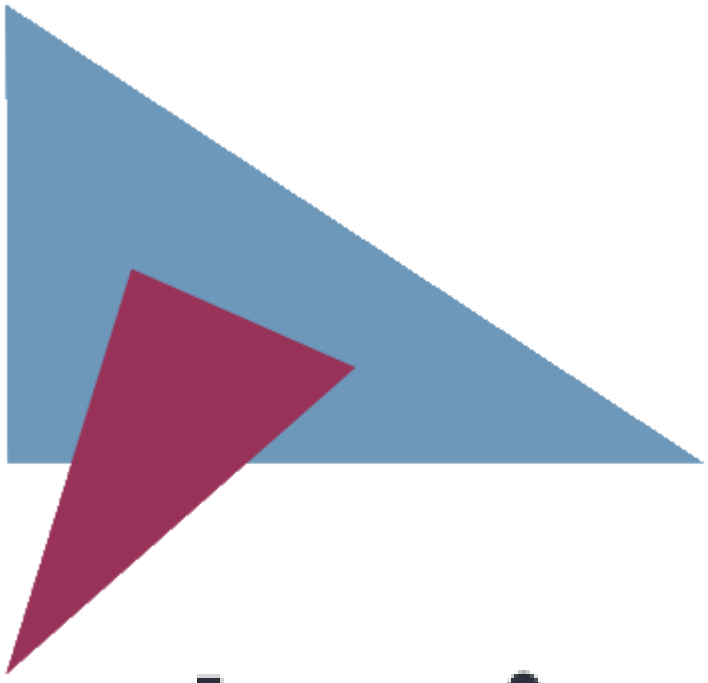


magknight 787

Aviator’s Edition

This manual is intended for use with the Magknight 787-9. It is not intended for training or to be used as a manual or reference to any real aircraft and is written solely for entertainment purposes.

To report any issues or bugs, please visit our website at:

https://www.magknight.org/beta

To stay up to date with latest progress on the project:

https://magknight.org/changelog

For technical support, please visit the X-Plane.org forums or send our team an email at:

support@magknight.org

What's new with this update?

- New EFB with many useful features.
- New PFD coded from scratch
- Custom Electrical system models
- Advanced Custom Anti-Ice system
- Proper IRS simulation
- Cockpit Texture Improvements
- Avionic Reflections
- New LED Strobe and Beacon lights
- New Engine Data page with custom EICAS
- Mouse wheel Manipulators
- Various bug fixes and Ease of use improvements
- Completely new Auto-Pilot based on X-Plane 11.30 Technology
- Helpful Pointers
- New Flight Model made from Scratch for X-Plane 11.30
- New Yoke model

DISCLAIMER: This version of the update is not meant to work with anything less than XP 11.30 and is currently only functional on Windows.

Java SE 9 or above is required to run this update which can be downloaded at the following link:

Download the JRE installer here.

Table of contents

General Symbology

What does it even mean by general symbology?

- General Symbology explains the general layout of the the EFB system such as when a button is enabled / disabled.

Power Key - Used to toggle power to the EFB display

POP Key - Used to use the EFB in its 2 popup modes :

1. In Simulator Popup. (1 Click)
2. External Window Popup (2 Clicks)

Blue Button: The button is disabled and cannot be used.

Magenta Highlight: The button is in focus. Click to activate

Cursor: Appears when the EFB is taking mouse input (Left click anywhere on EFB to activate)

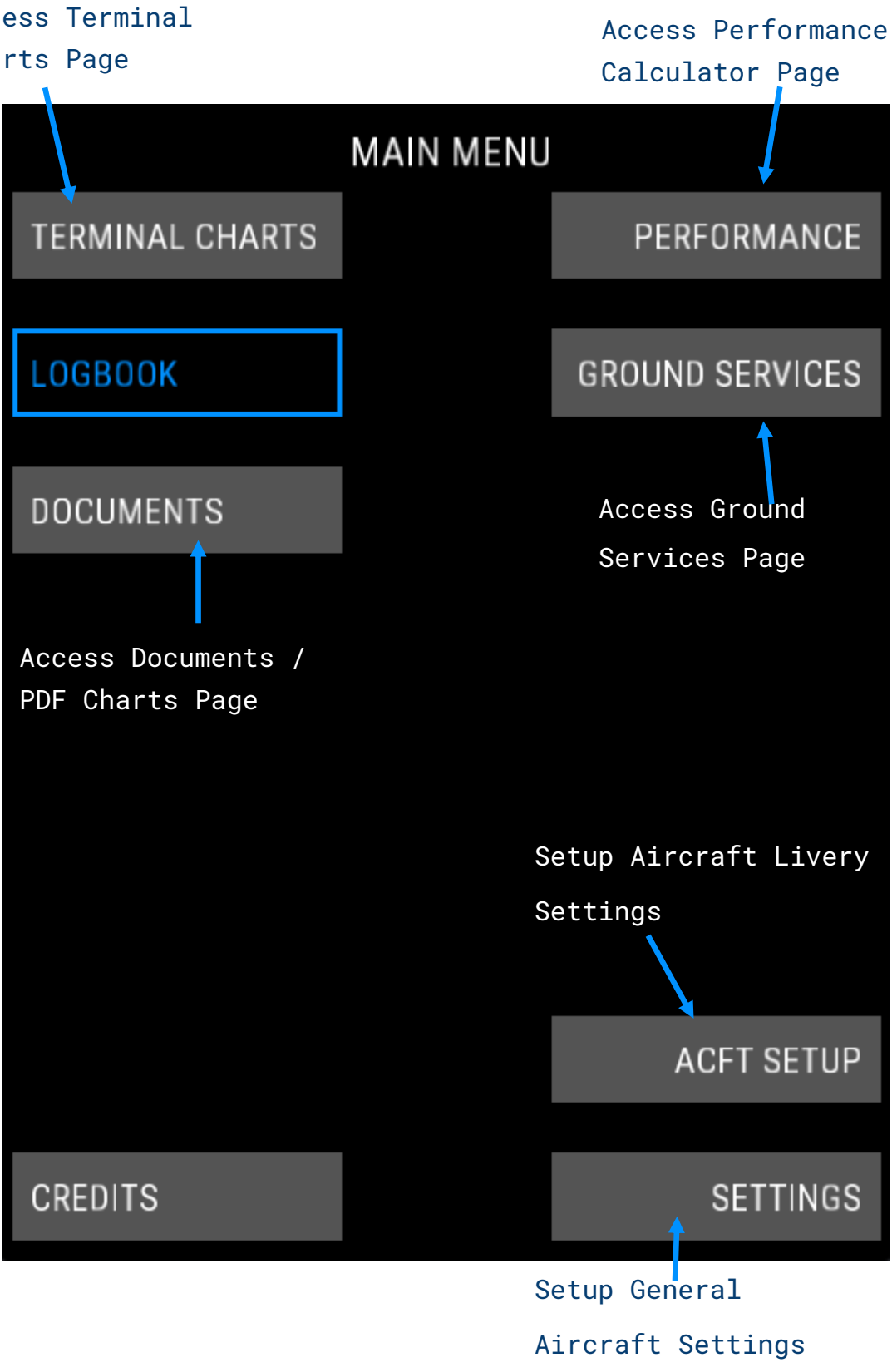
Green Text: Entry is correct / Activated

Blue Diamond: Not in use / Inactive, press to activate

Magenta Diamond: In use / Active, press to deactivate

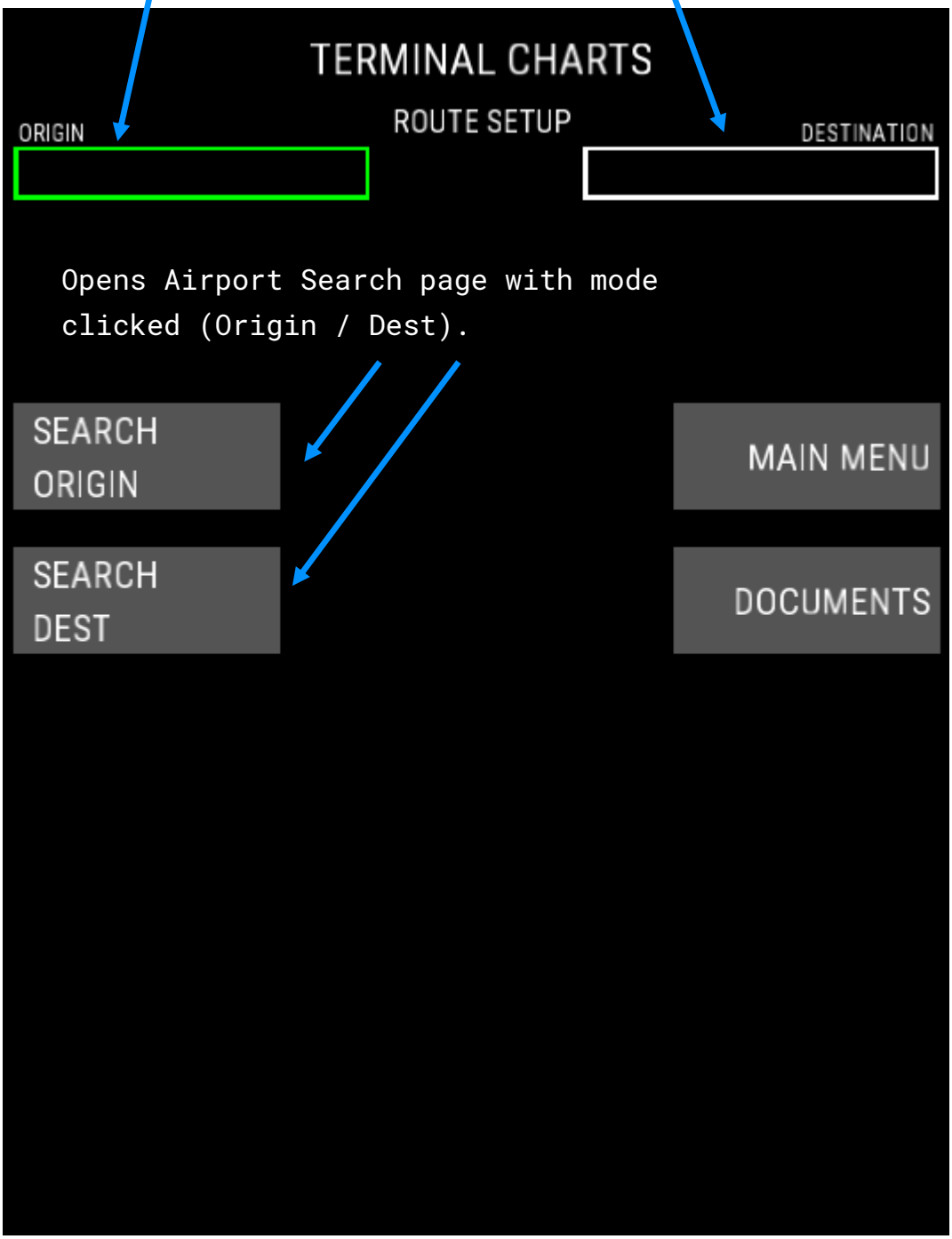
Exit button: Exits the popup window

Basic Operation (Main Menu)



Basic Operation (Terminal Charts)

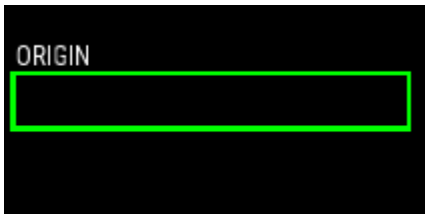
Enter Departure / Arrival ICAO. Turns green upon validation and activation. Entry through virtual on-screen Keyboard



Detailed Operations (Terminal Charts)

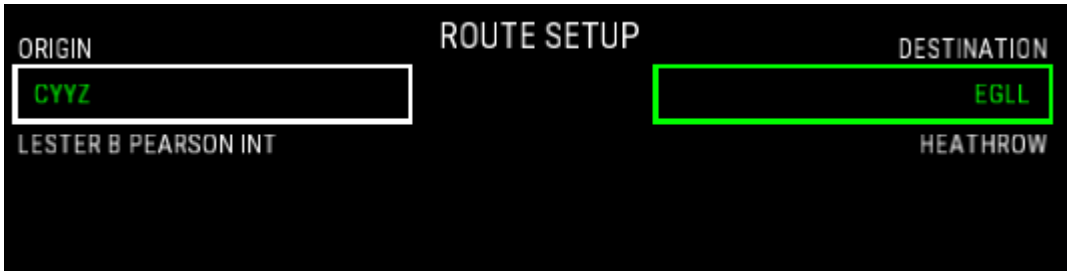
When setting up the EFB, it is mandatory to setup the departure and arrival airports and is done through the terminal charts page. Once the airports have been setup, the Takeoff Performance Calculator is activated.

On initial setup, the ORIGIN and DESTINATION fields are blank. These need to be filled with the respective ICAOs of the airports. The green highlight shows which field is currently in focus. (Click to focus)



The EFB will attempt to validate the ICAO once 4 characters are typed in which should cause a minor stutter as the process completes. Once an ICAO is validated for both the ORIGIN and DESTINATION fields, airport info is loaded in.

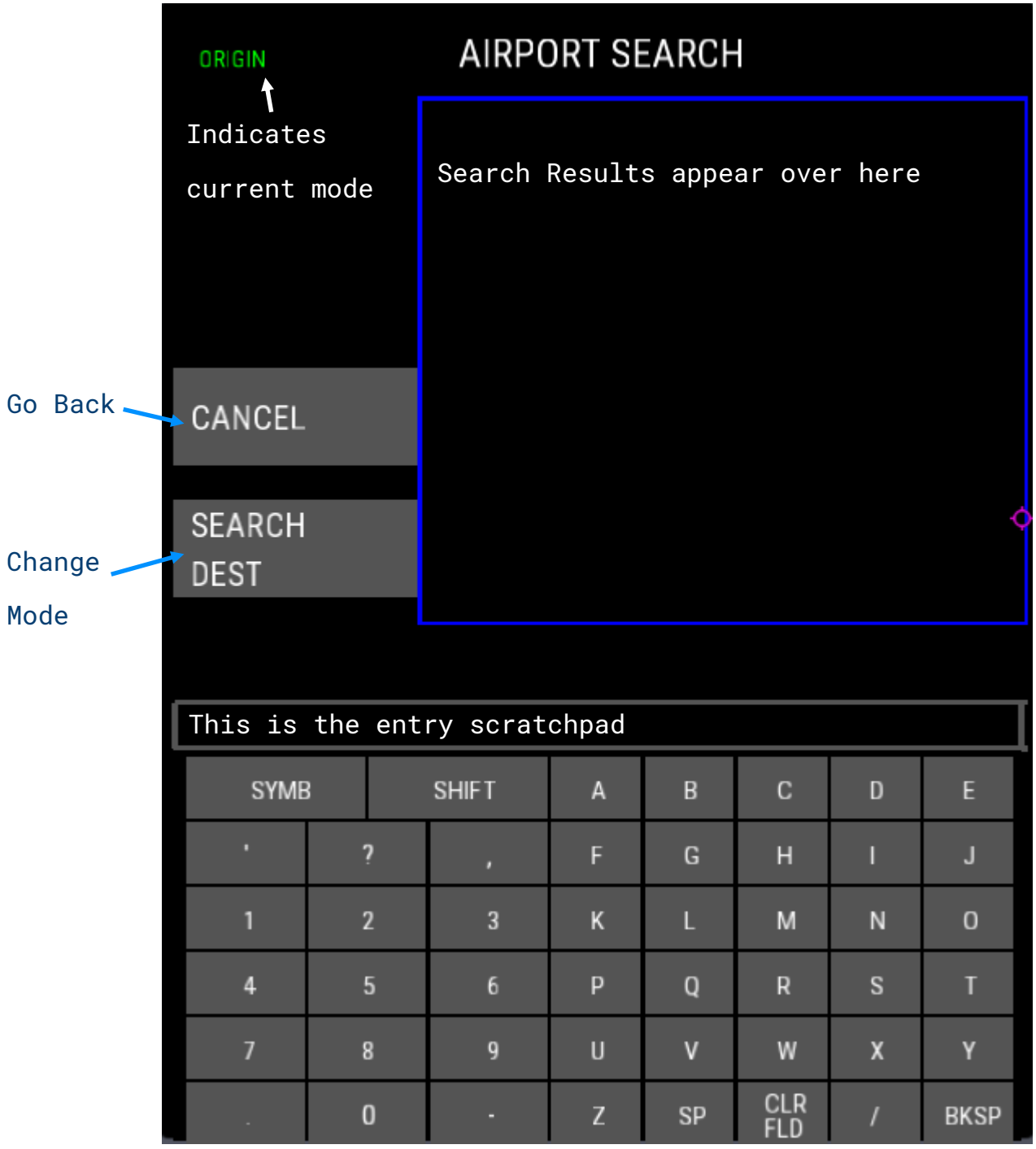
Once successfully completed, the fields should look like this:



The green text and the name of the airport entered should appear, indicating a successful setup.

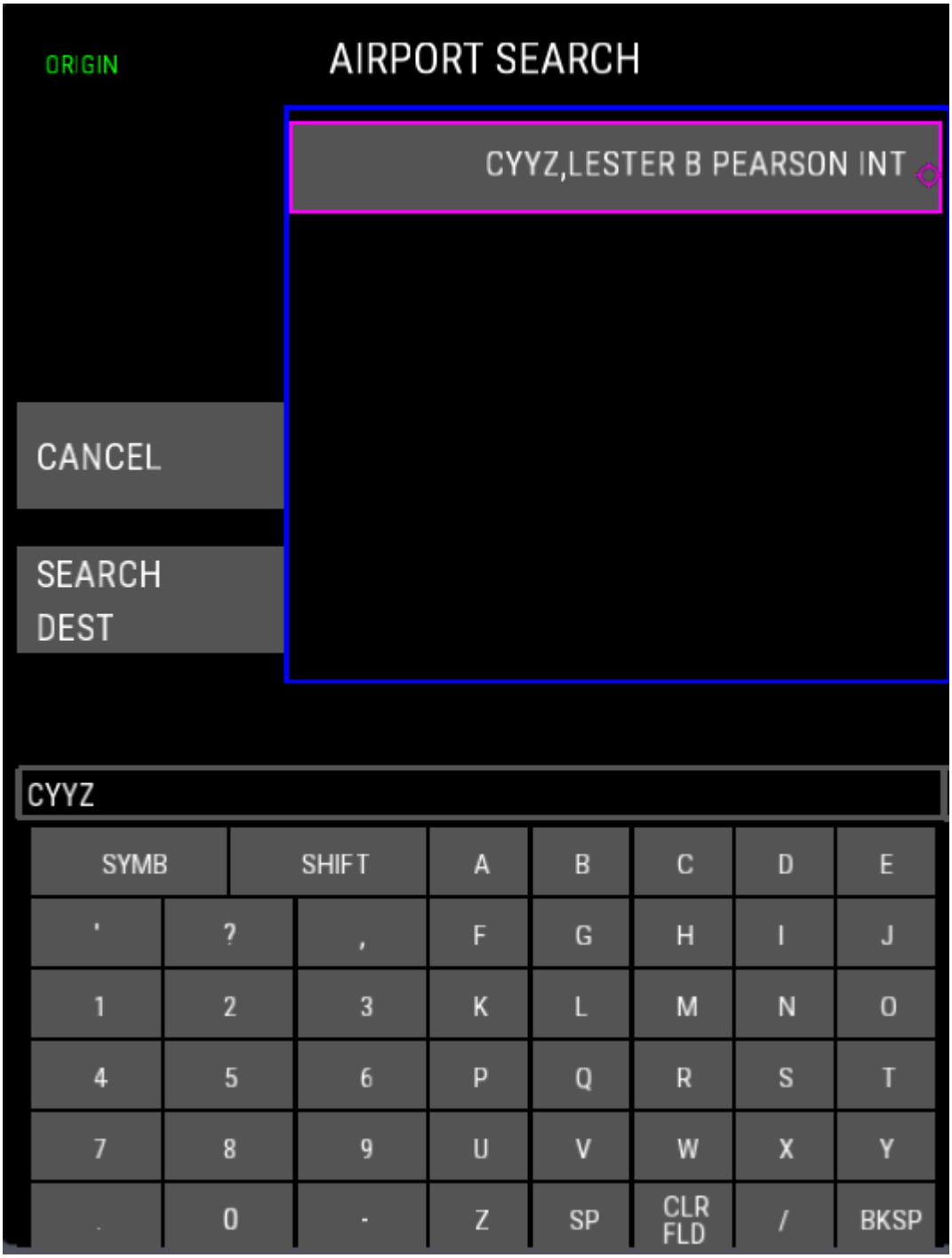
Detailed Operation (Terminal Charts)

Another alternative method of searching for inputting airports is to use the airport search functionality. To access this, click the SEARCH ORIGIN or SEARCH DEST button on the Terminal Charts page. (Contd. Next Page)



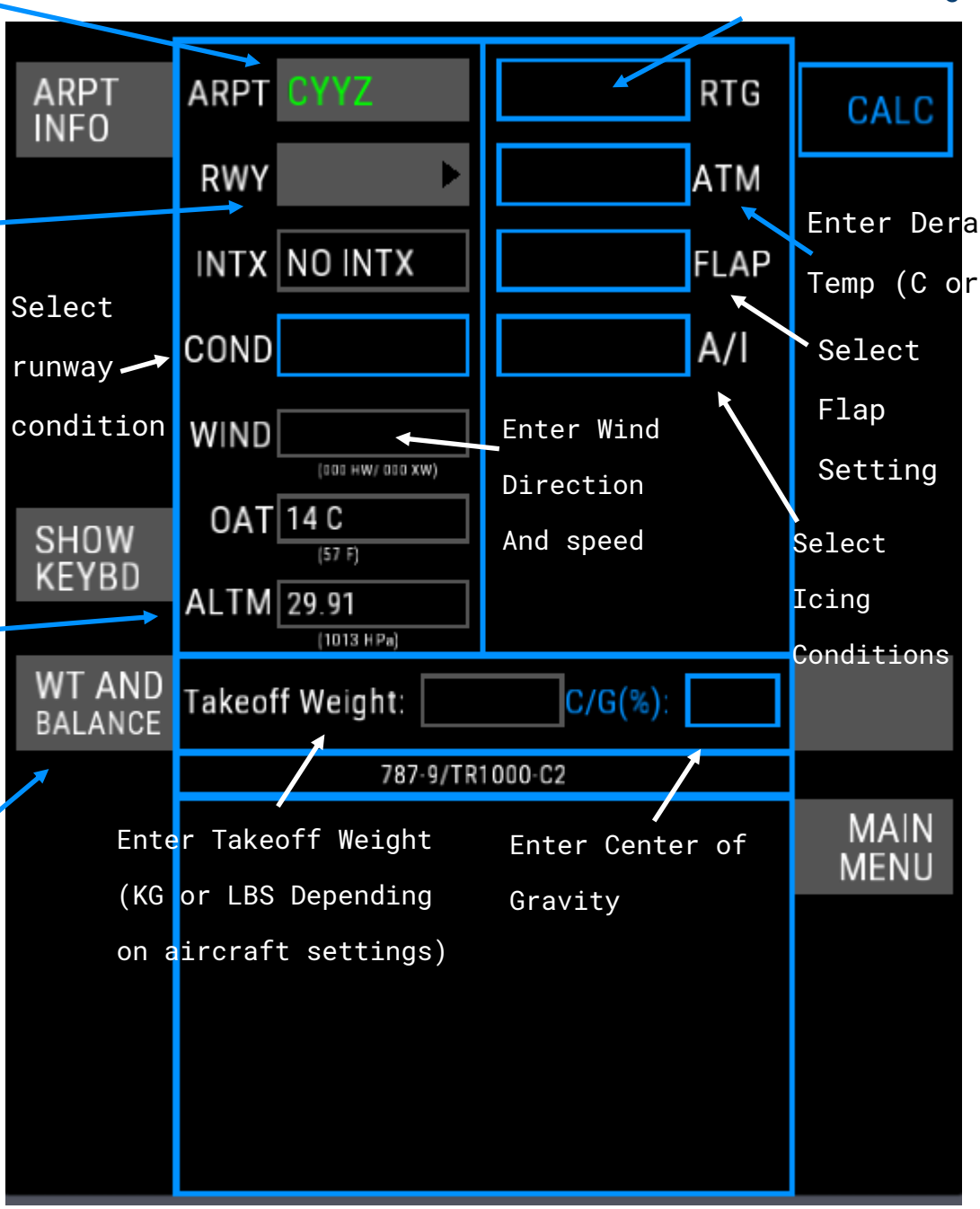
Detailed Operation (Terminal Charts)

Once characters are typed in, the EFB will search the database which may cause a slight stutter and airports start appearing in the search results box. Clicking on one of them will assign them to either ORIGIN or DESTINATION depending on the mode.



Basic Operation (Performance Calculator)

One of the signature features of the 787 series EFB is its performance calculator that allows pilots to determine various performance values and settings such as V-Speeds and Takeoff N1.



Detailed Operation (Performance Calculator)

Once loaded into the page after setting up the airports in the Terminal Charts page, every entry but the ARPT field should be populated.

Once all the mandatory entries have been populated, the CALC button on the right side should be enabled to click.

First, the departure runway needs to be selected

Upon clicking this field, a drop-down menu will appear with all the runways in the airport.

To access other runways, scroll up and down with the mouse scroll wheel till runway desired appears and select it. Clicking exit will exit the menu and erase the entry in the field. Upon selection,

Other fields will also be enabled.

Upon selecting a runway, the selected runway should be appear in green text showing its selected and activated.

Next, the COND field needs to be populated. Clicking on the empty field will show a similar drop down menu to view possible conditions.

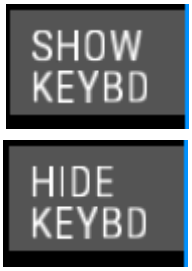
Possible runway conditions include: Dry, Damp, Wet and Contaminated.

When a condition is selected, it should show up like this, similar to the runway selection.

Detailed Operation (Performance Calculator)

The next entry to be populated is the WIND entry:

To bring it into focus, click it once and the box will turn green.



Entry for fields in this page are to be done using the virtual keyboard that can be shown / hidden using the SHOW KEYBD button

Each field on the page has certain characters that can be entered. For the WIND field, the possible characters are numbers and the slash symbol.

The entry format is as follows (HHH/SS) where H is the heading in degrees (0-360) and the S is the speed of the wind in knots

The OAT field is a static field and shows the temperature outside. The box shows it in degrees Celsius, whereas Fahrenheit is shown in the brackets below

The ALTM is a field that is read from the PFD and will change mode depending on the PFD setting (Hpa / inHg) Changing the PFD value will also change the value show here.

Detailed Operation (Performance Calculator)

Once the left side is fully setup, the right margin of the EFB needs to be setup.

The RTG field is the next to be populated.

This field is also a drop-down menu and will list Possible derate types. Possible types include:

TO (no derate), TO-1 (10% derate) and TO-2 (20% derate).

Upon selecting an option, it will also be populated.

After populating this field, the next field to be populated is the Takeoff Weight field. There are two ways to populate this:

1. Manual Entry
2. Using the weight and balance page to calculate takeoff weight.

If using manual entry, the entry will be typed in using the virtual keyboard. The entry must be in the same units as the one set in settings (LB or KG).

Upon entering this field, the C/G% field will be enabled allowing the entry of center of gravity along with the ATM field allowing entry of derate temperature.

The entry in this field is assumed to be in %.

Detailed Operation (Performance Calculator)

Once the bottom side is set up, the rest of the right side can be set up.

The ATM entry is the next to be populated. This entry is the derate

Temperature for the takeoff calculator. Entry is made using the virtual keyboard.

Valid entries for this field include numbers and the characters 'C' or 'F' to indicate the units of temperature.

The entry format is (TTU) where T is temperature and U is the unit of temperature.

Next, the takeoff flaps need to be selected in the FLAP entry.

This field is a drop-down menu. Possible selections include 5, 15 and 20.

The selected entry should be displayed as green text.

The final field to be populated is the Anti-Ice (A/I) field. This

Currently does not affect any performance calculations due to limited data available but is still required for other processing.

Possible selections are on and off

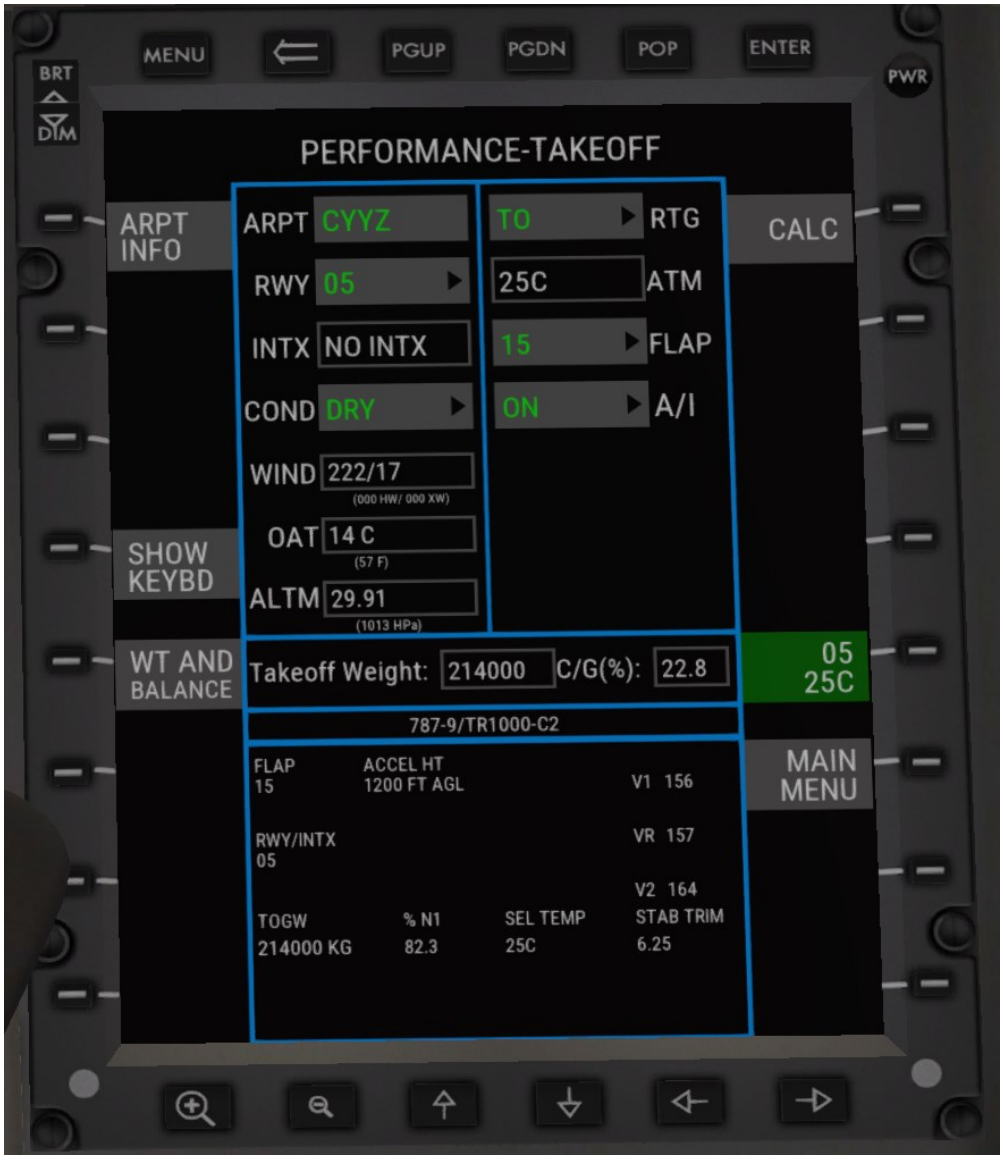
Upon selection, the selected entry should be displayed as green text and if everything is done right, the CALC button should now be enabled

Once this button is enabled, it can be clicked to perform

Takeoff performance calculation using the information entered.

Detailed Operation (Performance Calculator)

If everything previously was entered in the proper format and the values entered were in acceptable range, the black box underneath should display the calculated data.



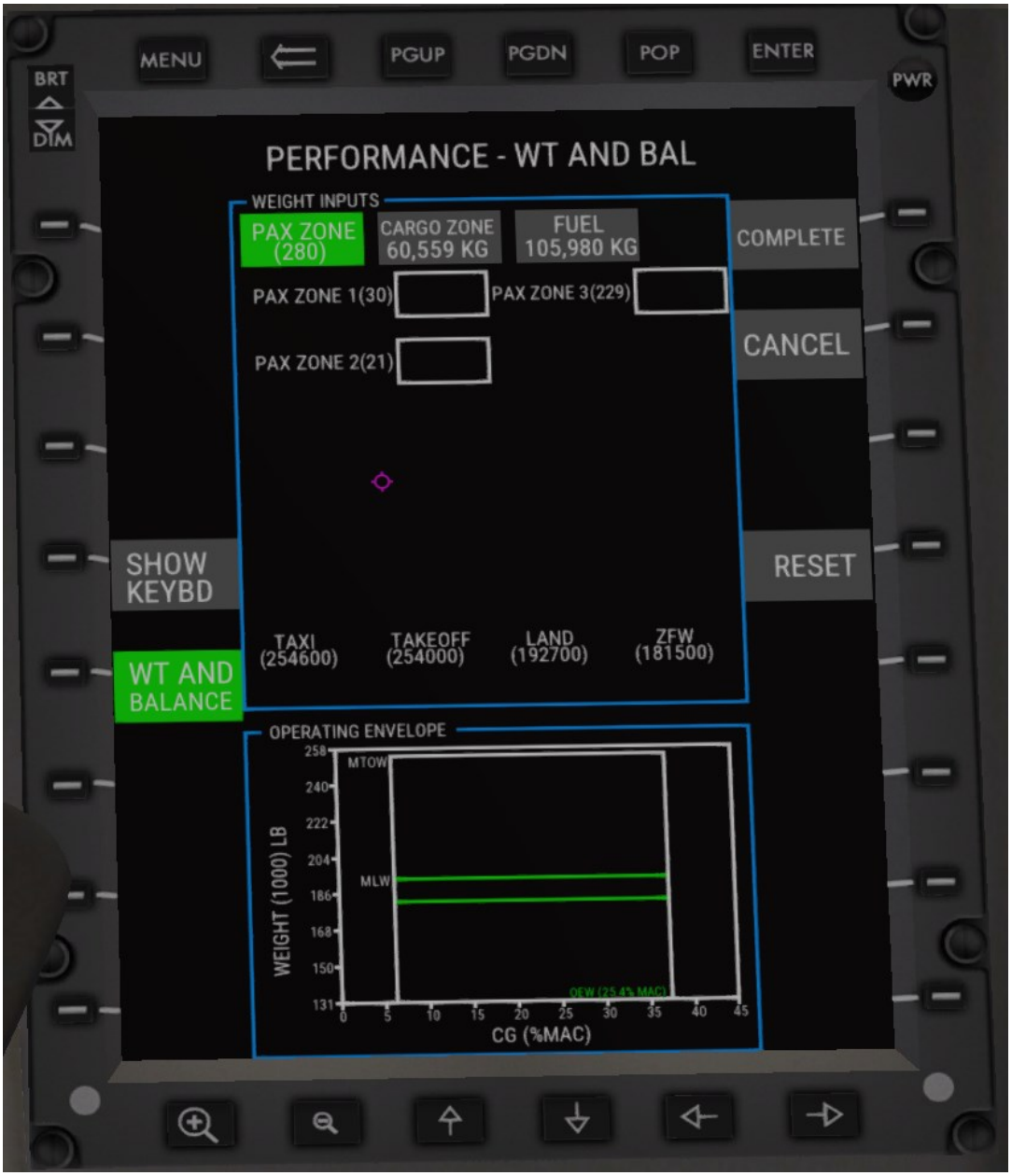
Calculated values include Takeoff N1, Stab Trim setting, and takeoff V-Speeds. The box above the MAIN MENU button should turn green displaying the runway selected and derate temperature if any.

Detailed Operation (Performance Calculator)

If any values entered were invalid an error page will show indicating the error encountered. Once the error is corrected, the CALC button can be clicked again to redo the calculation.

Detailed Operation (Weight and Balance)

The weight and balance calculator is part of performance calculator and can be used to calculate the takeoff weight and center of gravity with visual representations.



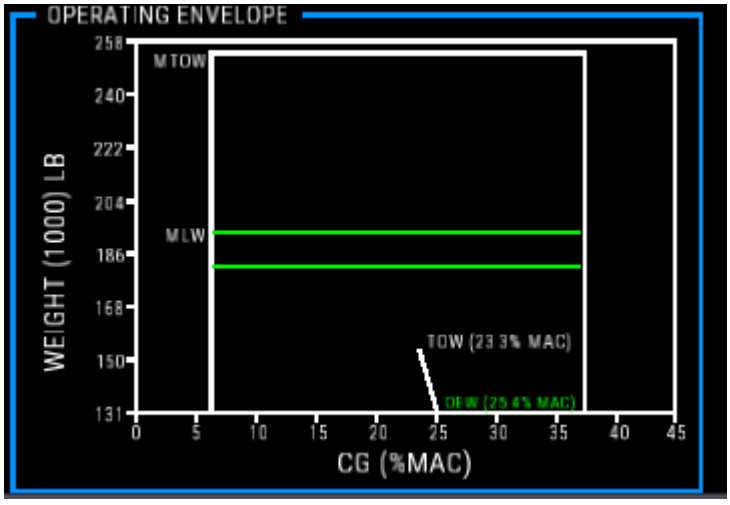
Detailed Operation (Weight and Balance)

The first page in this module should be the PAX page which will allow the adjustment of passengers. Entries are made using the virtual on-screen keyboard. The selected page is highlighted in a green box.

In the PAX ZONE page, 3 entries can be made for the 3 passenger zones available. The max value of each zone is listed beside the field in brackets. The weight of each passenger will depend on the unit selected in the settings menu.

The CARGO ZONE page also has 3 entries for the 3 different cargo zones on the aircraft and max entries beside each field as well. This page also provides a visual depiction of the cargo zones.

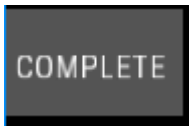
The FUEL page has 4 entries which are used to calculate weights. The max entries are listed beside each entry and change with the unit selected in the settings page of the EFB.



The operating envelope shows a graphical representation of the landing and takeoff CG as MEAN AERODYNAMIC CHORD. This will change with the entries in the field above. Landing weight is calculated once the landing fuel entry is populated in the FUEL page.

Detailed Operation (Weight and Balance)

Once every entry is completed. The final calculated values can be transferred over to the performance calculator by pressing the COMPLETE button.



Clicking this transfer over the calculated values displayed in the bottom part of the top margin. Upon clicking this button, the entered values will be applied to the aircraft load and balance menu

If the values indicated here are in amber color, they are over the maximum values.

Clicking the cancel button will discard all values entered and return to the performance calculator.

Clicking the RESET button will reset all values in the calculator.

Basic Operation (ARPT INFO)

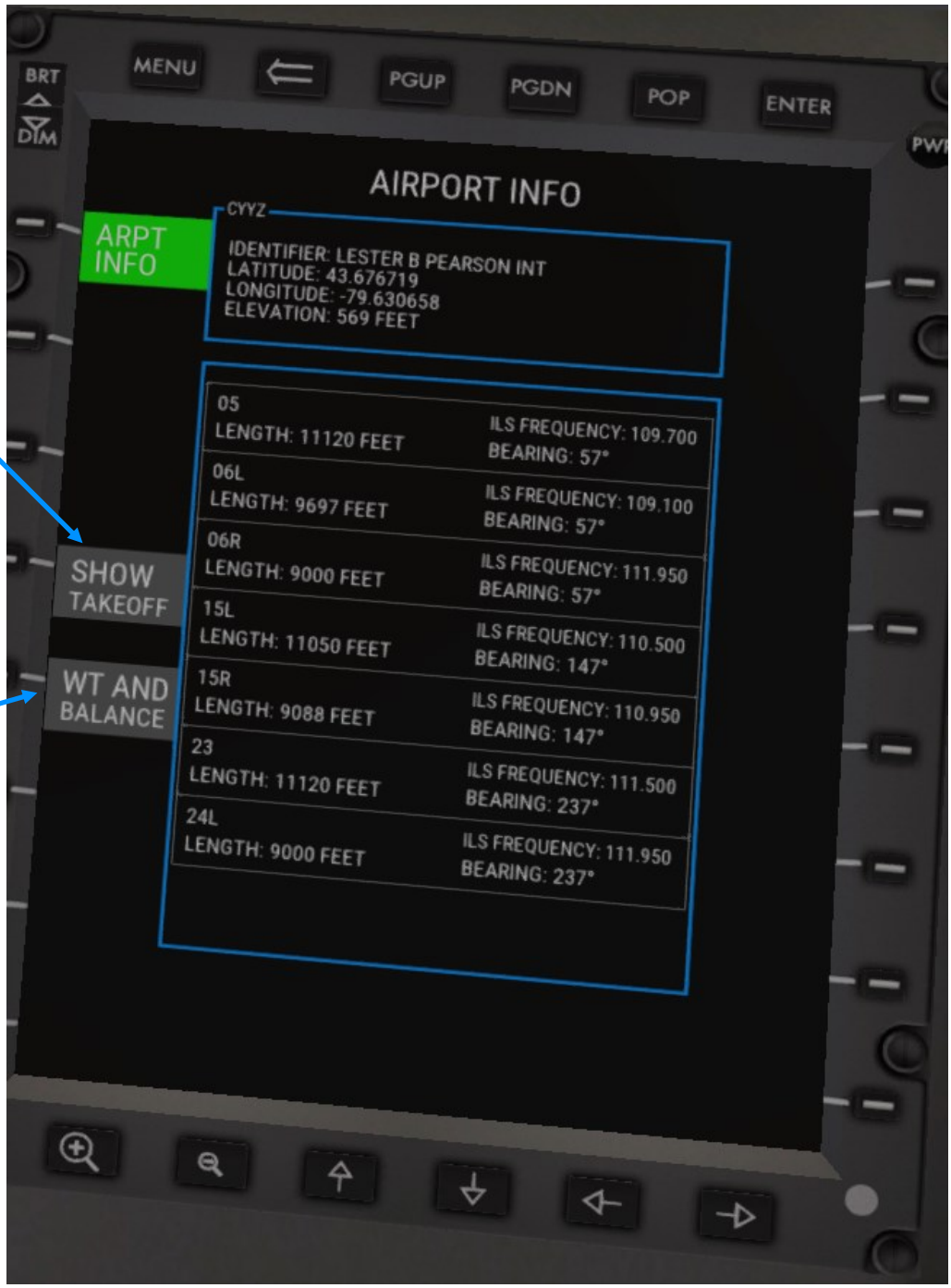
The ARPT INFO page can be accessed from the performance calculator.

It displays info for the departure airport selected and all runways.

The runways can be scrolled through by using the scroll wheel.

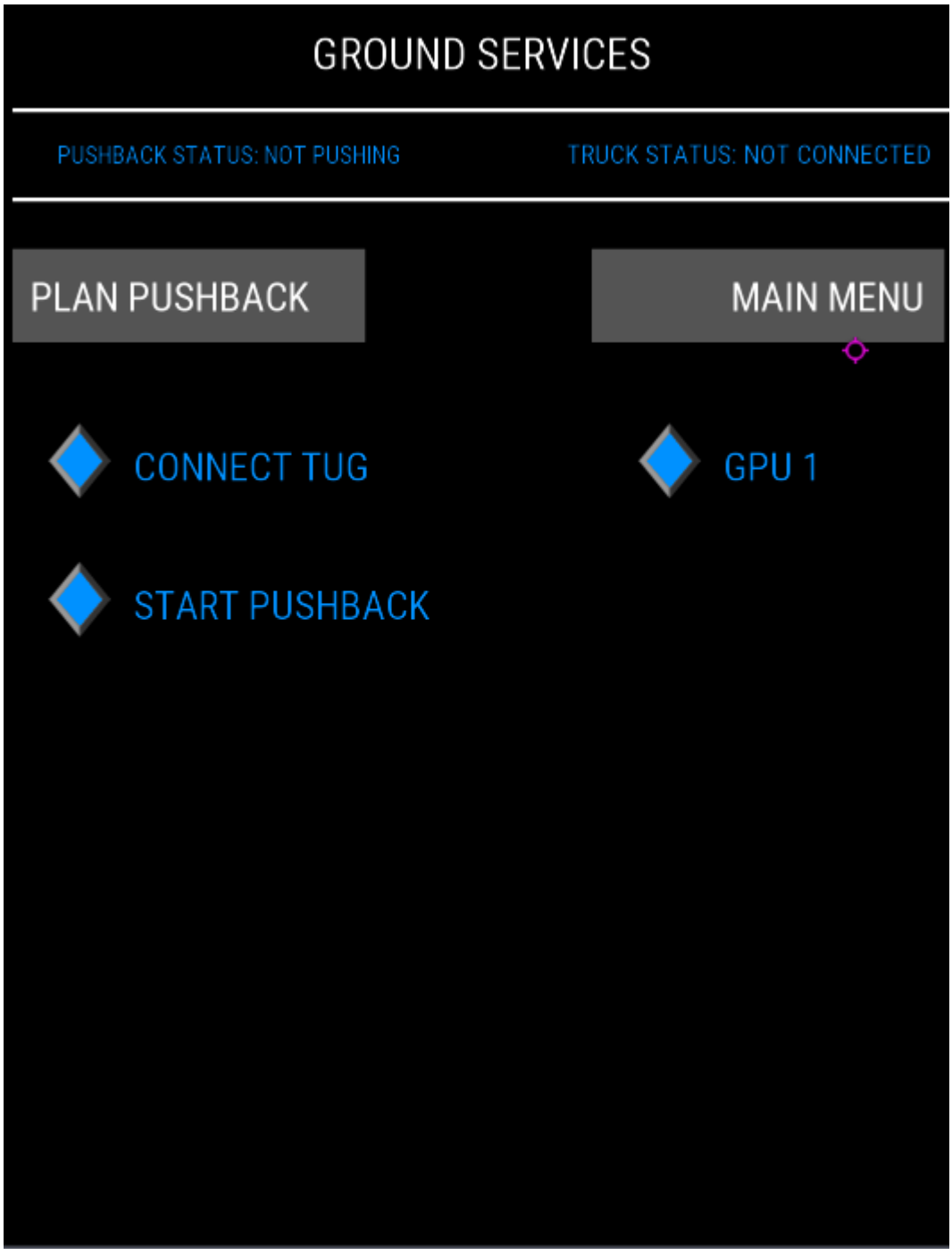
Go back to performance calculator.

Go to weight and balance calculator.



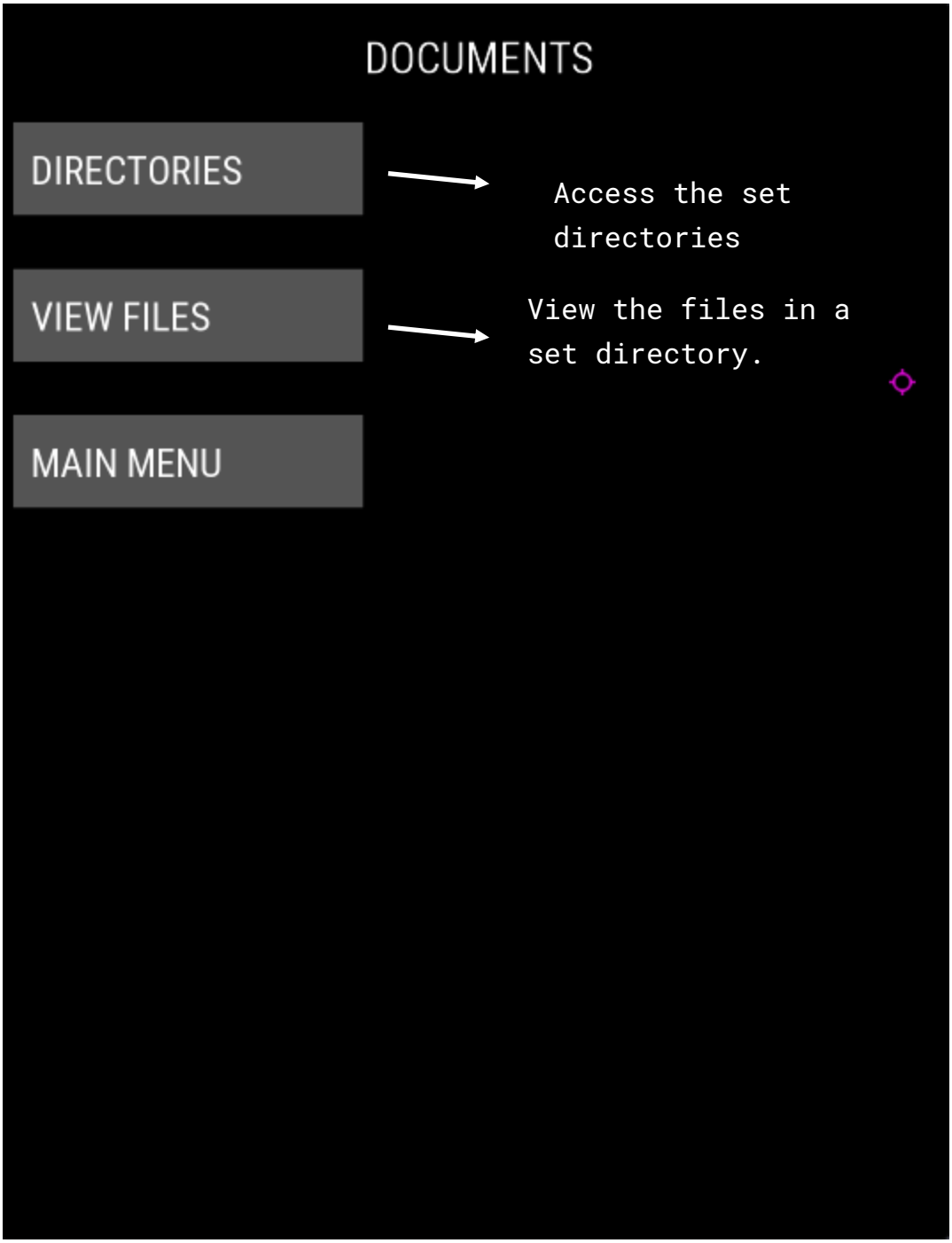
Basic Operation (Ground Services)

The Ground Services page allows for an easy access to various utilities. The Better Pushback Plugin by Skiselkov (Totoritko) has been integrated straight into the page itself. A GPU can also be toggled on and off. More functionality will be added when the systems are further expanded.



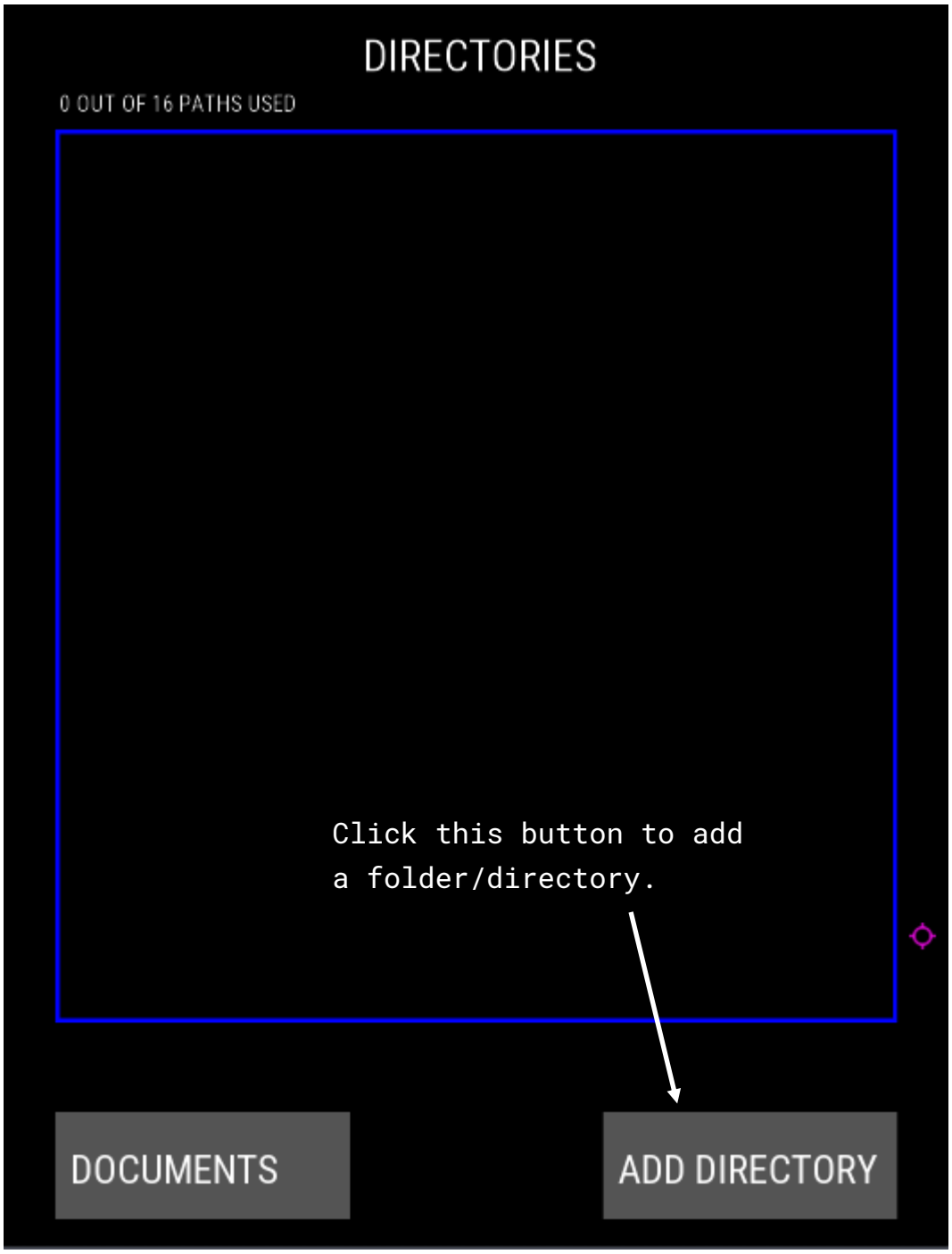
Detailed Operation (Documents)

The documents feature is one of the highlight features of this EFB. It allows the user to load in PDF charts into the EFB display. The page can be accessed by clicking the Documents button in the Main Menu, or in the Terminal Charts page.



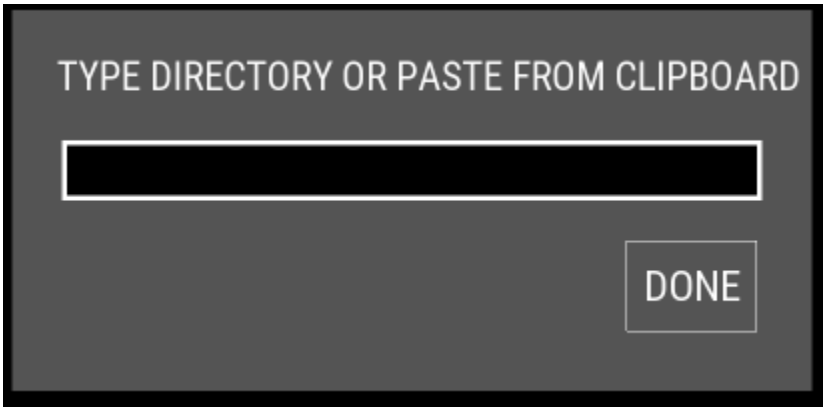
Detailed Operation (Documents)

The PDF Directories is the first page that needs to be set up. This page will include the folders/directories where the PDF files wish to be loaded are. These are saved and do not need to be added each time the EFB is loaded. Currently, 16 folders can be added.

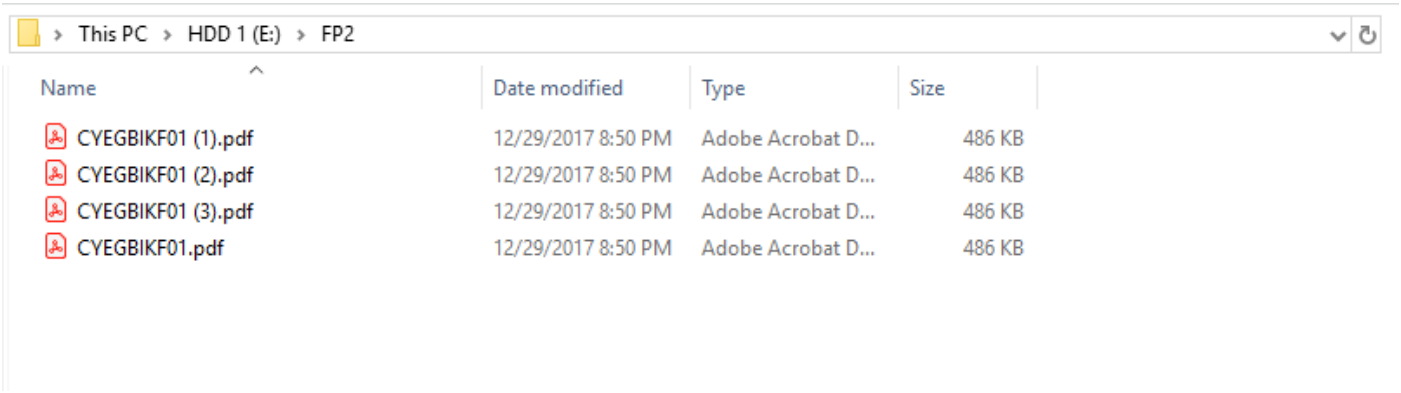


Detailed Operation (Documents)

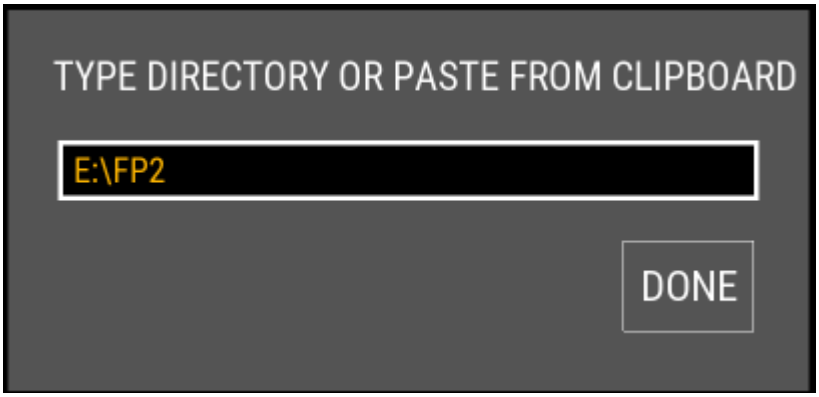
Upon clicking the ADD DIRECTORY button, a popup will appear where the path of the PDF files can be entered by either typing or pasting using CTRL-V.



For tutorial purposes, a sample folder will be used:



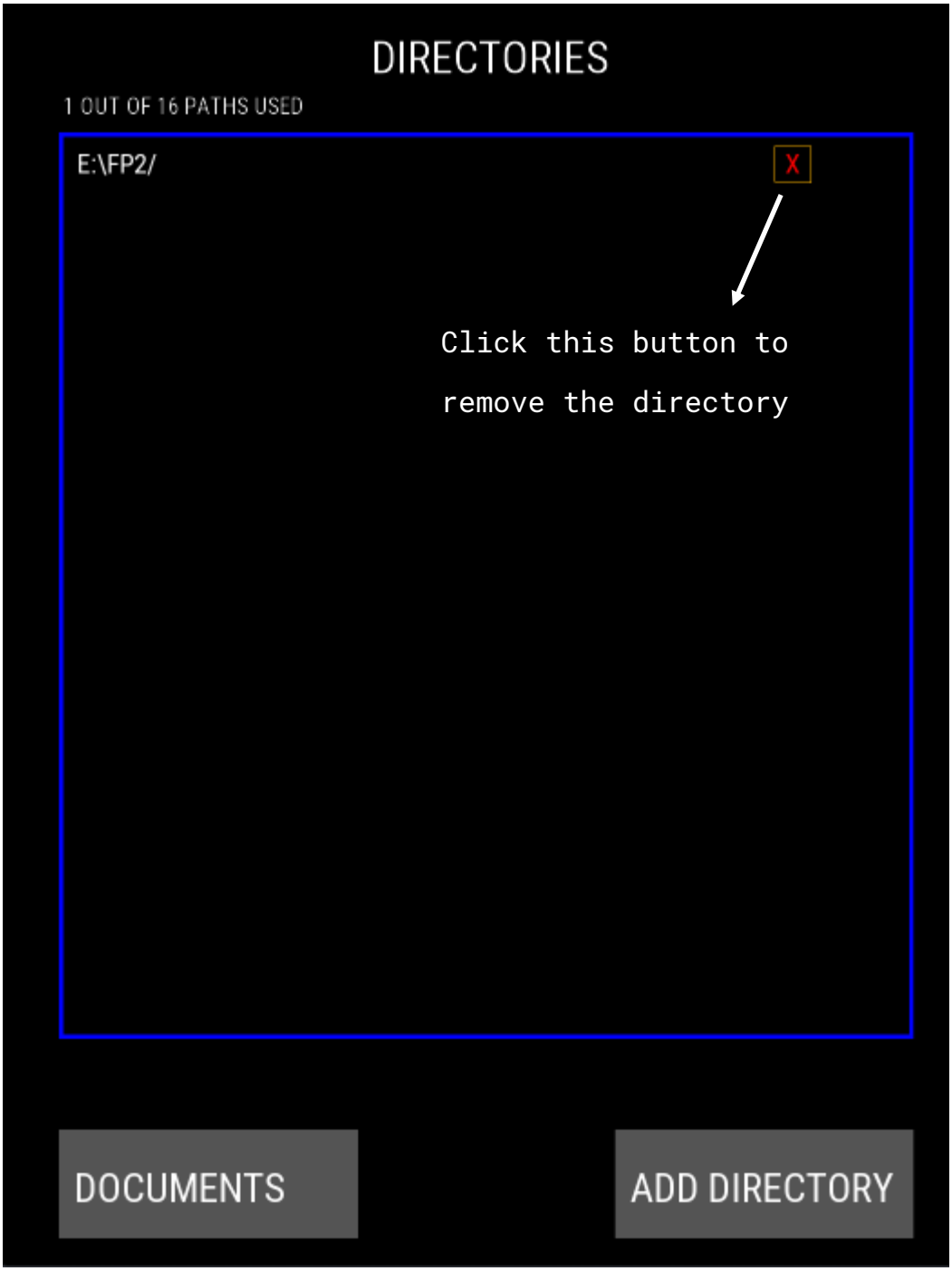
A properly typed up/pasted folder will look like this:



Upon clicking done, the Directory will be saved and the page will refresh to show the changes applied.

Detailed Operation (Documents)

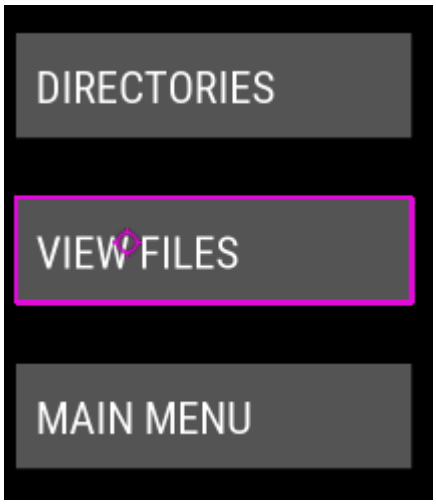
Once the page has refreshed, it should display the added directory:



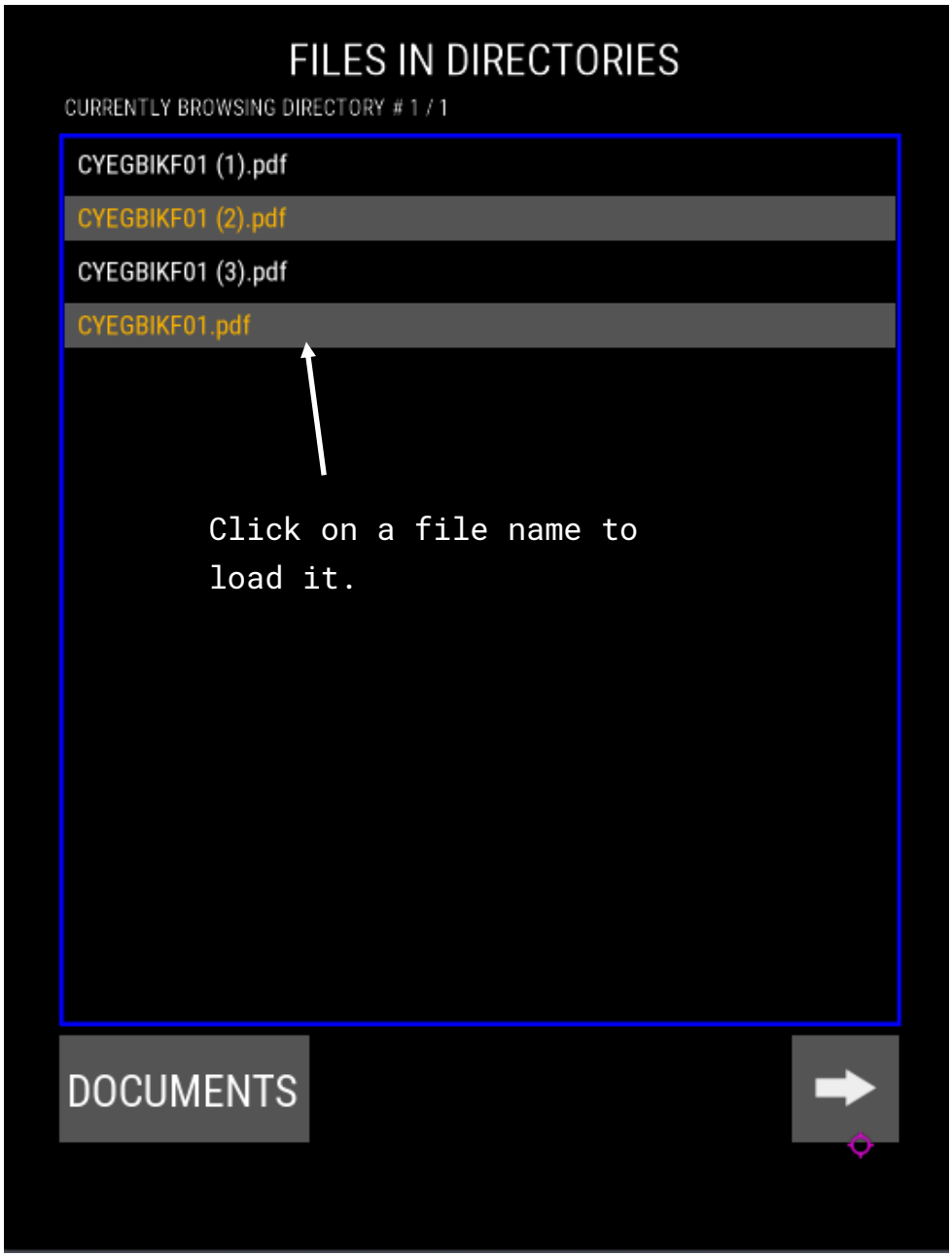
More directories can be added using the same steps outlined before. With at least one directory to work with, this part is complete.

Detailed Operation (Documents)

Once the directories have been set up properly, the PDF loader is ready for use.



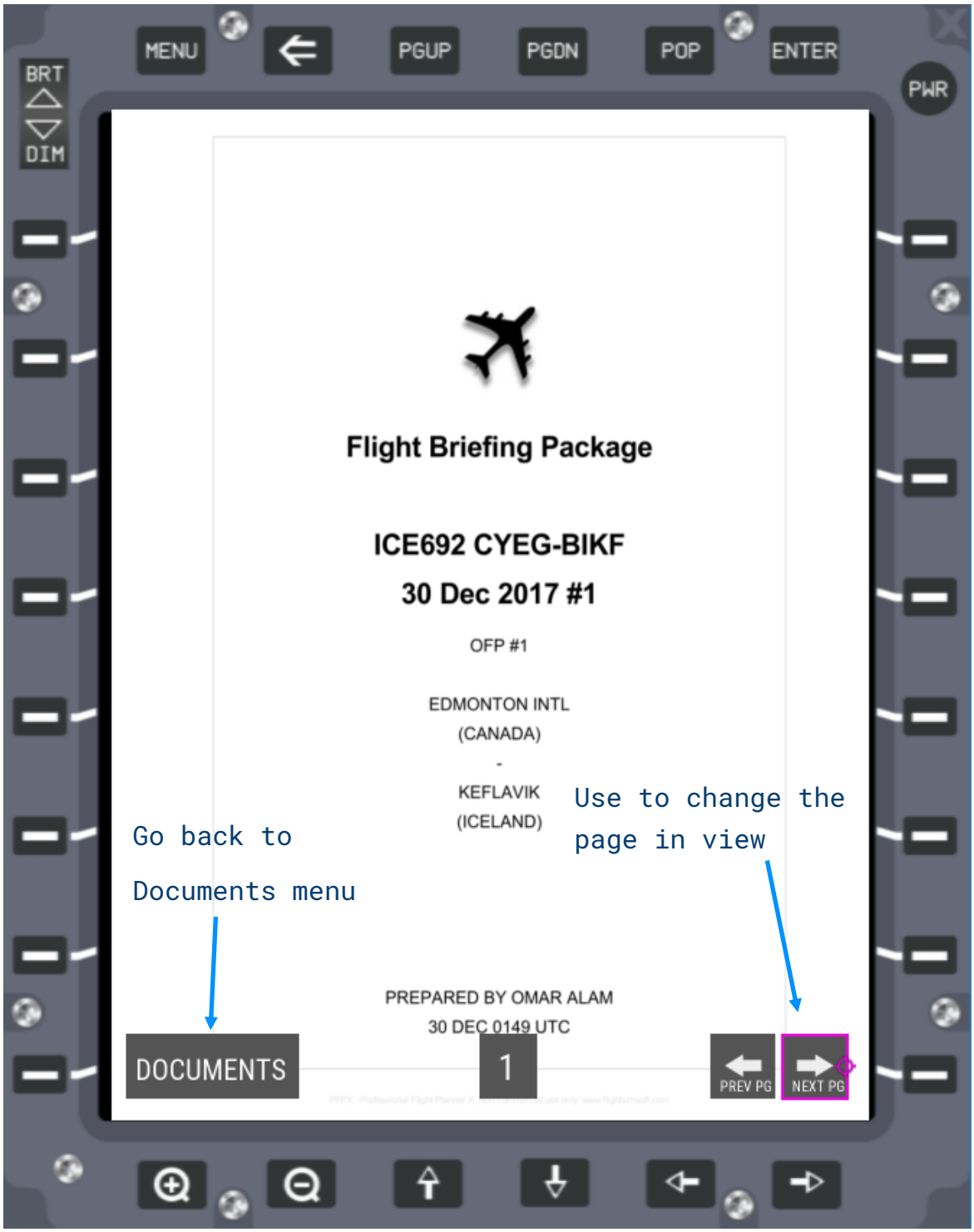
Now the VIEW FILES button can be clicked to access the file viewer.



Detailed Operation (Documents)

When a file is clicked on the list, it will be loaded into the PDF viewer.

A loading screen will be displayed while the file is being processed in the background. Once the processing is completed, the file will be displayed.

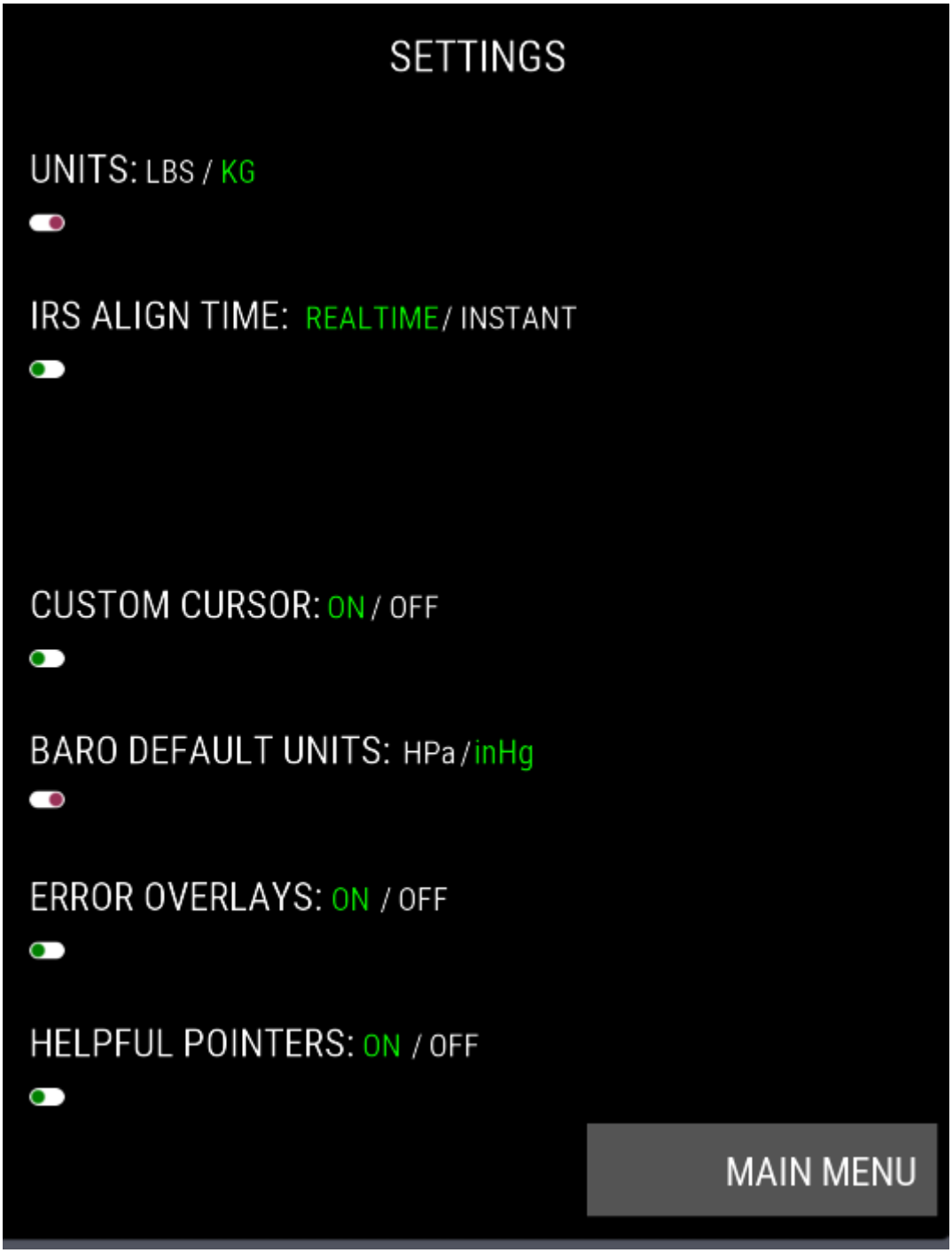


Detailed Operations (Documents)

This menu is a hover-style menu. It will show once the cursor is over any of the 3 buttons or the page number and hide when the cursor is not on those areas. To exit the PDF viewer and unload the file, clicking the DOCUMENTS button will load the Documents Menu page.

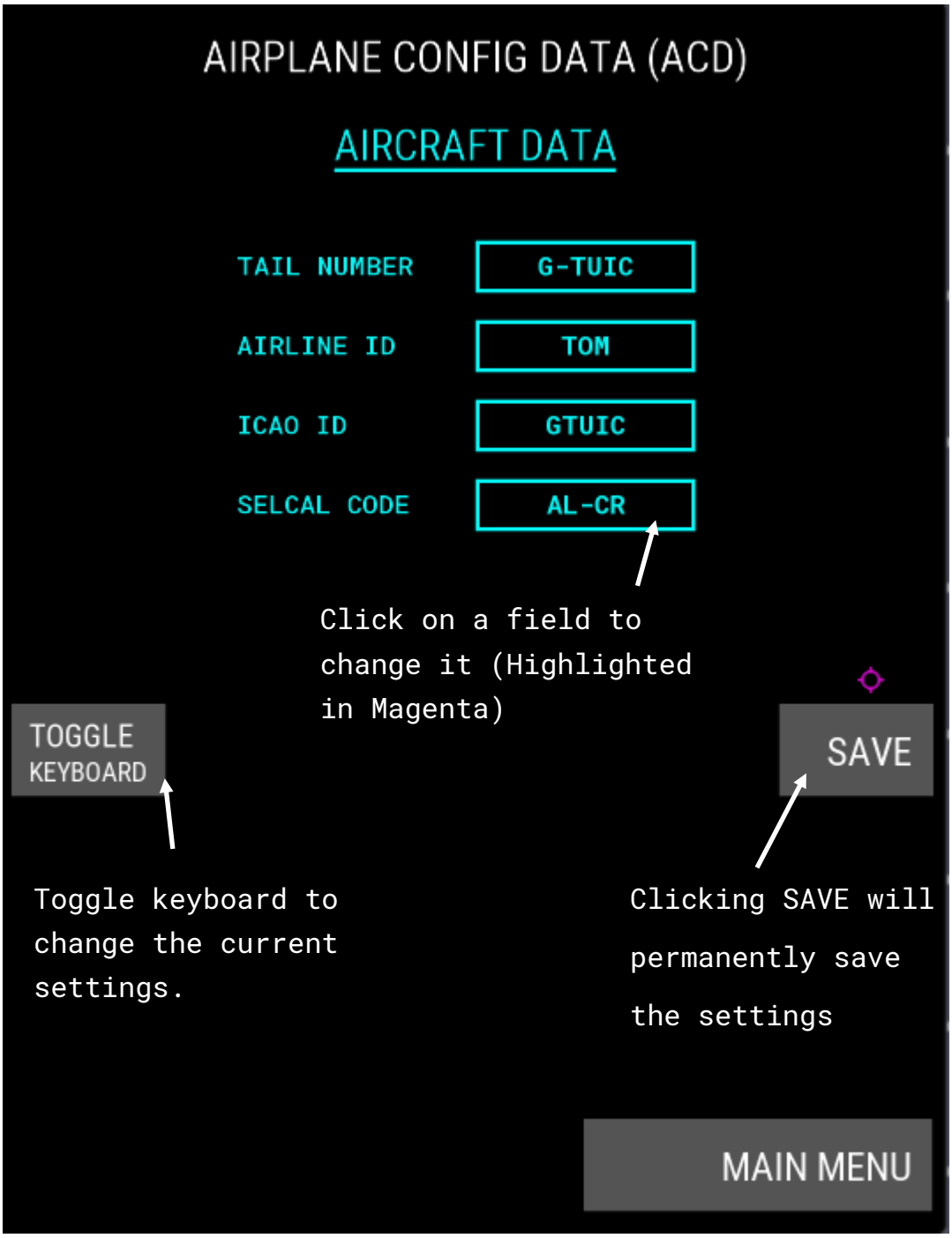
Basic Operations (Settings)

The settings page can be used to toggle a few basic utility settings. These settings are saved and do not need to be set every time. Clicking on a setting switch will toggle it either green or red indicating its current setting.



Basic Operations (ACFT Setup)

The ACFT SETUP page contains Airplane Config Data (ACD). These settings are livery specific and are set to default every time a new livery is loaded in. These settings will be assigned and saved with the livery it-self.



Basic Startup (How-to)

In this tutorial, the steps to start the aircraft up from cold and dark will be outlined.

To start in a Cold and Dark state, deselect the “Start With Engines Running” checkbox before loading the plane.

Toggle the battery on, to supply power to the Captain and First Officer Instrument Busses.

Basic Startup (How-to)

Once the battery is toggled, the airplane will turn on and the displays will come to life.

Since the Airplane has been started from Cold and Dark, the IRS needs to be aligned and the APU needs to be started to supply power to the 4 Engine Starter controllers.

Turning these switches to the on position using the scroll wheel will start the IRS alignment. The alignment time can be real time or instantaneous depending on the setting in the EFB.

Basic Startup (How-to)

Once IRS alignment has started, the time left will be displayed on the ND in the top-right corner.

While the IRS is aligning, the EFB can be set up and calculations can be done after the APU Start.

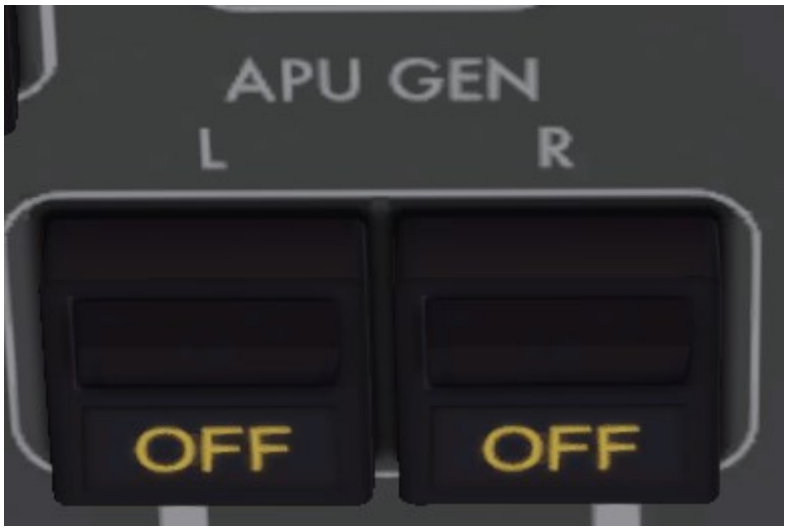
Starting the APU is the only current way to provide power for the Engine Starter Controllers.

To start the APU, move it to the START position. The FAULT annunciator will light up indicating the self-testing / system starting up. The switch will go back to the ON position on its own.

The EFIS page will indicate the current state of the APU. The APU can supply power once it is rotating at full speed.

Basic Startup (How-to)

The APU Running message will show up on the EICAS once the APU is ready to provide electricity. Toggling the APU GEN L and R switches will provide electricity to the main 235V busses allowing for engine start.



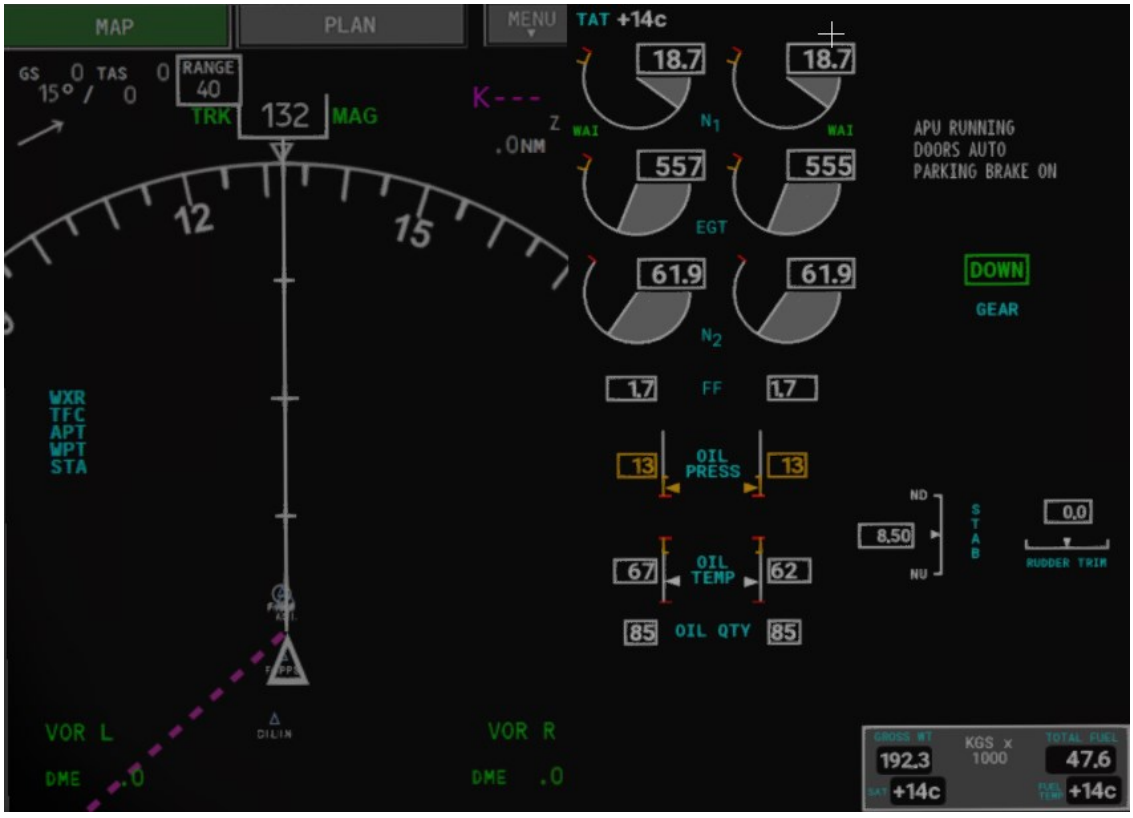
It is recommended that most EICAS messages be dealt with after this stage.

Basic Startup (How-to)

Once the APU Generators are supplying AC power to the 4 main busses (L1,L2,R1,R2). The engines can now be started.

To start the engines, toggle the engine start switch once.

Once the engine is fully started, the switch will return to the NORM position. Repeat the same process for engine 2.



Basic Startup (How-to)

Once the engines have been started and the IRS is aligned, the aircraft is ready for the skies. It is still rather simple to get the aircraft started from Cold and Dark. This will get more complex in the future as more systems are simulated. Turn on the new LED Beacon and Strobe Lights and you're ready for takeoff! The APU can now be shut down once the engine has been started.