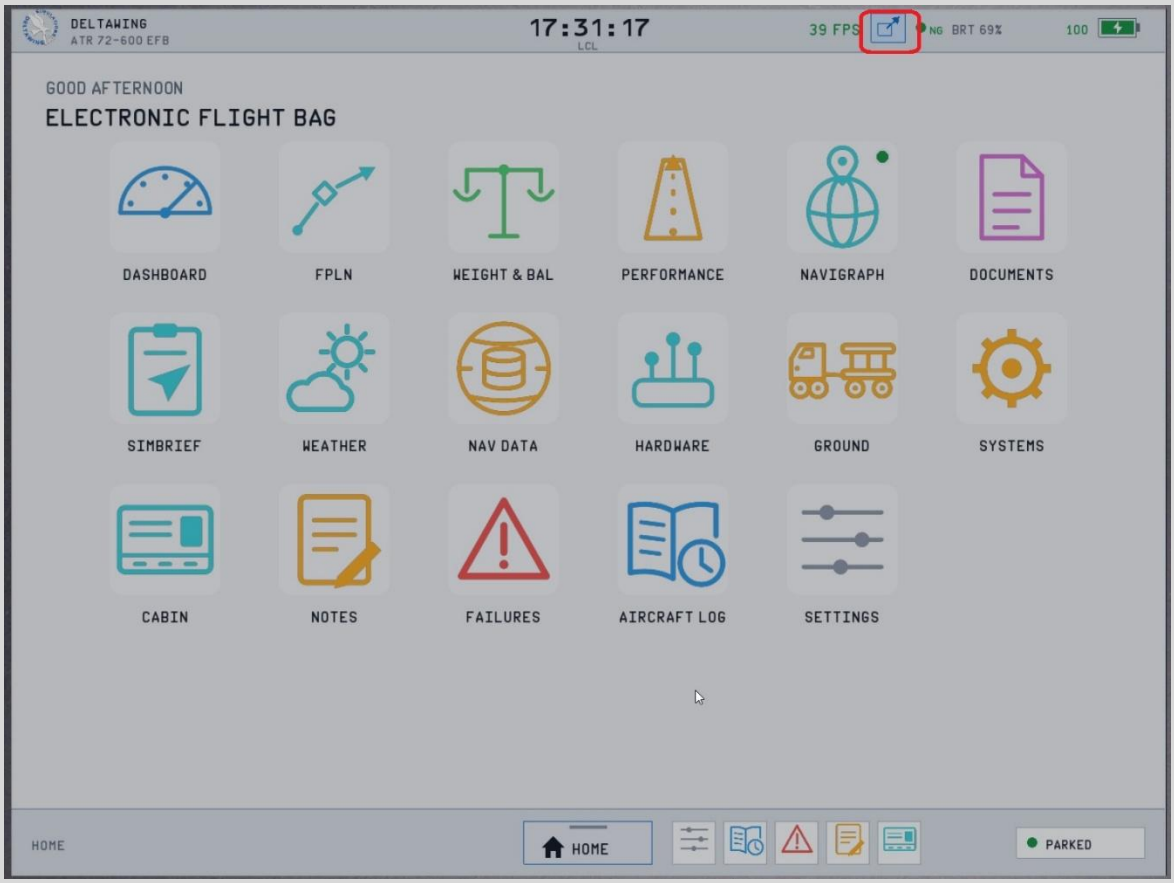
LIVERIES IN ATR-72-600 PACKAGE

Our package comes with few free liveries and many more is to be developed

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ALL DISPLAYS AND EFB ARE POP UPS

To Pop Up EFB, just click on the icon marked on screenshot below



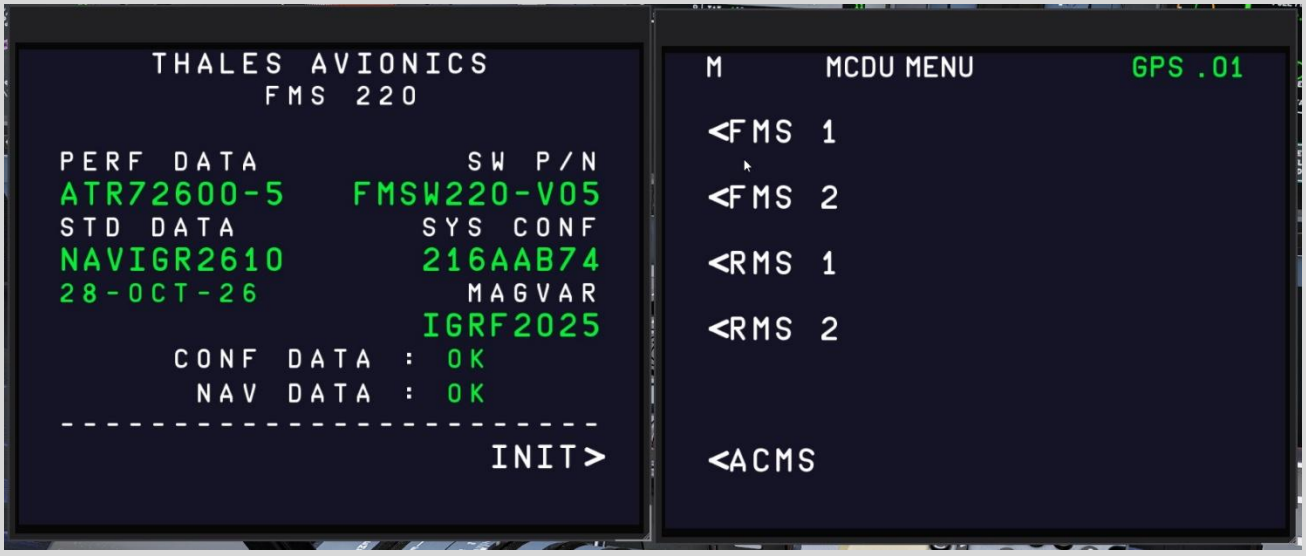
To Pop Up any display, simply left click on it

After it pops up, you can move it, scale it or make it independent from X-Plane widow and drag it to second display if you have any



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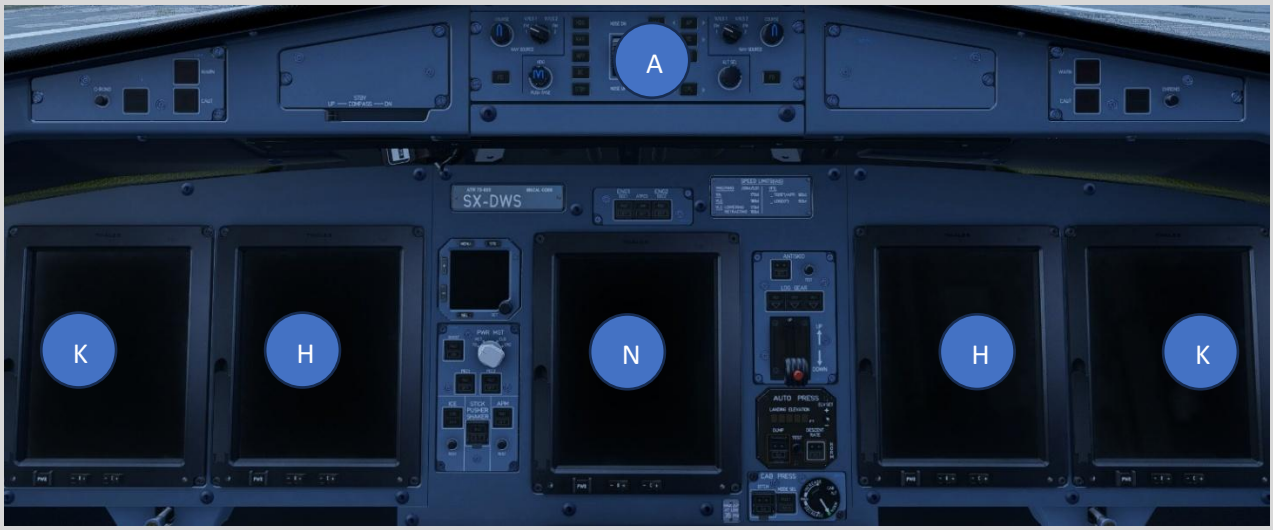
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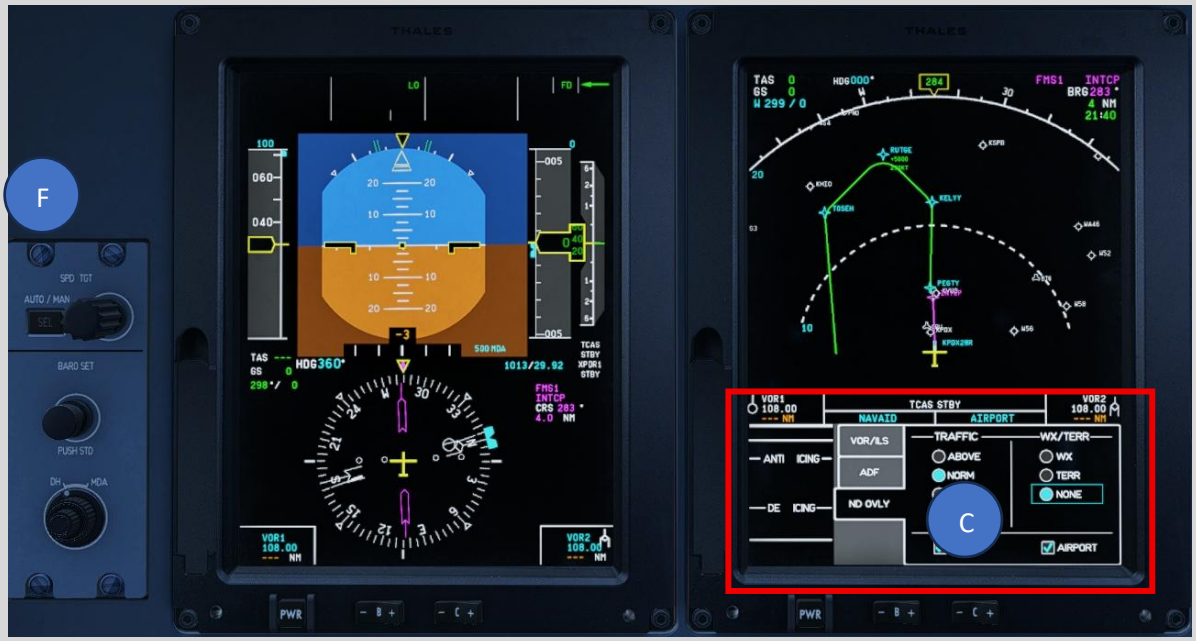
GETTING TO KNOW DWSIM ATR 72-600

COCKPIT INTRODUCTION AND TERMINOLOGY

See all descriptions corresponding to the white letters in blue circles below all screenshots







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1. **Control equipment**:
   - Flight Guidance Control Panel (FGCP) on glare-shield **A**
   - Two Multipurpose Control and Display Units (MCDU) **B**
   - Two Virtual Control Panels (VCP) **C** and their Multifunction Control Panels (MCP) **D**
   - Two EFIS Control Panel (EFCP) **E**
   - Two Index Control Panels (ICP) **F**
   - Two Go-Around (GA) pushbuttons on the Power Levers (PL) handles **G**
2. **Display equipment**:
   - Two DU displaying the Multi-Function Display formats (MFD) **H** including Navigation Display (ND), MFD PERF page and VCP PERF page

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- Two DU displaying the Primary Flight Display formats (PFD) **K** including the PFD and Horizontal Situation Indicator or mini-ND
- Two MCDU displaying the FMS pages **B**
- One DU displaying the Engine / Warning Display format (EWD) **N**

FMS Flight Management System Operation Modes

- **INTERNAL INITIALIZATION mode / FMS start**
- **OPERATIONAL mode / Normal FMS operation**
- **DUAL** mode When both FMS are operative, the DUAL mode activates automatically at FMS start. In **dual mode**, both FMS perform their own **computations in parallel** and the **crosstalk** function ensures continuous exchange, comparison, validation and synchronization of processed data.
- **INDEPENDENT** mode. In degraded independent mode, both FMS are available and active but they operate independently because dual FMS cross-talk function is inoperative. Each FMS can be controlled by its respective MCDU

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GLASS COCKPIT

- There are 5 in total Display Units DU1, DU2, DU3, DU4 and DU5



- In front of each pilot there are PFD (Primary Flight Display) and MFD (Multi-Function Display)



- Center Display Unit is called EWD (Engine Warning Display)
- FMS is Thales FMS220
  FMS = Flight Management System monitors and manages:
  - Aircraft Position
  - Weight, CG, Fuel and Cruise Level
  - Flight Plan
  - Fuel Prediction and Time
  - Guidance to the Autopilot System

  RMS = Radio Management System manages:

  - Radio Communication
  - Navigation
  - Transponder
  - TCAS Traffic Collision Avoidance System

  -

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PFD PRIMARY FLIGHT DISPLAY



In the center of PFD (Primary Flight Display) there is an ADI (Attitude Display Indicator) that shows pitch and roll. Screenshot above shows wing leveled and pitch about 1.5 deg nose up (typical cruise attitude)

1. We see the IAS (Indicated Airspeed, target speed shown with cyan number. Magenta color would indicate that target speed is calculated by FMS (Flight Management System)
2. On the right of the PFD, we see the Altitude and Target Altitude, actual altitude is shown with cyan bug. FL, Flight Level is altitude measured in 100 of FT. For example, 18000 FT = FL180
3. To the right of the Altitude Tape, there is Vertical Speed Indicator and TCAS (Traffic Collision Avoidance System)
4. Below TCAS, there is XPDR1 (Transponder used) and ALT (Altitude Reporting) that allows ATC (Air Traffic Control) to see your altitude on the Radar Screen

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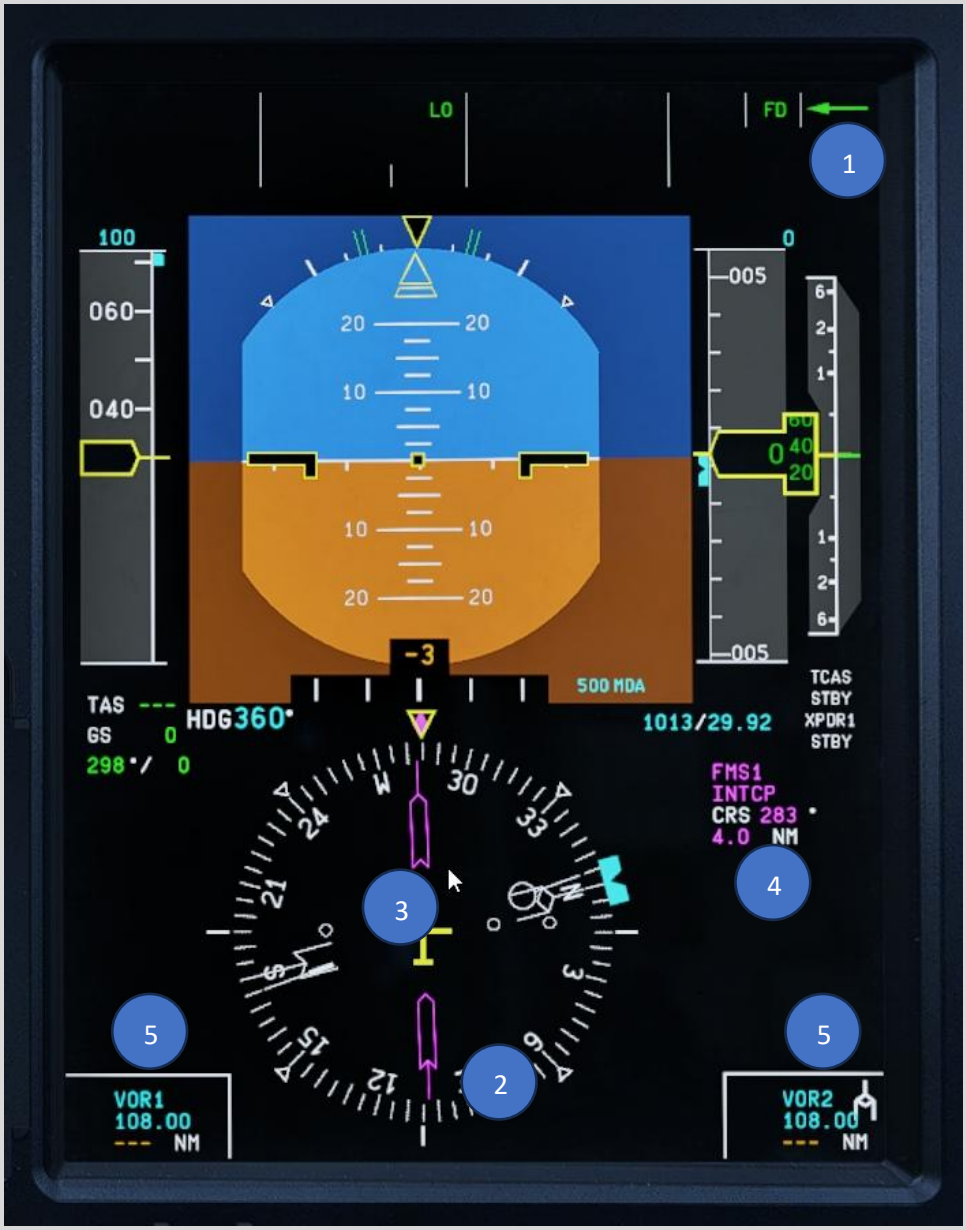
5. To the left of the PFD, there is **ICP (Index Control Panel)**, we can switch between **Automatic** and **Manual Target Speed** (shown in cyan color), **Barometric Reference** and **DH/MDA** (Decision Height/Minimum Descend Altitude
6. When descending below Transition Altitude, altitude when barometric pressure changes from standard to local (STD = 1013.25 hectopascal), we need to set barometric pressure **BARO SET** knob to local atmospheric pressure
7. We also set **MDA** (Minimum Descend Altitude), minimum altitude we can descend to during approach without having visual references and using Barometric Altimeter or **DH** (Decision Height), which is used during approach using radio altimeter.
8. DH is only used for ILS Cat II approach. All other approaches use MDA. MDA means minima is defined with the barometric altimeter.
9. Above ADI (Attitude Display Indicator) there is FMA (Flight Mode Annunciator) showing different autopilot modes, Flight Director status as well as Icing Status



ICP Index Control Panel shown above

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More components of the PFD are marked and described below



1. The green arrow shows to what side is the Flight Director coupled to, the navigation source selected by the Captain or First Officer
2. Below ADI (Attitude Display Indicator) there is HSI (Horizontal Situation Indicator) showing Heading and Navigation information
3. CDI (Course Deviation Indicator) shows if we are on a correct track
4. To the right of the HSI there is FMS selection and next Waypoint information, Bearing to it and Distance
5. At the bottom of the HSI there are two boxes showing Navigation Aids we are tuned into

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EFCP EFIS CONTROL PANEL

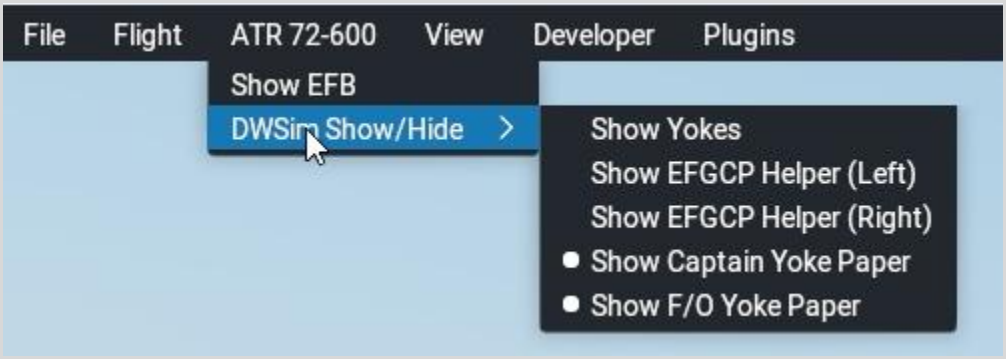


EFCPs are located on Pedestal and it has separate controls for MFDs

Six push-buttons are used to select different pages on **MFD**s

EFCPs are far away from the displays on Pedestal and it makes it very hard to access and operate while looking at other screens so we made an option to Pop them up

This option is available from X-Plane Pull Down Menu, see screenshot below



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MFD MULTI-FUNCTION DISPLAY



MFD Multi-Function Display can display different screens turning Knob above label FORMAT on **EFCP**

NAVIGATION DISPLAY with 3 different modes: ARC, ROSE and PLANNNING see images below

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ARC MODE above

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ROSE MODE above

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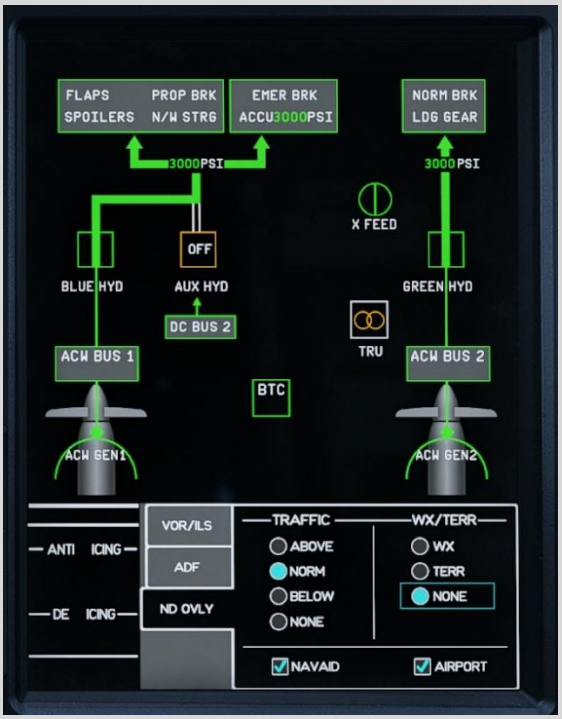
PLANNING MODE (in PLANNING MODE screen is oriented to the North) above

SYSTEM DISPLAYS shown below by pressing **SYS** on **EFCP**

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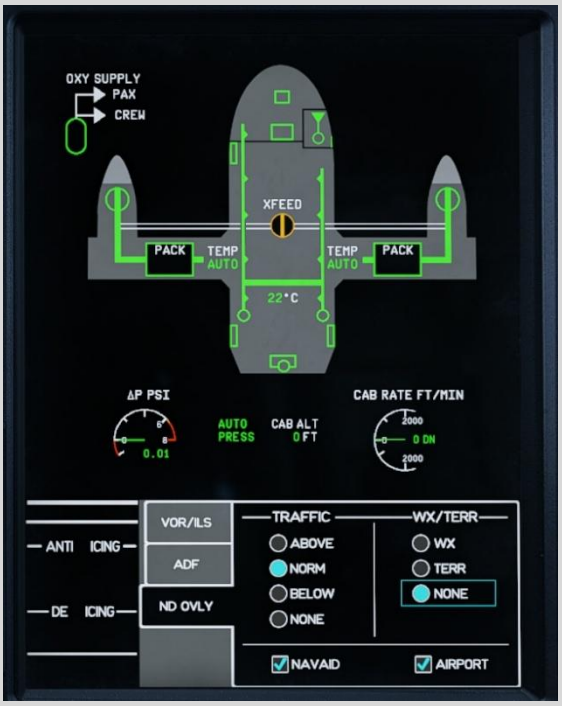


- **ACW/HYD**

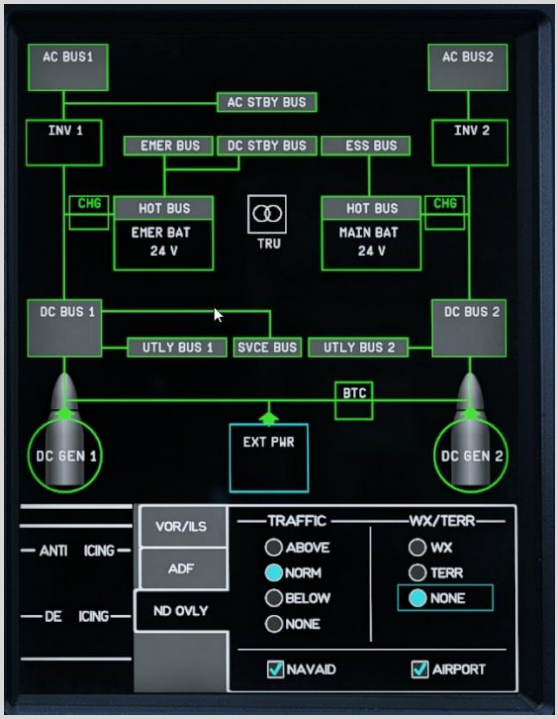


- **ENGINE** (SECONDARY ENGINE PARAMETERS)

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- **CABIN** (Cabin Page)



- **ELEC** (Electric Page)

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AC/DATA is displayed by pressing **PERF** on **EFCP**



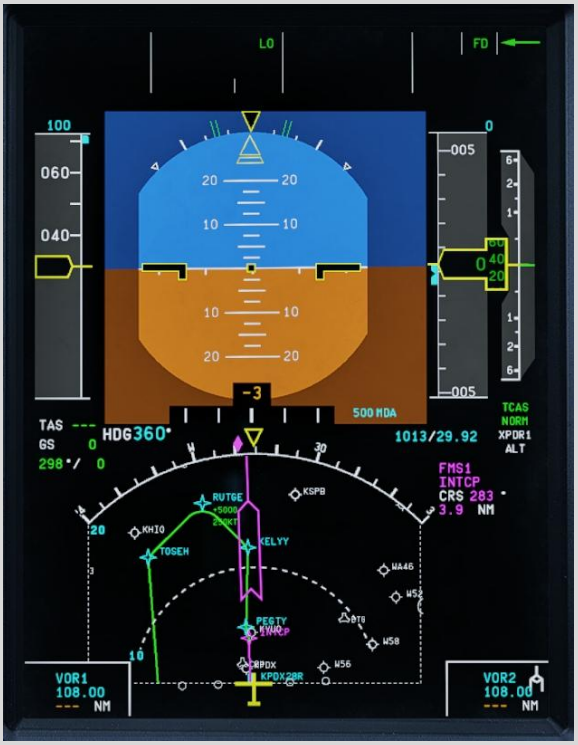
- **PERF** Page 1

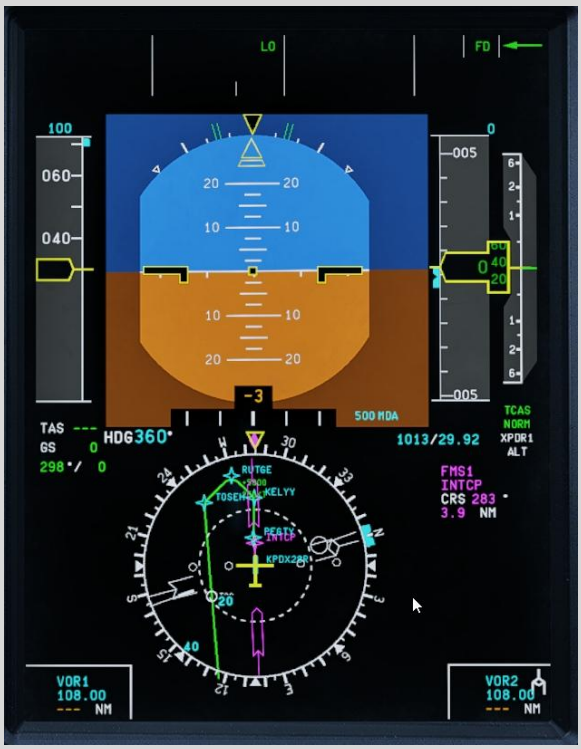


- **PERF** Page 2

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- When **MFD NAGIGATION PAGE** is replaced with another page, the **PFD** displays **MINI ND** (Mini Navigational Display in ARC and ROSE Modes, see below





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MAP is displayed by pressing **MAP** on **EFCP** as shown below





MAP Display shown with various Options

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MAP Display after Selecting **MOVE** on **EFCP**

There are options to MOVE MAP WITH ARROWS, CENTER ON SELECTION, CENTER ON AIRCRAFT ZOOM and RETURN by pressing corresponding buttons on **EFCP**

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MFD DIVISION

MFD is divided into three areas shown below

1. MFD UPPER WINDOW
2. MEMO PANEL DISPLAY
3. VIRTUAL CONTROL PANEL (VCP) WINDOW



- MEMO PANEL DISPLAY shows status of FUEL XFEED, ANTI ICING, DE ICING and PAX Signs

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VCP AND MCP (VIRTUAL CONTROL PANEL AND MULTI-PURPOSE CONTROL PANEL)



MCP (Multi-Purpose Control Panel)

To control **VCP (Virtual Control Panel)** we use **MCP (Multi-Purpose Control Panel)** shown above

Below is explanation of the buttons on **MCP (Multi-Purpose Control Panel)**

1. **COM** Pushbutton enables two pages:
   - VHF1
   - VHF2
2. **NAV** Pushbutton enables four pages:
   - VOR
   - ADF
   - ND OVLY (ND Overlay)
3. **SURV** Pushbutton enables two pages:
   - XPDR (Transponder)
   - TCAS (Traffic Alert and Collision Avoidance System)
4. **ENT** Pushbutton enables validating selection
5. **Multi Directional Pad** Pushbuttons enable choosing the selection areas
6. **ESC** (Escape Key) enables exit the current VPC function

Pressing COM, NAV and SURV, toggles between corresponding functions.

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After pressing COM on MCP, VCP shown above

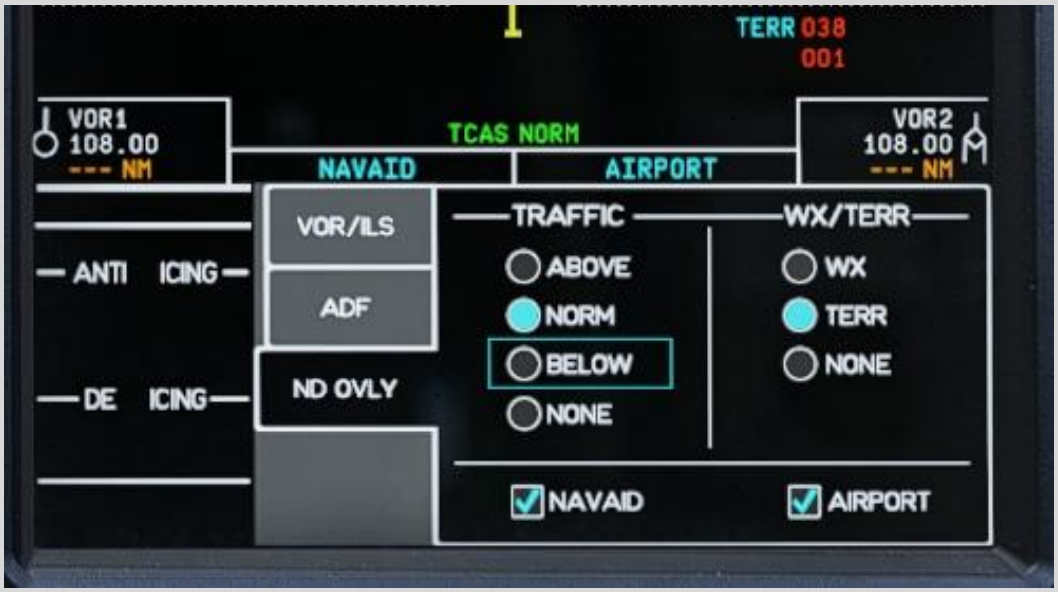


After pressing NAV on MCP, VCP shown above

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After pressing NAV second time on MCP, VCP shown above



After pressing NAV third time on MCP, VCP shown above

WEATHER RADAR CONTROL PANEL





1. **Mode Selector** - Enables the selection of the operating mode.
- **OFF**- The radar system is turned off and white ‘WX OFF’ label on the ND (unless TERR mode is selected
- **STBY** - (WX STBY displayed white on the MFD). Sets the radar in standby mode. The antenna scan stops and the transmitter is inhibited.
- **WX** - (WX TX displayed green on the MFD). Selects the weather detection mode, displaying five different levels of returns.
- **GMAP** - (WX GMAP displayed cyan on the MFD). Selects the ground mapping mode using four different levels of returns.
- **TST** - (WX TEST displayed on the MFD) displays a test pattern to verify the system.
2. **TILT** Control (adjusts antenna pitch from 15 deg down to 15 deg up
3. **GAIN** Rotary Control and Push/Pull Switch - When the switch is pushed, the system enters the preset calibrated gain mode, in this mode, the rotary control is inhibited. When the switch is pulled, the system

enters the variable gain mode, which can be adjusted by rotating the GAIN Knob (G-VAR is displayed green on the MFD)

4. **RCT** Pushbutton - Activates or deactivates the REACT mode which compensates the attenuation of the radar signal as it passes through rain fall. (WX RCT is displayed cyan on the MFD). The cyan field indicates areas where further compensation is not possible. Any target detected in these areas will be displayed in magenta and should be considered as dangerous.
5. **TGT** Pushbutton - Activates and deactivates the radar target alert mode. When activated, TGT is displayed green on the MFD and the system monitors beyond the selected range and 7.5 ° on each side of the aircraft heading. If a level 3 characteristic return is detected in the monitored area, the TGT legend on the MFD changes from green to amber. TGT alert can only be selected in the WX and FPL modes.
6. **STAB** Pushbutton - Turns the pitch and roll stability ON and OFF.
7. **SECT** Pushbutton - Is used to select either the normal 12 looks/min 120 ° scan or the faster update 24 looks/min 60 ° sector scan.

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EWD ENGINE WARNING DISPLAY

Engine Warning Display (EWD) is divided into 5 areas shown below

1. TRIMS, BRAKE MSG, TEST STATUS, FLAP
2. PRIMARY ENGINE WINDOW
3. PERMANENT DATA
4. ALERT WINDOW
5. PROCEDURE WINDOW



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TRIMS, BRAKE MSG, TEST STATUS, FLAP



1. Pitch trim pointer (green triangle) associated with its numerical value; it reports current position of the elevator trim actuator.
2. Magenta pitch trim objective bug computed by FMS.
    - The pitch trim objective is also displayed in the A/C DATA area on the MFD PERF page and in the MCDU WEIGHT page. Magenta bug is displayed once the pilot has confirmed the T/O DATA on the VCP PERF page.

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PERMANENT DATA



1. Fuel used, fuel quantities consumed by engines is computed by the FMS with fuel flow-meters measurement in engines feed lines.
2. Current Fuel On-Board (FOB) and aircraft Gross Weight (GW) are computed by the FMS. The pilot initializes weight values on the MCDU WEIGHT page (ZFW, FOB, GW). FMS then updates FOB value with engines fuel flows.
3. Flight Time (FT) and UTC time displayed in the line below. FT starts automatically at takeoff; UTC time is provided by GPS, otherwise by the FMS internal clock.
4. Total Air Temperature (TAT) and Static Air Temperature (SAT) from ADC

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CENTRAL PANEL

IESI Integrated Electronic Standby Instrument



1. **STD** Pushbutton
   - When pressed for more than 0.2s, resets barometric setting at 1013.25 hPa.
2. **SET** Knob
   - Sub function menu scroller
   - Baro setting tunning
   - VHF COM tunning
   - VHF NAV tunning
   - Course adjustment when in VOR mode
3. **SEL** Pushbutton
   - Validates the selection, or
   - When VOR mode is selected, changes cursor selection between VHF COM, VHF
   - NAV, BARO setting and course.
4. **+/-** Pushbutton
   - Adjust IESI screen brightness
5. **MENU** Pushbutton
   - Enable sub function selection menu.

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PWR MGT Power Management Selector



- PWR MGT – Power Management
- PEC1 and PEC2 – Propeller Electronic Control
- ICE Detector
- STICK PUSHER/SHAKER
- APM – Automatic Performance Monitoring

NOTE: The PWR MGT knobs are always moved together (Bigger arced arrow on the left and ride sides as you move mouse cursor over). The only reason there are two knobs is that the French authority insisted on one knob for each engine during certification

1. **PWR MGT** Knob
    - Made up of two independent parts (front and back). Provides FDAU, PIU and EEC with basic power requirements corresponding to the selected position.
    - For left engine with the back part of the selector
    - For right engine with the front part of the selector.
2. **PEC FAULT** Pushbutton (Propeller Electronic Control)
    - FAULT Comes on amber and FWS is activated when the two channels are lost.
    - OFF (Pb released) PEC is deactivated and NP is blocked at 102 % whenever power is sufficient.

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EEC – Engine Electronic Control and **ATPCS** – Automatic Take-Off Power Control System



PLACARD (SPEED LIMITS in IAS)



VMO - Maximum Operating Speed

MMO – Maximum Operating Mach Number

VA – Maximum Design Maneuvering Speed

VLE – Maximum Speed with Landing Gear Extended

VLO – Maximum Speed to operate Landing Gear

VFE – Maximum Speed for each flap extended

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LANDING GEAR PANEL



Landing Gear Panel include

1. ANTISKID
2. INDICATOR
3. LEVER

There is a **second indicator of the LANDING GEAR Status** on OVERHEAD PANEL.



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PRESSURIZATION PANELS



The pressurization panel should show the landing elevation. The default value is 0000 ft

SIDE PANELS



Left Side Panel

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Right Side Panel

GLARESHIELD



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FGCP FLIGHT GUIDANCE CONTROL PANEL



FGCP (Flight Guidance Control Panel) Buttons and Knobs functions described below

- **CPL** Pushbutton - PRESS TO SELECT PF SIDE, Couples AFCS with the navigation source (FMS or VOR/ILS) selected on the PF side. Green arrow is displayed on the PF side.
- **NAV** SOURCE (FMS selected). FMS is reported as navigation in right top corner of the navigation area (HSI) on PFD and FMS data are displayed on PFD and ND. ADVISORY In normal operation, it is recommended to select FM 1 on Captain side, FM 2 on F/O side. (V/ILS selected). It is recommended to select V/ILS 1 on Captain side, V/ILS 2 on F/O side
- **ALT SEL** (FIRST CLIMB ALTITUDE Knob – Set Altitude)
- **HDG** Pushbutton - Engages the HDG SEL lateral guidance mode (HDG SEL green).
- **IAS** Pushbutton - Engages the IAS vertical guidance mode (IAS green).
- **NAV** Pushbutton – Arms or engages navigation source selected with NAV SOURCE on the PF side
- **VNAV** Pushbutton - Works only when LNAV is in use. Arms or engages one of three modes: VNAV IAS, VNAV VS and VNAV PATH. The engagement logic is as following: When ALT SEL is set to an altitude above the aircraft, VNAV IAS is armed (on ground) or engaged (in flight). When ALT SEL is set to an altitude below the aircraft, VNAV VS is engaged when the aircraft is more than 5 minutes from TOD (the vertical rate is -1500 fpm); when the aircraft is less than 5 minutes from TOD (indicated with the appearance of the Vertical Deviation Bar on the PFD, VNAV PATH is engaged

AUTO FLIGHT OPERATION

BASIC MODES

LATERAL MODE

HDG HOLD

In HDG HOLD Mode

- If the roll angle is less than 3 deg for more than 10 s, at mode activation, the current heading is maintained (HDG HOLD green on FMA)

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- If the roll angle is less than 6 deg at mode activation: the aircraft returns to null bank angle with activation of the wing level basic mode (WING LVL, green on FMA), then when bank angle is less than 3 deg confirmed for 10 s, the heading hold basic mode (HDG HOLD, green on FMA) is activated
- If roll angle is more than 6 deg at activation, the autopilot holds the current bank angle (ROLL HOLD green on FMA)
- If roll angle is more than limit (+/-15 deg° or +/-27 deg depending on the speed, Low Bank/ High Bank), the aircraft returns and holds the limit bank angle (ROLL HOLD green on FMA)
- Autopilot is automatically disengaged if bank angle is greater than 50 deg

WING LEVEL

As the name indicates, aircraft will hold wings level

ROLL HOLD

As the name indicates, aircraft will maintain Roll angle

VERTICAL MODES

PITCH HOLD

Aircraft will hold the current pitch angle (between +/- 15 deg)

VERTICAL MODES

Altitude Select Mode

ALT SEL mode is automatically armed when the aircraft is climbing or is descending toward the selected altitude

The ALT SEL armed mode is annunciated by:

- A cyan ALT SEL message on the FMA

- A cyan bug and an altitude selected read out on the PFD altimeter

VS HOLD, IAS HOLD or PITCH HOLD modes can be used to fly to the selected altitude

When approaching the preselected altitude, the system automatically switches to the ALT SEL CAP mode and the previous vertical mode is cancelled. A command is generated to a symptomatically capture the selected altitude.

ALT SEL CAPTURE is annunciated by:

- A green and boxed ALT* (the box for mode change and the star for capture)

- A green ALT* after 7 s.

Altitude Hold Mode

Pressing the ALT pushbutton on the FGCP selects the ALT HOLD mode and overrides all active FD vertical modes

Any lateral mode existing at engagement is maintained

The ALT HOLD mode is annunciated on FMA by a green ALT

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VNAV ALT Mode (For FMS Leveling OFF)

VNAV ALT mode is automatically armed when the aircraft is climbing toward a FMS level off

The VNAV ALT armed mode is annunciated by:

- A cyan" VNAV ALT" message on the FMA

- A magenta bug and an FMS level off readout on the PFD altimeter

VNAV IAS mode is automatically used to fly to the FMS altitude

When the FMS altitude is reached, the VNAV ALT CAP mode is automatically cancelled and VNAV ALT HOLD mode is automatically selected

VS Vertical Speed Hold Mode

Pushing VS on FGCP selects the VS hold mode and overrides all active FD vertical modes

The VS mode is annunciated by:

- A green VS message on the FMA

- A cyan bug and a selected VS readout on the PFD VSI

VNAV Vertical Speed Mode

If the Selected Altitude is below the current aircraft altitude and aircraft is in cruise (more than 5 min before the TOD) action on the FGCP VNAV pb selects the VNAV VS mode and overrides all active FD vertical modes

The VNAV VS mode is annunciated by:

- A green boxed VNAV VS message on the FMA

- A magenta bug and a selected VS (-1 500 ft/min) readout on the PFD

When aircraft reaches the selected altitude, VNAV VS is cancelled and the system automatically switches to the ALT SEL CAP mode

IAS Indicated Airspeed Hold Mode

Pushing IAS pushbutton on FGCP selects the IAS hold mode and overrides all active FD vertical modes

The IAS target speed (MAN or AUTO) is acquired and hold

You can select MAN (manual) and adjust it or AUTO (the speed is managed by FMS)

VNAV Path Mode

If the selected Altitude is below the current aircraft altitude and aircraft reaches the TOD - 5 min, pressing VNAV pushbutton on the FGCP selects the VNAV PATH mode and overrides all active FD vertical modes

7 seconds after the selection the VNAV PATH is annunciated by a green" VNAV PATH" message on the FMA. The ALT SEL mode is automatically armed

While VNAV PATH is engaged, the aircraft will descend toward the FAF along the vertical profile provided by the FMS

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When the aircraft reaches the selected altitude, VNAV PATH mode will be cancelled and replaced by ALT mode

VNAV Indicated Air Speed Mode

If the selected Altitude is above the current aircraft altitude and aircraft is in cruise or climb, pressing VNAV FGCP selects the VNAV IAS mode and overrides all active FD vertical modes

The IAS target speed (MAN or AUTO) is acquired and hold

When aircraft reaches the selected altitude, VNAV IAS is cancelled and the system automatically switches to the ALT SEL CAP or VNAVALT CAP mode

LATERAL MODES

HDG Heading Select Mode

Pressing HDG pushbutton on FCGP selects the Heading Select mode and overrides any active lateral FD mode

The heading Select mode is annunciated on the FMA by a green boxed HDG SEL

NAV Navigation Mode

Pressing NAV pushbutton on FGCP arms the lateral guidance for capture of the selected navigation source that is displayed on the active HSI / ND

Depending on the selected NAV source and the frequency tuned. VOR, or LOC, or LNAV is selected

BC Back Course Mode

The back course mode is set up and flown exactly like a front course localizer approach but selecting BC mode

- Set the course pointer on the HSI / ND for the inbound published track

- Set the heading bug on the HSI / ND for the desired heading to intercept the course

COMMON MODES

ILS Approach Mode

Pressing APP pushbutton on FGCP selects LOC and GS ARM modes when the NAV receiver is tuned to an ILS frequency

LOC ARM is annunciated on the FMA by a cyan LOC message

HDG SELECT, HDG HOLD modes can be used to steer during the LOC ARM phase

GS ARM is annunciated on the FMA by a cyan GS message. Any vertical mode is allowed during GS ARM phase

LOC CAPTURE is annunciated on the FMA by:

- A green boxed LOC* (the box for mode change and the star for capture)

- A green LOC* after 7 seconds

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Glideslope capture is interlocked such that the localizer must be captured before glideslope capture. The GS capture overrides all vertical modes which were previously engaged

GS CAPTURE is annunciated on the FMA by :

- A green boxed GS* (the box for mode change and the star for capture)

- A green GS after 7 seconds

LPV Approach Mode (Localizer Performance with Vertical Guidance)

1. LPV Approach Mode without VTF (Vectors to Final)

Pressing APP pushbutton on FGCP selects L-LOC and L-GS ARM modes

L-LOC ARM is annunciated on the FMA by a cyan “L-LOC” message

L-GS ARM is annunciated on the FMA by a cyan “L-GS” message

L-LOC TRACK is annunciated on the FMA by the green “L-LOC” message.

- A green boxed “L-LOC”

- A green “L-LOC” after 7 seconds

L-GS CAPTURE is annunciated on the on the FMA by:

- A green boxed” L-GS*” (the box for mode change and the star for capture)

- A green” L-GS*” after 7 seconds

2. LPV Approach Mode with VTF (Vectors to Final)

Pushing HDG pushbutton on FMCP selects the HDG mode (LNAV mode is automatically canceled prior a VTF)

A yellow” SELECT VTF” flashes 7 s on the FMA

The crew selects VTF on the MCDU. All waypoints between current aircraft position and FAF are removed

LNAV-VNAV Approach Mode

Pushing APP pushbutton on FGCP selects V-FP mode provided a LNAV/VNAV approach is selected on the FMS flight plan

V-FP ARM is annunciated on the FMA by a cyan” V-FP” message

2 Nm before the FAF, V-FP mode engages and is annunciated on the FMA by:

- A green boxed” V-FP”

- A green” V-FP” after 7 seconds

While V-FP is engaged, the aircraft will descend toward the MDA along the vertical profile provided by the FMS. Aircraft will ignore the selected altitude

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GA Go Around Mode (FD Mode Only)

Pushing GA pushbutton selects the GO AROUND mode and cancels all armed and active FD modes

The AP disengages and the FD gives commands to fly predetermined minimum safe pitch attitude and to maintain heading followed at GA engagement

The GO AROUND mode is annunciated on the FMA by a GA message as vertical mode and HDG HOLD message as lateral mode

The GO AROUND mode is cancelled when one of the following events occurs:

- any other vertical mode is activated

- the AP is engaged

- FD STBY mode is selected

- the FGCP is not valid after GO AROUND mode has been engaged for at least 0.9 seconds

- stall warning is active

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MCDU MULTIFUNCTION CONTROL AND DISPLAY UNIT



All marked Keys and Areas are described below

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1. **MENU key** Press to display the MCDU MENU page and select the available system to connect to the MCDU

2. **FPLN** Press to display flight plans:
   PROG Press to display PROG pages with main navigation data in progress
   DTO Press to display the DIRECT TO page
   DATA Press to display the DATA MENU page with access to navigation databases
   PERF Press to display PERF pages with aircraft performances information and to access PERF entry (PERF INIT and WEIGHT pages)
   VNAV Press to display VNAV pages with vertical navigation data
   MSG Press to display MSG pages with detailed FMS messages (if any)
   MRK Press to create a MARKER waypoint at present A/C position
3. **SCROLLING/SLEW keys** Press **PREV** key or **NEXT** key to display respectively previous or next pages (if any)
4. **KEYBOARD** Alphanumeric keyboard; any keyboard entry is entered into the SCRATCHPAD **first**
5. **SCRATCHPAD** Buffer area for manual entry on keyboard; it enables the pilot to check an entry before inserting it into the FMS
6. **CLEAR** Press to clear a text or reset a field (if permitted)
7. **LSK** Press a Line Select Key to:
   - Insert data written in the scratchpad into the data field related to the LSK
   - Perform the action mentioned by a PROMPT that would be displayed on a page
   - Display revisions pages when a FPLN, TMPY or SEC page is displayed
   - PROMPT Press LSK of a prompt displayed on the screen: - Inward arrow (>XXX; XXX<): Modifies a selection or performs the labeled action - Outward arrow (<XXX; XXX>): Displays a dedicated page
8. **MSG TITLE** The message reminder is displayed in case of FMS message
9. **ANNUNCIATORS**
   - FAIL (amber) indicates a system failure
   - MSG (amber) indicates that a MCDU message is pending on the MSG page
   - POS is amber to indicate a positioning error
   - OFST (green) indicates the OFFSET function is active

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KPDX -KRDM EXAMPLE FLIGHT

It is well known fact that simulator pilots like different degrees of reality in their flying. We would like to make everybody happy so in the content below, you will find two different text types, regular and **bold.**

If you want to perform all steps, follow all text but **if you are eager to go flying, perform only steps described in bold text, it will get you airborne much faster.**

We will fly from **KPDX** Portland International Airport in Oregon, USA to **KRDM** Roberts Field Airport also in Oregon, USA.

We will set custom weather in X-Plane as preset Clear with no winds as we want to concentrate only on the flight.

Route: **KPDX WHAMY5 CUPRI KRDM 13,000 FT**

Take Off **RWY 28R**, Landing **ILS or LOC RWY 23** Approach.

INITIAL COCKPIT PREPARATION

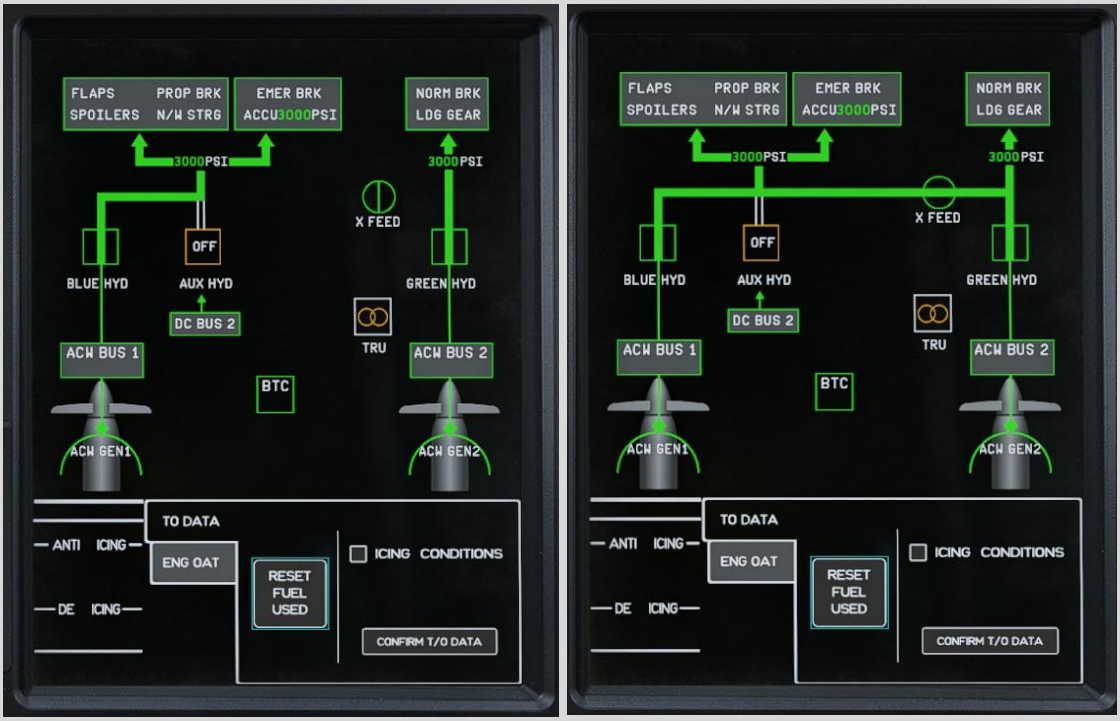
- When entering the cockpit in real aircraft, while walking toward cockpit, Escape Rope, Emergency Escape Hatch, Smoke Goggles, Oxygen Mask for Observer, Fire Gloves, Captain and First Officer Life Vests, Fire Extinguisher, Crash Axe and that Landing Gear Pins are behind First Officer Seat plus make sure that all Circuit Breakers are in
- On a Pedestal, we check if Brake Lever, Gust Lock, Power Lever Levers, Condition Levers and Flaps Lever are in the correct position
- On Center Instrument panel we make sure that Landing Gear Lever is down

POWERING UP

- **EFB Electronic Flight Bag – As desired but with Tail Prop, External Power available and Wheel Chocks ON**
- Overhead Panel Windshield Wipers OFF
- **Battery - ON** (No need to lift the cover, it is only lifted to switch to position it in OVRD Override)
- Observe MFC Test (Multi-Function Computer, 2 computers, 2 modules)
- Adjust Lights per your liking (Lower Pedestal)
- **Navigation Lights – ON**
- **Press MAST WARN and MASTER CAUT flashing buttons to reset the alarms**
- Monitor Avionis power up and self-testing (approximately 80 seconds with audio alerts)
- In Left Lateral Panel we check the External Power Voltage (28Volts or higher)
- **EXT PWR (External Power) ON (AVAIL changes to ON)**
- We check that IESI (Integrated Electronic Standby Instrument) is alive and wait for the rest of the Avionits to power up
- **Set PAX Payload and Fuel**
- We are going to skip External Inspection
- Popup MFD (Multifunctional Display) Hydraulic Page
- On the Pedestal we press HYD AUX PUMP (Auxilary Hydraulic Pump) to pressurize Blue Hydraulic System. This pump is running for 30 seconds

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- Set X FEED (Crossfeed) on HYDPWR Panel to ON and verify that blue and green Hydraulic Systems are on



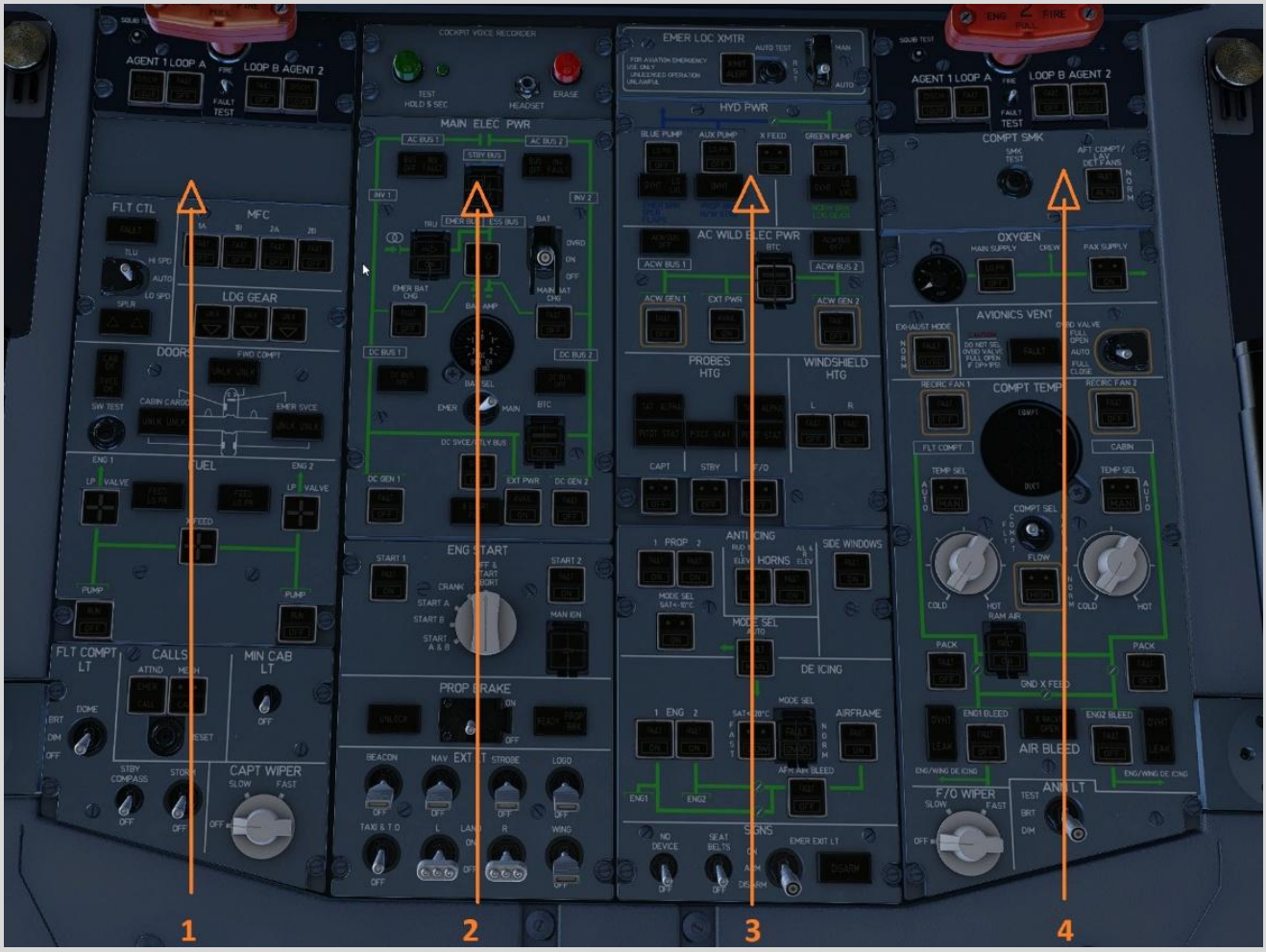
- X FEED – OFF
- **LOGO and WING lights - ON (other lights need AC power so OFF for now)**
- **EMERGENCY EXIT LT – ARM**
- In real plane Captain would do External Inspection

Overhead Panel

- Flip ANN LT switch to TEST position and check all Annunciation Lights is lots of them.
- Set ANNLT switch to BRT at the day time and to DIM at night

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FLOWS



On the screenshot above you see orange lines 1,2,3 and 4 pointing up. They are called flows

You simply check all Panels from Down Up and Left to Right confirming the states of the buttons and knobs as described below

- Fuel Pumps Test: ENG1 PUMP – ON (Green RUN Light lits, Yellow FEED LOPR light shuts off), X FEED – ON (second Yellow FEED LOPR light shuts off), ENG2 PUMP – ON (Green RUN Light lits, X FEED – OFF, leave the Fuel Pumps ON, reason to read the fuel quantity correct they need to run for 2-3 minutes and also while refueling (to read the fuel quantity correct)
- DOORS Panel – Press SW TEST button (CAB OK and SVCE OK lights will only illuminate when the associated door is open. The test simulates closing of the door)
- TLU: Check in AUTO position and no amber FAULT light
- LDG GEAR Secondary Indicator Lights – Three Green Trianges
- MFC (Multi-Function Computer) – No Light
- FLT CTL TLU (Rudder Travel Limit Unit) in AUTO Position
- Left Engine Fire Engine Tests: Sequence of engine fire test: Squib, Fault, Fire. Before testing the fire warning, the associated condition lever must be moved out of FUEL SO position (halfway to FTR). This

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allows for checking the red light in the condition lever, Pop Up EWD (Engine Warning Display) and observe while performing the test

- **If Starting in Hotel Mode, Press HYD AUX PUMP Button, READY Light on Overhead Panel will turn green after few seconds, lift cover and select the PROP BRAKE switch to ON and close the cover. Cyan PROP BRK light will turn on**
- Check COCKPIT VOICE RECORDER: Before checking the CVR, and the aircraft is powered by EXT power, the RCDR GND CTL button on the pedestal must be pressed (blue ON light), press TEST button and Hold for 5 seconds, After the test, press the RESET pushbutton
- **SEAT BELTS and NO DEVICE switches – ON**
- No light on DEICING and ANTI ICING Panels except one amber FAULT light on the DE- ICING panel: AFR AIR BLEED
- **WINDSHIELD HTG – ON**
- ACW BTC OPNG is check guarded in NORM FLT position
- Do NOT Press Emergency Locator as it would send distress signal on emergency frequency
- **OXYGEN ON, pressure should be at least 1400 PSI**
- Perform Smoke Test Press SMK TEST button, Pop Up EWD (Engine Warning Display) and observe messages
- During the test, Avionics Ventilation Extract Fan stops and needs to be reset by pressing EXHAUST MODE Button
- Right Engine Fire Engine Tests: Sequence of engine fire test: Squib, Fault, Fire. Before testing the fire warning, the associated condition lever must be moved out of FUEL SO position (halfway to FTR). This allows for checking the red light in the condition lever, Pop Up EWD (Engine Warning Display) and observe while performing the test
- ATPCS – simplified: Test (Automatic Take-Off Power Control System. Pop Up EWD (Engine Warning Display) and observe while performing. Turn ATPCS Test Knob through all positions and observe messages on EWD, close the cover after the test
- Adjust Panel Lights as needed
- On the first flight of the day test all trims PITCH, RUDDER and AILERON
- EFIS (Electronic Flight Instrument System) Control Panel controls what we data we see on MFD (Multi Function Display) and perform checklists
- Idle Gate Lever should be pulled out and no associated amber light
- EMER AUDIO CANCEL switch guarded
- Gust Lock Lever – ON
- Flaps set to 0
- MCDU (Multifunction Control Display Unit), we will program things later on
- **On EFIS Control Panel we press NAV until we see ND OVLY and set TRAFFiC ABOVE**
- **Press SURV button and set XPDR1 (Transponder 1) for Odd days and XPDR2 (Transponder 2) for even days of the month, set XPDR for STBY (Standby)**
- **Press SURV button one more time and set TCAS (Traffic Alert and Collision Avoidance System) to AUTO**
- Set Radar to TEST, observe test image (rainbow scan) and then set it to STBY (Standby)
- On Central Panel, we make sure STICK PUSHER SHAKER button is in and then we press and hold APM (Aircraft Performance Monitoring) TEST button and watch messages on EWD
- PEC (Propeller Electronic Control) – no lights and BOOST – no lights

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- PWR MGT Selector Knobs in TO position
- IESI (Integrated Electronic Standby Instrument) – no flags
- Check Trims on EWD, pitch trim after we program route via MCDU, other trims 0
- Flaps 0
- Check Engines Indicators – normal
- TAT and SAT should be the same
- EEC1, ATPCS and EEC2 – no lights
- **Presurization System: Auto pressure panel: Press test, then set landing elevation (destination airport elevation rounded up to next 100 feet**
- Landing Gear Paanel, ANTISKID – no lights, Gear Lever Down, three green lights
- On Glareshield left test GPWS System by pressing the PULL UP/GPWS button
- Check operation of the Standby Compas (UP and DN)
- **FGCP (Flight Guidance Control Panel) set Left Pilot NAV MODE to FM1 (FMS1 Flight Management System 1) and Right Pilot NAV MODE to FM2 (FMS2 Flight Management System 2)**
- **Set CPL (Autopilot Coupling) to point to pilot flying side (in our case Captain Side)**
- Right Side panels, adjust lights as needed, Console Cover should be closed and no need to do anything there. Make sure all switches are guarded
- After external inspection is completed, we turn OFF BEACON, WING lights and if it is daytime LOGO light
- Release the Gust Lock in order to prepare for Stick Shaker test
- Adjust lights on Left Side panel
- Open Left Concole Cover
- BRAKE ACCU HYD (Brake Accumulate Indicator) is dark
- ACW BTC OPNG NORM FLT should be guarded and in **NORM FLT** position
- Stick Shaker: Stick shaker test: The test pushbutton must be pressed and hold. After 5 seconds, an amber GPWS alert message is shown on the EWD. After 10 seconds, the stick pusher is activated, showing a green STICK PUSHER label on the FMA, and green CHAN 1 and CHAN 2 lights are displayed over the test selector
- Close Cover and engage Gust Lock
- **Open Cockpit Communication Hatch. The Cockpit Communication Hatch must be kept open when you close the doors, and it must stay open until you have started engine 1**
- **N/W STEERING should be ON for taxiing and OFF for pushback**
- Check Steering Tiller is centered
- Test Oxygen Mask
- Ther should be no lights on CAPT SWITCHING Panel
- INITIAL COCKPIT PREPARATION is now complete (done only before the first flight of the day when plane was sitting unattended for a long time)

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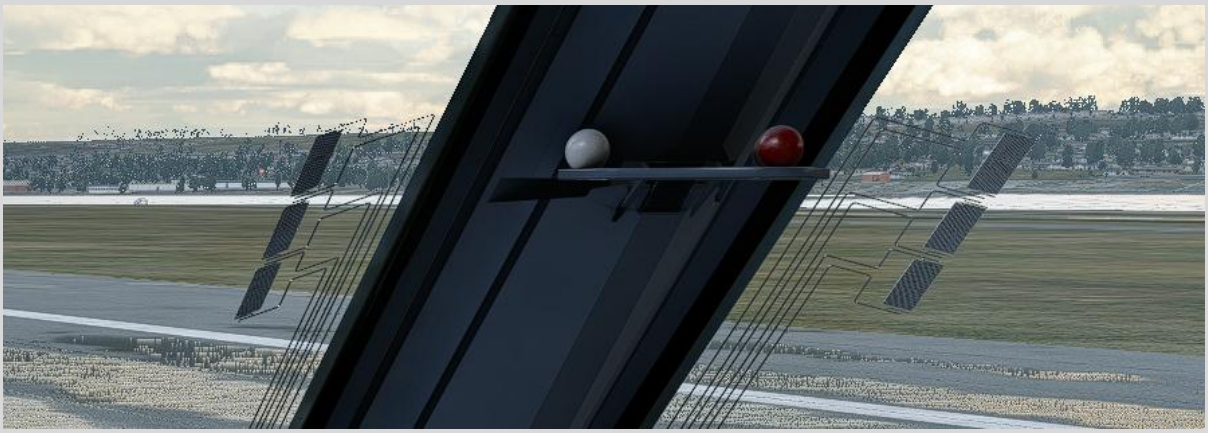
SHORT TRANSIT PROCEDURE

- Captain opens the Communication Hatch and do External Inspection
- First Officer does the rest
- Engine 1 Fire Test
- Cockpit Voice Recorder test
- Engine 2 Fire Test
- ATPCS static tests
- Trims Function Test
- FGCP (Flight Guidance Control Panel) initial settings

FINAL COCKPIT PREPARATION

INITIAL PART

- Adjust Seats and Ruder Pedals
- The Red Ball should cover the White ball, not much applicable in simulator



- Connect and check Headsets
- Press RCL Button on EFCP (EFIS Control Panel) to show all Alerts on EWD (Engine Warning Display)
- Set Proper frequencies on VCP (Virtual Control Panel), for example VHF1-Delivery, VHF2-Ground, VHF2-ATIS
- **Set Barometric Pressure with the ICP (Index Control Panel) on Captain and First Officer side and on Standby Instrument (IESI)**
- To calculate Weight and Take Off Speeds SPS (Single Point Performance Software) is used but in simulator we will use Simbrief
- Set VOR/ILS to AUTO as we will be flying using FMS, and want the best reception which will serve as GPS backup
- Set Bearing Pointers to OFF, so you do not confuse DME distance with distance to the next Waypoint
- Check Fueal Quantity, reset Fuel Used if needed (RESET FUEL USED on PERFORMANCE PAGE)
- Make sure there is no indications on the MEMO panel except for NO DEVICE and SEAT BELT
- Check PROP BRAKE, On for Hotel Mode and OFF for normal engine startup

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FMS SETUP

- More about FMS Route -> Programming KPDX-KRDM Detailed Steps
- **Select FMS 1** since we are flying from left hand side
- We check CONFIG DATA and NAV DATA to be OK
- Press **POS INIT** No acion needed in newer software 2.1
- The order of inputs is WEIGHT -> PERF INIT -> FPLN INIT -> PERF Pages
- **WEIGHT:** set using external sources like Simbrief enter approx **ZFW 19000** KG**, FOB 1600** KG and **RESERVE 800** KG and Press **RETURN**
- Select **PERF INIT** Page, set **CRZ ALT 13000** in FT**,** set ALTN/CRZ **KPDX/FL140,** press **RETURN**
- Select **FPLN INIT** then **ROUTE,** FLT ID **DWS001,** FROM/TO **KPDX/KRDM** then **EXECUTE**
- Select **KPDX, RWY 28R** and **WHAMY4**, press **TMPY** then **EXEC**
- **At KRDM select I23, pres TMPY then EXEC**
- Add **CUPRI** after **WHAMY**
- **Clear discontinuity**
- Blue Lines are Missed Approach
- **Check Route in PLN (**Planning Mode**)**
- **Press PROG key, check DIST distance and EFOB (estimated fuel on board at arrival airport)**
- **Press PERF key repeatably to see TAKE OFF, CRUISE and APPROACH Pages**
- **Press VNAV key repeatably to see VNAV Pages**
- **Set Initial Altitude on FGCP (Flight Guidance Control Panel) 7000**
- FINAL COCKPIT PREPARATION procedure is now completed
- Run Checklist FINAL COCKPIT PREPARATION
- **Get Clearance from ATC, set Transponder (XPDR1 on odd days and XPDR2 on even), Set XPDR code provided by ATC and set to STBY**

HOTEL MODE

- Make sure Service Door is closed
- Hotel Mode can be used for Engine 2 and when engine is running (without propeller rotating), it acts like APU (Auxilary Power Unit) providing electric power and air conditioning
- Captain calls marshaller who confirms the service door closed and area around engine is clear
- **FUEL PUMP 2 ON**
- **Rotate ENG START knob to A&B position** on first flight of the day (A on Odd days and B on Even days, will vary per airline). When moving the start selector out of OFF & START ABORT, the engine secondary page is automatically shown on both MFD, unless the screen is in ND mode
- **Set MFD to Secondary Engine Page**
- **Press ENG2 on ENG START Panel**
- **At 10% NH, move engine 2 CL (Condition Lever) to FTR (Feather) position**
- **Watch engine parameters on Secondary Engine Page**
- **After parameters stabilized, rotate ENG START knob to OFF&START/ABORT position**
- **Press EXT PWR to set External Power to offf**
- Check that DC GEN2 FAULT light is off and ENG2 BLEED light off
- Check if PACK1 and PACK2 VALVES FAULT Lights are off
- **Disconnect GPU using EFB (Electronic Flight Bag)**

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BEFORE PROPELLER ROTATION PROCEDURE

- Check Take Off speeds in PERF Page pressing PERF button on MCDU
- **Set the Pitch Trim per WEIGHT Page on MCDU**
- Open Performance page on MFD and if there are icing conditions below 1500 FT set the TO DATA accordingly
- **After all is checked and set, press CONFIRM T/O DATA, magenta bug appears on Pitch Trim Indicator**
- **Close all Doors and remove Tail Prop**
- Obtain Clearance for Engine Start from ATC
- **Check that BEACON light ON**
- Run BEFORE PROPELLER ROTATION checklist

BEFORE TAXI PROCEDURE

- Captain calls marshaller to confirm that WHEEL CHOCKS are on
- **Press HYD AUX PUMP button on pedestal to activate AUX pump. After activating the AUX pump, wait 10-20 seconds for the green READY light. Then, release the propeller brake**
- UNLK red light will turn on for a moment then green READY light will stay on
- Right Propeller is now spinning
- **Arounf 14 NP% propeller speed is stabilized and we move CL (Condition Lever) to AUTO**
- **On EWD we see temporarily message SGL CH and after than LOW PITCH (green)**
- When properrel speed NP% stabilizes around 71, we check if ACW GEN2 light is off
- **Set PROBES HTG to ON**
- **Set ANTI-ICE if needed**
- **Perform ANTISKID Test by pressing TEST button**
- **Set Flaps 15**
- **FUEL PUMP ENG1 ON**
- **Rotate ENG START knob to A&B position**
- **Press ENG1 on ENG START Panel**
- **At 10% NH, move engine 1 CL (Condition Lever) to FTR (Feather) position**
- **Watch engine parameters on Secondary Engine Page**
- **After starting engine 1, set the selector to OFF & START ABORT. Then, set CL1 to AUTO**
- On Overhead Panel should be no white lights
- Check all System Pages
- **Captain closes Communication Hatch**
- **Make sure NWS (Nose Wheel Steering) is on**
- Press RCL button, should be no allerts
- **FGCP (Flight Guidance Control Panel), coupling to the left (Pilot Flying), NAV Sources to FMS both sides, Altitude, set Heading and select Heading mode and LNAV mode and IAS mode and VNAV mode**
- **Set target Speed to AUTO on ICP (Index Control Panel)**
- Run BEFORE TAXI checklist

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TAXI PROCEDURE

- **WHEEL CHOCKS OFF and we are ready for taxi**
- **Obtain Taxi Clearance**
- **Taxi Lights ON**
- Start Timer8
- **Parking Brake OFF, hold breaks, Power Lever as needed and slowly taxi**
- **Taxi to RWY**
- While taxiing check brakes
- **Press TO CONFIG TEST button (should be no alarms)**
- Run TAXI checklist

BEFORE TAKE-OFF PROCEDURE

- Open Performance Page on MCDU
- Perform departure briefing, short but essential, Take-off Rwy, V1, acceleration altitude 400-1000 AGL
- **Gust Lock – Release**
- Check Rudder full movements, ailerons (you need to see green triangle SPLR on overhead panel) and elevator
- Press RCL Button verify there are no messages
- **Transponder - ON, TCAS to AUTO**
- Weather Radar – ON (if needed, it will become active after take off)
- MFD in Arc or Rose Mode and Range 10 or 20 nautical miles
- If Weather Mode os not used, select Terrain Mode
- **Before entering Runway, set Strobe and landings Light – ON**
- Check if the FLOW on Overhead panel is set to Normal as it affects performance
- ENGBLEEDs – ON or OFF if required for performance reasons
- Scan Overhead Panel, it should be no White or Amber light
- **After lining up with runway, press Heading Knob to line up heading bug with runway heading**
- Run BEFORE TAKEOFF checklist

TAKE-OFF

- **Parking Brake – OFF**
- **Power Levers to NOTCH**
- **Verify that ATPCS ON (above EWD)**
- **Rotae at Vr Speed , 9 deg nose up, when airborn, follow Flight Director bars**
- **Positive Climb, Gear – UP**
- **YAW DAMPER – ON**
- Taxi Light Off
- **At Acceleration Altitude PWR MGT Knob to CLB**
- If the BLEED Valves were OFF, we turn them ON
- **Flaps 0 (F marker on Speed Tape)**
- **Engage Autopilot (at least 100 FT AGL Above Ground Level)**
- Run AFTER TAKEOFF Checklist
- **At FL (Transition Altitude), set Baro to STD**

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CLIMB

- ATC cleared us to FL130 (13000FT)
- **Select new Altidue as 13000 FT**
- **On ICP (Index Control Panel) select Speed to Manual pressing SEL switch**
- **Using the Knob we set SPD TGT (Taget Speed) to Flap Speed +10 (150), it will increase climb rate** (speed bug will be shown in blue)
- **We can also fly using AUTO Speed by pressing SEL switch** (speed bug will be shown in magenta)
- **Passing FL100 (10000 FT), SEAT BELTS – OFF, NO DEVICE – OFF, WING LTS – OFF, LANDING LIGHTS – OFF**
- Check Cabin Pressure on System page

CRUISE

- Check wetaher in Destination airport (in our case we set weather manually so we just check Barometric Pressure at destination KRDM
- Check Progress Page on MCDU, TOD, arrrival time and FUEL on arrival.
- **Set PWR MGT Knob to CRZ (cruise)**

APPROACH PREPARATIONS

- **Recheck weather in destination airport**
- Approach briefing KRDM ILS or LOC RWY 23
- **Set active frequency to 109.1 (LOC I-RDM) and standby frequency to 117.6 (DSD VORTAC for missed approach procedure**
- **Activate Bearing Boxes on MFD**
- **Center and Select Heading Mode, Select Nav Source 1 to V/ILS1**
- **Set CRS to 226 deg and Nav Source back to FM1**
- **Repeat for right side Nav Source and Course**
- **Select Nav Source 2 to V/ILS2 and set CRS to 226 deg and Nav Source back to FM2**
- **Set Minima (both sides)**
- **Switch back to NAV Mode**

DESCENT

- **Reaching TOD (Top of Descent) we assume ATC cleared us to 9000 FT**
- **Use VS mode with rate of descent 1000 FT/MIN**
- **Standard descend speed is 240 IAS, when we reach it, we reduce power (around 40 % TQ)**
- Run DESCEND Cchecklist
- **Passing 10,000 FT, we turn on PAX signs and External Lights except Taxi & T.O.**
- We check Cabin Pressure on MFD
- **Let's assume that before passing CUPRI, ATC will give us vectors to intercept ILS or LOC RWY 23 at KRDM**
- **Right before CUPRI, switch to HDG Mode and fly heading 85**
- **24 NM from LOC1 IRDM 109.1 change heading to 185**
- **Reduce Speed to 200 on ICP**
- **Descend to 7100 FT with VS around 1000 FPM (reduce speed by pulling PLs down)**
- **Both pilots select ILS as Navigation Source**

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- **Select APPR (Approach Mode on FGCP)**
- **Turn PWR MGT Knob to TO**
- Run APPROACH Checklist

APPROACH AND LANDING

- LOC and and later GS show green on FMA (Flight Mode Annunciator on top of the PFD Primary Flight Display), we are now flying ILS RWY 23 Approach
- **Adjust power to keep speed around 170**
- Swithching to Tower frequency, ATC clears us to land
- **Center Heading but do not switch to HDG mode**
- **At 8 NM from the threshold, the speed should be 170 kts. Select flight idle and Flaps 15**
- **At 160 kts, gear down. At 140 kts, flaps 30 Adjust power to maintain approach speed (22 to 25% torque**
- **Take Off and Taxi Lights ON**
- **Flaps 30 Target Speed 130**
- Run BEFORE LANDING Checklist
- **At 1000 AGL (Above Ground Level) approach stabilized check, continue**
- **At 600 AGL, Auopilot OFF and Yaw Damper OFF**
- **Minimums, continue or execute Missed Approach**
- **Touch down, Power Levers to idle and use Reverse Thrust**
- **Taxi to Parking**

AFTER LANDING

After landing and clear of runway:

- Landing lights off
- Strobe lights off
- Flaps 0
- Gust lock on, check controls locked
- Start timing for 2 minutes
- Trims neutral
- Radar STBY
- Transponder STBY
- FGCP press STBY
- De-icing / anti-icing off
- Probes heating off
- Read ‘After landing checklist’ silently

After 2 minutes passed

- CL 1 to FTR (F/O)

After 30 seconds:

- CL 1 to FUEL S.O.

Arriving at Stand:

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- Taxi light off

Parking:

- Parking brake on
- CL 2 to FTR
- When green READY light: Propeller brake on
- When propeller stopped: Beacon light off
- When EXT PWR AVAIL light: EXT PWR on
- CL 2 to FUEL S.O.
- Wing lights off
- Pax signs off

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PROGRAMING FMS FOR KPDX-KRDM Detailed Steps

- **Press MENU button and then FMS 1 as we will fly from Captain Side**



- **Check if Data is correct and press INIT**



- **Press POS INIT**



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- **Press RK6 to check SENSORS STS**



Press RETURN to go back to POS INT Page and RETURN again to get back to INIT Page



- **The order of inputs is -> WEIGHT -> PERF INIT -> FPLN INIT pages**



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- **WEIGHT: ZFW, FOB, RESERVE and T/O CG can be entered via MCDU keypad and pressing corresponding LSK next to the entered value**

- **WEIGHT: ZFW, FOB, RESERVE and T/O CG can be also transferred automatically when using Simbrief from EFB or when changing values using WEiGHT BALANCE Page in EFB Changing WEiGHT BALANCE Page entries does NOT transfer RESERVE**

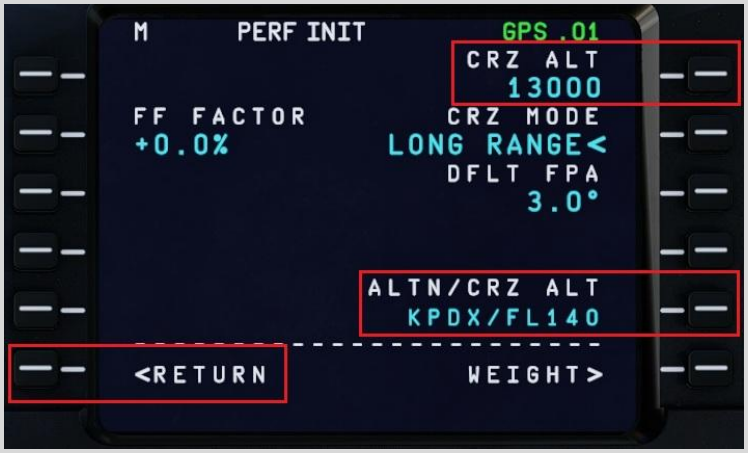
- **After you are done editing WEIGHT Page, press RETURN back to INIT Page**



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- **Select PERF INIT Page, set CRZ ALT 13000 in FT, set ALTN/CRZ ALT to KPDX/FL140 and press RETURN**



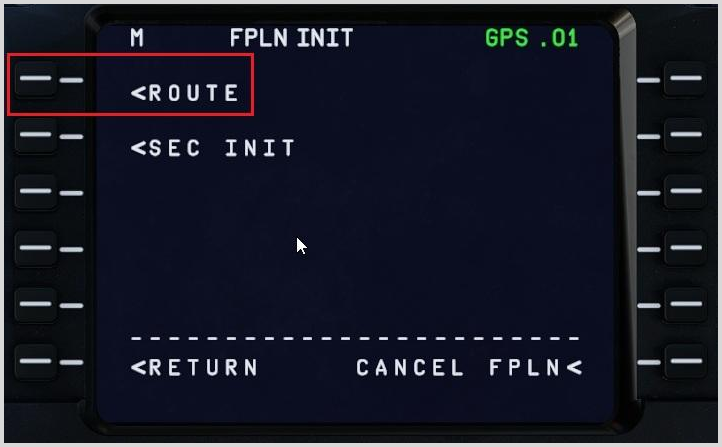


- **Select FPLN INIT**



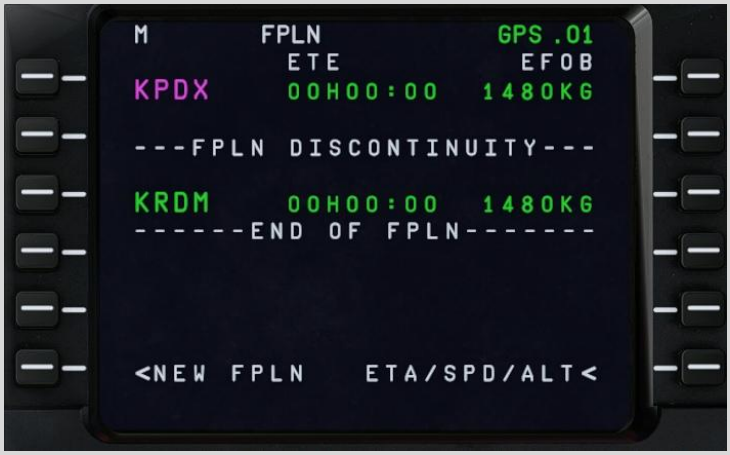
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- **ROUTE**



- **FLT ID – DWS001, FROM/TO – KPDX/KRDM, Press EXECUTE**



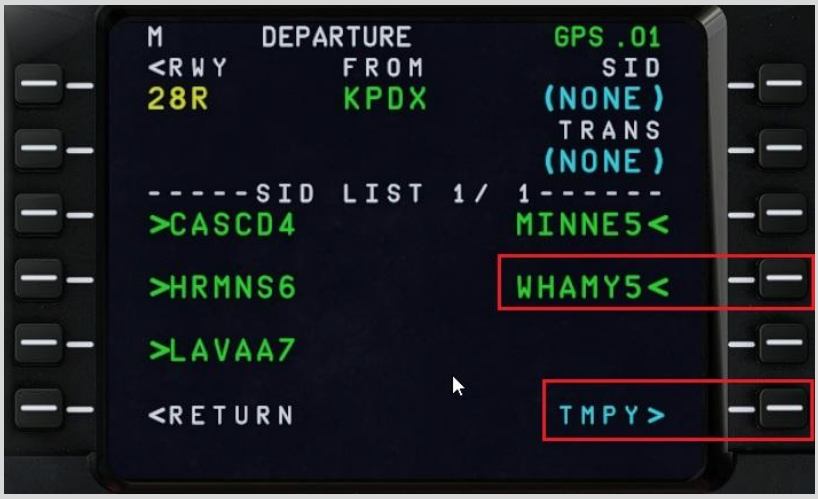


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- **Select KPDX, RWY 28R**



- **Select WHAMY5, press TMPY**



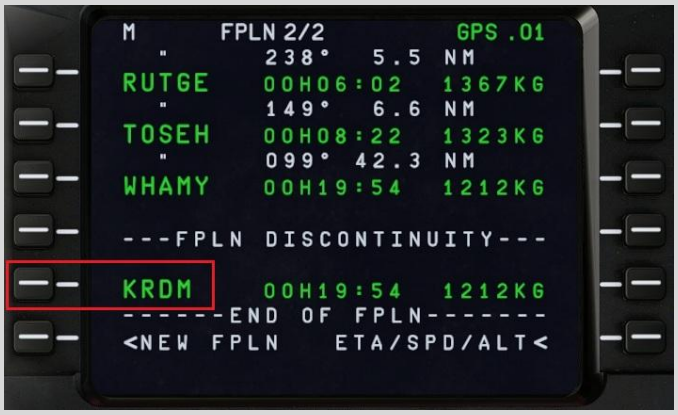


FOR FLIGHT SIM USE ONLY – NOT TO BE USED IN REAL LIFE OPERATIONS!

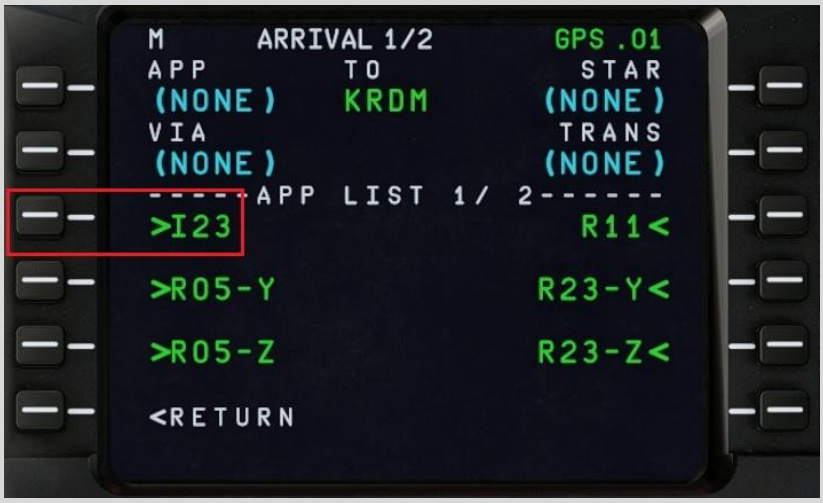
- **Press NEXT to SEE KRDM**



- **Select KRDM**



- **Select I23**



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- **Press TEMP**



- **You can scroll through pages (pressing NEXT/PREV)**





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- **Press EXEC**



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- **Flight Plan Becomes Active (Green)**

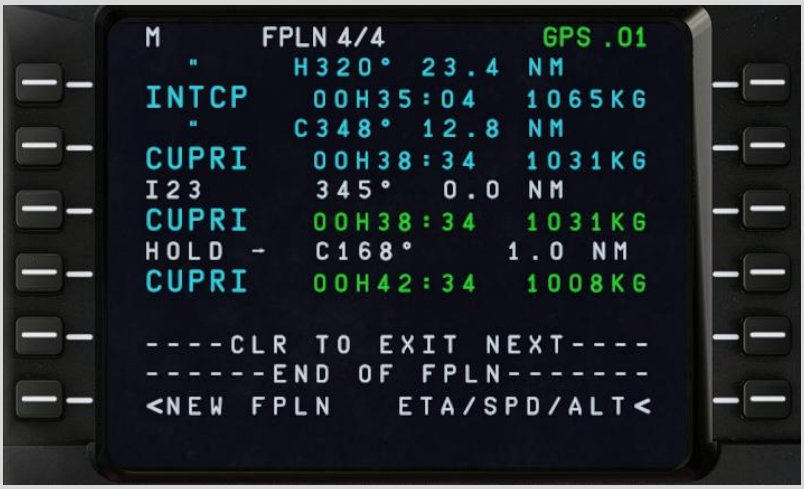


- **You can scroll through the Pages pressing NEXT/PREV buttons**





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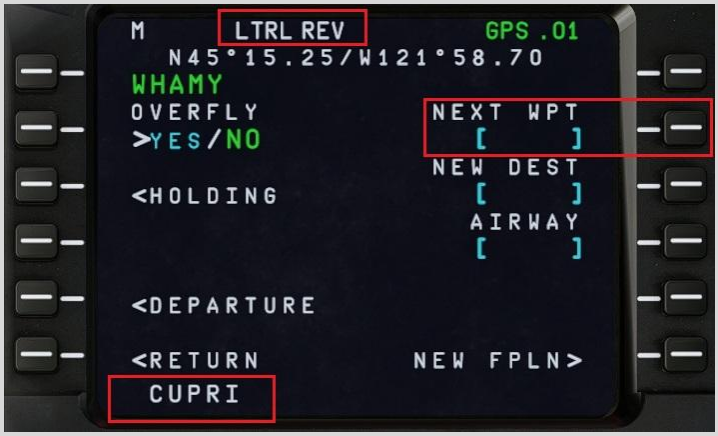
- **Add CUPRI after WHAMY (press NEXT first to see WHAMY)**



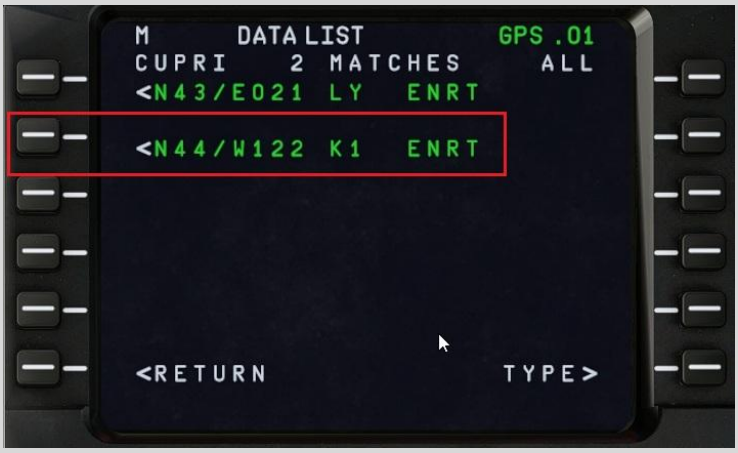


FOR FLIGHT SIM USE ONLY – NOT TO BE USED IN REAL LIFE OPERATIONS!

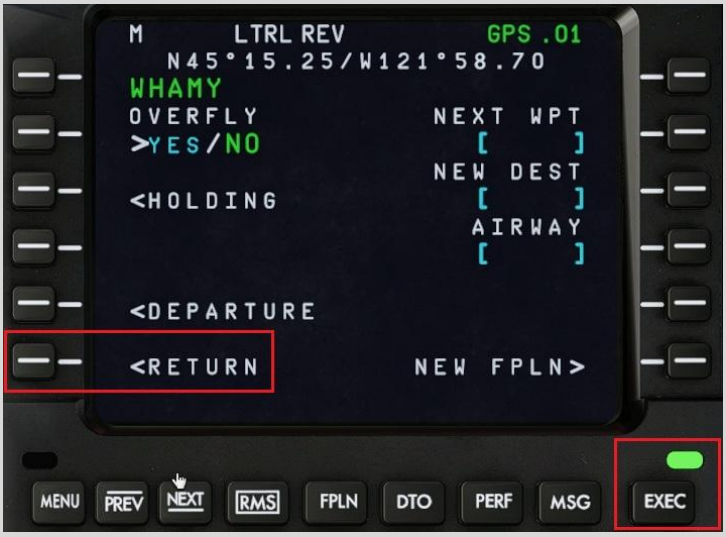
- **Pressing on WHAMY will bring you to LTRL REV Page. Type in CUPRI and press RSK2 (Right Select Key 2)**



- **Select K1 option (ICAO Region Code) and press LK2 (Left Line Selection Key 2)**



- **Press EXEC then RETURN**



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- **New Waypoint CUPRI appears after WHAMY**



- **Clear Route Discontinuity (Press CLR on MCDU and then press LK5)**



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- **Press EXEC, discontinuity is cleared**



- **Discontinuity is cleared**



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- **Check Route in PLN (Planning Mode), pressing NEX/PREV button will scroll through programmed waypoints**

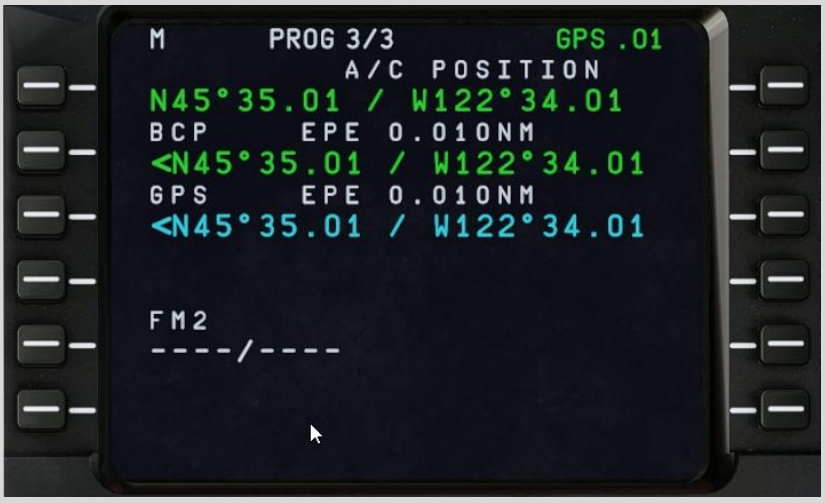


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- **Press PROG key to check Progress Pages**





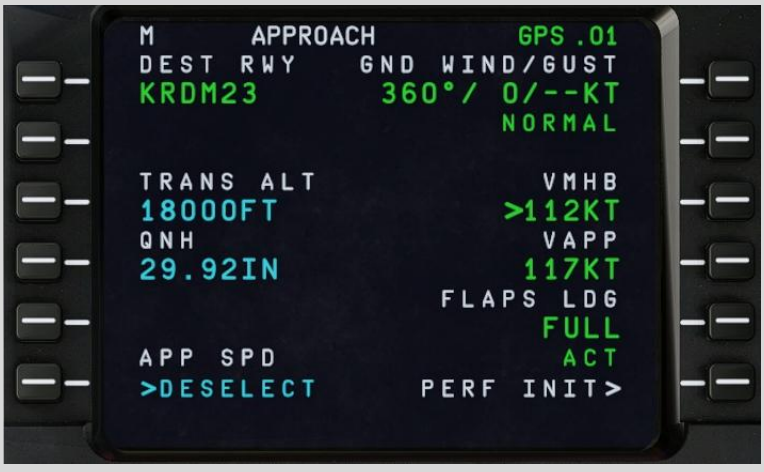


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- **Press PERF key repeatably (or use NEXT/PRV keys) to see TAKE OFF, CRUISE and APPROACH Pages**



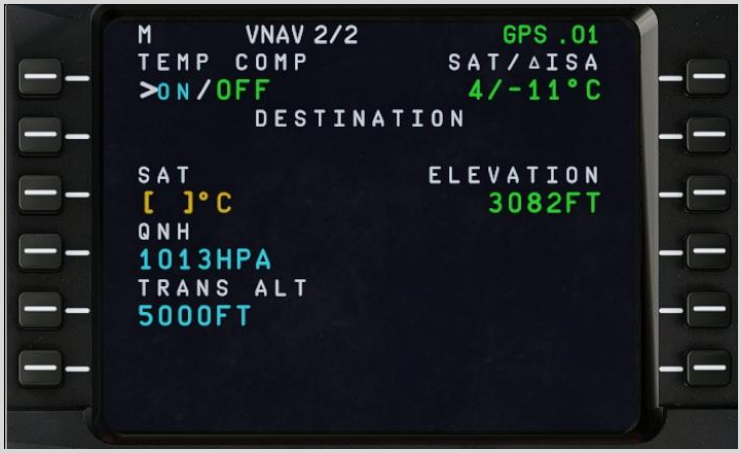




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- **Press VNAV key repeatably to see VNAV Pages**





Go back to FMS Setup for KPDX-KRDM EXAMPLE FLIGHT

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DWSIM PACKAGE ADDITIONAL CSREENSHOTS WITH EXPLANATIONS

Entering the ATR 72-600 it is not very common as the entrance to the aircraft is at the rear part of the fuselage as shown below



Walking from the back of the airplane, we pass Forward Cargo Compartment and enter the cockpit.



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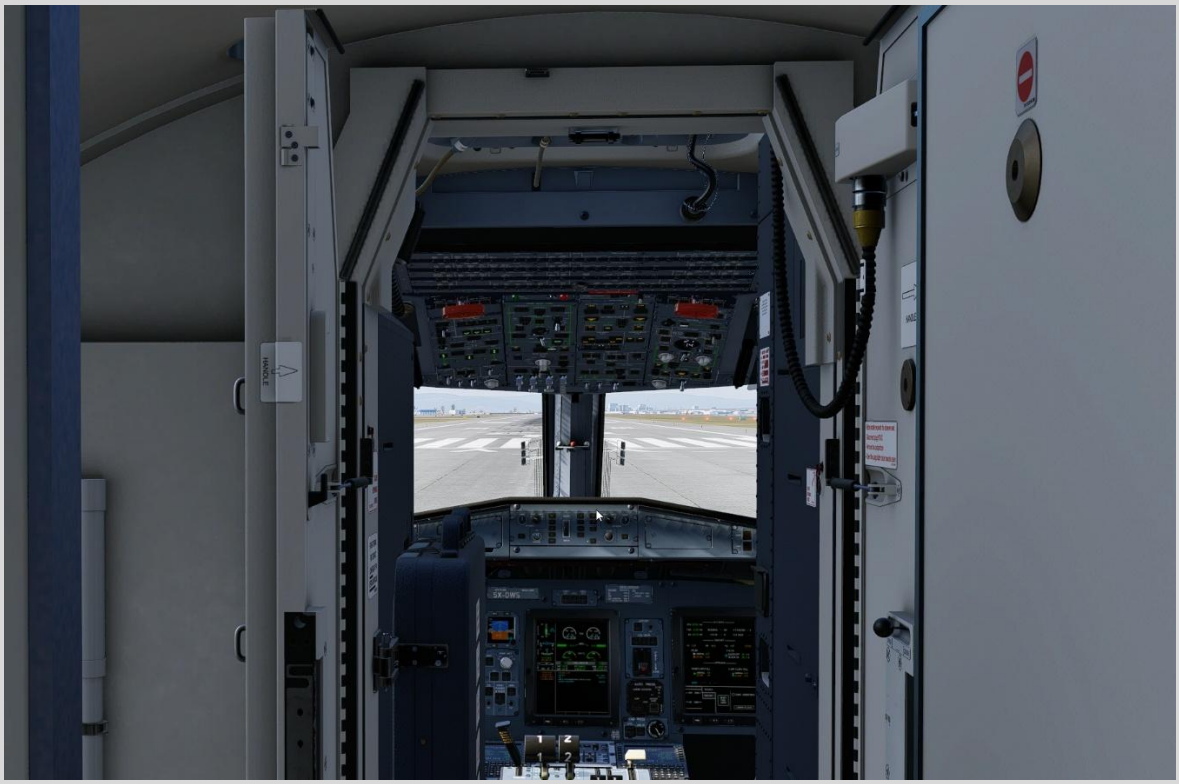
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Cockpit door is bulletproof and has two panels opening toward the cargo compartment.



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Door halves are locked with electromagnets controlled by pilots. When electrical power is lost, doors can be locked/unlocked manually by sliding top and bottom door handles.



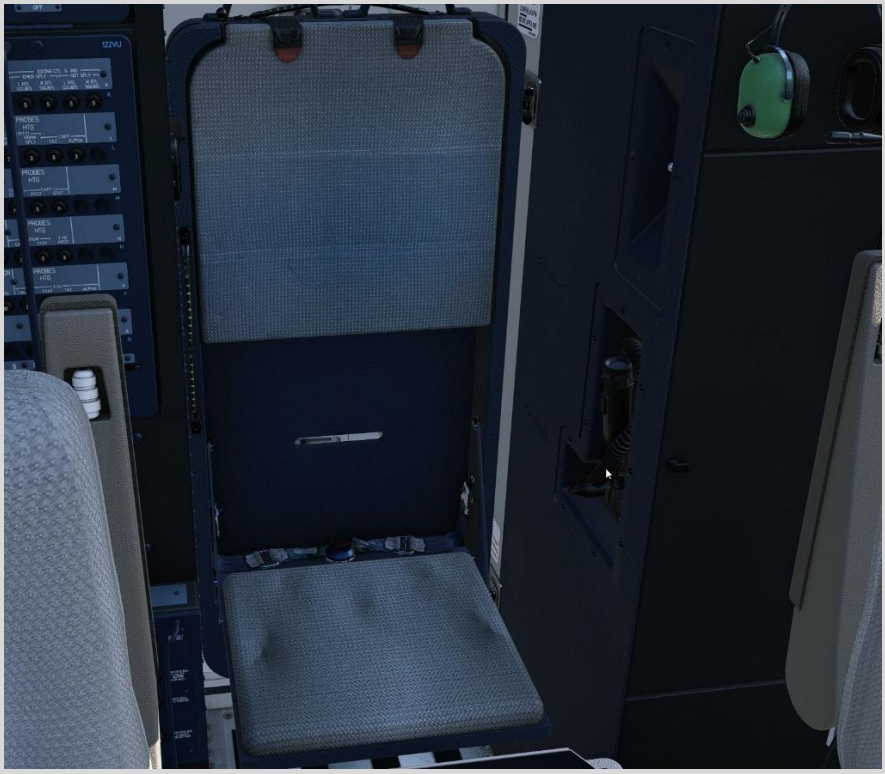


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Observer Seat when not in use, is folded against left cockpit wall and held in place with the bungee cord. To unfold the seat, it needs to be pushed and locked against the cockpit door frame.



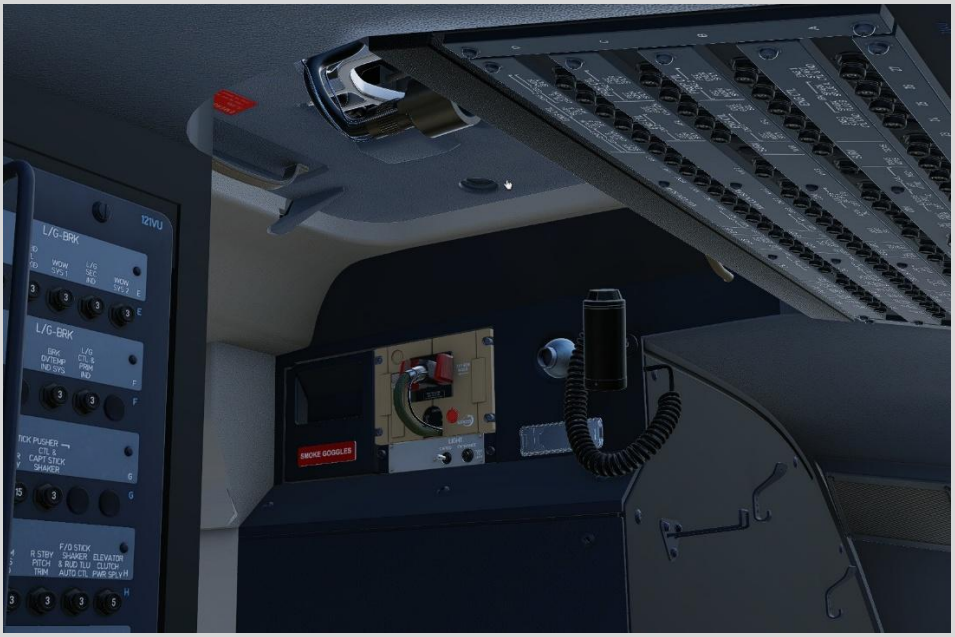


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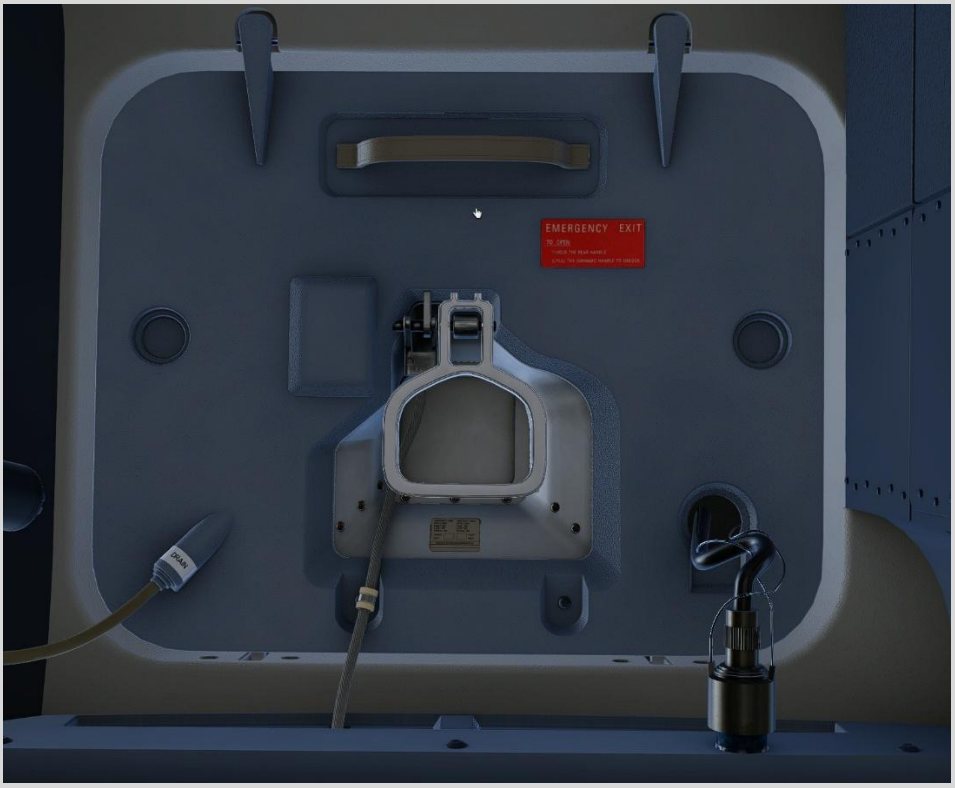
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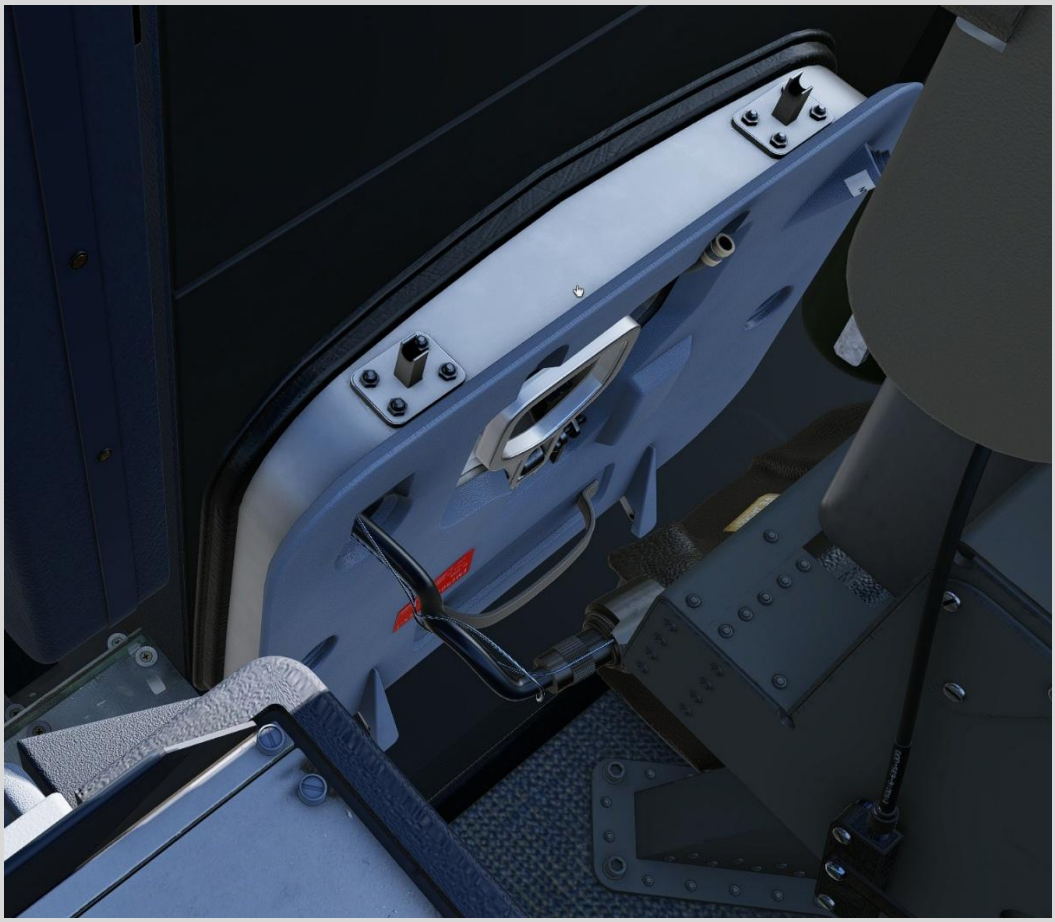
On the left side of the cockpit wall above the Observer Seat, there is a compartment for Smoke Goggles, Oxygen Mask, Push Button for Entrance Light, adjustable Ventilation Vent and the Reading Light.

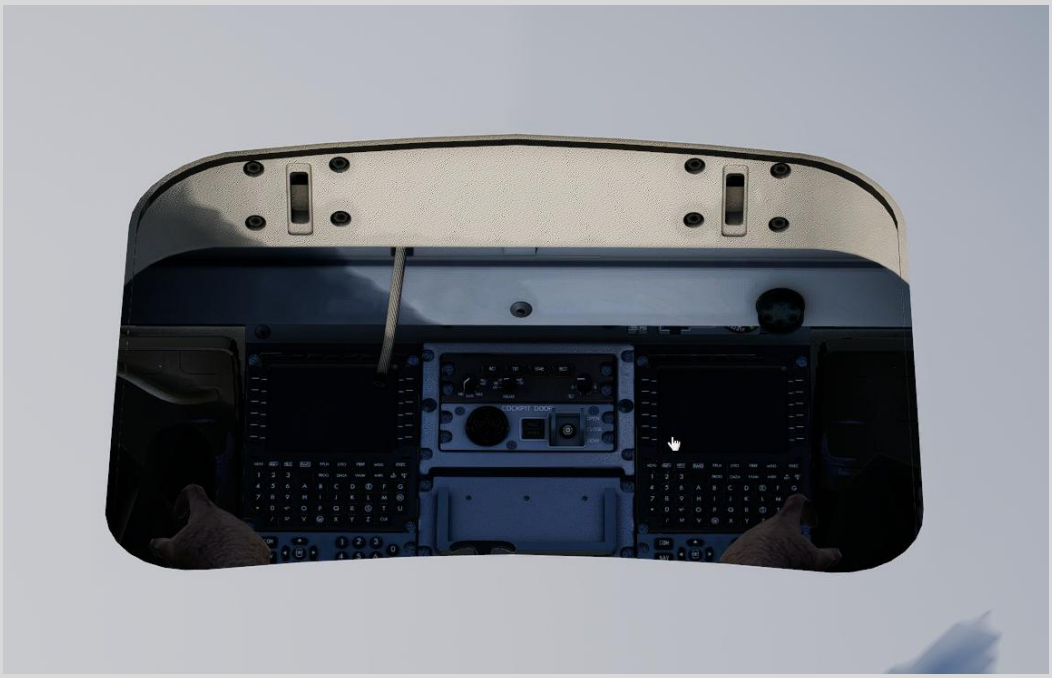


Escape Hatch is used as an emergency exit from the cockpit as cockpit windows do not open.



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On the wall to the right of the Observer Seat there are steps and escape rope.





Pilot Seats have animated adjustable arm rests.

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Proper seat alignment to see over the nose and all instrument panels is achieved when pilot see red ball over the white one. Because of the graphical limitations of the simulator used on computer screen, we just adjust the views for the most comfortable positions while flying.

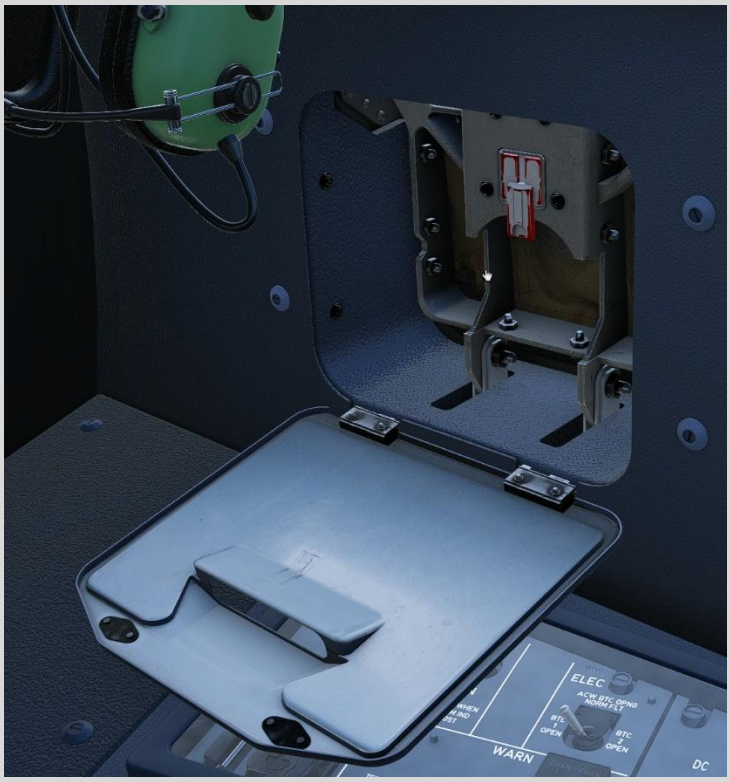


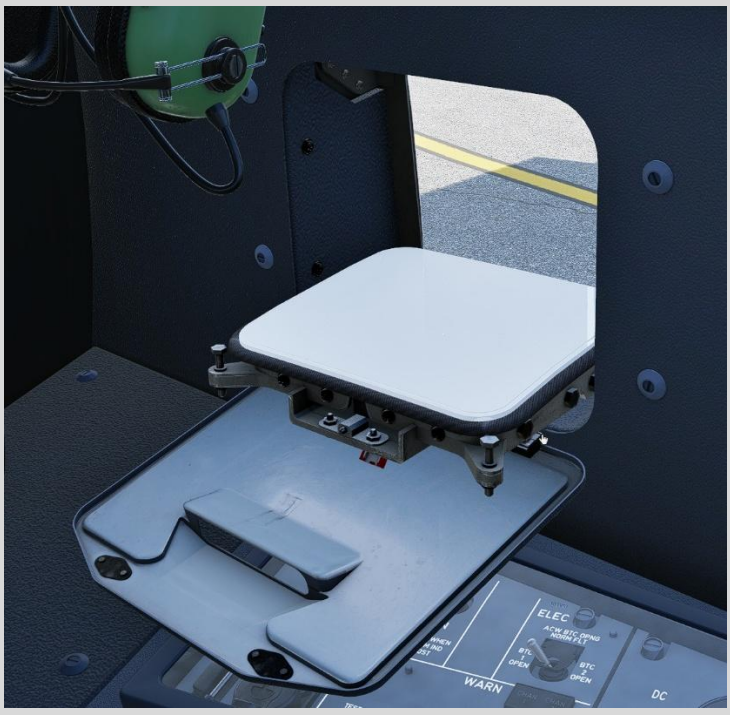
Under the left side window, there is a Communication Hatch that is a part of the ventilation system and allows to pass documents.

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Circuit Breakers are located on the wall behind FO First Officer Seat as well as on the ceiling.



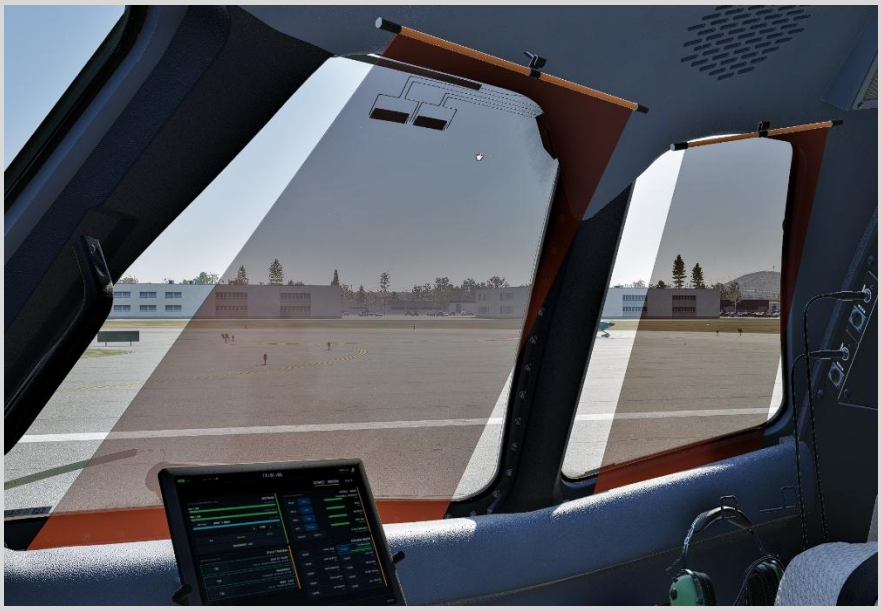


Side windows have yellow curtains that are used a lot but they need to be handled gently as they are easy to be damaged.

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Captain side Port Maintenance Panel has a transparent cover and design varies with 600 variants.

We are concerned only about TEST button, and Rotary Know in WARN section, ELECT IND and N/W STEERING (Nose Wheel Steering).



Starboard Maintenance Panel, also protected with transparent cover is very rarely used by pilots. The exception is ELEV CLUTCH if installed used to recouple elevator clutch in case it has been disconnected

We can also see next to the panel EXTRACT AIR FLOW Switch and Control Panel for Video Surveillance System.

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BRAKES

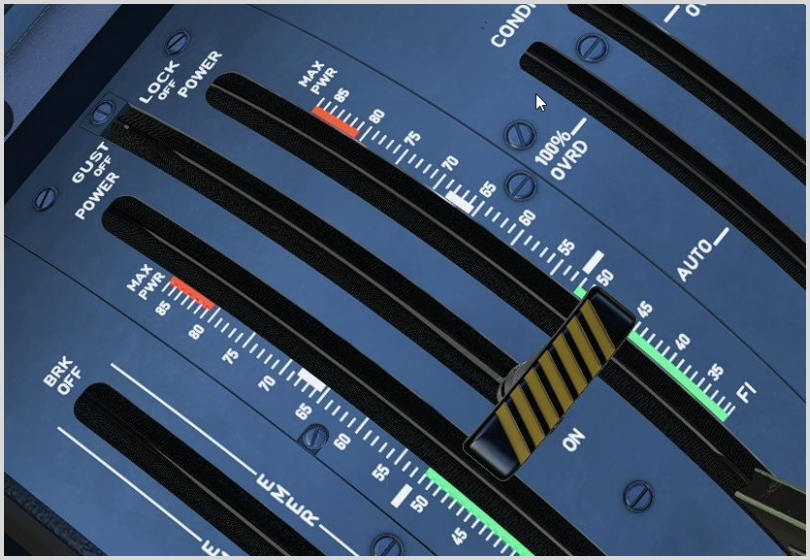
Brakes Lever can be set to three positions: Off, Emer (500 psi), and Parking (3,000 psi). The Emer position is used when normal braking is lost and prevents the wheels to lock when stopping the aircraft.



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GUST LOCK

Prevents power to be increased for Take Off when on the ground and taxiing



POWER LEVER POSITIONS

- Full Reverse REV
- Ground Idle GI
- Flight Idle FI
- Notch (used from Take Off to Descent, white indicator on the Power Levers base)
- Ramp (100% Power, red indicator on the Power Levers base)
- Wall (All the way up, Emergency Power gives 115 Torque)

Before starting the engines, Power Levers need to be set to GI Ground Idle and Gust Lock ON

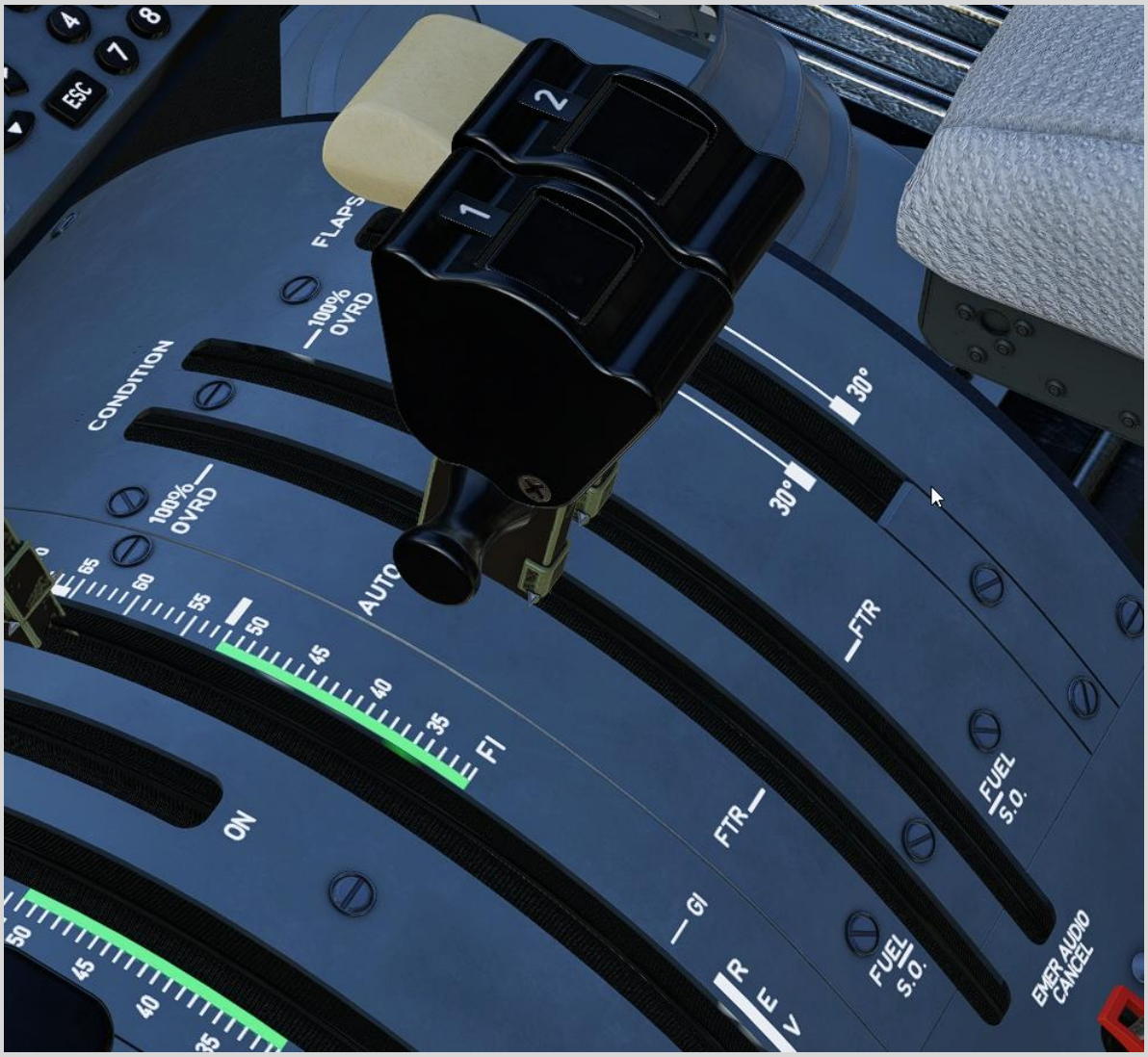


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CONDITION LEVERS

Condition Levers have 4 positions

- FUEL S.O. (Fuel Shut Off position)
- FTR (FTR position is used for engine start and feathering the propeller before engine shut down)
- AUTO (used for flight)
- 100% OVRD (100% OVRD is used when the PEC has failed, and when the checklist tells you to do so (for example single engine approach and landing). It is also recommended for approach in turbulent conditions, as it ensures more crisp engine response. (NP during normal approach is 82%)
- Before starting the engines Condition Levers needs to set to FUEL S.O. (Fuel Shut Off position)

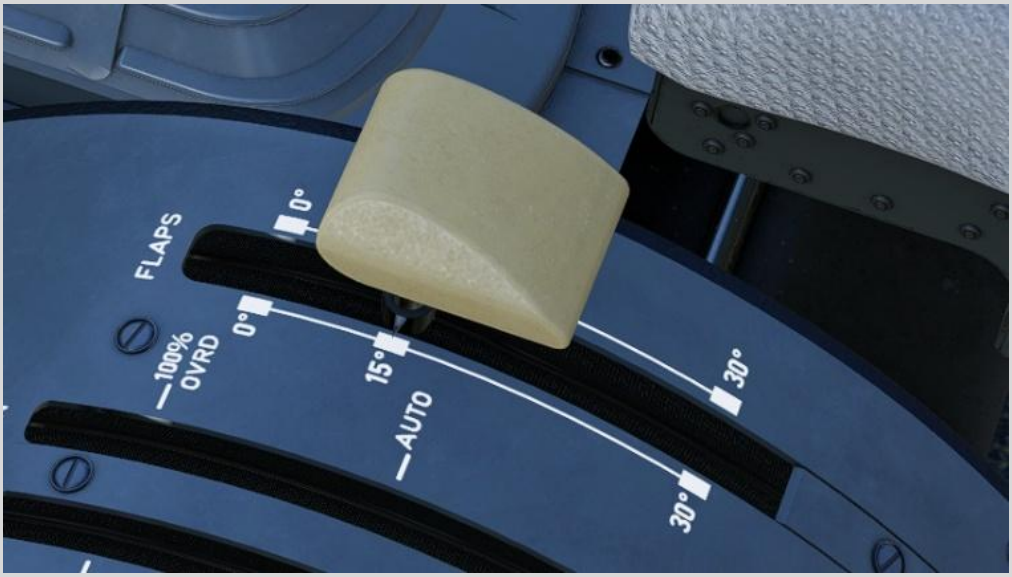


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FLAP LEVER

On ATR 72 there are 3 flaps positions, see above

- 0 Deg
- 15 Deg
- 30 Deg



CABIN

Cabin is modeled based on real life new ARMONIA interior



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Flight Attendants Seats are modeled and animated



Seats have adjustable tilt, folding table trays and pop able safety cards

All window shaders are adjustable per customer preference



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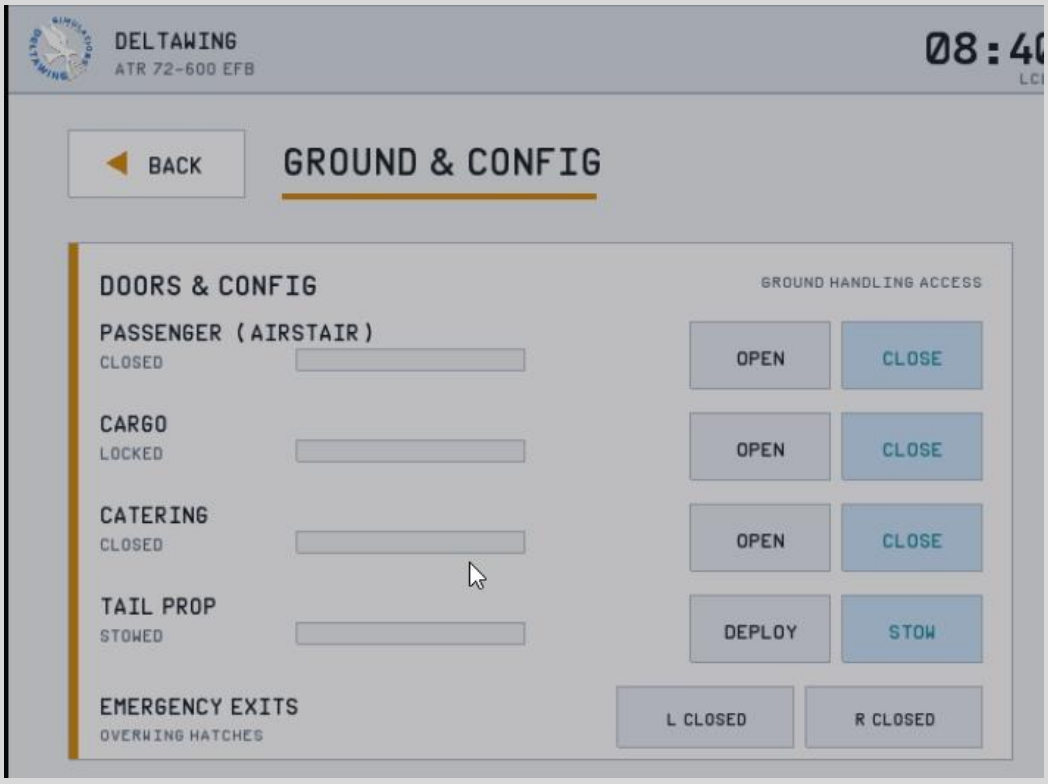
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Overhead bins are animated



Emergency Exits are animated and accessible from Cabin or EFB (Electronic Flight Bag)



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Passengers Signs are functional (turned on in cockpit Overhead panel), air vents are adjustable and reading lights are functional



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AFT Galley has animated doors and locks and many animated details





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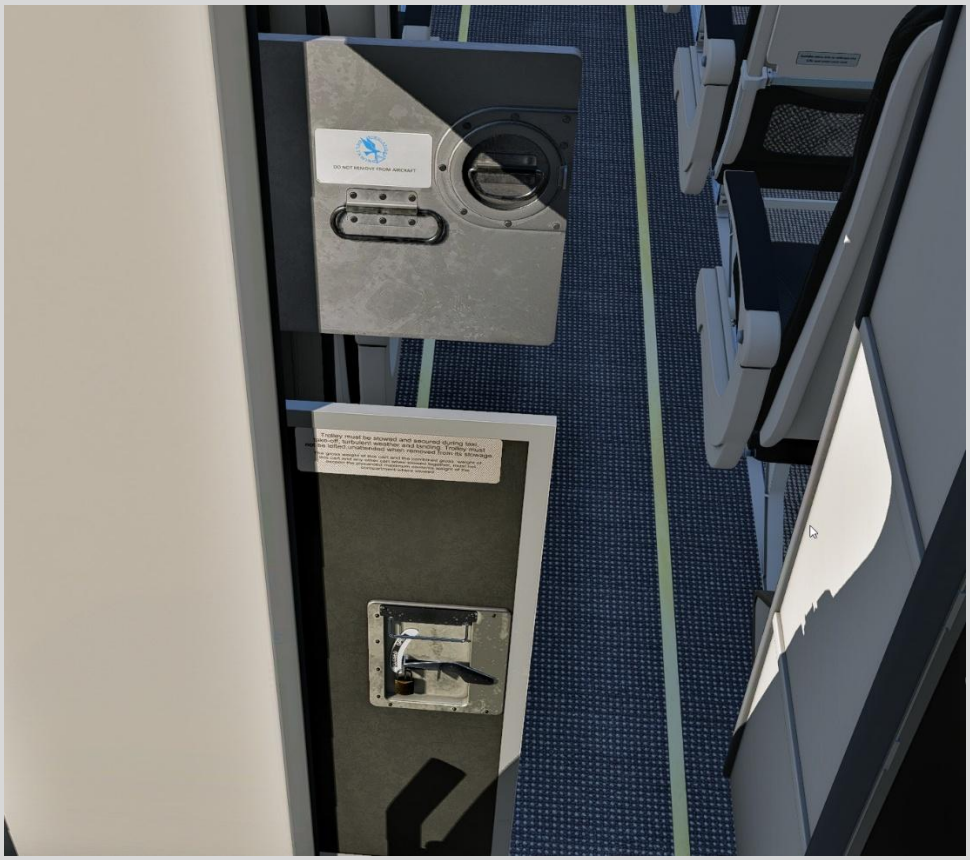
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Check some animations in the Lavatory 😊



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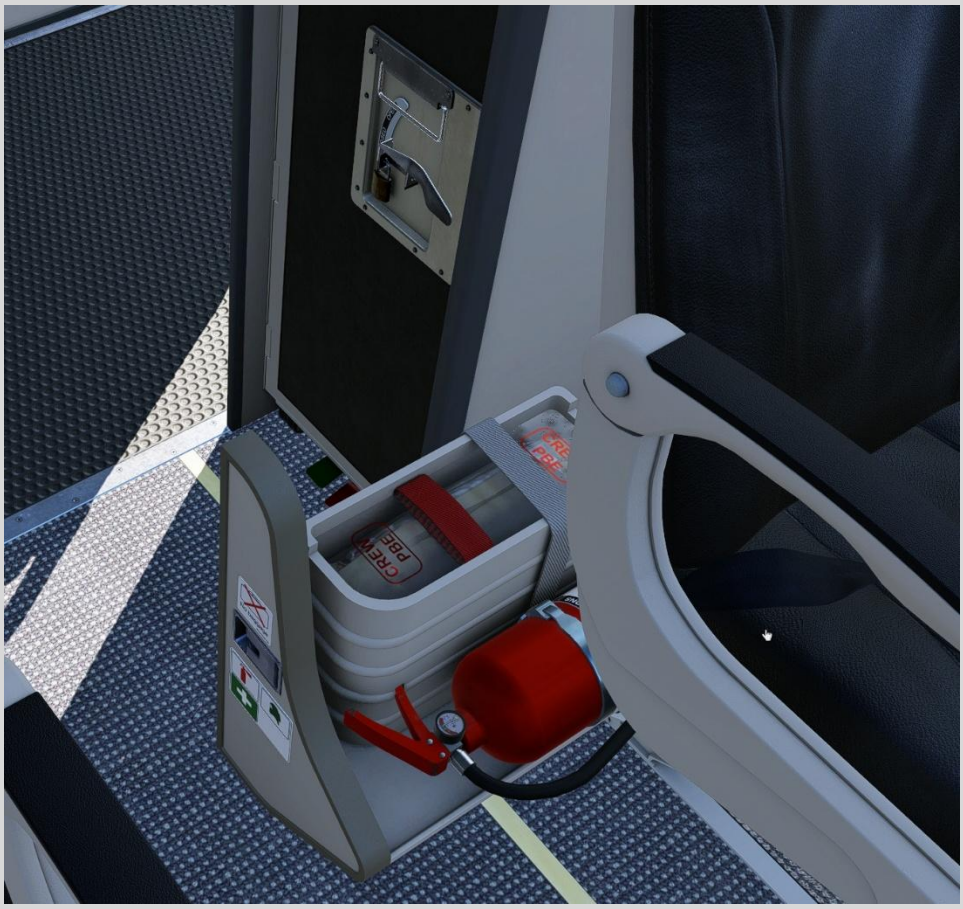


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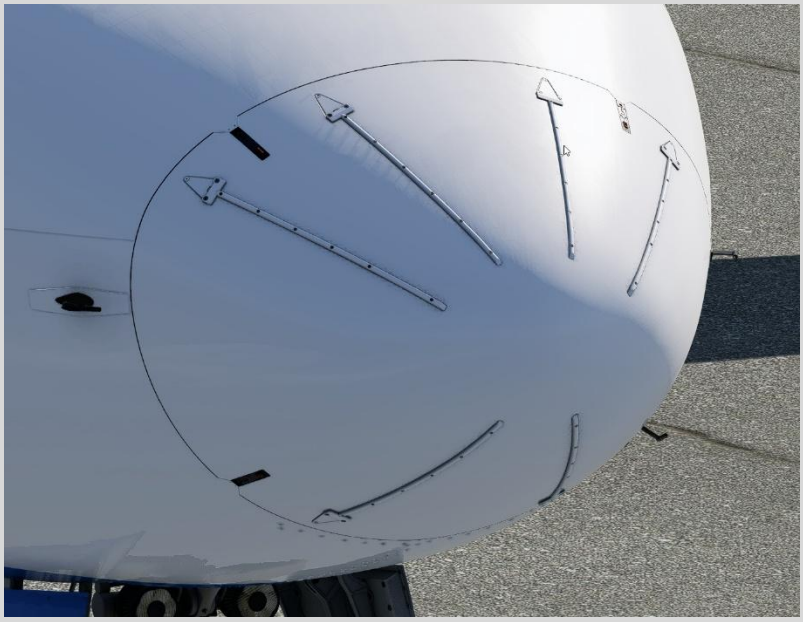
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EXTERIOR DETAILS

Below you can see beautifully modeled some aircraft external details



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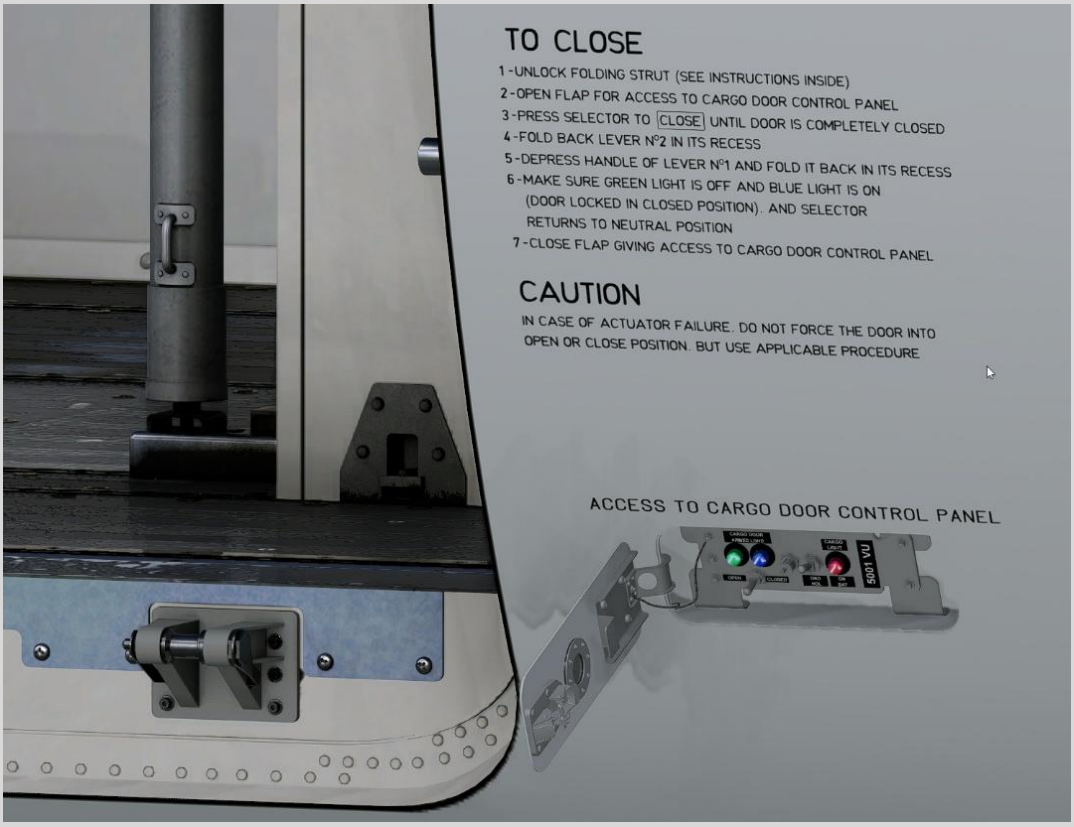




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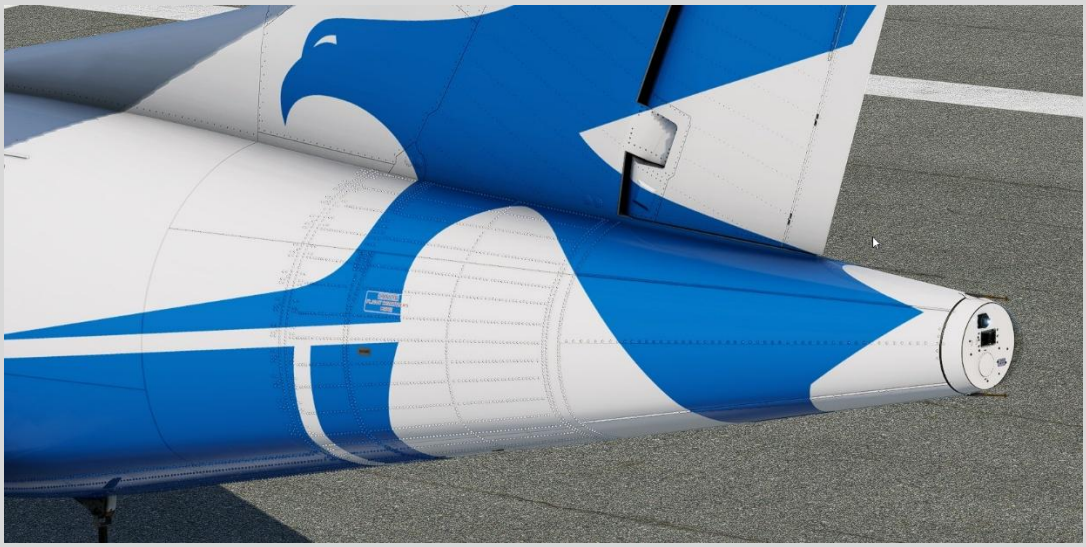


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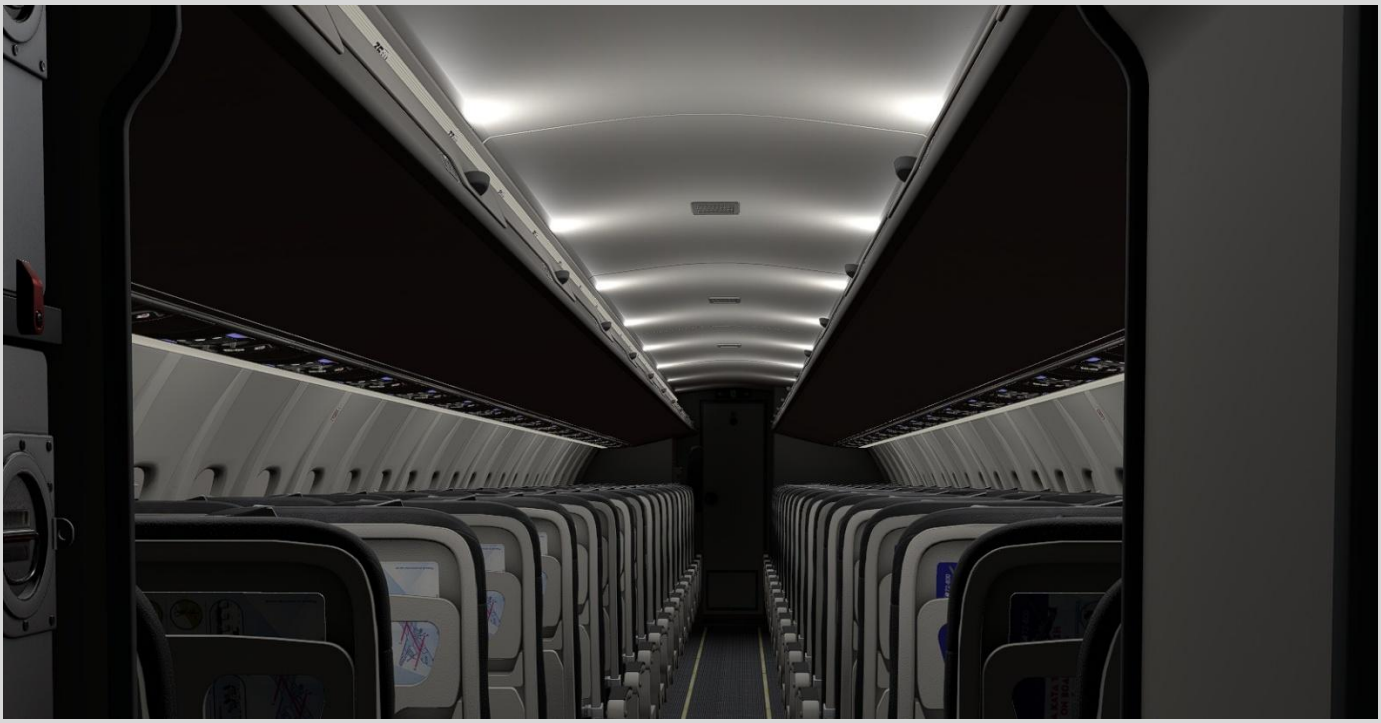




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FMS FLIGHT MANAGEMENT SYSTEM BASED ON THALES FMS220

This guide is based on Thales FMS220 FMS (Flight Management System) used on the ATR 72-600. FMS is a system that enables pilots to interact with many functions related to the flight.

On following pages, **when you see Press** (and screenshot shows content in red otlined rectagle), we mean **pressing corresponding LSK** (Line Selection Key on the left or right)

Refer to Explanations in Chapter called: FMS (FLIGHT MANAGEMENT SYSTEM) Introduction

FMS has:

- Sensors based localization system
- Planning Primary and Secondary Flight Plan
- Provides Lateral and Vertical Guidance
- Radio Management
- Navigation Database
- Performance
- Predictions

MCDU MULTIFUNCTION CONTROL AND DISPLAY UNIT

Our ATR 72-600 has two FMCs (Flight Management Computer) units operating in DUAL MODE meaning that both FMCs are synchronized, this is a normal operating mode



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MENU PUSHBUTTON



Press MENU key will bring you to display shown above

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INIT PAGE

Pressing **FMS1** will bring **THALES AVIONICS FMS 220** Page



Pressing **INIT** will bring up INIT Page shown below



From here we have options listed below

- POS INIT
- NAV DATA
- FPLN INIT
- WEIGHTS
- PERF INIT
- UNITS

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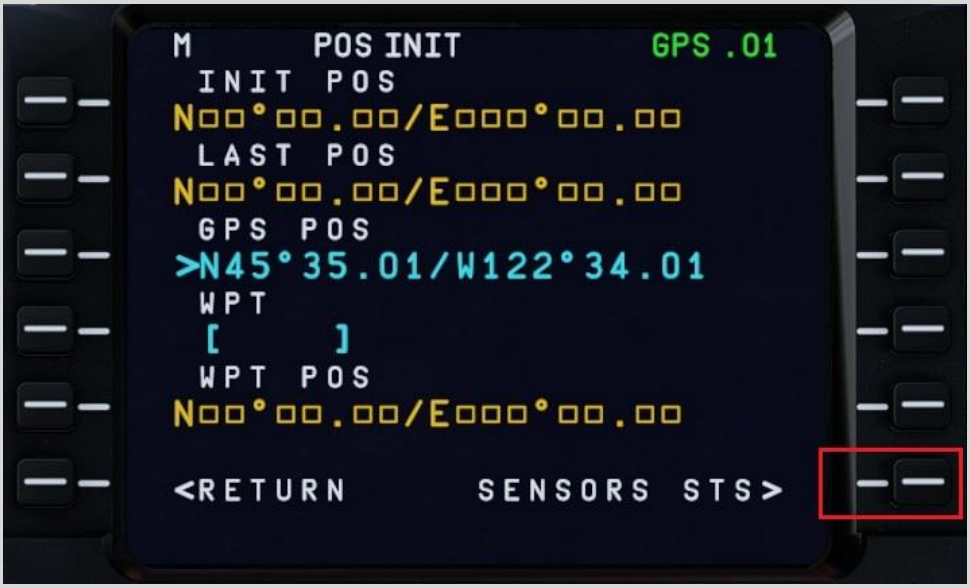
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POS INIT PAGE

No need to do anything starting with version 2.1 of the software position is calculated automatically

From FCOM:" CAUTION This manual FMS positioning initialization overrides the automatic FMS positioning function.Usually, the FMS continuously computes its position through an algorithm that can mix all positioning systems onboard (GPS, R/NAV) to compute the best FMS position available onboard"



You can check SENSORS STS Page but no need to do anything



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NAV DATA PAGE

Press MENU button, then FMS1, then NAV DATA button



It will bring you to NAV DATA Page



Press RETURN to go back to INIT Page

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FPLN INIT PAGE

Press **FPLN INIT** on INIT Page



Press **ROUTE**



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Enter Flight ID (anything you like, some users put callsign there) on scratchpad and press FLT ID



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In the Scratchpad Type Route in Format **XXXX/XXXX** and press **FROM/TO**



Press **EXEC** button



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Flight Plan will change color from Yellow to Magenta/Green and will become active



To enter Departure Runway and SID (Standard Instrument Departure), press **KPDX**

It will open **DEPARTURE** Page at Departure Airport



FOR FLIGHT SIM USE ONLY – NOT TO BE USED IN REAL LIFE OPERATIONS!

It will open **DEPARTURE** Page at Departure Airport



Make selectons accordingly to the Flight Plan, press **TMPY**



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Flight Plan Waypoints will become Yellow (TMPY ½ Temporary Flight Plan with 2 Pages)



Press **NEXT** button to see Next Page



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Press **PREV** button to get back to Page 1 and press **EXEC** button, Flight Plan becomes active



Press **NEXT/PREV** buttons to see next/previous Pages



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To go to Arrival Data, press **KRDM**



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It will open **ARRIVAL** Page/s



Make selectons accordingly to the Flight Plan, press **TMPY**



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Flight Plan Waypoints will become Yellow (TMPY 1/4 Temporary Flight Plan with 4 Pages)

Use **NEXT PREV** buttons to see corresponding Pages





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Press **EXEC** button, Flight Plan becomes active



Press **NEXT/PREV** buttons to go to next/previous Pages



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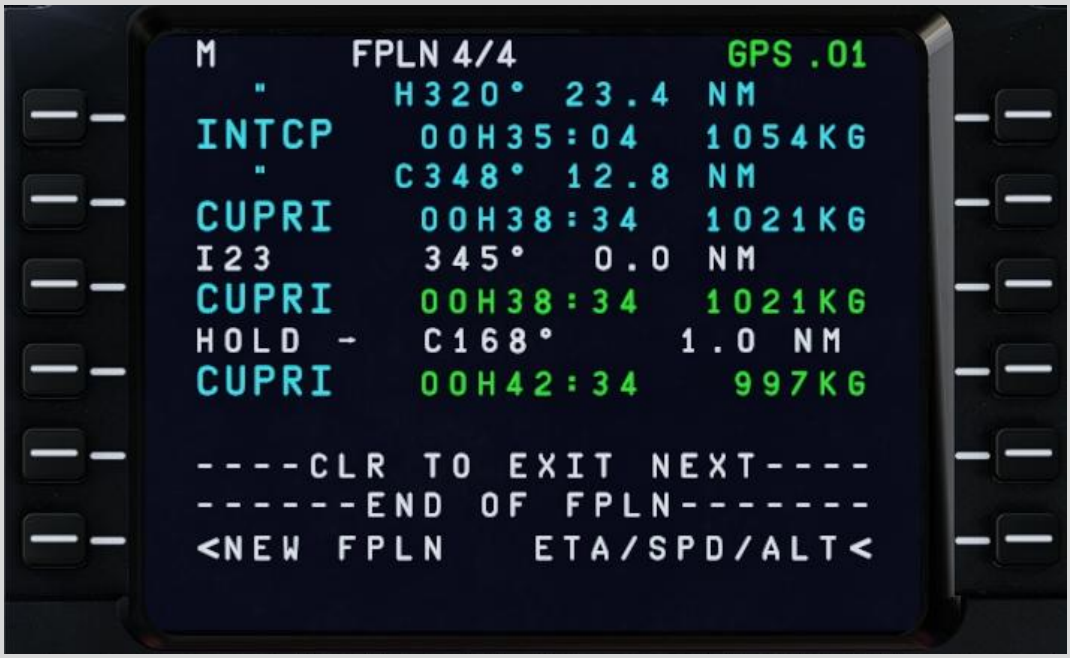




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Looking at Page 2 of the Flight Plan (FPLN 2/4) we see FPLN DISCONTINUITY

We need to clear it. Press **CLR** button and press LSK adjacent to discontinuity



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Waypoints text will become yellow indicating temporary flight plan (TMPY 2/4)



Press **EXEC** button , Flight Plan becomes **ACTIVE** with 4 pages

Press **NEXT/PREV** will go to next/previous Pages



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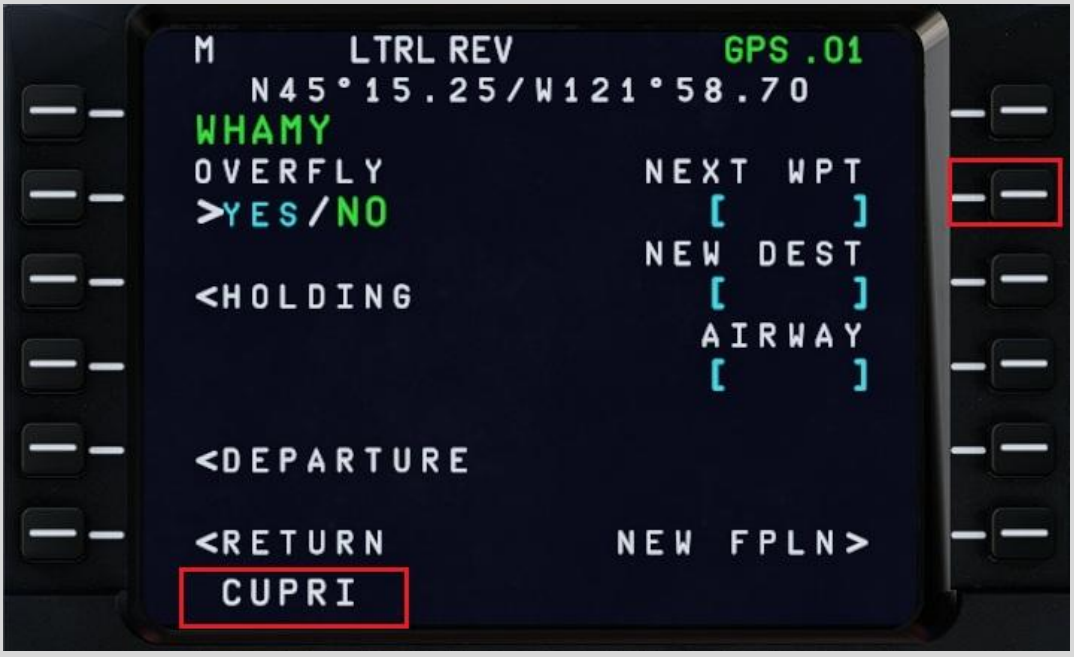
ADDING WAYPOINT TO ROUTE

Let's say we want to add CUPRI after WHAMY

Scroll to the page where you can see **WHAMY** and press on **LSK** next to WHAMY



Type **CUPRI** on scratchpad and press **NEX WPT**



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Press **K1** option (based on coordinates, K1, and LSK next to **K1 ENRT**

You can check coordinates in Skyvector.com website



Then press **EXEC**



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After green **EXEC** light goes off, press **RETURN**



CUPRI was added to the planned route

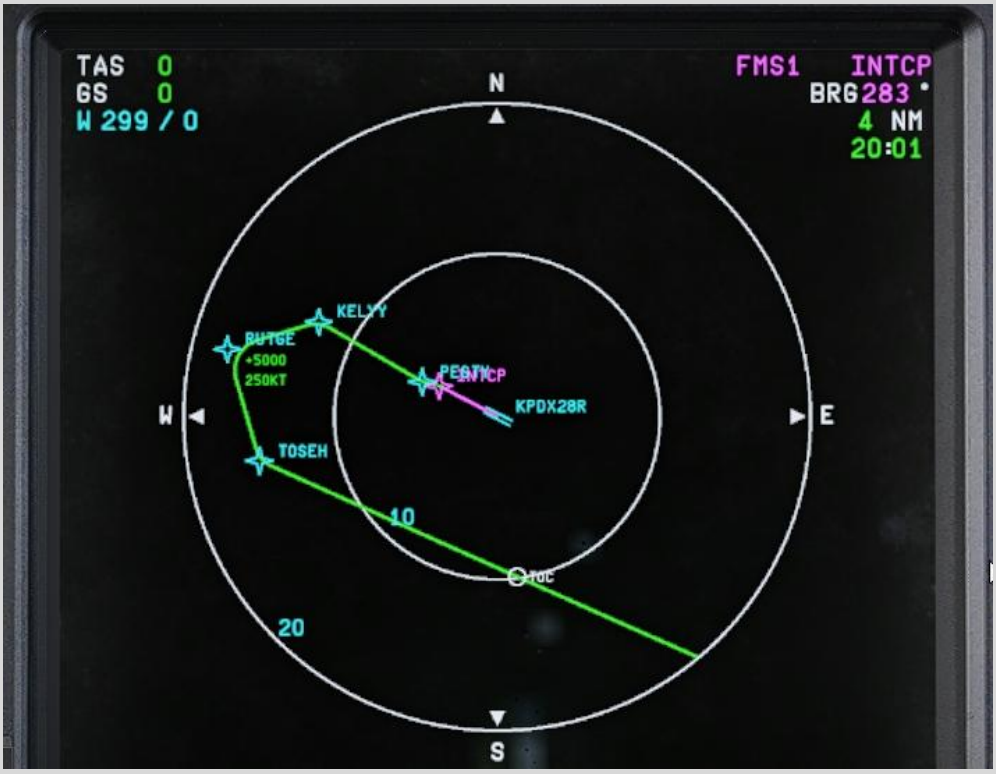


Use PREV and NEXT buttons to make sure all is good and there is no route discontinuity

Switch to **PLN** mode on **MFD ND** (Multifunction Disdplay Navigation Display) and pressing **NEXT**, scroll between all waypoint of programed route

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ND will center on selected waypoint





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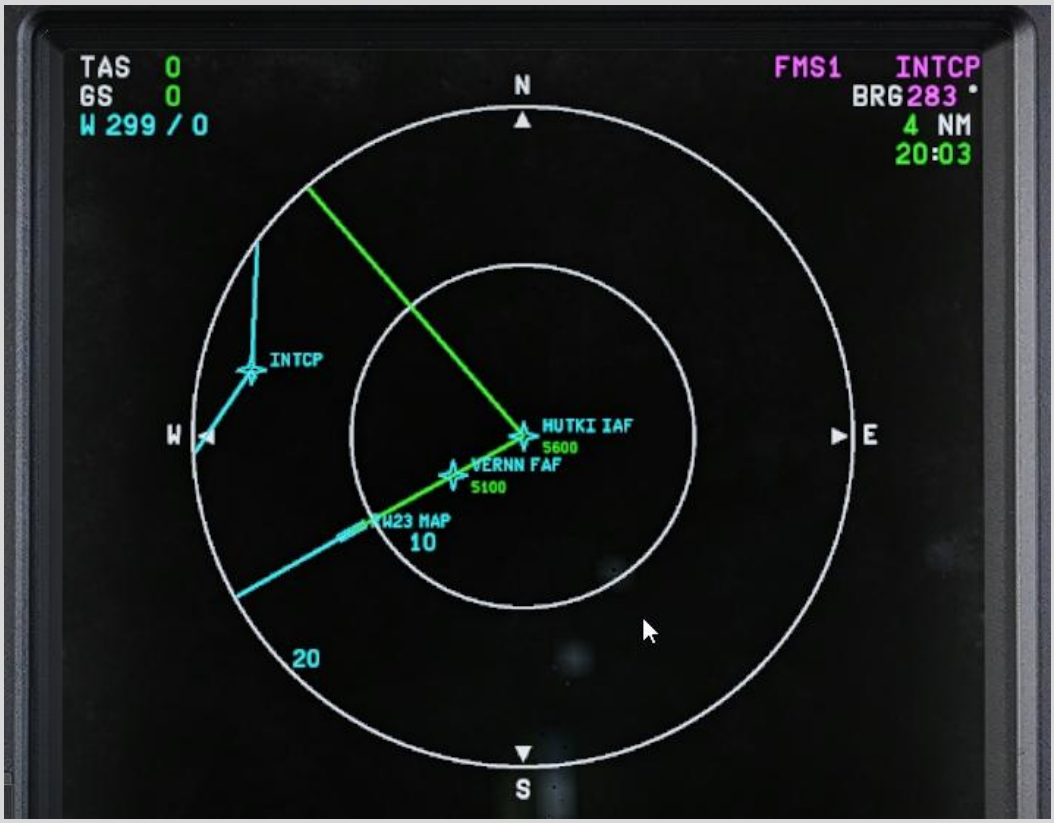




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Notice that Map Orientation in PLN mode is that North is facing Up

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WEIGHT PAGE

Press **MENU**, then **FMS1**



It will bring up **THALES AVIONICS** Page, press **INIT**



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It will bring you to **INIT** Page, press **WEIGHT**



It will bring up the **WEIGHT** Page



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- ZFW, FOB, RESERVE and T/O CG can be entered via MCDU keypad and pressing corresponding LSK next to the entered value

- ZFW, FOB, RESERVE and T/O CG can be also transferred automatically when using Simbrief from EFB or when changing values using WEiGHT BALANCE Page in EFB
  Changing WEiGHT BALANCE Page entries does NOT transfer RESERVE

- T/O TRIM (Take Off Trim) will be calculated automatically after you enter T/O CG (Take Off CG value from EFB

- After you are done editing WEIGHT Page, press RETURN back to INIT Page



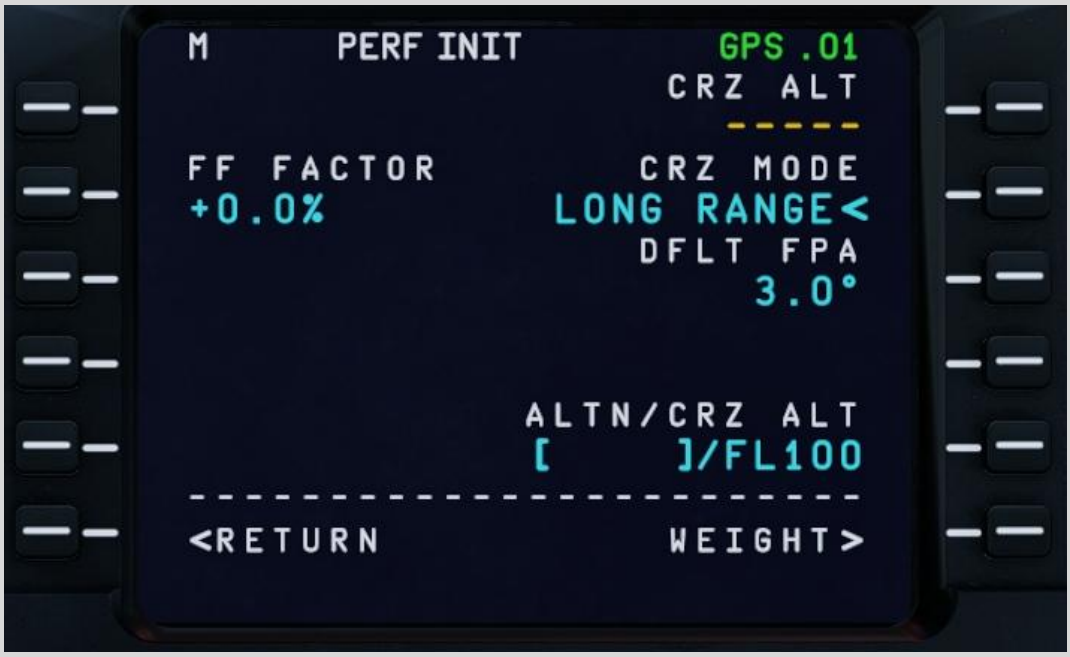
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PERF INIT PAGE

Prom **INIT** Page press **PERF INIT** Page



It will bring you to **PERF INIT** Page

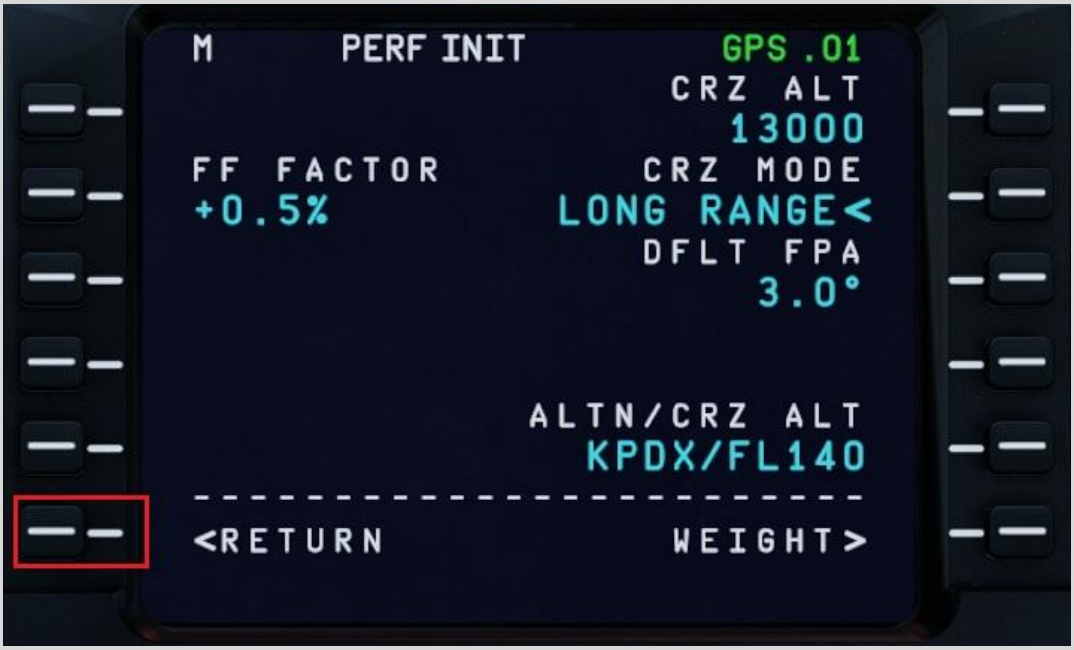


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Enter **CRZ ALT** (Cruise Altitude in format XXXXX FT)

Enter **ALTN/CRZ ALT** (Alternate Airport Cruise Altitude) in Fornmat YYYY/FLXXX

You can also add **FF FACTOR** (Fuel Flow Factor) and press **RETURN** to get back to **INIT** Page





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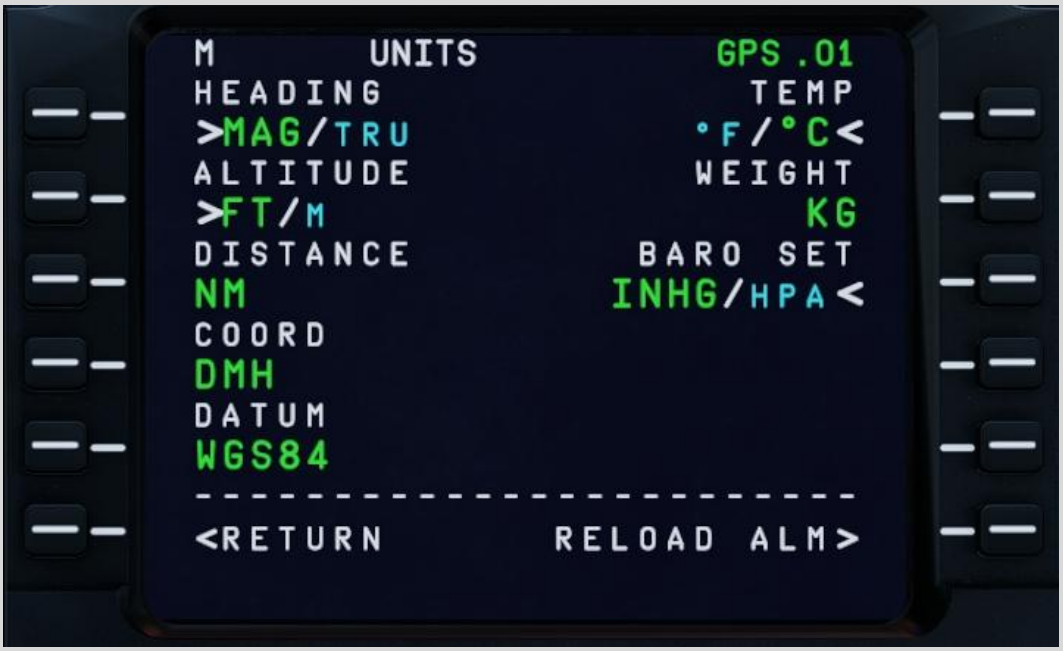
UNITS PAGE

From **INIT** Page Press **UNITS**



UNITS Page will let you switch units of different parameters

HEADING, ALTITUDE, TEMP, BARO SET



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COMMUNICATION PAGES

Pressing **RMS** (Radio Management System) button will take you to **COMMUNICATIONS** Pages



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You can set your **VHF1** and **VHF2** radio frequency, **XPDR** (Transponder code given by ATC), TCAS modes **IDENT** function



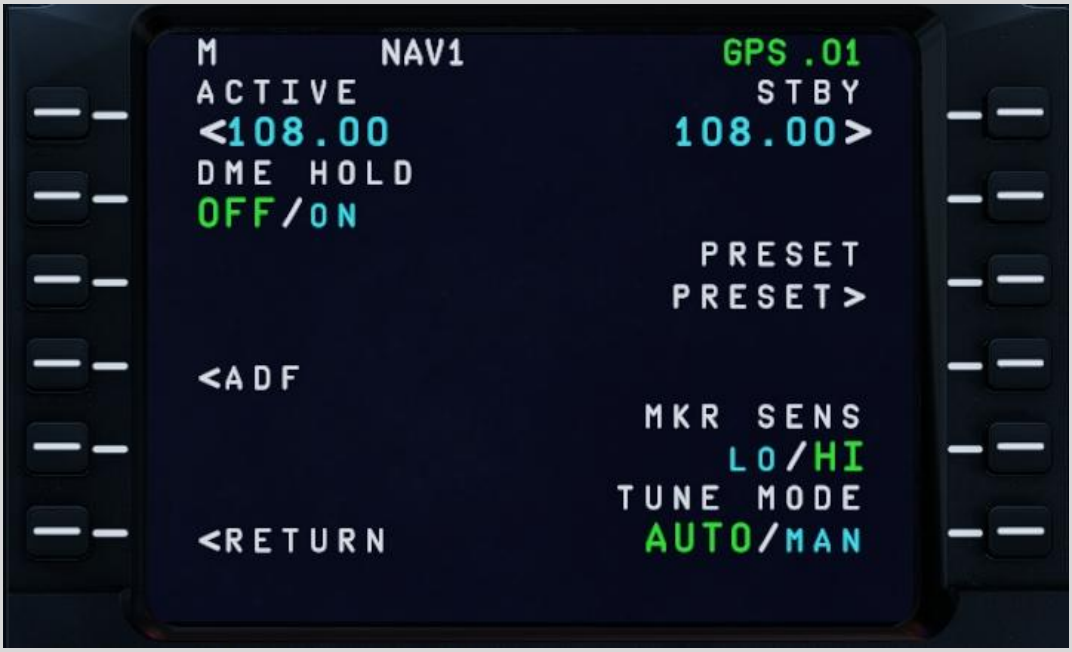
Pressing **NAV**, will bring you to **NAV1** Page



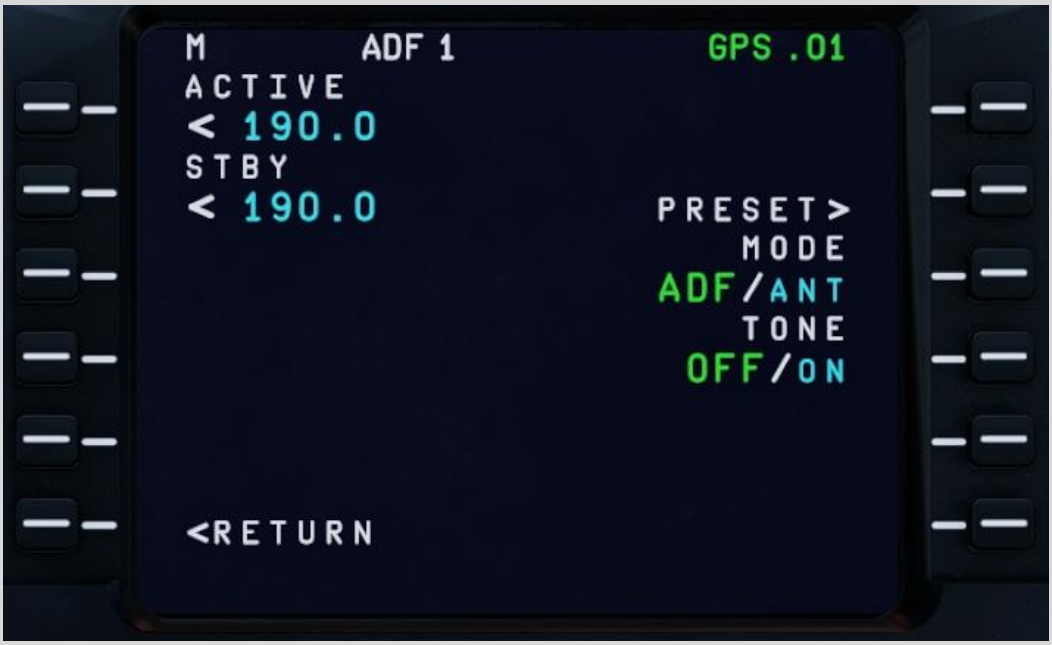
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On **NAV1** Page you can set:

- **NAV1** Radio Frequencies (ACTIVE AND STBY)
- **DME HOLD**
- **ADF**
- **MKR SENS**
- **TUNE MODE** (AUTO/MAN)



Pressing **ADF** will bring up **ADF** page where you can set ACTIVE and STBY frequencies as well as change MODE and TONE



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FPLN PUSHBUTTON

Pressing FPLN button will take you to FPLN Pages, you can scroll through Pages using NEXT/PREV buttons



You can scroll through Pages using **NEXT/PREV** buttons



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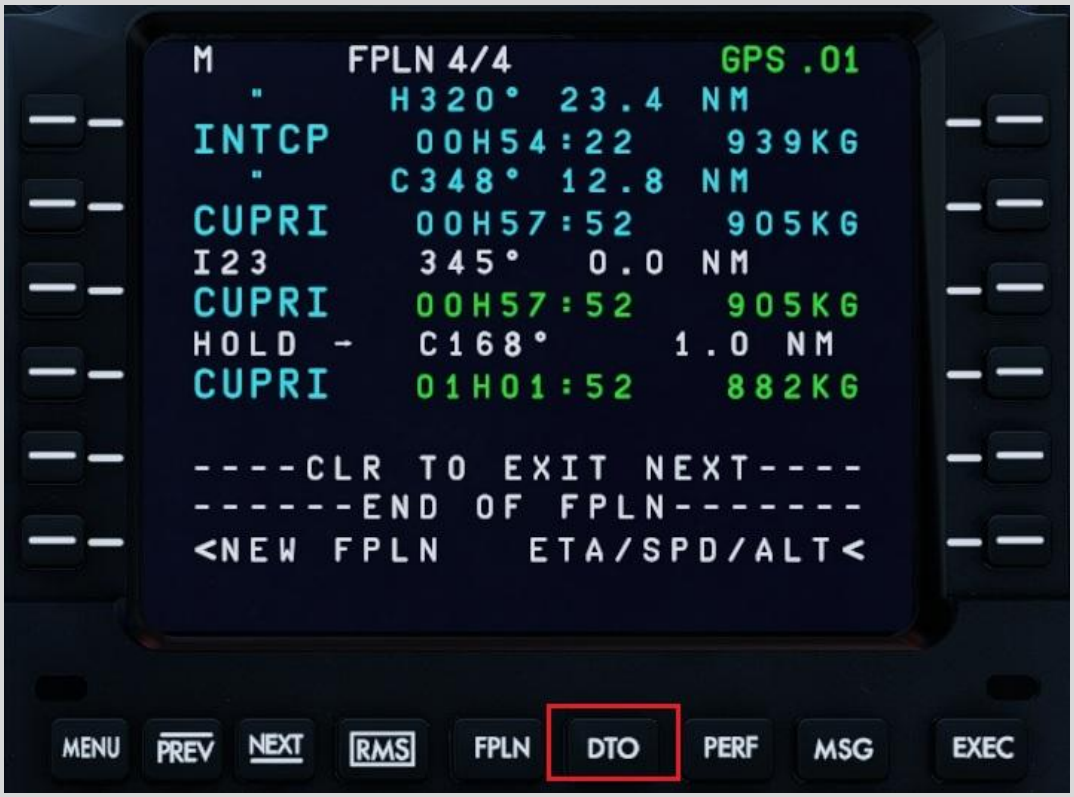
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DTO PUSHBUTTON

Pressing **DTO** button will take you to **DIRECT TO** Pages, you can scroll through Pages using **NEXT/PREV** buttons





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PERF PUSHBUTTON

Pressing **PERF** button will take you to **TAKE OFF** Page





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Second press will take you to **CRUISE** Page



Third press will take you to **APPROACH** Page where you can enter **QNH** in destination airport



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Do **NOT** Press **ACTIVATE**, just go back to any other pages

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MSG PUSHBUTTON

Pressing **MSG** button will take you to **MSG** (Messages) page





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EXEC PUSHBUTTON

Pressing the **EXEC** (Execute) button is used to confirm and activate pending changes to the Flight Management System (FMS)

It does **not** do anything unless the **green EXEC** annunciator/light is illuminated



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PROG PUSHBUTTON

Pressing **PROG** button will take you to **PROG** pages, you can scroll through Pages using **NEXT/PREV** buttons

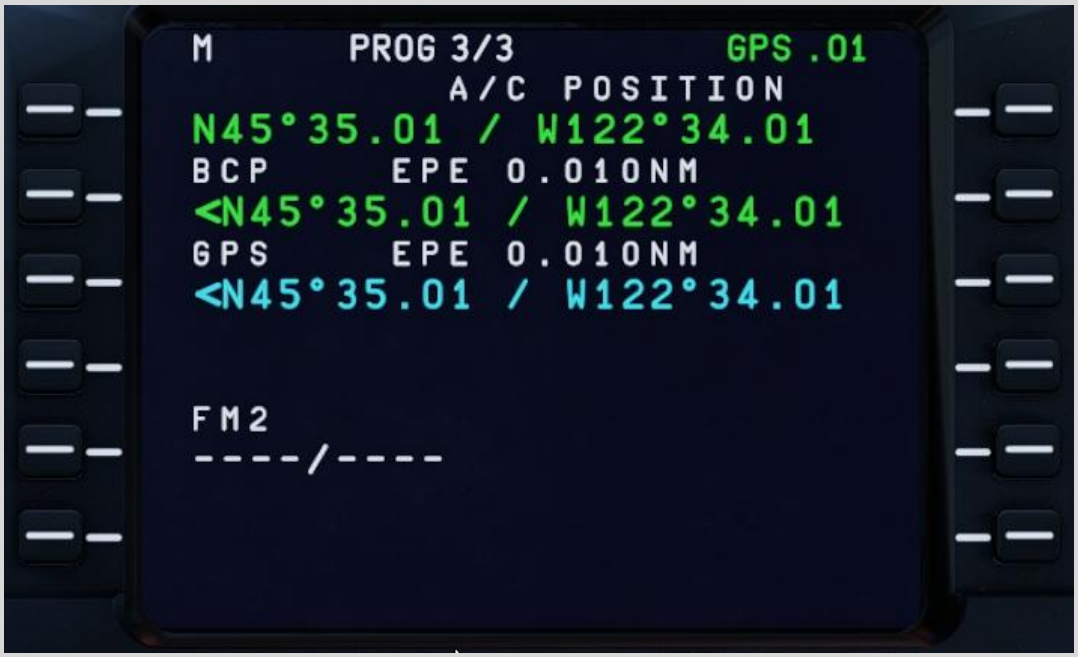




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DATA PUSHBUTTON

Pressing **DATA** button will take you to **DATA** Page

You can access following Pages:

- **INIT**
- **STATUS**
- **UNITS**
- **TIMERS**
- **DATABASE**
- **NAV DATA**
- **NAV FRQ**

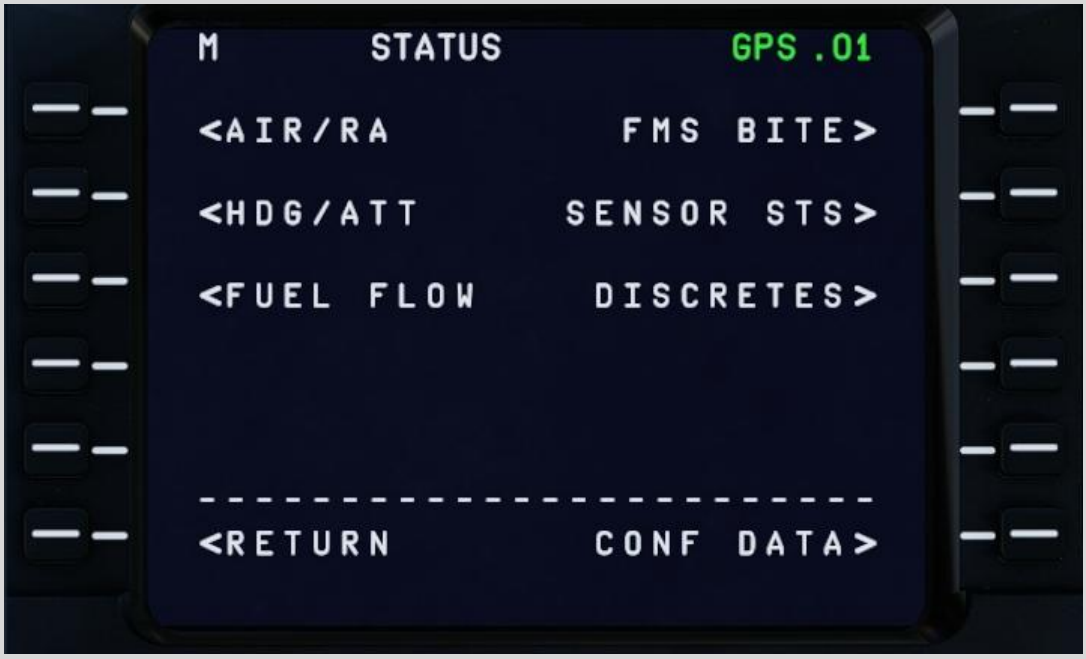


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INIT Page



STATUS Page

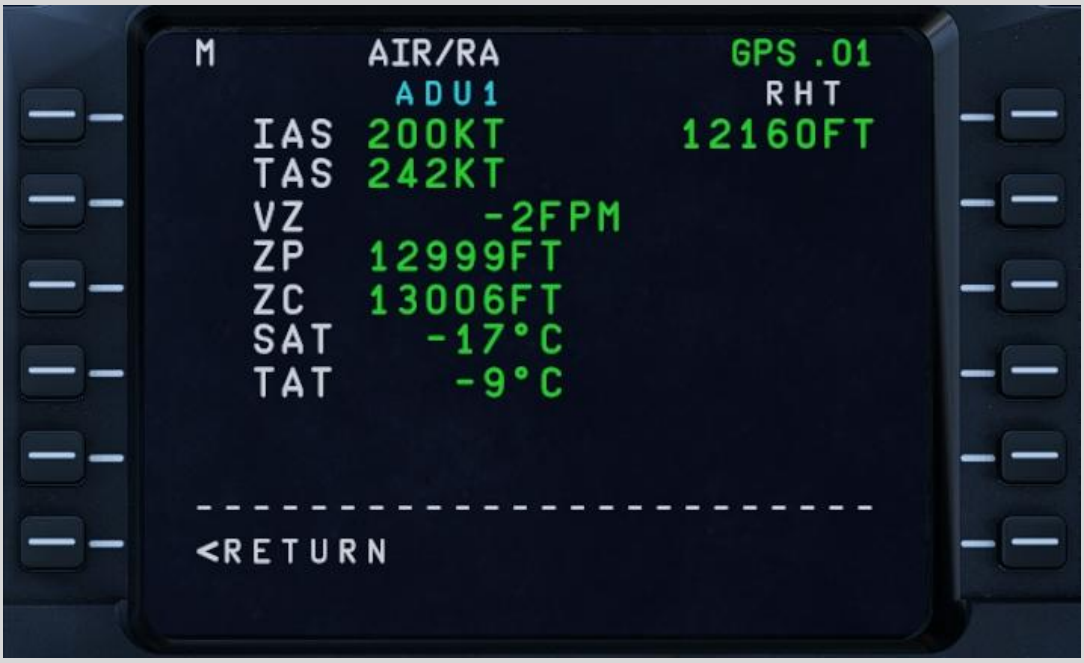


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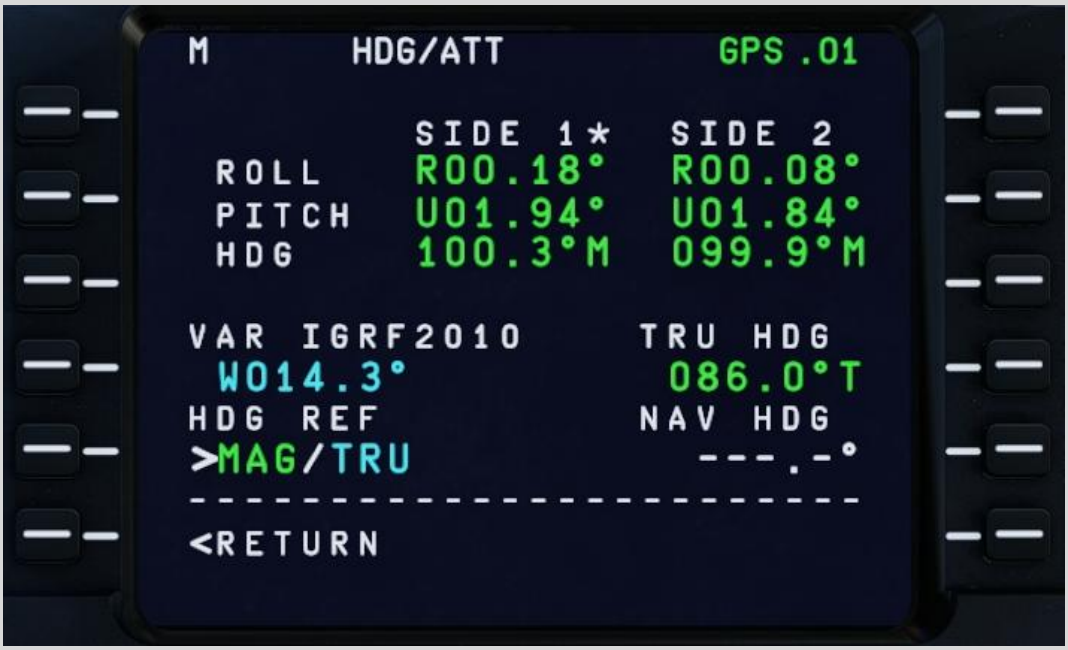
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AIR/RA Page



Press **RETURN** to bo back to **STATUS** page

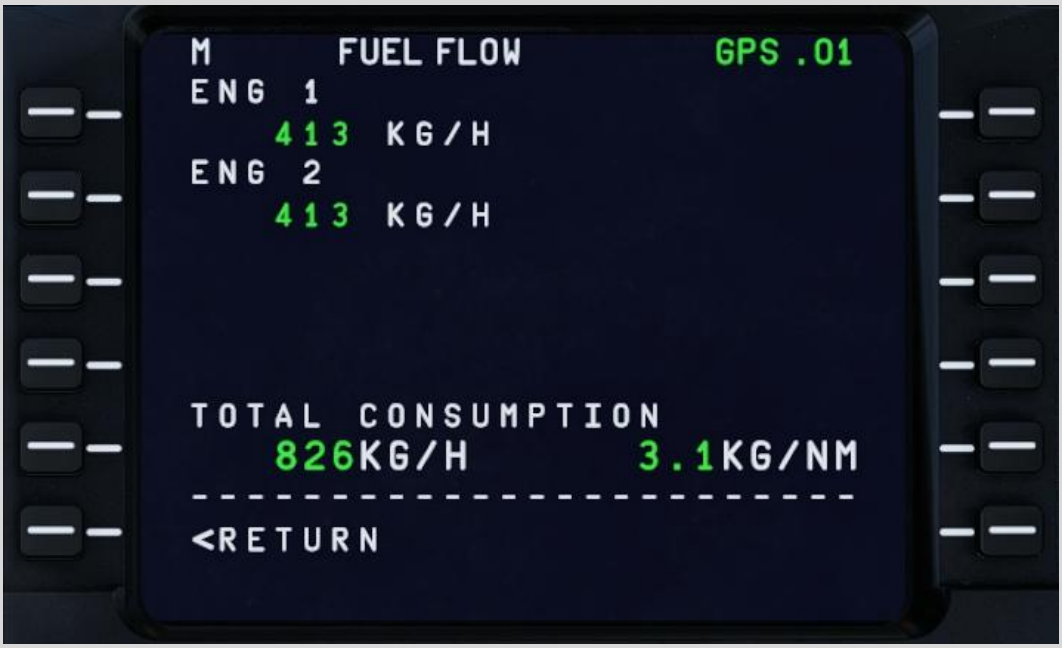
HDG/ATT Page



Press **RETURN** to bo back to **STATUS** page

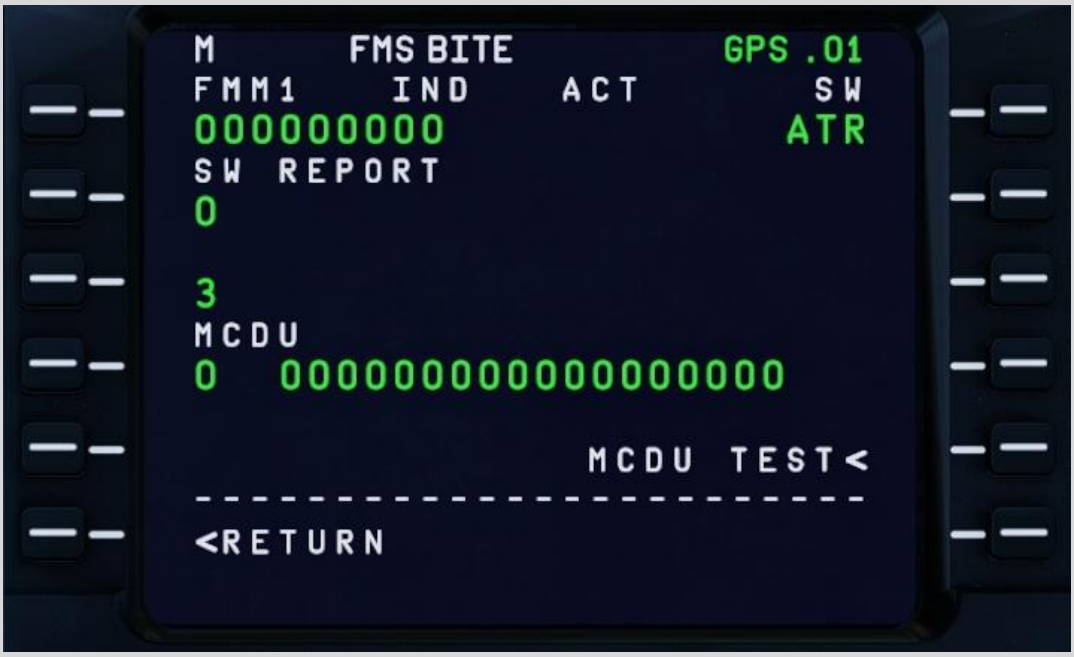
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FUEL FLOW Page



Press **RETURN** to bo back to **STATUS** page

FMS BITE Page



Press **RETURN** to bo back to **STATUS** page

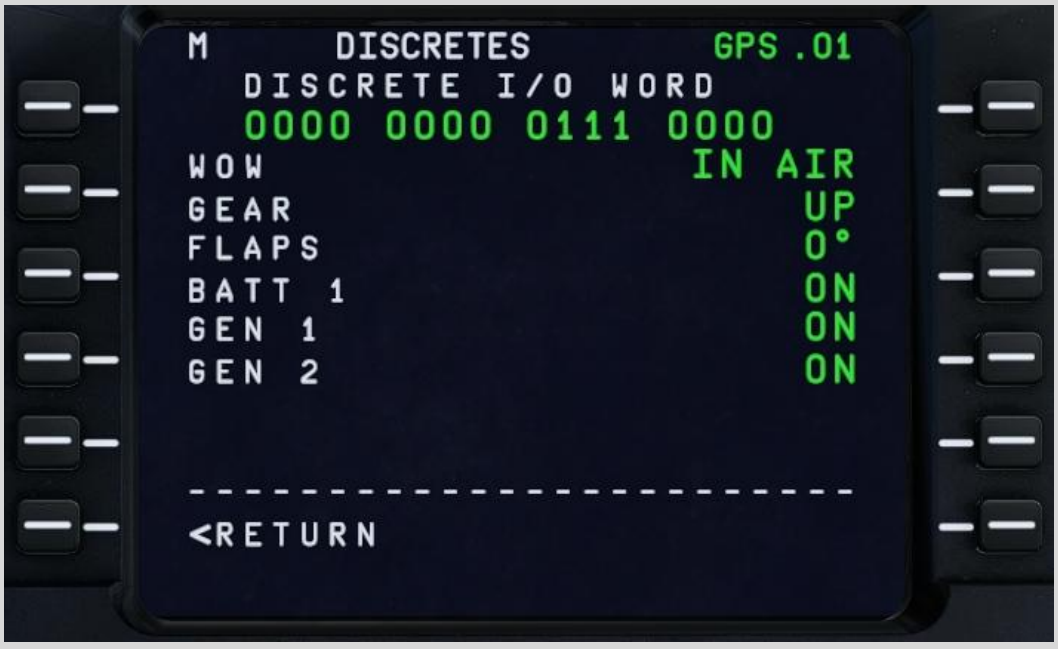
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SENSOR STS Page



Press **RETURN** to bo back to **STATUS** page

DISCRETES Page



Press **RETURN** to bo back to **STATUS** page

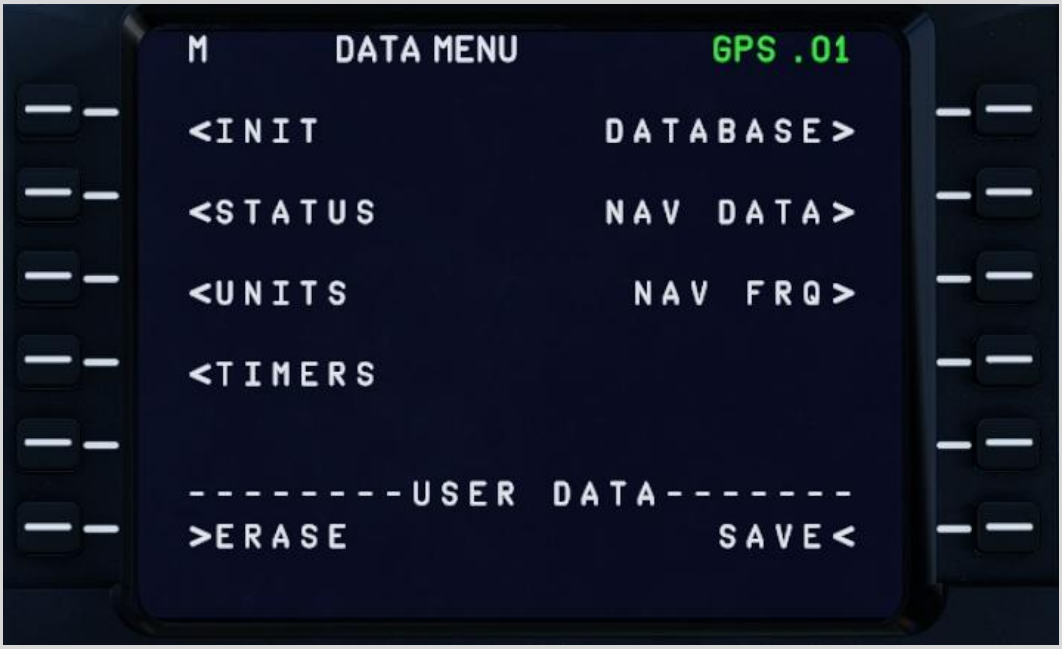
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CONF DATA Page



Press **RETURN** to bo back to **STATUS** page

Press **RETURN** again to get back to **DATA MENU** Page

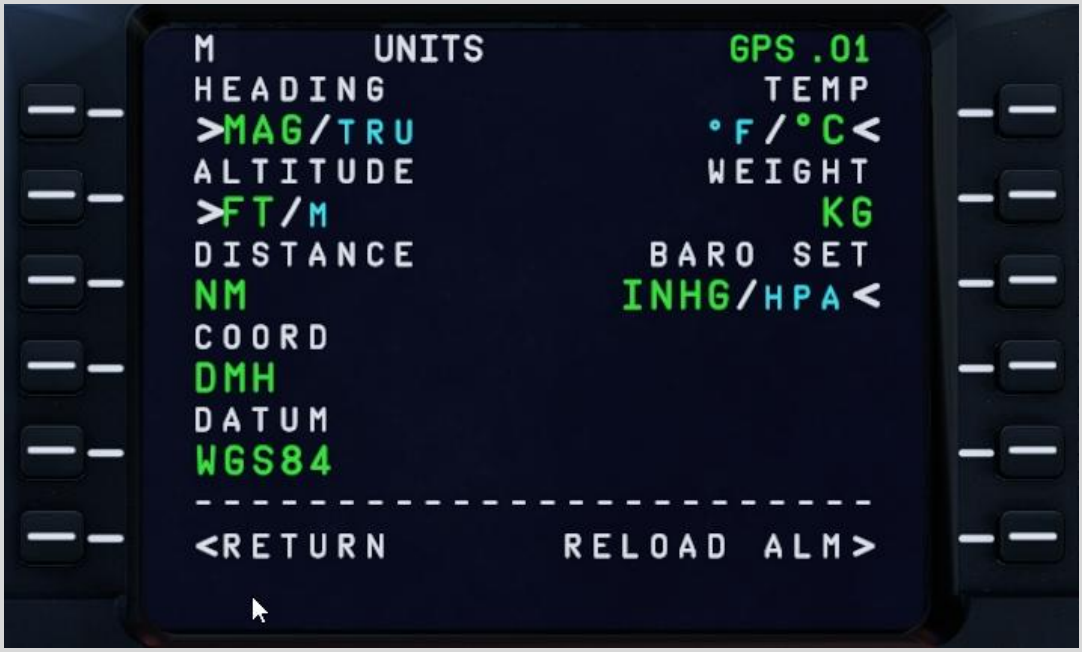


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UNITS Page



Units Page will let you set units for different variables

TIMERS Page

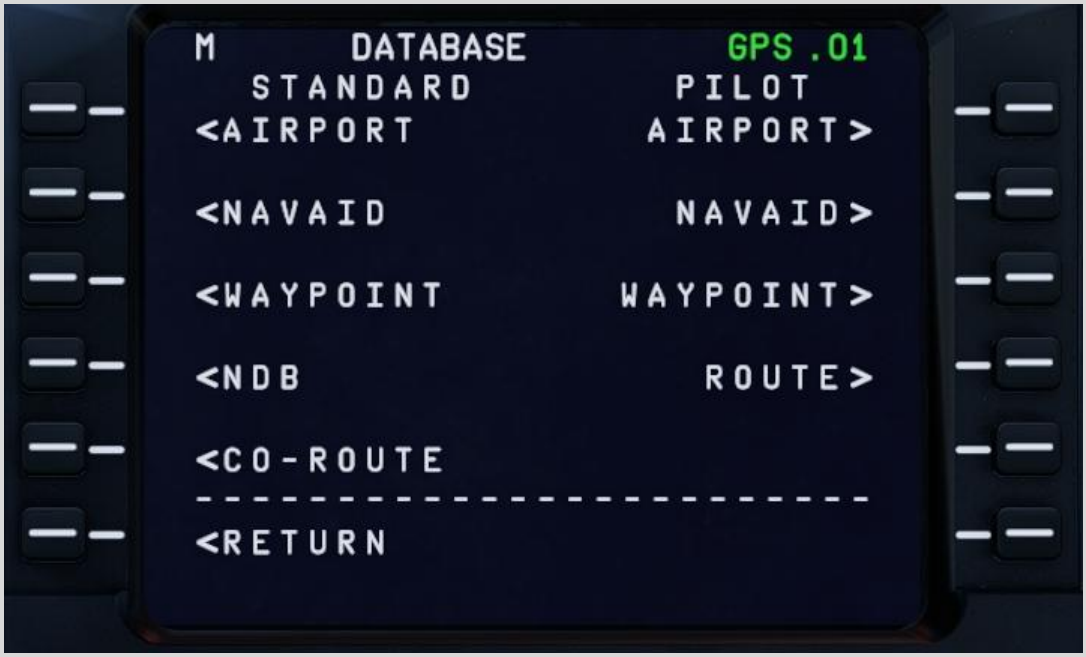


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DATABASE Page



DATABASE Page will let you go to different pages associated with the navigation data

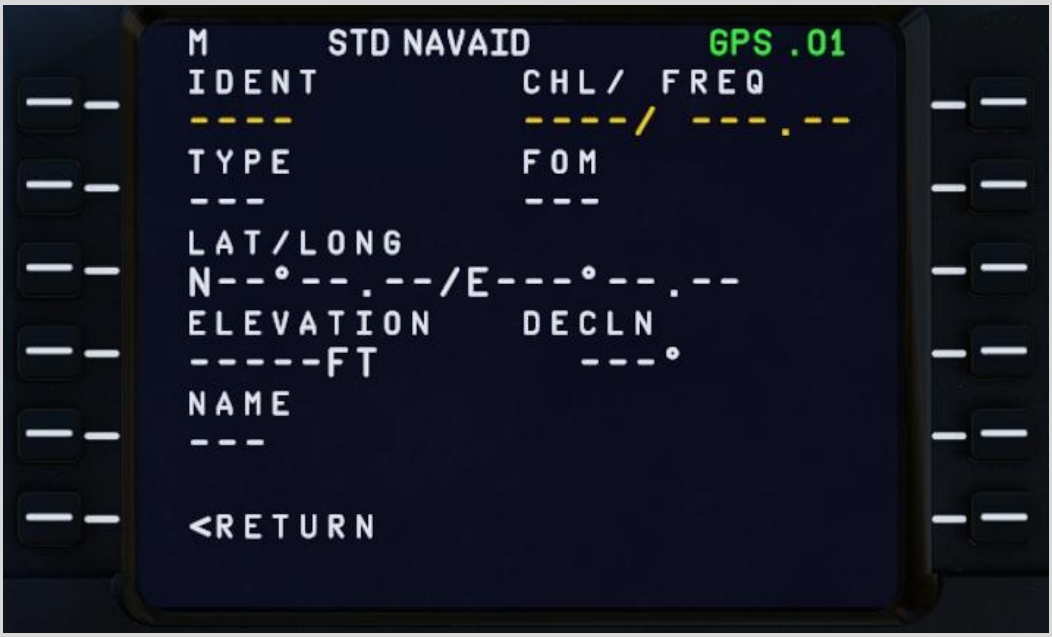


STD APT Page will let you check airport data using airport **ICAO Code**

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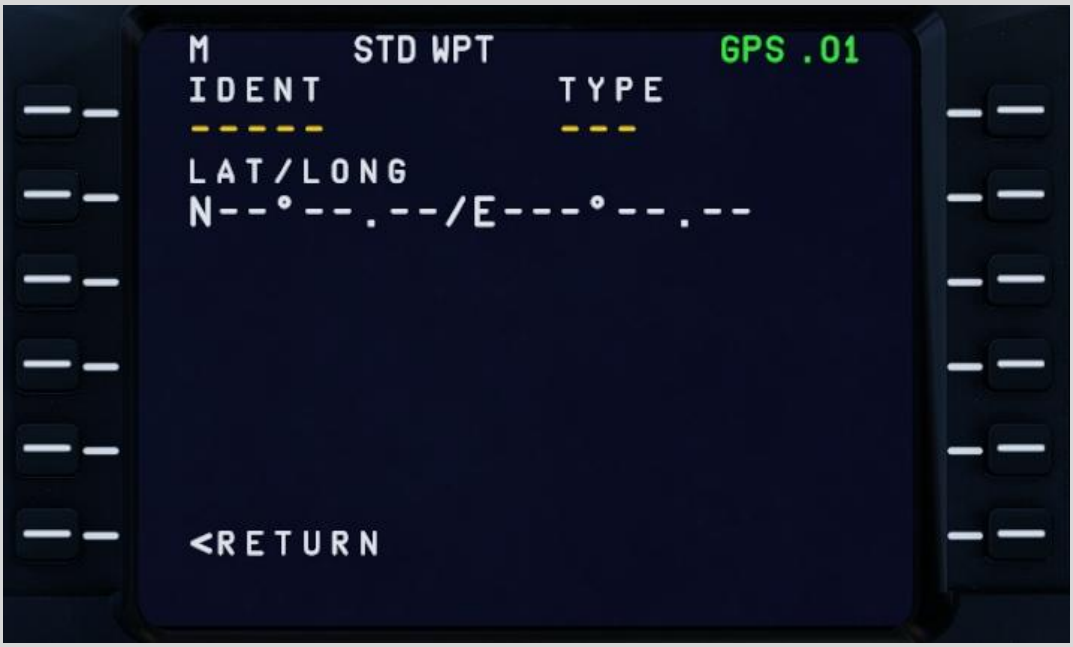
Press **RETURN** again to get back to **DATABASE** Page



STD NAVAID will let you check **NAVAID** data using it's identifier, example below is CUPRI

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STD WPT will let you check waypoint by typing in it's name

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KELLY is shown above with 3 MATCHES



NDB Page will let you check NDB using it's Identifier

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STD DATA Page will list all Company Routes if saved



Selecting one of the routes will make them yellow (Temporary)

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Pressing **EXEC** will make route ACTIVE as shown below



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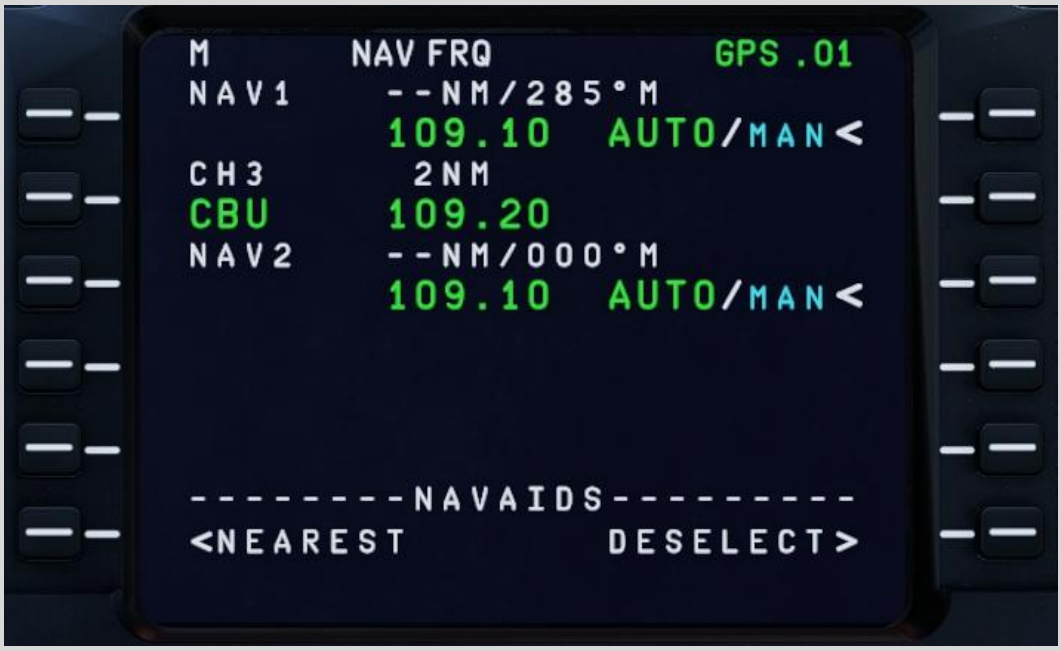
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NAV DATA Page



NAV FRQ Page



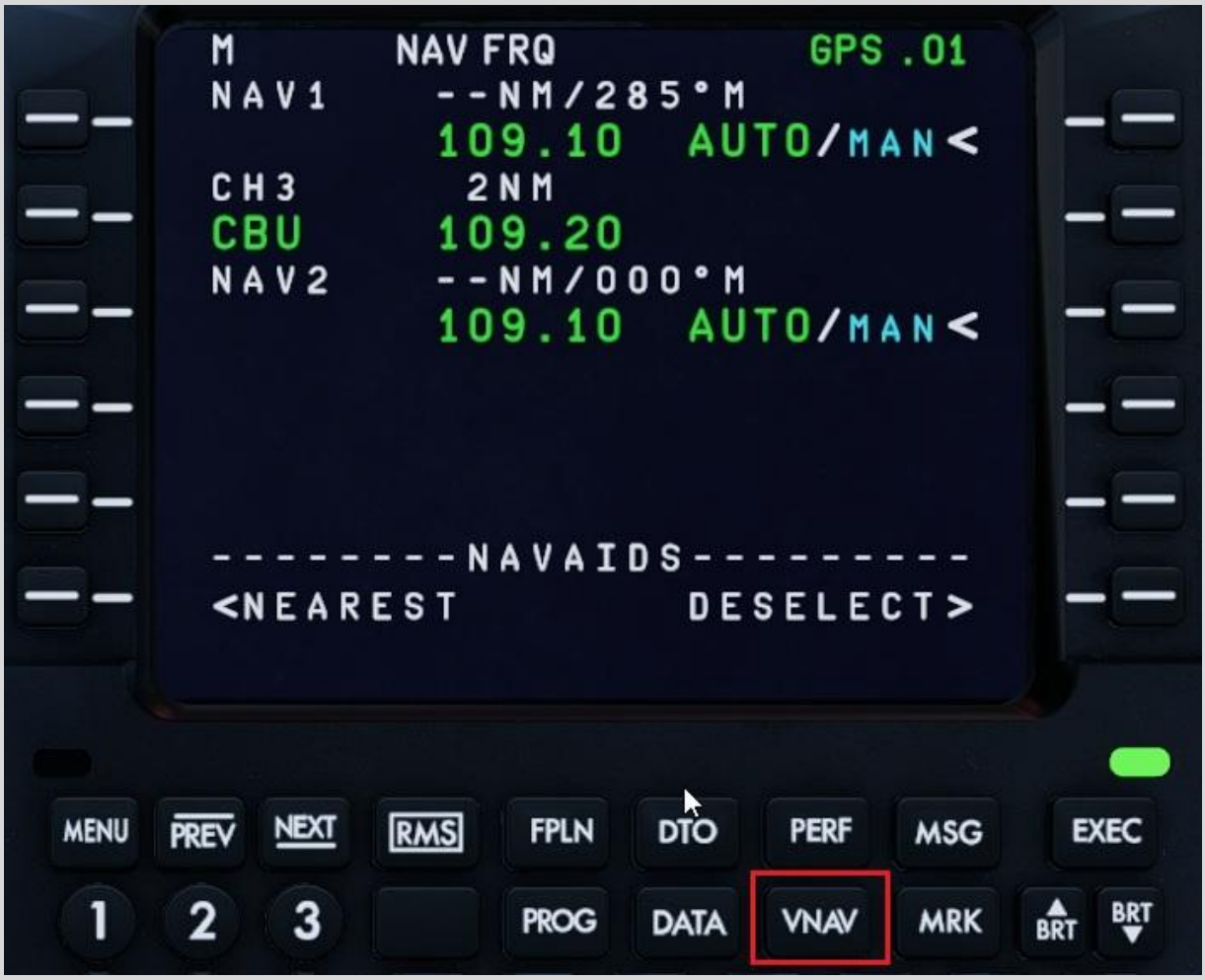
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VNAV PUSHBUTTON

Pushing **VNAV** button will take you to **VNAV** Pages, you can scroll through Pages using **NEXT/PREV** buttons

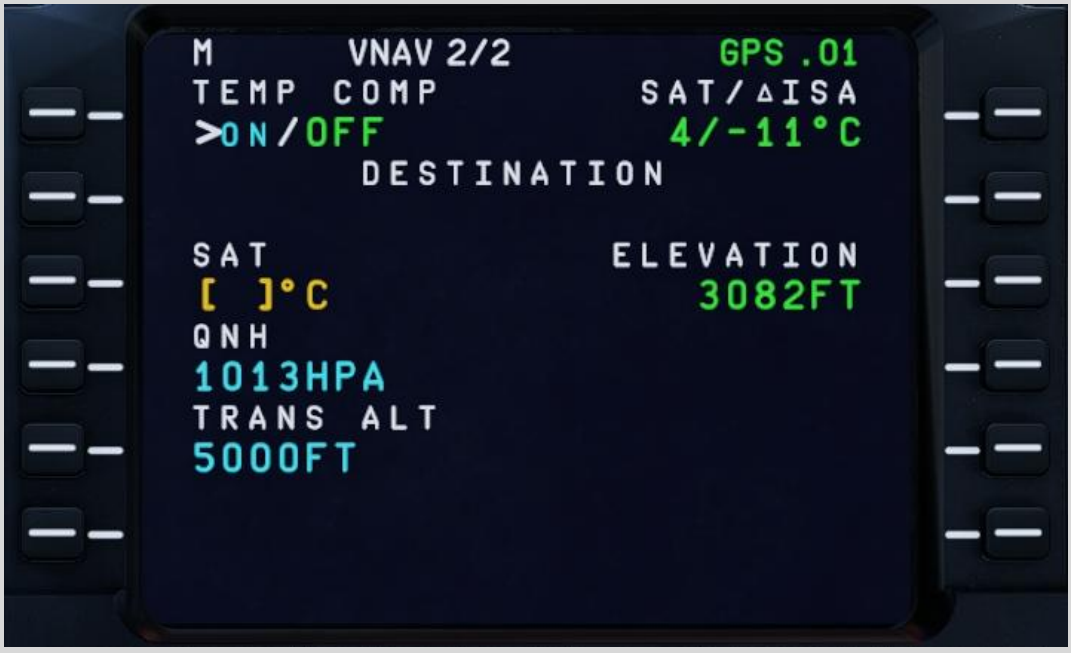


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MRK PUSHBUTTON

Pressing MRK button will take you to the MARK Page (in development)



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CLR PUSHBUTTON



Pressing CLR button will trigger two actions

- When pressed and held for couple secconds, it will delete the whole content of the scratchpad line
- When presed consequently, it will delete one character at a time from scratchpad line

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