FSCaptain

User's Guide

Software Version 1.8.3 SP

Updates to this document can be found at http://www.fscaptain.net/downloads/User%20Guide.pdf

Introduction

This manual is written to help you configure and use FSCaptain – an Air Transport Pilot simulation addon for use with Microsoft's Flight Simulator 2004, Microsoft's Flight Simulator X, Dovetail Games' Flight Simulator X – Steam Edition, and Lockheed-Martin's Prepar3D (versions 2, 3, 4 and 5). This manual explains everything about the Administrator program in detail, but including those parts involving using the FCDU communications device while you are flying.

FSCaptain is easy to configure and use. This manual is divided into seven main sections:

Getting Started—is as easy as 1 – 2 – 3. This section will help you understand how to install the FCDU device into your aircraft, so you can use them with FSCaptain, and how to start your career flying for one of the airlines provided with the system.

Your Career — will explain how to track your career, and what all the data means. This section contains advice on how to make the most of your time to get the highest scores.

Flight Dispatch — documents how to select and plan a flight and have that flight be committed into your log.

Profile and Settings (formerly "Options for All Airlines") -- contains an explanation of the optional FSCaptain settings that apply to your entire installation and not to a specific airline. This also explains how to configure FSCaptain to share the same career in FS2004, FSX, and P3D.

Configuring Aircraft — will tell you how to create and maintain the aircraft overrides that help FSCaptain calculate the flight profiles for the different airplanes you fly.

Load Maps — explains what load maps are and why they are necessary to solve certain loading problems with the FSCaptain automatic loading process.

Creating and Managing an Airline — explains how to create a new airline, including all the details about all the options and policies. Also, it reveals how to create and change airline schedules.

These sections are followed by several Appendices which go into detail about diverse ways to configure *your* FSCaptain to suit *your* style of flying!

Contents

Legal Notes:

FSCaptain, including the Administrator, FCOM & FCDU, FCDU Installer, and FSCAI & FSCCAI components are all Copyright 2009 – 2021 by Charles Owen.

RegFixer, SceneryScanner, and the Transition Altitude database used by FSCaptain are all Copyright 2011 – 2021 by Travis Guy.

The FSCaptain Installers include elements from the Aerosoft NavDataPro 1808 dataset, whose distribution with FSCaptain is kindly granted by Aerosoft GmbH.

MakeRunways is Copyright Pete Dowson. A copy is included inside our program installers.

LorbySceneryExport is copyright Lorby-SI. A copy is included inside our program installers.

All other copyrights, trademarks and indicia which are referenced in this *User Guide* are properties of their respective owners, and are only included here as references.

This was an accident.

Section 1: Getting Started

It's easy to get started using FSCaptain and to start your career as an Air Transport Pilot (ATP). It requires just three steps: 1) Installing the program on your computer, 2) Setting up your FCDU device, and 3) Signing up for employment by an airline.

That second step includes an odd term, "FCDU." What is the FCDU device? It's simply how you communicate with your crew and company during a flight. In two forms, either it's a standalone EXE, or it's a gauge which is installed as a separate window into any airplane you will be flying with the FSCaptain system. It's an innocuous gauge – the FCDU is only used with FSCaptain; you can fly the airplane normally just as before without ever looking at the FCDU.

Step 1: Installing FSCaptain
(Note: most users will have already done this step before reading this manual. But the manual can be downloaded from the website and read before installation, so we'll cover the installation steps here. If you've already installed FSCaptain, skip to step 2 below.)

Installation is very easy. FSCaptain is distributed in different archives – one type for FS9, one for SimConnect-32, and one other for SimConnect-64 simulators. Each Zip file has several files inside it: some README files, the FSCaptain.exe executable, and a separate folder with Designated Deicing Facility scenery files. You should read the README file (which will also contain installation instructions – if they differ from what's said here, follow what's in the README) and then execute the installer file.

Clicking on "Next" will take you to the this dialog:
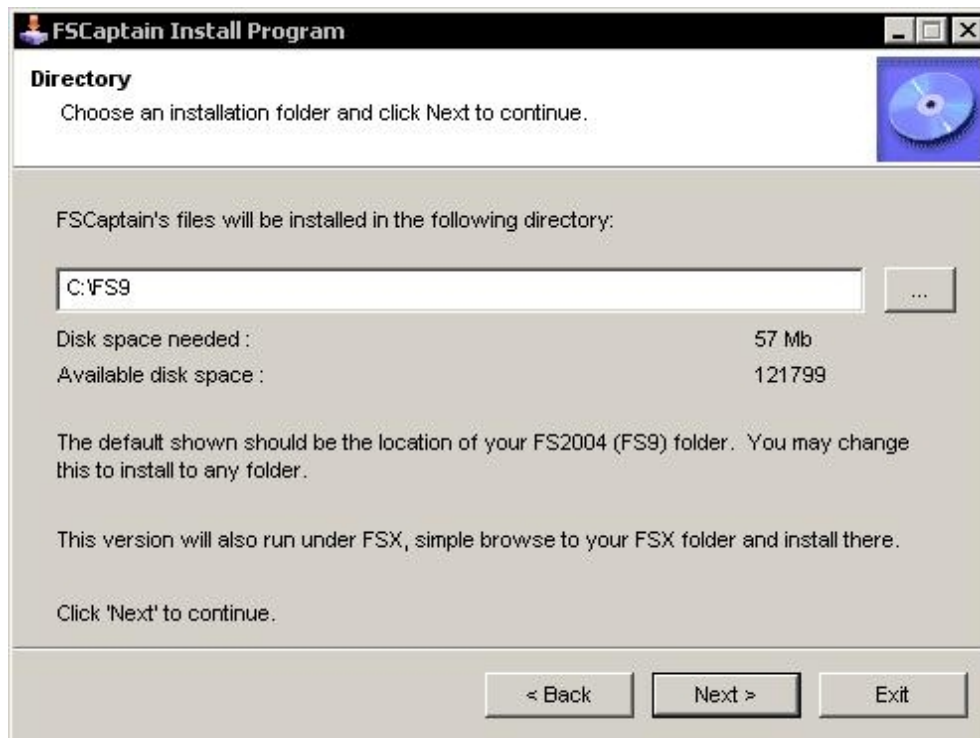
This is the root folder of your Flight Simulator installation. (The example above is where Dutch put his FS2004. What you would see here is where yours is installed, and by default it could be something long like "C:\Program Files\Microsoft Games\Microsoft Flight Simulator 2004".)

By default, the SC-32 installer searches for an FSX installation, as FSX has the largest base of users.

The SC-64 installer searches for a P3D5 installation, as this is the newest P3D version.

If you do not have FSX or P3D5 installed, the above entry will be blank and you will have to use the "…" button to find your simulator folder.

FSCaptain can be installed into FS2004 or FSX or P3D and it will run well in all of them. If you are installing into FS2004, just click on the "..." button above and browse to your FS2004 root folder. Once this is pointing to the place where you want to install FSCaptain, click the 'Next" button.

The rest of the installation is straightforward. The next screen will ask you to confirm the folder to install into and you'll do that by pressing "Start". The files will be installed, and then the FCDU gauge installation window will appear – see Section 2 on how to get started using FSCaptain.

A word of reassurance about the installation of FSCaptain: All of us have had the experience of installing FS add-ons or other programs that have caused problems with our FS installation or even the rest of the computer. For this reason, we are justifiably cautious about putting a new one on our computer, especially from an automatic installation program that doesn't let us see exactly what it's doing.

FSCaptain is designed to be very safe to install. If you are very cautious and choose to install to a temporary folder called "Check it Out" to see what it does, this is what you'll see:
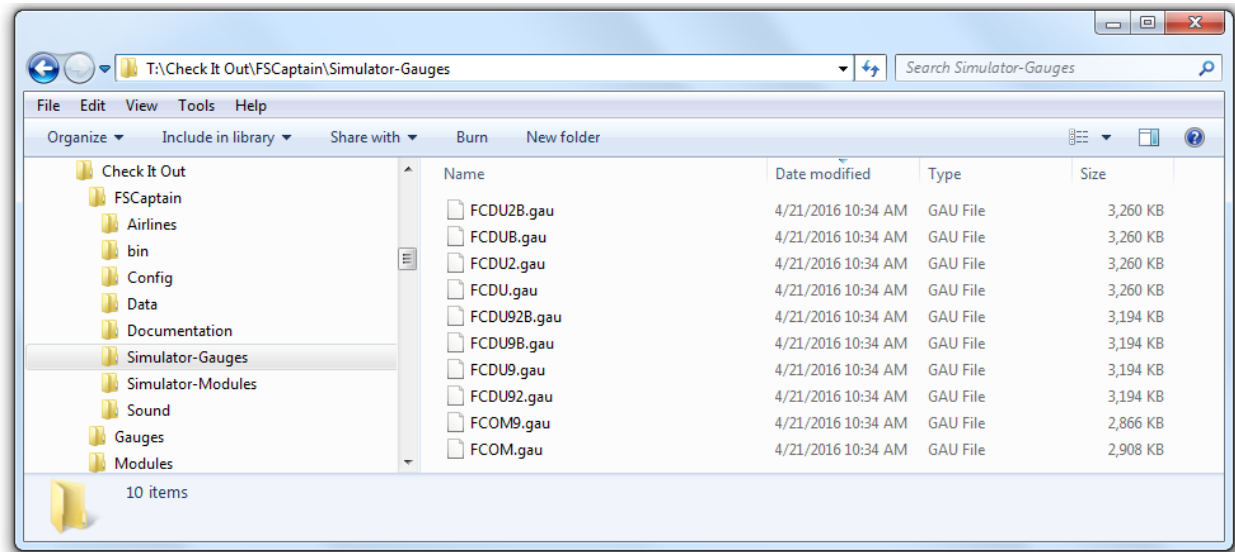
You can see that it creates a new folder inside your FS root folder called FSCaptain, and inside that there are several sub-folders containing the FSCaptain databases and programs. Also, there are several gauges and a small sub-folder placed in the "Gauges" folder of your FS folder. These gauges are the FSCaptain FCDU, some xml interfaces for complex aircraft, and some smaller warning gauges that you can optionally install on your airplanes.

FSCaptain will also install Pete Dowson's MakeRunways program into the root folder of your Flight Sim installation if you do not have it already, or if your installed version is older than the one we would be supplying. MakeRunways is a great program that can leaf through your enabled scenery folders and dig out lots of pertinent information about your airports. We'll look at this utility and the FSCaptain SceneryScanner later.

For the SimConnect-32 and SimConnect-64 version of our installers, FSCaptain will also install Lorby-SI's LorbySceneryExport program into the root folder of your Flight Sim installation if you do not have it already, or if your installed version is older than the one we would be supplying. LorbySceneryExport is used by MakeRunways for Prepar3D version 3 to 5 installations to access scenery data that is contained in "Add-On" packages which sit outside the legacy scenery.cfg.

Finally, our Full and Fixpack installers will write AIRAC 1808 versions of Aerosoft's NavDataPro data into your "My Documents" folder if no data currently exists. This data is used by our SceneryScanner utility to get Transition Altitude and Navaid data for your flights.

That's all. Nothing else inside your FS installation is modified, and the Windows registry is not touched in any way. You'll also notice that there's an "Uninstall FSCaptain.exe" program placed in your FS root folder. Simply execute this to remove the program completely. (Or just delete the \ FSCaptain\ folder from your simulator along with any gauges from your \Gauges\ folder.)

The only thing the un-install program does not do is it will not remove any FCDU gauges installed into your aircraft with the FCDU installer. You should do this with the FCDU Installer (see step 2 below) *before* you uninstall FSCaptain itself. Also, it will not delete any logs that you have recorded in the \FSCaptain\Data folder. This will preserve your career in case you change your mind, but you can easily delete this too if you want by removing the FSCaptain folder with Windows Explorer.

Steps 2 & 3: Installing an FCDU gauge and signing up

After you have clicked "Exit" on the FSCaptain Installer program, the Administrator will run for the first time. It will know that you aren't working for any airlines yet, and will give you a welcome dialog:
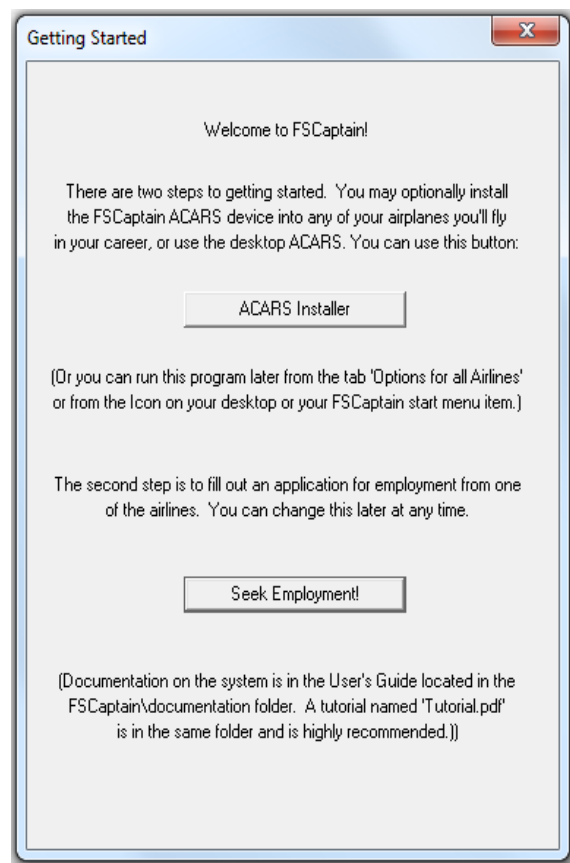
This gives you a basic guide to getting started. First, there are two buttons. The first will let you run the FCDU installer program for the first time. This program is the one that will install the FCDU gauge into the aircraft that you select, or remove it from any aircraft you where it was previously installed. You don't need to install a gauge if you intend to use the FCDU.EXE, but if you're running FS2004 or you just really like gauges, here's what to do:

First, this is the main dialog of the FCDU gauge Installer program:
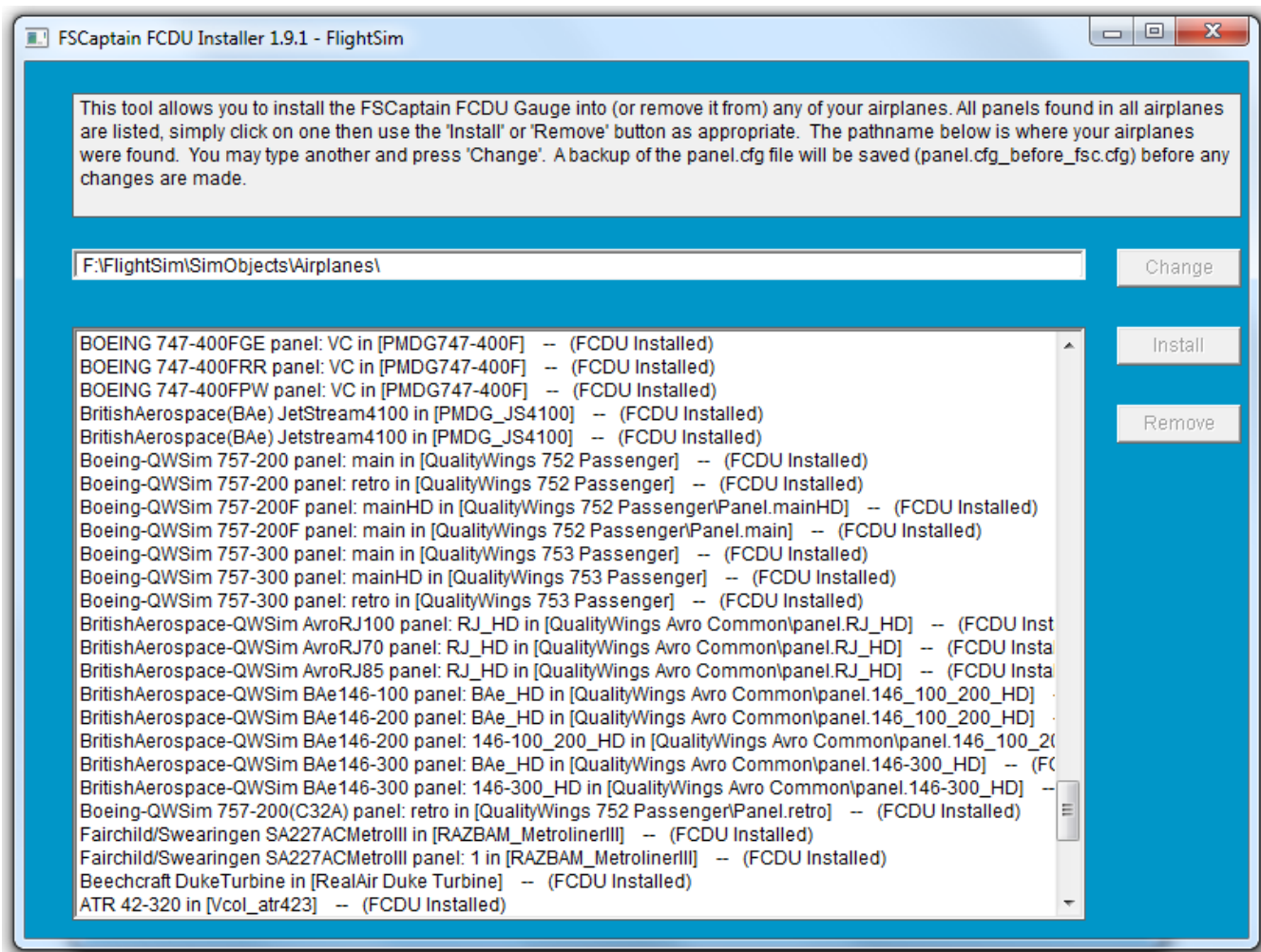
Here you see each panel in each airplane in your Flight Simulator installation. At the top is the folder where the airplanes are found. This folder is the one located in the same root FS folder that the Installer was executed from, which in the case of a new installation will be the FS version you are installing FSCaptain into. But this is a crucial point if you have more than one Flight Simulator folder. The Installer and Administrator programs primarily work on the databases inside the flight simulator folder that they were executed from.

You can simply change the folder the program is looking in, by typing a new folder name in the window and pressing the "Change" button. But normally you wouldn't need to do this.

With the advent of Prepar3D Version 4, the FCDU Installer will look for your "add-ons.cfg" file as well as all of the "add-on.xml" files that are directed to.

Each line in the "list box" shows all the panels in each of your aircraft. The aircraft manufacturer and name from the aircraft.cfg are shown along with the word 'in' and the folder name where the airplane was found in brackets. After this, if the FCDU is already installed in that panel the phrase "FCDU Installed" will appear in parenthesis. If there is no FCDU you won't see this, obviously.

To install the FCDU in an airplane, just click on a line to select it. The button "Install" will be enabled, and to install the FCDU just click on this button. A dialog will appear showing you all the windows currently installed in the panel plus some other information to help computer the proper style and resolution of the new window:
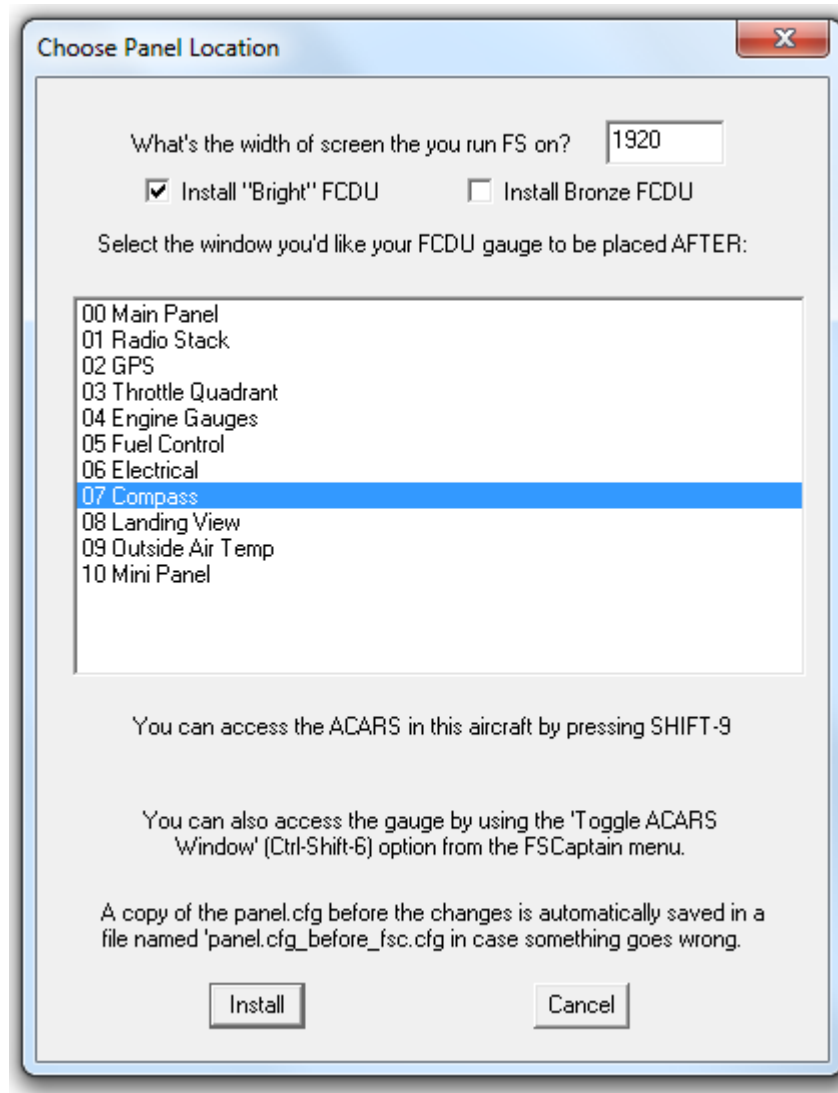
At the top, you get a choice of which style of FCDU (Flight Communications Display Unit) to install in this airplane. By default, the FCDU is a grey color and if you open the FCDU panel in a darkened cockpit, it will be dark itself. You can choose to install a "Bright" FCDU that will never be darkened, and you can choose to install a bronze-colored FCDU if your cockpit would suit.

You can choose either of the options or choose none at all. If later you want to change the appearance of the FCDU in this aircraft, you can use this Installer program to remove the previous version and install the other one.

You will also need to input is the width in pixels of your monitor's screen resolution you'll be running when flying airplanes with this gauge installed. The reason for requiring this is so that the size of the gauge window can be adjusted for wide-screen or square-screen monitors.

The window below that is the list of windows defined in the panel for this airplane.

Since there is no icon on a panel to click on to access the FCDU (though it is possible to install such an icon manually) we can choose a location that allows us to use a SHIFT-key combination. This means you need to choose between the 01 and 08 numbered windows. For example, let's decide above to install the FCDU after the "07 Compass" window:

In our example above, we see that the "07 Compass" line is highlighted, and a message appears below the list of windows saying, "You can access the FCDU in this aircraft by pressing SHIFT-9". This is because we chose to install it after the 7th line, which would place it as the 8th window. (The way FS works is that the first window (Window 00) is accessed by the shortcut key combination SHIFT-1, and so forth. This is slightly complicated, which is why the Installer just tells you how to access the FCDU. If you try and install it past the 8th window it will explain to you that you won't be able to access it except with the standard shift-control-6 key combination, which always works.)

This also prevents you from installing the FCDU into Window00, which could affect your simulator's performance.

If the Installer detects one or more of the existing panel windows uses a "zorder" value, the installer will ask if you wish to apply a zorder value to the FCDU panel.

Zorder is the value given to the simulator to instruct the drawing order of panels… to make one panel appear "on top" of others. A panel zorder value of 2 will have that panel drawn "on top" of panels with a zorder value of 1 (or 0). Zorder values range from 0 to 100.

If you answer "Yes" then the FCDU's panel will be given a zorder value that is higher than all other panel windows (or '100' if there is another panel already with a zorder of '100'.)

The FCDU panel can also be installed such that the panel will not automatically close if you change your simulator's "view." You will be asked before installation if you wish this to occur.

Once you press the "Install" button the FCDU will be installed in the panel automatically. It's that simple.

You can also remove the gauge by a very similar process – if you click on a line that already says "FCDU Installed" you will see the "Remove" button is highlighted. Click on it to remove the gauge from the airplane. Windows shifted down will be shifted back up. Any changes you have made to the panel since installing the FCDU will be retained.

What is *the FCDU?*

The FCDU is a device that allows you as the Captain (Pilot in Command) to communicate with your Dispatch Office and members of your crew using the ACME system – the **ACARS and Crew Messaging Environment**. The FCDU appears in the style of an FMC/CDU in a modern airliner, specifically the types used by Boeing 737/747 systems (both grey and bronze).   Options are selected using line-select keys to the left and right of the display screen, and there's an alphanumeric keyboard with special shortcut keys, and a scratchpad area into which you can key in data and up-select using the line select keys.

Among the FCDU's capabilities is the ability to create a flight, to revise the details of a flight during the preflight phase, to communicate with the apron crew (for pushback and deicing) and exchange messages with your dispatcher and your flight crew during the flight.   It also monitors critical aircraft systems and can be used to alert you to a system failure!

This is the entire premise of ACME – combining an **ACARS** together with a **Crew Messaging Environment** for a unified solution – this one tool communicates with Dispatch and your Crew!

You might say the FCDU is a **Flight Communications Dispatch Unit**. Or a **Flight Command Display Unit**.   Or any number of aviation terms built from those four letters….
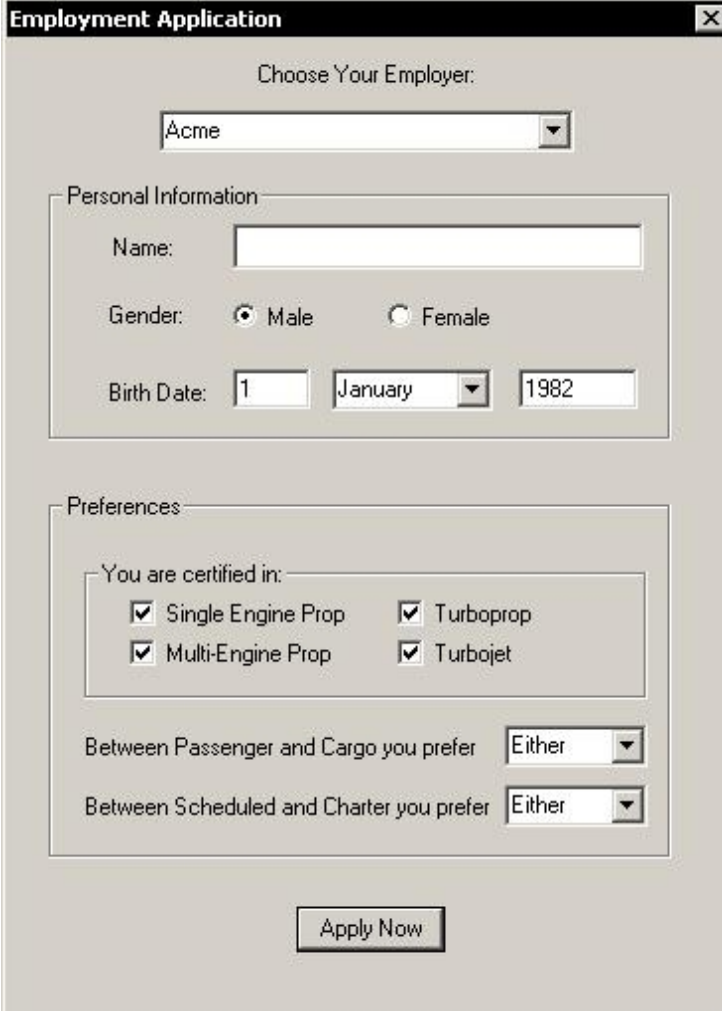
Geeky Details: What does the FCDU Installer do? It alters the panel.cfg text file for the airplane by placing a new window in it for the FCDU device, and it places an invisible gauge on the main window and the main VC window (if there is one). This invisible gauge is the FDR, the Flight Data Recorder that silently records each flight for scoring and analysis. Before it changes your panel.cfg, it makes a backup for safety named "panel.cfg_before_fsc.cfg". If things get really messed up in your panel, you can always delete the altered panel.cfg and rename the backup to restore things to the way they were. This should only be necessary in an emergency as the Installer has been carefully tested.

Once you are done with installing the gauge you can close the Installer window and go back to the 'Welcome to FSCaptain!' dialog. You don't need to install the FCDU right now if you want to wait; it's easy to run the Installer anytime from the desktop icon, or the start menu, or from a button in the Administrator.

However: The need for installing an FCDU gauge in simulators which use SimConnect has been lessened with the introduction of the standalone FCDU.EXE. If you are happy to use the FCDU.EXE, all you need to do is to run FCDU.EXE once you have launched your simulator. You can even run the FCDU.EXE from a remote PC – one that is networked with your simulator's PC, that has a properly configured SimConnect profile, and with sufficient Microsoft networking rights to run programs on other PCs. We won't get into details of how to do all of that now, because we need to get you signed up with an airline!

The last button on the welcome dialog isn't optional if you want to be a captain for an FSCaptain airline! This is where you sign up for employment:

In FSCaptain, you are choosing a career as an Air Transport Pilot (also known as an *Airline Transport Pilot* in some countries). An ATP is the highest classification of pilot license that all countries issue. You will be the Pilot in Command (PIC) of aircraft which will contain cargo or passengers – or both. You will be employed by an Airline who will Dispatch you on Flights in order to arrive safely, and on-time, all the while hoping to generate revenue. (But don't worry about that – FSCaptain is not itself a business simulation. Your job is to fly aircraft to the best of your ability. The bean counters back at the home office will always find a way to keep the doors open. That's what they're paid to do.)

Some of the airlines are based on liveries that are provided by default out of the box in both FS2004 and FSX. If you choose a default airplane that belongs to one of these airlines not only will you look right flying for it, but the FS ATC will call you by the right airline name. Under FSX, FSCaptain will even ensure that ATC will call you by the correct flight number.

There are even dozens of real world airlines for you to choose from – from (nearly) every continent! *(Sorry Antarctica*, you don't have native airlines!)

There is even a fictional airline – Acme Air Service – which if truth be told, is the founding spirit for FSCaptain itself.   (If Acme Air Service had a logo on its aircraft, it would be an image of a falling anvil….)

But let's focus on the simulator airlines to start with. Which airline should you choose? They are all different. Here's a quick guide:

Easy Airlines: *Landmark* and *Emerald Harbor* are the easiest in that they have less restrictive policies and so it's less frustrating for a new pilot to fly for these two. They do not require you to commit to a flight during the selection process and the flight won't be logged until you land. If you crash, the crash won't be counted against you. There are fewer requirements and so fewer ways to screw up. We suggest your first few test flights should be for one of these until you get the hang of using the FCDU to deal with the Dispatcher's office.

Medium Airlines: *World Travel* and *Global Freightways* are two airlines that have a medium level of difficulty.   Once you start your flights you are committed to finishing them – even if you have to start over (due to an FS crash). If you crash your airplane it will count against your career. There are some policies that you'll need to watch out for, such as needing to turn your landing lights on before you take off, and off anytime you fly above 10,000 feet. Global is the only "cargo-primary" airline provided out of the box. If you are interested in cargo flights over passenger flights, you might want to sign up with Global. (You can also easily change one of the others to "cargo-primary" or create your own, see the section "Creating an Airline" later in this manual.)

Hard Airlines: *Acme* and *Pacifica* have the hardest rule-set. Once you *select* a flight you are committed to finishing it. These companies not only have all the policies that the medium ones do, but they require accurate position reporting during flight. These are closest to the reality of a professional pilot's challenges.

Once you've chosen the airline you want to work for, you need to fill out some information on your employee application form. You should enter your name, indicate your gender, and enter your birth date. Following those three obvious fields are some that could use a little explanation:

You are certified in: These check boxes let you tell the airline the categories of aircraft you are competent to fly. This will not limit your choices in FSCaptain...but it will allow you to avoid check rides in new aircraft for airlines that have chosen a policy to make check rides optional.

Between Passenger and Cargo you prefer: This is the type of flights you'd rather be making. You can choose between passenger, cargo or both. This will have a major effect on the type of flights you will see offered to you by the airline. Here's how it works: If you are in an airplane that is configured as a passenger aircraft, you will see passenger flights. If it's configured for cargo, then naturally you'll see cargo flights. But many aircraft are designated "convertible". If you select "either" here, then the airline's primary role (passenger or cargo) will determine the type of flights. But if you indicate a preference here, then those are the type flights you will be offered most often.

Between Scheduled and Charter you prefer: This also affects the kind of flights you are offered. If you choose either you'll see both scheduled and charter flights. If you chose a specific type, you'll only see that type presented to you – unless there are none of that type available, in which case you will see flights of the "other" type.

After clicking "Apply Now" you are ready to make your first flight in your career as an FSCaptain!

But before you click "Apply Now" you should understand that this is an easy task you seek. As an ATP, you will be required to follow all pertinent regulations, to exercise your complete under-standing of aviation knowledge, to follow all operational procedures of your airline, to understand your aircraft's performance capabilities under all circumstances, to be fully aware of the meteoro-logical conditions that you may encounter, to account for the human performance and limitations of your team(s), and most of all to dress sharply and neat always while in public.

There will be tests….

Multiple Installations of FSCaptain

You may wish to install FSCaptain in more than one Flight Simulator folder. For example, you may have a copy of FS2004, one of FSX, and one of Prepar3D and you want to have a single career in all versions. To accomplish this, you need to execute the installer in all three folders so that each one has its own copy of FSCaptain and the FSCaptain databases.

You then need to decide if you want to have the same career in all versions, or not. If you do, an explanation of how to configure this situation is in section 3 of this manual, "Profile and Settings" under the subheading of "Log File Folders."

You may install FSCaptain in any number of Flight Simulator folders on your PC or on multiple PCs. In some cases, you may have two or more installations of a simulator with different environments, such as FSX Boxed or FSX Steam Edition. FSCaptain can be installed in all of these locations, with the same technique used above to point all databases to the same master location.

When the Administrator or the FCDU Installer program is executed it determines the location and version of the simulator under which it is installed. Each copy of the Administrator and Installer only work with the databases inside its own installation where it is located. Therefore, if you have two copies of FS2004 you must be sure to run the right copy of the Administrator program to access the databases in the copy you want. Note that the installation process will overwrite the desktop and start menu links with each new install. You must create your own links to different copies of the Administrator and Installer if you have them installed in separate places.

During the initial development of FSCaptain, Dutch had two versions of FS2004, a "modern" and a "retro" version. The modern one was in a folder called FS9 and the "retro" one was in Retro_FS9. He installed FSCaptain in both locations, and created two desktop icons for the Administrator program, one called "Admin FS9" and the other "Admin Retro FS9". To create the retro one, for example, he right-clicked on the Windows desktop, selected "New" from the pop-up menu, and then selected "Shortcut". Then he browsed to the C:\Retro_FS9\FSCaptain\bin folder and clicked on "Admin.exe" to select it. On the next panel, he typed in "Admin Retro FS9" for the name. Then he repeated those steps for the other version. Thus, he had two administrators for his two separate versions on my desktop.

Over the years, Dutch, Peter and Travis all have run multiple simulators using the same principle.

The Administrator and the FCDU Installer will indicate in its window title what folder it is accessing.

FSCaptain 1.7.0 Administrator - PREPAR3DV2

Achievements | Areas of Concern | Flight Dispatch |
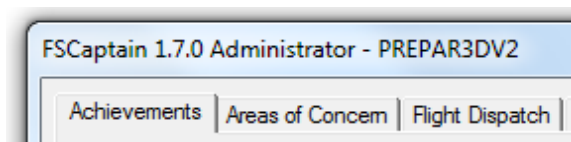
"FSCaptain Can't Find My Simulator"

It is possible that when you first start the Administrator, that it cannot find certain simulator files which it needs to access. In this case, you will be prompted to choose the simulator which you want to use the Administrator against.

The series of [Yes | No] message boxes you see to the right represent the order by which the Administrator tries to gain knowledge of your simulator.

Just click "Yes" when you get to your simulator type.

Simulator not found - 1/6	Simulator not found - 2/6
Are you using FSX (Boxed)?	Are you using FSX (Steam Edition)?
Yes No	Yes No

Simulator not found - 3/6	Simulator not found - 4/6
Are you using P3D (Version 2)?	Are you using P3D (Version 3)?
Yes No	Yes No

Simulator not found - 5/6	Simulator not found - 6/6
Are you using P3D (Version 4)?	Are you using FS9?
Yes No	Yes No
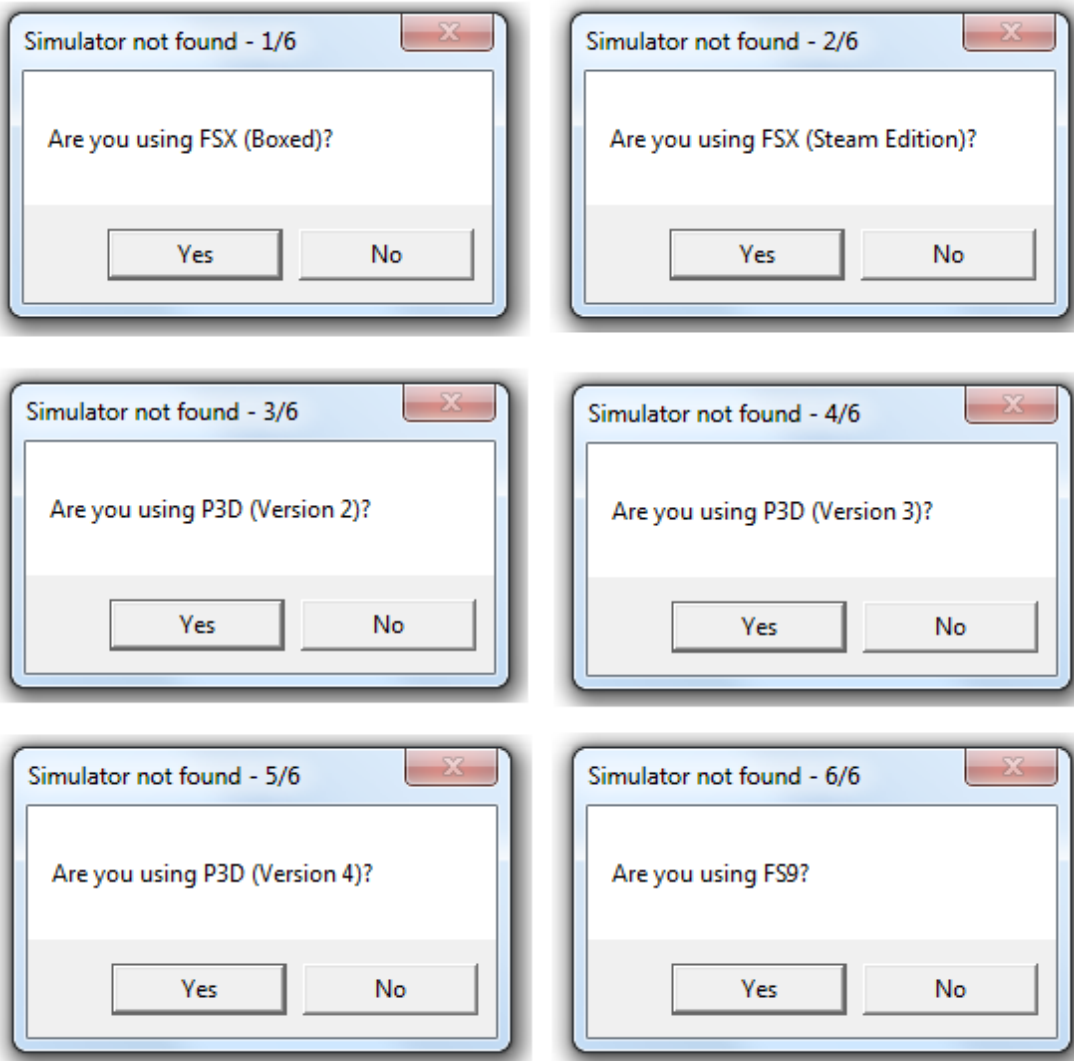
And yes, we also ask for P3D (Version 5)... these screenshots may be updated in a future version....

Understanding the Administrator

There are several programs you will use as an FSCaptain pilot. The primary one is the FCDU communications device.

The other program is documented here, the Administrator. This program lets you configure and control the entire FSCaptain system. You can do everything from change the airline you work for, to creating a whole new airline with its own elaborate schedules and much else.

The Administrator is organized as a property sheet rather than a standard Windows application. This means there are tabs across the top to allow you to select the various sections. It also means that you can change anything in any tab but you should only click on the "OK" button when you are done with the Administrator and want to save your changes and exit. Do not click on "OK" every time you make a change. If you want to save your changes immediately use "Apply", which will leave the Administrator running. "OK" means you are done with working with the program.

It's important to understand how these two programs relate to one another. You can access the Administrator program from your desktop icon or from the Start menu. One very important thing to know is that the Administrator should always be run "As Administrator" on your PC. This allows our Administrator the ability to read and write to all necessary files and folders.

If you use the Administrator while Flight Simulator is active and the FCDU is in use, any change you make to the databases or the configuration of FSCaptain will not be effective inside the FCDU until it is reset and you log in again. This is to protect the integrity of the system – unpredictable results could easily happen if you change things "on the fly".

If you access the Administrator from inside Flight Simulator, the "Erase Last Entry" button on the Detailed Log tab is disabled. You are not allowed to change the log while Flight Simulator is active. If you need to do this, you'll need to execute the standalone Administrator from the desktop icon or the Start menu. On the Flight Dispatch tab, the "Commit" button will be disabled any time the power is turned on to the FCDU device. Thus, you can accept a flight assignment from the Administrator while in the cockpit, but you must have the FCDU turned off.

Other than those exceptions, no matter how or when you access the Administrator it will function per the documentation in this manual.

To manage your airport sceneries, you'll also use the FSCaptain SceneryScanner which combines data from many various data files, including output from Make Runways. SceneryScanner can be launched from the Administrator by selecting the Rebuild Airport Database function, while Make Runways can be launched by having its checkbox selected at that time.

Remember to ensure that you run the FSCaptain Administrator "as Administrator" on your PC, so it in turn can run Make Runways and SceneryScanner "as Administrator." PC security….

The FSCaptain Menu

Under FS2004 (FS9) there will be a separate menu item named "FSCaptain" that will give you access to some helpful functions. Under FSX and P3D, it will appear as a sub-menu named "FSCaptain" under the "Add-ons" menu heading. In either version, even though they may look different, the menu functions are the same.

Toggle FCDU Window (Ctrl-Shift-6): Clicking on this option (or using the keyboard shortcut) will make the FCDU gauge window appear if it is hidden, and hide when it is in view. If you have no FCDU gauge installed in your aircraft, this will do nothing.

View Dispatch Release: If a dispatch release has been prepared and is ready, then you may view it using this option. Normally this document is not ready until the loading process is complete. However preliminary versions are generated ahead of time. You should review the contents of the release carefully as they are the legal document allowing the flight to proceed. In the real world, this must be signed by the pilot in command and the dispatcher for a flight to be legally released.

Toggle Belt Switch (Ctrl-\): Clicking on this (or using the shortcut) will toggle the seat belt sign on or off. Under FSX, this toggles the actual Cabin Alert function. Under FS2004 (FS9), it toggles the FSCaptain Interface variable (ACMEBELTS), which can be used by aircraft to interface to the FSCaptain system. Even if your airplane doesn't interface to FSCaptain, toggling this switch will be accepted by the FCDU as the seat belt switch. Warning: Most aircraft in FS2004 do not have a seat belt cabin alert switch and are configured as not having one in the Aircraft Characteristics. This means that the entire Belts function of FSCaptain is ignored. If you use this option to toggle the belt switch at any time during an FSCaptain flight, this will be detected by the FCDU and it will assume an interface is present, so you are then responsible for the operation of the seatbelt sign – it is no longer ignored.

Toggle No Smoking Switch (Ctrl-]): Clicking on this (or using the shortcut) will toggle the no smoking sign on or off. Under FSX and P3D, this toggles the actual Cabin Alert function. Under FS2004 (FS9), it toggles the FSCaptain Interface variable (ACMESMOKE), which can be used by aircraft to interface to the FSCaptain system. Even if your airplane doesn't interface to FSCaptain, toggling this switch will be accepted by the FCDU as the no smoking switch. You may use this keystroke to alert the Flight Attendants prior to takeoff or landing by turning it off, waiting for a half second or so, then turning in on again. This will work in either version.

Alert Flight Attendant: This option will alert the lead flight attendant of an impending takeoff (if on the ground) or that you are about to land (if in flight.) These two notifications are very important for the safety of the flight attendants and you should never forget to do them at the appropriate times. There are multiple ways to do this, one of which is to select this option from the menu. You can also use a button from the Communications screen of the FCDU device, but the most realistic and easiest way is to flip the "No Smoking" cabin alert switch off for about a half second and then on again. This flicking of the switch will cause an audible ding in most airplanes and is the signal to the flight attendants. However, some aircraft don't have this switch implemented so you can use the FCDU or this menu option instead.

Say Again Please: This will cause the last verbal message from your crew to be spoken aloud again. If both the First Officer and the lead Flight Attendant have both spoken, the First Officer's statement will be repeated first. If you invoke this function a second time, the Flight Attendant will repeat their last statement. If you invoke it a third time, the First Officer statement will be repeated yet again. And so on.

About FSCaptain: This displays the current version of the system you have installed, and shows the credits for the program.

> **Note for Prepar3D Version 4 & 5:** We are not seeing these keystrokes being reported to us in the simulator. Until such time as we can determine the cause, you will have to use the menu items.

What Happened to the in-simulator Administrator?: In FSCaptain versions 1.8.3 and earlier, it was possible to access the Administrator while in the flight simulator – it had its own separate menu item.

Over the years, several Captains managed to negatively impact current flights by editing various files using this Administrator. Several versions ago, we removed the ability to edit a flight, but left intact the ability to change other items. After careful consideration, we've removed the ability to access the Administrator altogether from inside simulators.

Understanding Weather in FSCaptain

Because weather is such an important part of aviation it's important to understand how FSCaptain obtains weather information and how it uses it – and the potential for misunderstanding.

FSCaptain obtains weather information from three sources: published information from sites on the Internet, internally from the weather that is set inside Flight Simulator during and FSCaptain flight, and optionally from a database that is a part of a third-party weather generator program. FS-Captain *never changes any weather* inside Flight Simulator; it merely obtains, uses, and/or reports it.

FSCaptain uses weather information in these ways:

- It uses METAR and TAF data to adjust Block Time and fuel requirements during the dispatch planning process.   This METAR and TAF data are obtained from real-world weather as re-ported on the several Internet sources, or from the database of an external weather generator program.
- It uses METAR information obtained from the weather settings at weather stations inside Flight Simulator to determine minimum safe weather conditions for dispatch of flights and landing at destinations. Dispatch will not authorize landing at an airport below company mini-mums (as defined for each airline).
- It obtains current weather information from inside Flight Simulator, or from an external weather generator, to display weather reports at pilot request on the FCDU during flight.
- It uses the current external weather outside the airplane to implement the special "hazard pack-age" that optionally intensifies the effects of icing and thunderstorms on the aircraft. The Ground Deicing feature even tracks conditions that would result in frost and/or freezing fog, even though they may not be mentioned in a METAR report.

Most simulator pilots using FSCaptain fly using real-world real-time weather. For this reason, us-ing Internet METAR and TAF data from the Internet is reasonable. But you must be aware of the potential difference between the weather as set and depicted inside Flight Simulator and any data obtained from real-world sources. When planning and dispatching your flight using the Adminis-trator the program will obtain the latest METAR and TAF information available at that point in time. If, however, substantial time passes between the times the flight is dispatched and when it is flown things will have changed. The data obtained by the Administrator from Internet sources is not necessarily the same used by the FS "Real World" weather option, nor is it necessarily the same source as used by third-party weather generators. While all these programs obtain "real world" METAR data, because of timing they may not match up as exactly as you might expect.

Within Flight Simulator all weather is depicted based on weather parameters set at each Weather Station within the program as you are flying. There are several ways these weather stations have their data set and it's important to understand these sources. Remember, regardless of real-world METAR data, the *weather you are flying in is determined* <u>only</u> *by what is set at these FS weather stations.* The Flight Simulator world is full of weather stations. (Not all are always set – some sim-ply do not have any weather data in them.)

These are the weather sources:

- You may define your own weather manually or select Weather Themes from the weather options. Obviously, if you set up your own weather it won't match the real-world data. You can choose to define only certain named stations, or define all of them as having the same weather.
- You can elect to use the "Real World Weather" option of Flight Simulator. This will download METAR data for all the weather stations inside the program, all over the world, and will set each to match its own METAR.
- You can use a third-party weather generator. Since these programs are specialized they generally do a better job of setting the weather at weather stations – but that is all they do (although some also modify some FS graphics to make clouds and such look more realistic but this is cosmetic and has no effect on flight.)

We'll assume here you don't set your own weather and either use "Real World" weather or a third-party weather program.

Either way, real-world METAR data is downloaded and weather stations inside FS are set to match it. In the case of the internal Real-World weather, all reporting stations are set. In the case of third party generators (and this is critically important to understand) *only a select set of stations within a given radius of the user's aircraft position* are set. The only exception is that for many third-party generators if you load a flight plan into the weather software any stations within a given radius of the destination and any way points of the flight plan are also set.

It's important to realize that if you are using a third-party generator, most of the weather stations in the world will not have their weather set. Therefore, requests to the FCDU to report on weather at distant stations will likely report "Weather Station not set in FS" if you are using Flight Simulator itself as your weather data source. If you're using an external program this warning doesn't apply – all the weather information for all stations should be available in its database.

Weather data at a weather station contains more detail than is reported in real-world METAR data. For instance, many cloud layers can be defined and attributes such as turbulence and icing can be defined in different intensities in any cloud layer. Real-world METAR data does not contain turbulence and icing data. (Although FS METARs *do* report such.) Therefore, both the "real world" and third-party weather programs make educated guesses and combined with random factors will assign turbulence and icing to cloud layers. The FCDU reads and reports these extra attributes as Pilot Reports (PIREPS) when your data source is your simulator. (If you have an external program configured you can still see what FS has in a weather station by using an option on the weather display screen. You can flip back and forth between the two sources. In fact, it's interesting to compare in this way to see how FS has altered a station from an external METAR.)

All weather you see depicted in FS comes from these weather station settings. Third party weather generators can set the parameters and attributes more accurately, but they cannot change the depiction inside Flight Simulator except to change the graphics.

Many weather "problems" of FS occur because two different weather stations are reporting dramatically different weather. You may be flying near a station that is reporting clear skies and suddenly pass into the zone of one that's reporting overcast – suddenly, once you pass that invisible zone line, clouds appear everywhere! (Newer simulators aren't as dramatic with this as older ones....) Major differences in wind direction and velocity as well as visibility also lead to these unrealistic transitions. Many third-party weather programs try to deal with these effects, but they can only do so much because they are external to FS and dependent to a large degree on the basic FS weather depiction programming.

The very useful utility FSUIPC can change some weather depictions and it is highly recommended that if you don't already have a registered copy of this program you should consider doing so, whether you are using FS2004 or FSX or Lockheed Martin's Prepare3D. The most important thing FSUIPC can do is smooth wind transitions which can be brutally unrealistic (flying at 300 knots from a weather station that has winds reported at 270 degrees 80 knots into the next one that is reporting 90 degrees at 60 knots to use an extreme example.) It can also smooth visibility transitions and fix a host of other small and large FS bugs and glitches.

(FSUIPC is not just a weather utility - it has a host of non-weather-related functions. It can offer customized hardware interface items such as axis, button and key controls, recover lost VAS, launch other add-ons, and even help to block some simulator crashes!)

FS weather does not remain static, but changes over time per weather change rules programmed into FS. Flight Simulator has an option to determine the rate of weather changes, and one of the settings is "none", but field research tends to confirm that indeed Flight Simulator starts to change the loaded weather station settings almost at once, albeit at a slower rate. But none of the Flight Simulator family ever leaves the weather completely alone after it is set but is constantly changing it in small and large ways.

Understanding Gates and Parking

Checking the option on the "Profile and Settings" tab of the Administrator Require an FS Parking Location to Unload will make FSCaptain aware of gates (or parking spots) in the Flight Simulator world. It's important that if you choose this option you understand how parking is defined and works in Flight Simulator and how FSCaptain uses those definitions.

All the large and medium size airports, and most of the smaller ones, have parking spots defined on them. These parking spots serve one purpose for Flight Simulator: they are the starting and ending points for fixed-wing flights. The user aircraft starts in a parking spot (or on a runway, unrealistically) and if under control of the default ATC will be assigned a parking spot on arrival at an airport if any parking exists there. AI aircraft always start a flight in a parking spot (if an airport has no parking it will not have AI airplanes landing or taking off there) and will always be assigned to one and taxi there when they land.

Each parking spot has four attributes that are important to us: it has a name, number, a type and a radius. Names are generally of three classes: Ramp, Gate, and Dock. Each gate is unique at an airport by its name and its number. You may have a Ramp 1 and a Gate 1 but you shouldn't have two Ramp 1s. Gates can be further defined by a letter; you can have Gate A1 and Gate B1 and so on down to Z. Ramps cannot be so split. The name "Gate" or "Ramp" implies a larger or smaller spot but this is only an implication it has no real effect. There are eleven types of parking spots: RAMP_GA, RAMP_GA_SMALL, RAMP_GA_MEDIUM, RAMP_GA_LARGE, RAMP_CARGO, RAMP_MIL_CARGO, RAMP_MIL_COMBAT, GATE_SMALL, GATE_MEDIUM, GATE_HEAVY, and DOCK_GA. Again, these tend to imply size but in fact this too has no effect. The only attribute that define size is "Radius" which is a value in meters. Helipads at airports are different than "parking spots" and are only valid for helicopters.

Size is very important to a parking spot. It determines gate assignment in Flight Simulator. FS will always try to assign a parking spot to the user aircraft, or to an AI airplane, based on how closely it matches the radius of a parking spot, *regardless of the parking type*. Each aircraft has in its aircraft.cfg an attribute called "wing_span". This, converted to meters and matched to the radius of the parking spots, will determine what's assigned when you (or an AI plane) lands. The closer the match is, the more certain the assignment will be.

Parking spots have another attribute which is not used in the default FS airport definitions, but which is partly honored by the program and used by most add-on designers. Spots can optionally be assigned "airline codes" which are 1-4 letter designators. Many airlines can even be assigned to a single parking spot. For example, a gate at an airport can be given a code "DAL" for Delta Airlines, and then two gates away, the codes are for "DAL, DALX, FFT, HAL." (In sequence, they are: Delta, Delta Express, Frontier, and Hawaiian Airlines.)

Aircraft can be assigned airline codes in their aircraft.cfg. When a code in the aircraft definition matches a code in a parking spot, AI aircraft will tend to be assigned to those spots. Thus, any AI airplanes with a code "DAL" will wind up in "DAL" parking spots if they are defined at an airport. Disappointingly, this system only works for AI airplanes. While the default ATC will only guide

AI aircraft to these spots, ATC will ignore the codes for the user airplane, who is only assigned a spot by the internal Flight Simulator ATC based on radius versus wingspan.

That's where the FSCaptain dispatch system comes into play. If your airline has parking codes for a spot that can fit your aircraft – and which is appropriate to your type of flight – then chances are Dispatch will assign you to one of your airline's locations. (You would have to ignore the default ATC's guidance.)

And if your airport scenery doesn't have airline parking codes, check out our Appendix 5's "Preferred Parking" on how you can assign FSCaptain-readable codes to any parking spot!

"That's not the correct parking for this airport!"

If you're not seeing the parking spots that you are expecting at a certain airport, perhaps the Airport Database isn't considering the airport scenery you wish.

Open the \Config\AirportSceneries.csv file in a spreadsheet or text editor and search for your airport's ICAO ID. Then at the end of that row of data should be the Airport Scenery "name", the path information (taken from scenery.cfg) and the name of the primary scenery BGL. If it's viewing default scenery, and not your airport add-on, then you may want to rebuild the airport database *with MakeRunways.*

FSCaptain gets its parking data directly from the MakeRunways-generated file G5.CSV. Any time you add or remove (or re-order) your airport sceneries, you should rebuild your airport database.

Fixed-Wing Parking in FSCaptain

FSCaptain uses gates / ramps on two levels: 1) The requirement that you park in a parking spot to unload (triggered by the Require an FS Parking Location to Unload option) and 2) Dispatch can assign parking spots to you and you must be in your assigned position to unload (the *Assign Gates* option on an airline definition.)

What this means is you can enforce the requirement that you unload in any valid parking location of your choosing, and you can even add the requirement that you must use the spot that's been pre-selected by either you or by Dispatch.

Important: for FSCaptain to use parking spots, it must know where they are. For this to happen you must use the option Rebuild Airport Databases the first time you turn on the options to use parking spots, and any time you add, delete or change any add on airports you may have. This option runs Pete Dowson's MakeRwys.exe – a nifty little program that scans your sceneries and identifies airports and their facilities, and then runs the FSCaptain SceneryScanner which combines data from MakeRunways with many other data sources to build your airport database.

Tip for FS Nerds: With FS9 and FSX it was reasonable to disable scenery areas in your *scenery.cfg* file when you will not need them for a flight. (After all, if you're flying from Chicago to Detroit,

why enable scenery areas in Africa, South America, Europe, Texas, etc. It just uses valuable virtual memory.) However, when you add new airport scenery packages to your installation, you should enable all airport-containing scenery areas before you run the Rebuild Airport Database option in FSCaptain… as well as other similar options for other FS add-ons. (After you've updated your add-ons, you can revert to your "only what I need for this flight" scenery areas for *scenery.cfg*.)

When you are required to park at a parking spot, but not assigned to one, it means you can unload at any open spot at the airport. The trick is to get into one. FSCaptain uses the "radius" attribute to determine whether you are there or not. It doubles the radius figure of a parking spot and if you are that many meters away (or closer) regardless of the direction you are pointing, you are considered "in" the spot and allowed to unload. When you are not yet in a spot, the FCDU Flight Status screen will offer guidance to the nearest gate, depicted as "`Nearest (123/456M)`" where '123' is the heading to the gate and '456M' is the number of meters distant you are from its center point.

As you move about the airport the "nearest spot" will change. You are not required to park at the nearest spot. If MS ATC has assigned you a spot, taxi to it and FSCaptain will allow you to unload once you are in it.

If you are not using MS ATC finding your spot may be challenging (this can be true in the real world.) There are some external programs that can help. A free version of the FollowMe package for FSX is available on the FSCaptain Website (see the "File Exchange" section.) A fine payware solution for FSX installations is GSX from FSDreamTeam, which adds much more than a follow me car. Another great add-on that works with FS9 and FSX is AES from Aerosoft. It also adds more to your airports than a follow me car.

If you have been assigned to a gate it will only be because your airline definition has selected this option, and your challenge is higher. You will know you have been assigned a gate by four indicators: 1) It will be written in the remarks section of the Dispatch Release document, 2) You can see it on the Information screen accessible from the Progress screen of the FCDU, 3) When Dispatch clears you for approach via the clearance FCDU message they will tell you what your assignment is, and 4) on the FCDU Flight Status screen you will see the text "Assigned (123/456M) after you land at your destination. The 123 is the heading to your assigned gate and 456 is the distance in meters to its center point. When you have arrived in the gate the heading and distance will disappear.

When parking destinations are assigned during dispatch it's assumed they will be open. When you arrive however this may not be the case. AI aircraft may be parked in your destination parking spot. If this happens, dispatch will assign you to another open spot and send you a message that your gate assignment has been changed. If before you arrive there another AI aircraft occupies that spot, you can be assigned to yet another open gate.

It is possible that an airport does not have parking spots large enough for your aircraft and it is also possible that it does but after you land all are occupied by AI airplanes. In the first case, you won't be assigned a gate and you are authorized to park at any gate – as if the gate assignment process was not in use. If after you land there are no parking spots available for you, Dispatch will send a mes-

sage stating "NO PARKING AVAILABLE, PARK AS CLOSE AS POSSIBLE." In effect, this means all gate rules are suspended for this flight and you can unload anywhere at the airport.

However, if you have SimConnect (or the fully licensed version of FSUIPC), the FCDU can be configured to "clear" AI aircraft from your assigned parking spot. It's a process that does not need to be triggered by the Captain, and by default will remove rogue parked AI 70% of the time. (The level at which this is triggered can be adjusted in the OPTIONS.CFG – see Appendix 5: Special Options and Features.)

FSCaptain assigns parking spots based on different rules than standard FS. No parking space is considered for assignment unless its radius is equal or greater than the wingspan of your airplane.

The wingspan of your aircraft is not taken from the aircraft.cfg but is based on the "volume class" as follows: Tiny: 5 meters, Small: 10 meters, Medium: 15 meters, Large: 24 meters, Heavy: 24 meters. These may seem less than real life, but based on research into the radius of average parking spots as defined in the default Flight Simulator these numbers were picked so that a "Large" aircraft would fit into most "Small" gates, and "Heavy" would fit into most "cargo" and "heavy" gates.

For all matching parking locations, FSCaptain first tries to find a match for your flight type (PAX or Cargo) to the type of parking area, favoring a "Gate" for PAX, and "Ramp" or "Dock" for cargo. It also tries to match any airline codes to the "Designator" code on the airline definition if codes are on the parking spots and a designator is defined.   If the airline code match fails, it tries on flight type. If the flight type fails, it goes for any spot that will fit. Thus, it is possible that your passenger flight could be assigned to a cargo parking spot, if, for example, that was the only spot available at the airport large enough for your aircraft.   There is a certain randomness built in: when multiple spots match the criteria, the spot is selected randomly from the candidates.

One other criteria that FSCaptain honors is that if you're flying a small GA type aircraft, FSCaptain will try to select a non-gate parking spot. It's normally not usual to have a Beechcraft or Cessna turboprop parking among jumbo jets, and using a jetway for passengers! (Larger turboprops like a Q-400 would of course be welcome there!)

Another quirk is that some airport scenery developers choose "cargo" or "military" type designations for their ostensibly "commercial" parking spots. (They have their reasons, one of which is to suppress commercial vehicles & pushback tugs in the area.)

FSCaptain will always favor a non-military parking area for non-military flights, but if the only open spot that would fit your aircraft has a military type, that spot will be assigned for your use.

If you're using the Administrator to plan your flight, you'll see the Destination Parking selector populated with all possible parking spots, listing their Types, Names and Numbers along with their parking radius (in meters) and any special flags to help you select a spot. These flags include "A" for Airline Code Match, "C" for Cargo parking, "M" for Military Cargo parking, and "O" for Military Combat parking. If a Jetway has been noted at a location, the selector will note that with a flag of "/J".

Here's an example for a PAX flight to LSZH (where they have wonderful coffee shops!) showing that we've been offered to park our airliner at Gate E 22, where our airline has a lease (and a jetway too). If we were flying with another airline that did not have a lease, then as long as our aircraft had its own staircase, we could consider one of the "Terminal D" gates (even the ones marked as Cargo), and then arrange for a small bus to transport our passengers to the terminal.
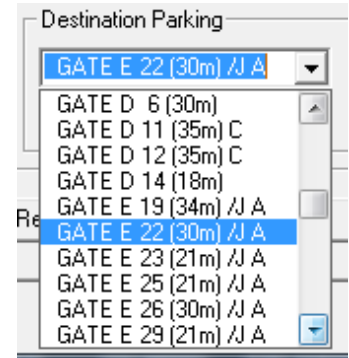
Helicopters and Helipads

Helicopters are treated differently in that we have removed the requirement to land those large whirling blades at a ramp or gate (!).

When you arrive if you have the requirement to park at an assigned spot turned off (or there are no helipads at your arrival airport) then when you first land you have "arrived" as before and can unload. But if your airline requires an assigned spot, and a helipad exists, you must proceed there to unload. If there is no assigned spot requirement or no helipad, you can unload and proceed anywhere at the airport as long as you're on the ground and not moving.

CMP (Consider Me Parked!)

If your airline uses Assigned Parking, and you've found yourself at an airport with literally no place to park (all spots are full, and the AI Zapper didn't fire) there is a way out of the dilemma.

This used to be an option, but now it's enabled for everyone. So when you find yourself in such a pickle, switch to your FCDU's Parking screen and you'll see that LSK1R has the label "CMP>". Click LSK1R and you will be considered as "parked" anywhere, and can start to unload.

Working with FSDreamTeam's GSX

FSDreamTeam produces an add-on for the same Microsoft/Lockheed Martin flight simulation environment the FSCaptain runs under which adds extra layers of realism and authenticity to ground operations at airports. It works for any aircraft and any airport and most if not all the FSCaptain development team routinely use it to enhance their flights.

FSCaptain is aware of GSX so that during ground operations before a flight starts and goes "on the clock" all GSX procedures can be detected and woven into the flow of preparation that our Captains are accustomed to. This integration is completely optional. Unless you invoke GSX services during the FSCaptain load process, nothing will change. But if you do, you can expect FSCaptain to see and react to them in logical ways that enhance the realism of the simulation. All GSX services are detected and reacted to in the following ways:

Deboarding

If you are in the midst of a multi-leg passenger flight, once you go IN at your parking spot, you can call GSX to deboard your passengers and their baggage. If your aircraft is configured for "exit mapping" and if you have allowed your crew to handle all doors, they will open your passenger and baggage exits for you.

When you arrive at your destination and you want GSX to handle the deboarding process, do not advance past the "Arrival" screen (#29) until you call GSX deboarding. Once you do, the FCDU will automatically advance to the "Flight Complete" screen (#30) and your passengers will be able to leave the aircraft.

If the GSX process is underway after the ACME process completes and if you are ready to start your next leg… if you are using the option HONOR_OTHER_GROUND_SERVICES=1 you will not be 'Cleared to Load' nor 'Commit' on the FCDU until all GSX deboarding procedures have completed.

GSX Refueling

After a flight is resumed or created on the FCDU and PROCEED has been selected from the Flight Review and before loading begins (typically this would be on the "READY TO LOAD" screen) if you invoke the GSX fuel truck by using the standard GSX menus then when the fuel truck arrives FSCaptain will load the flight's requested fuel into the fuel tanks and send an FCDU message to the pilot to that effect.

If your FCDU is set to AutoFuel your aircraft, we recommend that that the option on the GSX 'aircraft customization' to bring up the FSX/P3D 'Payload and Fuel Box' be unchecked. This is because FSCaptain will do the loading for you seamlessly; you don't need to use the menu item dialog box. You should also call the GSX refueler before clicking "NORMAL LOAD >", so we will see them enroute when we begin deciding when to refuel.

You can read the GSX perspective on refueling "FSCaptain AutoFuel aircraft" by following their manual's "**A 3rd party airplane without a Progressive Refueling simulation**" section.

If you are using an aircraft which handles its own fuel loading, then follow the appropriate GSX perspective.

GSX Catering

Any time before the flight begins (even before you turn on the FCDU) you can request catering services from GSX using the standard menus. When catering services are completed, if the FCDU is powered up, an FCDU message will be send informing you that catering is completed.

GSX Boarding

Once boarding is possible, you may request boarding from GSX using their standard menus. If you do this, then you will not be 'Cleared for Departure' on the FCDU until all GSX boarding procedures are completed.

If you are using GSX Version 2.1 (or greater), FSCaptain will tell GSX how many passengers need to be boarded and deboarded, along with how many cockpit and cabin crew! (You can disable this on a per-aircraft basis using the Aircraft Characteristics tab in the Administrator.)

GSX may put the PAX numbers into a "green line text bar" in your simulator and ask you to confirm or correct the numbers.

Technical Note: all GSX passenger ambient sounds are in the C:\Program Files (x86)\Addon Manager\couatl\GSX\sounds folder and are named beginning with the words "Airplane_Boarding" or "Airplane_DeBoarding".

GSX Pushback/Departure

Once you are 'Cleared for Departure' (screen 22) on the FCDU you are free to use the GSX pushback procedures from their standard menus, or the FSCaptain pushback system, or any other that will get you out of the gate. If you are on FCDU screen 22 (CLEARED FOR DEPARTURE) you can start the GSX pushback immediately, or you can select the PUSHBACK option and start the GSX pushback from the FCDU pushback screen (70). If you start it from the FCDU screen 70, it will monitor the progress of the pushback and integrate some of the FSCaptain pushback dialog with the GSX dialog.

GSX Deicing

If certain criteria are met (the common ones are a temperature of 4C degrees or colder and an aircraft wingspan of 22 meters or more) the GSX Pushback procedure will offer you the option of performing a deicing procedure before the pushback begins.

Whether you started the GSX pushback from the FCDU screen 22 'Cleared for Departure' or the FCDU screen 56 'Pushback', if you choose the GSX deicing option you will automatically be switched to the FCDU screen 70 'Deicing' which will then monitor the progress of the GSX procedure while interleaving ACME voice dialog with the GSX dialog. When the procedure is complete you can press PROCEED or RETURN to get back to the Pushback screen where the pushback will resume when you select the direction from the GSX menu which appears once deicing is complete.

You may also start GSX deicing from the FSCaptain Deicing screen (70) directly simply by selecting the GSX menu option for pushback, then selecting 'yes' when asked about deicing. If all you want to do is deice and push back later, you can cancel the 'pushback direction' menu GSX will eventually present to you by pressing the GSX menu key (usually, CTRL-F12).

GSX Crew, Passengers and Pilots

With the advent of GSX Level 2, GSX can now show animated Cabin Crew, Cockpit Crew ("Pilots"), and Passengers.

The GSX model boards Cabin and Cockpit Crew before Passengers on all flights, and then deboards Cabin and Cockpit Crew after Passengers on all flights.

But if you're making a multi-leg flight in FSCaptain, we command GSX to not deboard or board Crew on any intermediate legs of a flight. (This will change in a future FSCaptain, to allow for "Crew Transfers" on very long flight legs – there, you may see Crew board or leave on an intermediate leg.)

When it comes to the initial and final legs of a flight, our option CREW_TRANSFER_STATE can direct GSX to not board Pilots and Crew (with a value of 1), or to not deboard Pilots and Crew (with a value of 2), or to not board nor deboard Pilots and Crew (with a value of 3).

Check Appendix 5 for the listing of this option.

A Typical Procedure for using GSX with FSCaptain

1. Power up the aircraft and turn on the FCDU.
2. If you want, you can call for GSX catering now to get it started early. Do not call for boarding or departure yet.
3. You should call for GSX fueling before starting the FCDU's MANUAL or NORMAL LOAD.
4. You should select the FCDU's MANUAL or NORMAL LOAD before the fueling truck arrives.
5. Resume, select, or create your flight using the FCDU.
6. For your first flight of your session, when you select MANUAL or NORMAL LOAD on the 'Flight Review' screen (that's lucky screen 13), your aircraft's fuel will immediately drop to the "pre-set level" as noted on your Aircraft Configuration data. (This will allow GSX to take time to simulate adding fuel, if you use them.)
7. Once the GSX fuel truck connects, the ACME fueling process will begin (if your FSCaptain options allow).

8. Once you are on the Load Confirm screen (42), you may call the GSX boarding function when you are ready. If the option HONOR_OTHER_GROUND_SERVICES=1 is set, the following will apply:

   A. The FCDU option to COMMIT> or PROCEED> will not be available. The FCDU will automatically advance once GSX has boarded the first passenger.

   B. Newer versions of GSX (including their Level 2 Expansion) will accept our declaration of the number of passengers to board and deboard. If you're taking 100 PAX onboard a Heavy jetliner, this should be a quick process….

      Note: Some aircraft can send the number of passengers and crew to GSX on their own. If you have an aircraft which does that, you can set its Aircraft Configuration "Reports Own Crew / PAX to GSX" value and FSCaptain will not send its count to GSX.

   C. GSX will set the tempo of how fast passengers will board and deboard once they have started. From our observations, GSX appears to count a passenger as "boarded" once they enter the aircraft, and "deboarded" once they have entered the bus or jetway. ACME's passenger boarding count occurs after that (when the passenger has seated or is well up the jetway). So the ACME boarding and deboarding count should always naturally lag behind the GSX boarding and deboarding count.

   D. The ACME load process counts non-passenger weights (baggage and other cargo) when they leave the terminal / cargo area. Until any GSX baggage trucks have completed their loading, you will remain on the "Load Progress" screen and the PAYLOAD value will display in red.

   E. GSX baggage / cargo loading times are not taken into account against FCDU loading times! Some of those baggage tugs can take a while to cross the airport to service your aircraft. Take this time to review your preflight progress and to enjoy a refreshing beverage!

9. Once all GSX and ACME pre-loading and loading operations are completed you are ready to be CLEARED FOR DEPARTURE.

10. If deicing is required, select DEICING from the ACME 'Clear for Departure' screen (22).

11. From the deicing screen (70) you may continue with the ACME procedure, or use the GSX menu to call for Pushback then select deicing 'yes'. If GSX deicing is not offered, cancel the Pushback (with your GSX key combination or your custom GSX menu key) and use the ACME procedure.

12. Some Captains have devised off-stand Dedicated Deicing Facilities on some of their airports. Please see the document *Building Dedicated Deicing Facilities* for suggestions on how you can do so. However GSX does not support off-stand deicing.

13. Once any on-stand deicing is complete, if you used the GSX procedure you can continue with the pushback by selecting a direction from the GSX menu, or you can cancel with your GSX menu key operation, return to the FCDU, then later select the PUSHBACK screen and start the GSX pushback again from there, declining any deicing option since you've already done it.

14. Newer versions of GSX announce which anti-ice types were used, so the ACME system should give you a Holdover Time that matches the published HOT for the weather and the deicing process used.

15. Once all pushback and deicing procedures are complete the FCDU will automatically switch onto the 'Flight Status' screen. You have gone OUT and you are "on the clock." Have a great flight!

Saving and Restoring your Flights

Introduction

While you are flying and the FSCaptain FCDU is monitoring your flight, you can save the state of the FSCaptain data and later restore it. This can restore you to a saved point before a crash.   Saving is very easy to do and restoring is only slightly less complex. So long as you save your data you don't have to fear losing the flight and having to start over. You can resume at the last point your data was saved as long as you follow some easy to remember guidelines….

If you are flying under FSX & P3D, FSCaptain will automatically monitor the simulator looking for save flight operations. If a save occurs FSCaptain will detect it and will save the FSCaptain data also. Later you can restore that flight using the simulator's restore facility ("Load Flight") and then once your cockpit is accessible you can use the FCDU to restore the FSCaptain data and resume the flight.   This save flight detection works anytime a flight is saved, including when using the FSUIPC AutoSave facility. If you are a registered user of this utility and have your flights being saved at regular intervals, your FSCaptain data is automatically saved too.

The other way of saving is a manual process using the FCDU – just click the Menu key, and then select SAVE>. If you haven't saved your simulator flight data recently, this may not allow you to synchronize the two save files. Remember, you need to save both simulator and FSCaptain data!

However your data is saved, it's important to understand the relationship between MS Flight Simulator standard data, special data that may be present in a complex add-on, and the FSCaptain data set. Whenever you use the 'Save Flight' action in FS a copy of your flight will be saved under a name you choose in your 'Flight Simulator Files' folder.   If you are flying an add-on aircraft, it too may detect this save and save its own special data where it chooses to do so.   Thirdly, FSCaptain will detect the save and write out a copy of its current state in a file in the folder \FSCaptain\Data\ Saves. The file will be named by the airline and the aircraft type, for example, Acme_MD80.sav is a file saved of the last Acme flight in the MD80. This is important to realize because only one save is kept per aircraft per airline.   If you were to save an Acme flight in the MD80, then start another Acme flight in an MD80 and save that flight, the data from the first flight would be overwritten and you wouldn't be able to restore it. However, a backup of that file is made which you can use to refresh the targeted "save file" if that's needed.

The other factor that's important to keep in mind is that the pair of save files (the one the simulator saves and the one FSCaptain saves) should be thought of as a matching set. When you go to restore the flight to resume it, you must first restore the flight inside the simulator, and then restore the data from the FCDU.   When FSCaptain restores a flight, it checks to be sure the data being restored matches the current situation.   Obviously, the airline and aircraft must match, but also the aircraft must be positioned at approximately the same point in space that the FSCaptain data was saved at. To use an extreme example, you may have crashed just after takeoff but you don't know where you exactly were, so place your airplane on the departure runway to restore it. The location of your airplane must be within 15 nautical miles and 5,000 feet of altitude to successfully restore an FSCaptain save.

Saving a Flight

Under FSX or P3D, simply save your flight using the in-sim menu item 'Save Flight...' at any time, or use the FSUIPC AutoSave facility, or press the semicolon key and enter a filename.   This insures the best chance that your simulator save file and your FSCaptain save file data will match up. Be sure you know which save file matches to this FSCaptain data; the files' Last Modified value helps.

To manually save a flight (FSCaptain data only!) from the FCDU, simply press the MENU key at any point and then click on the line select key next to SAVE.   There is no reason to do a manual save in FSX, since it's done for you, and you should always do an FSX save when you do an FSCaptain save.   But under FS9 you need to do this manual save, using this method, and then *immediately* do an FS save using the 'Save Flight' menu or the semicolon key.   If you wait until you've flown more than 15 miles away from the point where your FSCaptain data was saved then the two files won't match up and you won't be able to restore the situation.

Auto saving your Simulator Flight Data

Everyone here at ACME Industries (Our motto: "Our motto changes daily!") is a registered user of FSUIPC which has a wonderfully easy to use function that allows its users to automatically save FSX/P3D.

However not every Captain has a registered copy of FSUIPC. So we have added the optional ability for FSCaptain to request the simulator to perform a save at a frequency each Captain can specify.   These four options – also noted in Appendix 5 – control how this feature is regulated.

```
SIM_AUTOSAVE_CLEANUP=1          ; 1 = Removes all non-IN simulator save files generated during the
                                ; flight after going IN and updating your company log. Default is 0.
SIM_AUTOSAVE_FILES=0            ; The number (0-16) of autosaved simulator files to generate per
                                ; flight.  0 = Disables simulator autosave.
SIM_AUTOSAVE_ON_GROUND=0        ; Sets autosaving of simulator files while on the ground.
                                ; 1 = Before takeoff.  2 After landing.  3 = In air and both ground
                                ; phases.  4 = Only while on ground.  0 (Default) = Simulator
                                ; autosave will only occur in air.
SIM_AUTOSAVE_SECONDS=180        ; The number of simulator seconds between simulator autosaves.
                                ; Range is 30 to 1800, default of 180.
SIM_AUTOSAVE_WHEN_IN=0          ; 1 = Enables a separate autosave when going IN after a good landing.
                                ; Useful if you want to start where you last parked in an airline's
                                ; aircraft.  SIM_AUTOSAVE must be enabled.  Default is 0.
```

Of these options, SIM_AUTOSAVE_FILES is the one that can enable/disable auto-saving. Set it to zero to disable FSCaptain Sim Autosaving, or set it to a value of how many save files you wish to keep. (There is a maximum of 16 files.)

SIM_AUTOSAVE_ON_GROUND allows you to save while on the ground (it's very useful when you run out of VAS just as you're parking!), and SIM_AUTOSAVE_SECONDS sets the duration between saves. (It's not an exact count, but very close.)

Captains who use other utilities which auto-save only while in the air can use the SIM_AUTOSAVE_ON_GROUND=4 option to have FSCaptain auto-save while on the ground.

You can change this option from your FCDU on a per-flight basis if you see that you need to have the FCDU manage autosaving. (Perhaps your other utility crashed on your flight….) Go to the

FCDU's main menu, and select <COCKPIT. You can cycle through all options and then press the EXEC button to commit your change.

Enabling the option SIM_AUTOSAVE_CLEANUP will remove all the Autosave files after you've gone IN and logged your flight. Some Captains might want to archive such files, so this can be disabled if preferred.

In addition, if you've just made a good landing (no Emergency, no Captain-introduced Damage, a Landing Vspeed less than 1200FPM, and a Landing Bank and Landing Pitch both less than the Options allow), then once you start your rollout, there will be an additional Sim Autosave. This is in place to ensure that a "Low VAS CTD" on/after touchdown can be recovered!

Finally, the option SIM_AUTOSAVE_WHEN_IN take effect when you go IN with an otherwise good landing. (No Emergency, no Captain-introduced Damage, a Landing Vspeed less than 1200FPM, and a Landing Bank and Landing Pitch both less than the Options allow.)

This will make a separate FSCaptain Sim Autosave file with a different name format that will not ever be auto-deleted. The purpose of this file is to allow you a "starting point" for a continuing flight. You can make a new flight from your landing position, or continue a multi-leg flight for which you wouldn't have "real-world time".

Imagine flying an American Airlines Boeing 738 from anywhere to KDFW with a subsequent leg that goes to KSEA. Once you go IN after a good landing, the simulator will auto save the file "FSCAPTAIN_IN_American_B738" at your KDFW parking position. If you don't have the real-world time to make the next leg *right now*, then you can shut down your simulator after you deboard your PAX / cargo… then when you return ready to fly, you can restore "FSCAPTAIN_IN_American_B738" and your simulator will have you in your previous livery at your previous parking position at your previous parking time!

Using this example, anytime you make a flight for American in any B738, when you go IN, the "FSCAPTAIN_IN_American_B738" file will be updated with your new Autosave values.

You will need to have SIM_AUTOSAVE_FILES enabled (with a value of 1 to 16) for the "_IN_" Autosave files to be generated.

The "_IN_" Autosave files will occur even if you have a SIM_AUTOSAVE_ON_GROUND value that would not allow for autosaving after a flight.

Restoring a Flight

Restoring is where you save your bacon by getting back to where you were before the sim crashed without having to start over. It's not complex or dangerous to restore but it can be slightly tricky because of the need to match up FSCaptain's saved data with your current flight situation, and also potentially because it can be a bit of trouble to get some airplanes to restore their systems properly in the simulator. **You need to be sure the flight situation is restored *and stable* before doing the FS-**

Captain restore or you could incur penalties from FSCaptain detecting undesirable settings of the systems or abrupt flight maneuvers as the situation stabilizes.

The procedure for restoring is the same in FS9, FSX and P3D, are almost the same:

1. Start Flight Simulator and select "Load Flight" then click on the saved situation you want to resume. Be sure that the one you pick is the one that has your airplane in roughly the same point in space that it was in when you saved the FSCaptain data.
2. Once your flight loads, let it run for 10-15 seconds in order to have all switches and controls to restore their saved values. Then press the P key to pause the simulator.
3. Once you are in the cockpit again be sure the airplane is in the state you want it to be in. Some complex airplanes don't restore all their settings after an FS situation load so be careful that lights and other vital controls are correct before proceeding - or you could get a penalty. You may need to un-pause to flip some switches. Just be sure you don't fly over 15 miles while getting this set up before you do the next steps.
4. Bring up your FCDU – either the gauge window or the FCDU.EXE.
5. Power up the FCDU (it will power up while the simulator is paused).
6. On the FCDU click on MENU, then click on RESTORE
7. Once you have restored your flight, the screen you were viewing at the same the state was saved will appear.
8. Unpause the simulator. You are now where you were at the point where your flight and your FSCaptain state were saved.

Problems in Restoring

You can receive several error messages when you attempt to restore. Here they are and how you can avoid them.

`LAT/LONG MISMATCH` or `ALTITUDE MISMATCH` – if you see either of these it means your aircraft isn't currently located near the same point as it was when your FSCaptain data was saved. This probably means you've picked the wrong Flight Simulator situation file to restore. If you are using the FSUIPC AutoSave facility but are saving multiple files always pick the most recent save. This is the one that will match up with the FSCaptain save.   (Comparing the files' timestamps can help.) Repeat the restore procedure with the correct situation.

`NO SAVE FILE FOUND` – this probably means you are in the wrong airplane, or with the wrong airline, since that's how the save files are named.

`WRONG VERSION` – each version of the save file format is marked. Versions change from one release of FSCaptain to another as more data items are added with new features. Simply put, you can't restore a flight saved by a different version of FSCaptain.

`INCORRECT SAVE FMT` – the restore data did not go where it was expected to go. This could be an FSCaptain bug, it could be that you are trying to restore to the FCDU.EXE from a gauge-saved file, or it could be another variation of the WRONG VERSION problem.

Recovering an Overwritten Save

If you regularly save your flights and you're are in the latter legs of a long transcontinental flight and run out of VAS – no worries! You know that all you need to do is to just restore the last simulator saved flight and when you stabilize your aircraft and go to restore your FSCaptain save, all should be in sync.

But what if something occurred that would disrupt your FSCaptain save file? For instance, what if your VA needed you to make another flight in the meantime using the same type of aircraft?

Each of your FSCaptain save files generates a copy using your flight number and the year/month/day/hour/minute/second when your flight starts. So taking our earlier example, your backup file would be named `Acme_MD80_9435_20160502_195741-backup.sav`. Just make a copy of it using the filename that would be loaded into the `FCDU – Acme_MD80.sav`.

<u>Final Observations</u>

We would recommend that you try out the save and restore procedures *before you need them*. That way you'll be more familiar with the concepts. Start up a short flight, save it midway through, shut down Flight Simulator, have a refreshing beverage, then go through the restore procedure.

It can be tricky to restore a situation, and this has little or nothing to do with FSCaptain. For example, the original PMDG 737NGX under FSX did an excellent job of saving its internal data and restoring it.   But the airplane had a built-in 15 second pause where it would initialize its systems, and this didn't happen if you paused the simulator.   So even though you probably saved a situation with the autopilot flying LNAV and VNAV for you, for 15 seconds of flight you wouldn't have an autopilot after you restore.   At the end of those 15 seconds the autopilot would kick in suddenly and the airplane could make an abrupt movement to get back on course.   If you had restored your FSCaptain data before this happens your newly awakened PAX will probably be upset, and you would have risked a "rough flying" penalty.   To avoid such a situation, you would have to have carefully hand-flown the NGX until the autopilot resumes its control.

Other aircraft, even default ones, sometimes do not restore the settings of even simple things like brakes, NAV lights, or landing lights. Be sure everything is how you need it before restoring FSCaptain – allow 15 to 30 seconds to elapse and double check all necessary aircraft systems again!
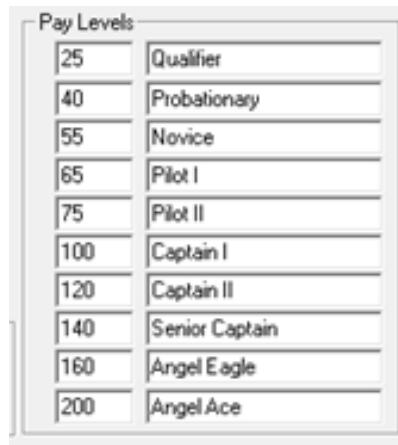
Finally, if you are about to upgrade FSCaptain to a new version, your previously saved flights likely cannot be reloaded. We're constantly making changes and since it's possible that the save/restore file format may have changed, we had to add a version number match!

Section 2: Your Career

When you fly using the FCDU device to sign up for a flight with your airline, every detail of that flight is recorded in the FSCaptain log files. That information is used to evaluate your career with your airline. Here's how a career in FSCaptain works.

Pay Grades

Each airline has up to 10 pay grades (it may have fewer, although all the default ones have 10). The names of the pay grades and the pay rates may vary by airline, but the requirements to advance from one grade to the next are the same across all airlines. This is so that all Captains are all climbing similar ladders. For example, the Angel airline defines these pay grades:

Pay Levels	
25	Qualifier
40	Probationary
55	Novice
65	Pilot I
75	Pilot II
100	Captain I
120	Captain II
140	Senior Captain
160	Angel Eagle
200	Angel Ace

This means that as a "qualifier" you will earn 25 dollars per hour (currency does not have to be in dollars, it's configurable, see the section "Creating an Airline" below). The next step up is "Probationary" at 40 at hour, and so on all the way up to "Angel Ace" which is your goal – at 200 an hour you are being rewarded for being the expert professional you're proved yourself to be by getting that far. It isn't easy, but it's doable – there are many FSCaptains out there who have made it to Level 10.

What are the requirements for advancing to each level?

Advancing to a higher level (except for 1, the starter level) requires three conditions:

- A number of flights flown at the previous level,
- A total number of hours flown in your career so far
- A minimum average score in the previous level:

Level	Flights at previous level required	Total hours required	Average score required
1	None	None	None
2	3	10	75
3	5	50	80
4	15	100	80
5	20	200	82
6	25	250	85
7	35	350	88
8	50	500	90
9	75	750	92
10	95	1000	94

For an example, to advance from level 1 to level 2, you must have flown at least three flights at level 1, for a total of ten hours, and have an average score of at least 75. To advance to level 3, you must have a minimum of five flights *in level 2* (the flights you made in level 1 don't count towards the level 2 advancement), you must have flown at least 50 total hours (in all levels), and you must have a minimum score of 80 *in level 2.* It's important to realize that your average score is reset at the beginning of every level.

(The details on how scores are computed are explained in Appendix 1 "*Score Computation*".)

Career Evaluation

In addition to climbing the pay ladder, your performance is constantly being evaluated by the Chief Pilot's office by looking at overall trends in how you are doing your job. The result of this is the "Quality Point Average", which is a number which can be positive (good) or negative (bad) based on points awarded to you based on performance.

This evaluation starts with the "*Career Summary and Achievements*":

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| Achievements | Areas of Concern | Flight Dispatch | Flight Log | Profile and Settings | Airline Definitions | Aircraft Characteristics | Load Maps | Registration |

Rufus T. Firefly flying for Castle Air and Cargo

[Change Airline and/or Pilot]

Company Data
Reputation: 70
Profit: 2.627M

You are pay level 9 (Ulitimate Captain - 800/hour) with 778 hours and a level score of 111 (A+).
You need 222 more hours and a level score of 94 to reach the next pay grade (Castle Supremo - 900/hour).
The total gross pay received so far in your career is $403508. You have 2350 points for appeals.

15-JAN-11 Flight 700 - First Flight with Castle Air and Cargo. (+10)
04-FEB-11 Flight 1741 - Promotion to level 2, Rook with a score of 107 (A+). (+50)
09-APR-11 Flight 94 - Promotion to level 3, Pilot with a score of 92 (A+). (+50)
09-APR-11 Flight 94 - Flown 50 hours. (+5)
29-JUL-11 Flight 3330 - Promotion to level 4, Line Pilot with a score of 102 (A+). (+50)
29-JUL-11 Flight 3330 - Flown 100 hours. (+10)
30-APR-12 Flight 4612 - Promotion to level 5, Senior Pilot with a score of 102 (A+). (+50)
14-NOV-13 Flight 1313 - Promotion to level 6, Captain with a score of 102 (A+). (+50)
14-NOV-13 Flight 1313 - Flown 250 hours. (+25)
15-MAR-16 Flight 3336 - Promotion to level 7, Senior Captain with a score of 97 (A+). (+50)
19-APR-18 Flight 7156 - Promotion to level 8, Command Captain with a score of 107 (A+). (+50)
19-APR-18 Flight 7156 - Flown 500 hours. (+50)
06-DEC-20 Flight 5494 - Promotion to level 9, Ulitimate Captain with a score of 112 (A+). (+50)
06-DEC-20 Flight 5494 - Flown 750 hours. (+75)
Special Award: Punctuality - 100 percent Ontime! (+712)
Special Award: Awesomeness - Score Higher than 100 on 505 Flights: (+4016)
Special Award: Authentic Hero - More than one safe landing with a serious mechanical fault! (+200)
Special Award: Busy Beaver - 5 times with at least one flight flown per day in a seven-day period: (+500)
Special Award: Calm Under Pressure - More than one safe landing with a cabin emergency! (+200)
Special Award: Clock Watcher - On time with scheduled arrival on 4 flights. (+65)
Special Award: Landing Master - Over 50 percent smooth landings! (+100)
Special Award: Passenger Satisfaction at over 88% percent! (+315)

[OK]   [Cancel]   [Apply]

This tab will list all the positive things you're done overall in your career. You get a commendation for each pay level you gain, and each time you score over 100 on a flight. In addition, you can receive many awards for special achievements such as landing with broken equipment, arriving on-time often (and even arriving on-time always!), or simply by landing smoothly, as well as many others.

The second tab is a negative one, "*Areas of Concern*":
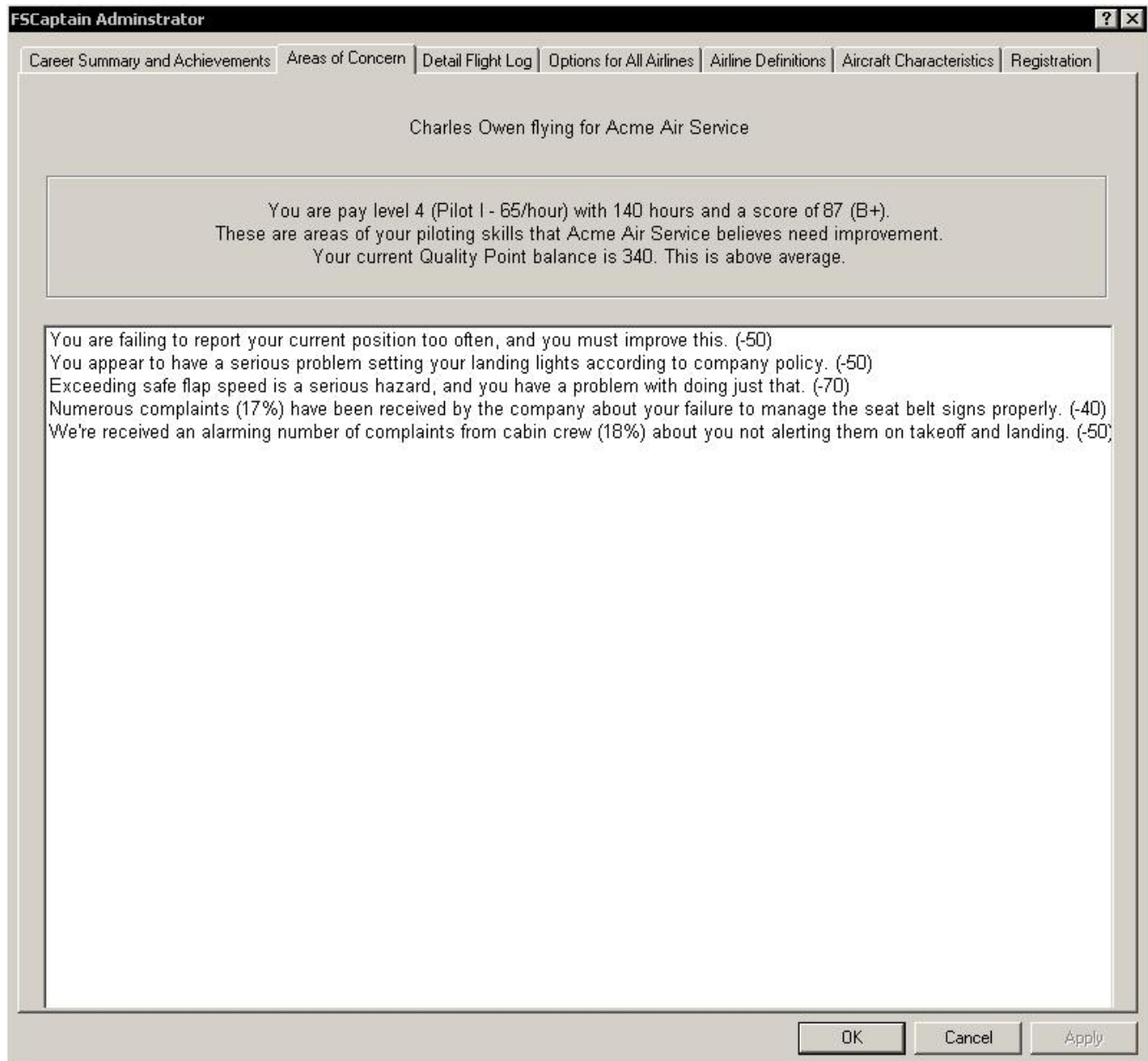
Here you see those things you aren't doing so well. The explanations should be self-explanatory. It's important to note that these are recent trends – it's possible to "grow your way out" of trouble here by cleaning up your act and correcting these areas of concern. If you stop committing the sins that led to these rebukes, they will drop off here eventually.

The above two tabs of information and evaluation are based on the detailed flight log recorded for your every flight. You can access this log with the tab "*Flight Log*".

Flight Log

FSCaptain 1.8.2 - Administrator - FLIGHTSIM

Achievements | Areas of Concern | Flight Dispatch | Flight Log | Profile and Settings | Airline Definitions | Aircraft Characteristics | Load Maps | Registration

Oldest First

Log for Rufus T. Firefly flying for Acme

Flt	Status	From	To	Date	Depart	Arrive	Aircraft	Payload	PAX	Grd	Pay	Lvl	LS	LH	AV	CD
29	Sent	KSFO	KFAT	24-MAR-11	18:09L	19:04L	CRJ7 N42EFB	8600	49	107	$55	2	103	36	102	--
2778	Sent	KMFR	KEUG	31-MAR-11	15:21L	16:23L	PC12 N605FL	2100	1	104	$63	2	103	37	102	--
2787	Sent	KTLH	KATL	01-APR-11	11:22L	12:20L	CRJ7 N42EFB	11500	42	97	$58	2	102	38	102	--
61	Sent	KSFO	KPDX	04-APR-11	14:49L	16:26L	B738 N3771K	23400	105	102	$98	2	102	40	102	--
47	Sent	KSFO	KLAX	05-APR-11	08:51L	10:18L	B738 N3771K	23800	100	107	$87	2	103	41	102	--
2810	Sent	EDDM	LSZH	06-APR-11	11:49L	12:45L	CRJ7	8800	52	102	$57	2	103	42	102	--
56	Sent	KLAS	KSFO	07-APR-11	17:46L	19:31L	B738 N3771K	22800	127	102	$105	2	102	44	102	--
2816	Sent	KRNO	KLAS	07-APR-11	16:08L	17:25L	CRJ7 N42EFB	8600	23	97	$78	2	102	45	102	--
2831	Sent	ZGKL	VHHH	08-APR-11	06:09L	07:20L	B738	25600	133	92	$71	2	102	46	101	--
94	Sent	KMCI	KSFO	09-APR-11	17:45L	19:38L	B738 N3771K	18100	122	97	$292	3	97	50	101	--
2851	Sent	MYNN	KTPA	11-APR-11	17:04L	18:33L	B738 N3771K	26600	86	102	$112	3	99	52	101	--
2865	Sent	EPSC	EDDM	12-APR-11	18:49L	20:18L	B738	23600	155	102	$112	3	100	53	101	--
494	Sent	KTPA	KDFW	12-APR-11	17:53L	19:40L	B738 N3771K	19400	111	102	$209	3	100	56	101	--
99	Sent	KSFO	KPHX	14-APR-11	10:29L	12:44L	B738 N231U	18300	85	97	$169	3	100	58	101	--
2872	Sent	KEUG	KPSC	15-APR-11	16:04L	17:07L	CRJ7 N716SK	10500	54	102	$79	3	100	59	101	--
199	Sent	EHRD	LFSB	16-APR-11	07:28L	08:37L	B738 EC-MJV	17400	156	102	$87	3	100	60	101	--
2891	Sent	EKBI	EKCH	16-APR-11	19:48L	20:50L	B738 OH-CAS	23600	121	102	$78	3	100	61	101	--
199	Sent	LFSB	LEBL	17-APR-11	07:21L	08:52L	B738 EC-MJV	20900	162	102	$114	3	100	63	101	--
2896	Sent	KPHX	KDEN	17-APR-11	16:49L	19:34L	B738 N231U	25600	120	97	$132	3	100	65	101	--
2916	Sent	KAPA	KPUB	18-APR-11	17:01L	17:55L	CRJ7	9600	35	102	$68	3	100	66	101	--
2929	Sent	FMEE	FIMP	20-APR-11	06:07L	07:01L	CRJ7 BR-549	12300	59	102	$68	3	100	66	101	--
2948	Sent	KDEN	KSFO	20-APR-11	17:02L	18:58L	B738 N737X	19200	132	107	$221	3	101	69	101	--
2963	Sent	KORD	KCVG	21-APR-11	17:24L	19:38L	CRJ7 N509AE	12500	55	102	$93	3	101	71	101	--
2967	Sent	CYHZ	CYQY	26-APR-11	18:29L	19:18L	CRJ7 C-FZAQ	12200	42	102	$61	3	101	71	101	--
2973	Sent	TJSJ	MDSD	26-APR-11	17:01L	18:12L	CRJ7 N509AE	8400	55	102	$90	3	101	73	101	--
2995	Sent	KPIT	KIAD	28-APR-11	18:18L	19:21L	CRJ7 N42EFB	12500	58	107	$79	3	101	74	101	--
2998	Sent	CYQY	CYHZ	29-APR-11	17:16L	18:09L	CRJ7 C-FZAQ	10600	42	107	$67	3	102	75	101	--
2999	Sent	EGSS	EGMH	30-APR-11	07:00L	07:53L	PC12 G-BXFT	1700	1	107	$66	3	102	75	101	--
3019	Sent	LSGS	LFLC	01-MAY-11	20:00L	21:02L	CRJ7 F-GRJT	10000	50	102	$78	3	102	76	101	--
3033	Sent	EDDM	LOWI	02-MAY-11	06:52L	07:36L	CRJ7	8600	34	100	$56	3	102	77	101	--
3047	Sent	KIAD	KJFK	03-MAY-11	16:39L	17:42L	CRJ7 N716SK	11100	59	102	$79	3	102	78	101	--
3062	Sent	MDSD	MBPV	04-MAY-11	18:21L	19:34L	B738	15800	72	97	$92	3	101	79	101	--
3073	Sent	LSGS	LSGG	06-MAY-11	08:48L	09:36L	PC12 N605FL	1200	5	107	$60	3	102	80	101	--
3084	Sent	KMER	KEUG	06-MAY-11	15:46L	17:18L	CRJ7 N42EFB	9900	59	102	$116	3	102	82	101	--
3101	Sent	EDDG	EHRD	07-MAY-11	07:56L	08:59L	B738 PH-PCH	24400	133	107	$79	3	102	83	102	--
3108	Sent	KBUF	KCLE	09-MAY-11	18:25L	19:23L	B738 N737X	25500	49	102	$73	3	102	84	102	--

View Details | View Release | Mark Exported | Mark Unexported | Export | Erase Entry

Explanation of columns to the right of 'PAX':
'Grd' is the flight score - use 'View Details' to see how it was computed. 'Pay' is the amount paid and 'Lvl' is the pay grade for the flight.
'LS' is the score for the level, 'LH' is the total number of hours, 'AV' is the average total score as of each flight. 'CD' is the result code:
CE=Canceled/Emergency CM=Canceled/Mech CP=Canceled/Pilot CR=Canceled/Reassigned CW=Canceled/WX DM=Delayed/Mech
DP=Delayed/Pilot DW=Delayed/WX AE=Diverted/Emergency AM=Diverted/Mech AO=Diverted/Other AW=Diverted/WX XX=Crashed.

Here you see your name and your employer. Below that, every single flight you've made for that airline is listed. Every column here should be obvious, up to the one to the right of the PAX. 'Grd' is the score for that flight (Appendix 1 details how scores are computed.) After that you'll see the total money you were paid for the flight and the pay level. Following that is the Level Score ("LS"), which is a running average score for that level. *This is the score that's used when it's time for your promotion.*   After that is the Level Hours ("LH"), the number of hours (rounded down) after the flight was completed. Then it's your Average Score ("AV"), your current ranking with your airline. And finally, the "comment code" which is dashes ("--") for a normal flight. If the flight didn't end normally, this code gives the reason, and the possible reasons are listed on the tab at the bottom.

Below the table and on the right, is a button called "Erase Entry". We all know sometimes Flight Simulator can unfairly cause crashes or create other bugs that are unrealistic for us, and that sometimes these problems can result in an unfair score. This will solve that problem. If something happens that just isn't right and you wind up, say, crashing on a tiny invisible blip on a runway – you can come here and erase that flight. Click on the flight number you want to erase first.

Note: the "Erase Entry" button is disabled (grayed out) when you are using the Administrator from inside Flight Simulator, to prevent conflicts.

On the far-left side is a button marked "View Details". To see more information on a flight, including the detailed computation of the score, click on the flight number (the actual flight number, not just the line the flight is on) and press View Details. You'll see this:
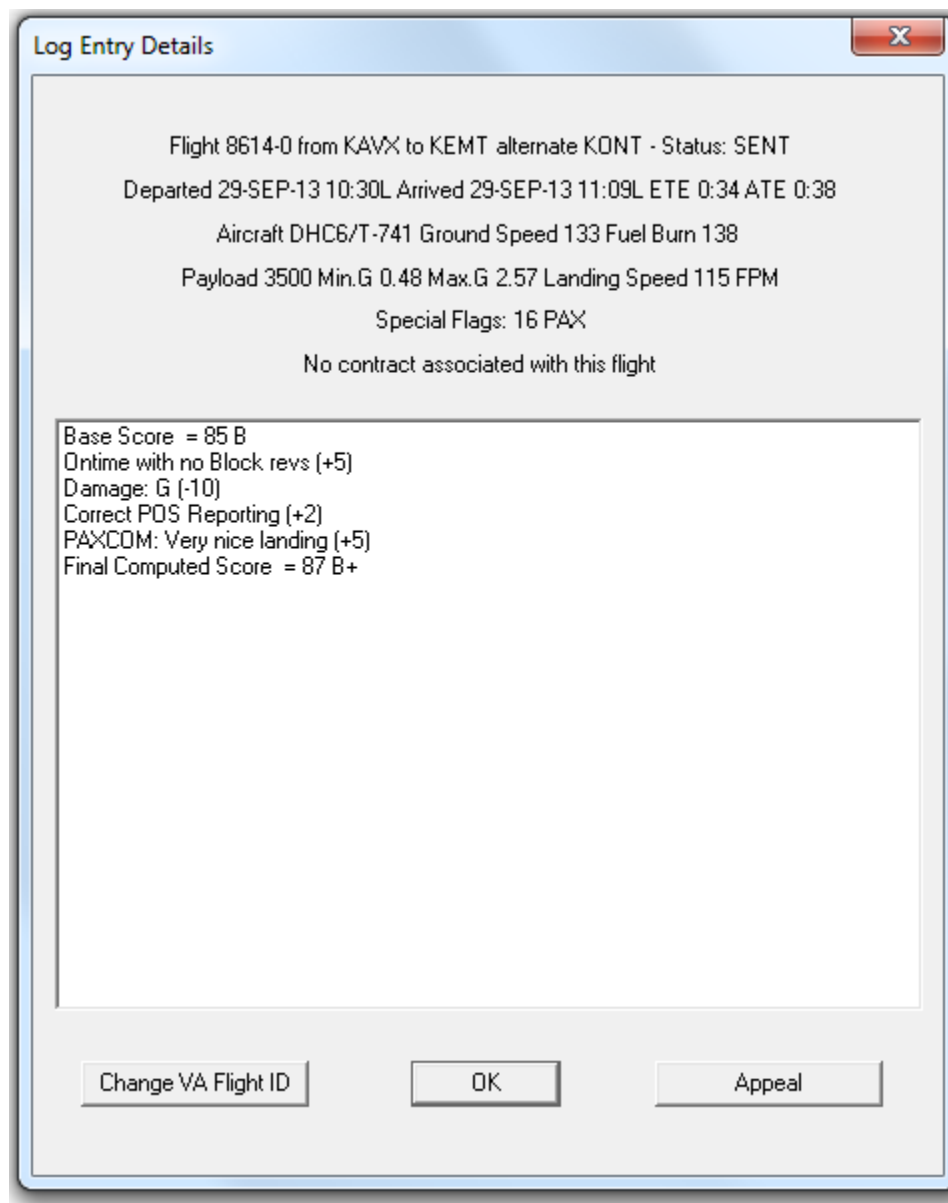
This shows you how your score was computed and much more details of any flight.

If your aircraft or cargo suffered any damage during the flight, special damage codes will be listed:

g = Exceeded minimum G Force.
G = Exceeded maximum G Force.
L = Landed too hard.
H = Hypoxia. (You strayed too long above 11000 feet in an unpressurized aircraft.)
C = Crashed.

And yes, there could be multiple reasons for damage... and they all add up.

Note that on the Details dialog there are two special buttons. You can assign a flight ID that's different from the FSCaptain one if you belong to a VA and need to do this. And on the right, a button is available for you to appeal any or all of the penalties shown on the dialog above, and potentially erase them.

Appealing Penalties

A penalty accessed against you can be appealed and removed. Each penalty has a price to remove it in points, with the number of points each penalty costs related to the severity of the penalty (more severe penalties cost more to erase, of course.)

The points available to you are based on your "Quality Points" computed by the system and shown at the top of the "Areas of Concern" tab. Basically, you receive positive quality points for doing good things, and negative ones for doing bad things.   The grand total indicates how you are doing in your career, and they can be used to remove penalties.

Once points are used to erase a penalty, they are gone from your pool. A penalty erasure is permanent; you cannot restore the penalty once you have accepted the removal. The total pool available at any point in time is your total quality points minus all the points you have previously used to remove penalties. It's possible this total could be zero or negative, if for example you used up all your points and then had an "area of concern" pop up that reduces your quality point total. If the pool goes negative that doesn't restore any previously removed penalty, it just means you can't remove any more until you build up your quality point total.

Two options are available which allows each Captain to adjust the cost of Quality Points to remove a Penalty Point (the standard cost is 10 QPs) and to set the minimum amount of Quality Points necessary to lodge an appeal. You can find these options in Appendix 5.

These options could be used to make an appeal much costlier, or to effectively make appeals "free of cost." This can be useful for those Captains who fly aircraft that have design decisions such that they bounce so hard while in taxi that they "take flight" and land with enough force to render a "rough flying" penalty. (Yes, there are such!) Use your best judgment in these matters. Remember, FSCaptain is not a competition, so you alone are accountable for your flights.

The Appeal button will not be enabled if there are no penalties assessed for this flight, or you don't have enough points to appeal. If you click on the button, you'll arrive at the Appeals dialog:
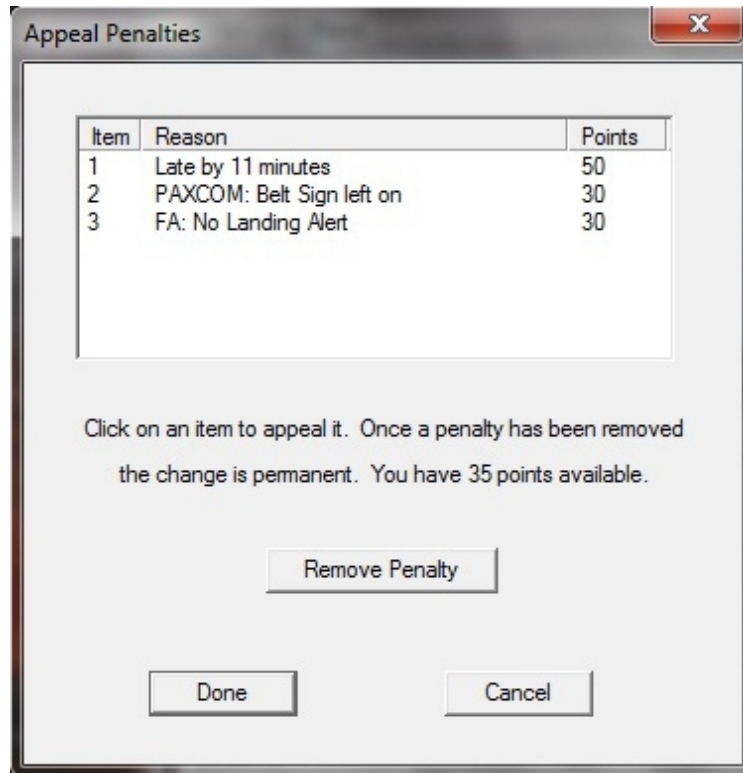
In this example, there are three penalties assessed against the flight. Below you can see that this Captain has only 35 points still available. Therefore, Penalty number 1 cannot be erased as it costs 50 points to do that. A choice between removing 2 or 3 is possible. Once either of these is removed, you will only have 5 points left.

Remove a penalty by clicking on (and therefore highlighting) the item number, then click on "Remove Penalty". You'll be asked to confirm, and once you do the penalty is *permanently* erased from your record, and all scoring is updated. This can have an immediate effect on your career. For example, erasing a penalty could bring a flight score from a C+ up to a B. Imagine you have enough hours to get up to the next level but are held back because it requires a B average, and this change raised your average in your current level to a B. Presto! You have made the next grade up, and this will be immediately shown on the Flight Log tab.

Reviewing your Dispatch Releases

Beside the View Details button is a button that will allow you to review the Dispatch Release for your flight.   A Dispatch Release is a formal binding establishment of a flight under *domestic*, *flag* (international), *commuter*, or even *supplemental* and *on-demand* operations. It's an agreement signed by the Pilot in Command and a Company Dispatcher which lays out the details of the flight.

The ACME Dispatch Release combines elements of real-world dispatches releases (aircraft info, crew info, required fuel, flight plan data, etc.) with elements of "load manifests," NOTAMs, current weather information, and any "Risk Factors" attached to the flight. We'll go into details about Dispatch Planning shortly.

This image shows your basic flight information, fuel and weight data, and some weather information. A very detailed view of a Dispatch Release can be found in the accompanying *A Guide to FS-Captain Dispatch Releases* in the \FSCaptain\Documentation\ folder.

```
CASTLE AIR AND CARGO       DISPATCH RELEASE        FSCAPTAIN 1.8.3

FLIGHT 5167 KDEN (DEN) -- KSLC (SLC) -- ALT KPIH (PIH)  LOGGED  13-DEC-20 21:32Z

AIRCRAFT N709EV           OUT: 13-DEC-20 19:51Z    OFF: 13-DEC-20 19:57Z
TYPE     CRJ7             ON:  13-DEC-20 21:25Z    IN:  13-DEC-20 21:32Z

CREW INFORMATION:
DISP: H H TABBIDY        / _____ (SIGNED)
PIC : RUFUS T. FIREFLY   / _____ (SIGNED)


FUEL CALCULATION                WEIGHT/FUEL BREAKDOWN
MIN        500LB                        ZFW  49200LB
TAXI       782LB     23MIN          T/O FOB  14711LB (MAX: 19590LB)
KSLC      6631LB     92MIN      PLANNED TOW  63911LB (MAX: 72750LB)
KPIH      1729LB     19MIN     ENROUTE BURN   6631LB
RSV       4095LB     45MIN      PLANNED LDW  57280LB (MAX: 67000LB)
HOLD      1365LB     15MIN  DESTINATION FOB   7689LB
EXTRA        0LB               ALTERNATE FOB   5960LB
*************************
TOTAL    15102LB    194MIN


WEATHER INFORMATION:
* METARs
KDEN 131953Z 16009KT 10SM FEW220 M03/M09 A3013 RMK AO2 SLP236
     T10281094
KSLC 131954Z 14008KT 10SM BKN140 BKN200 M02/M10 A3028 RMK AO2 SLP286
     T10221100 $
KPIH 131953Z 01008KT 10SM BKN110 M02/M08 A3020 RMK AO2 SLP269
     T10171083

* Weather Aloft
       FT   3000   06000   09000   12000   18000   24000   30000   34000   39000
   ID  ---- ---- ------- ------- ------- ------- ------- ------- ------- -------
 KDEN: KDEN 2105 2105-04 2302-06 3125-12 3234-21 3452-32 3382-45 3290-52 3372-59
MUGBE: KBJC 2502 2403-03 2902-06 3020-12 3335-21 3357-31 3378-44 3284-52 3271-59
RALFI: KBJC 2502 2403-03 2902-06 3020-12 3335-21 3357-31 3378-44 3284-52 3271-59
  RLG: KGNB 3103 3103-04 3103-07 2718-12 3238-21 3362-31 3274-44 3277-53 3172-60
  EKR: KEEO 2006 2006-03 2006-06 2814-10 3235-19 3259-29 3058-44 3060-54 2963-60
RACER: KVEL 2301 2301-04 2202-08 2920-07 3134-17 3149-30 2956-44 2859-54 2860-60
SPANE: KPVU 1705 1705-03 1708-07 2919-06 3033-17 2944-30 2853-45 2760-55 2759-60
LEEHY: KPVU 1705 1705-03 1708-07 2919-06 3033-17 2944-30 2853-45 2760-55 2759-60
  FFU: KPVU 1705 1705-03 1708-07 2919-06 3033-17 2944-30 2853-45 2760-55 2759-60
PITTT: KU42 1705 1705-03 1909-07 2823-06 2931-18 2847-30 2756-45 2759-55 2757-60
MAGNE: KSLC 1704 1704-03 1807-07 2821-06 3032-17 2946-30 2855-45 2759-55 2758-60
```

Approve	OK	Print

Exporting your Flights to your Virtual Airline

The Detail Log dialog has the facility to export your flight details to a virtual airline over the Internet directly. To use this feature, the virtual airline must be using scripts that are compatible with the venerable FSPassengers system for reporting flights, and they must have provided you with a small set of standard configuration information such as a user name and password.

Each entry in the FSCaptain log has a status attached to it – this is the second column right after the flight number. This status can be "Open", which means the flight is either currently in progress or is on hold awaiting a pilot (you) to show up at the departure airport in the appropriate aircraft. Or, it can be "Closed" which means the flight is complete. There is a third status: "Sent". This means the flight has been exported to your virtual airline through this reporting system.

When a flight is marked "Sent" it will not be sent again. You can control the status of a flight by "marking" it. To mark a flight, click on the flight number (not the line, the actual number) then click on **Mark Exported** or **Mark Unexported** as appropriate. You could use this marking ability to mark a flight that has not been sent, if you don't want to send it. Or to mark an already sent flight as not exported if you need to re-send it for some reason.

The other button on this dialog is **Export.** This is where you actually do the export operation. When you click on this button you will see something that would look like this:
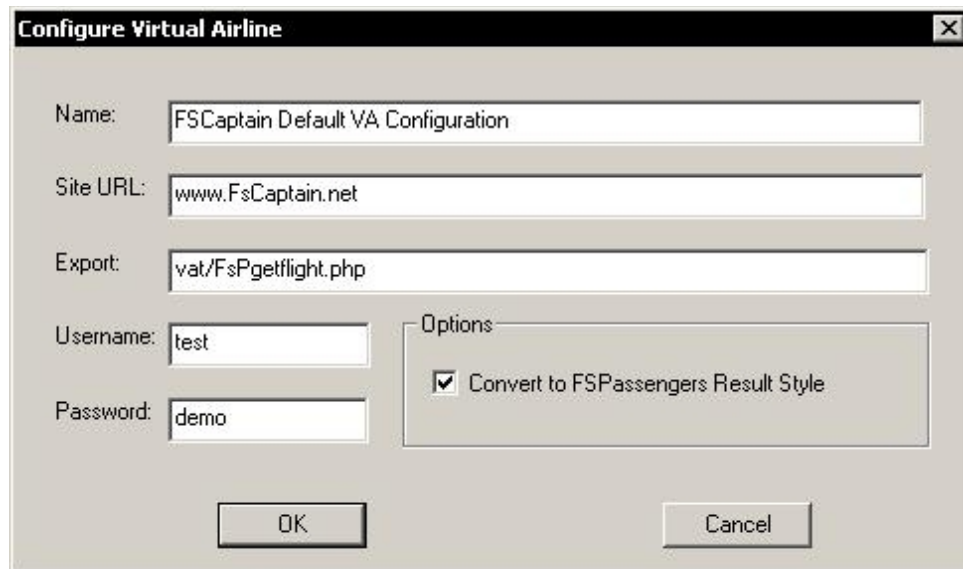

At the top, you see that it tells you that you have one flight ready for export to "FSCaptain Default VA Configuration". In most cases, what will be displayed here in the name of your virtual airline as you set it up in the configuration. If you see you have no flights ready for export that means that there are no flights in your log with a status of "Closed".

There are four options:

Mark All Flights Exported: This will change the mark on all flights in your log with a status of "closed" to "Sent".

Unmark All Flights: This will change the mark on all flights in your log with a status of "Sent" to a status of "closed".

Configure: This is where you can configure your connection to your virtual airline. When you click this the following dialog appears:

You must properly fill in each of these boxes with the correct information to hope to have this connection work. Alternatively, if you have received an FSPassengers "VaFsPassengers.cfg" file (normally found in the FSPassengers\config_va folder) from your virtual airline you can use Windows explorer to drag that file to the \FSCaptain\Config folder and rename it to "VADefault.cfg" and this will set your configuration to what is in that file. You can modify that here in the Administrator in this dialog if you need to but normally you shouldn't need to.

Name: This is the name of your virtual airline. It's displayed at the top of the Export dialog (see below) but otherwise it's used for matched to anything.

Site URL: This is the Web site of the Virtual Airline. This must, obviously, be spelled correctly for a connection to be made.

Export: This is the location and name of the script your VA uses to accept flight data. Your VA will provide this.

Username: Your user name as provided by your VA.

Password: Your password as provided by your VA.

Convert to FSPassengers Result Style: This option lets you control how the export process sends the "Flight Result" text. The default behavior is to send this as the FSCaptain letter grade score and numeric score – for example" B+ (91)". However, if you check this option the Administrator will translate the FSCaptain result into the words "Perfect" for any A grade, "Good" for any B grade, "Average" for any C grade, "Poor" for a D+, "Very Poor" for a D, "Bad" for a D-, and "Horrible" for any grade of F.

 "Export Now": This means to export all the available flights now. If you click this the blank text box will have status information displayed in it:
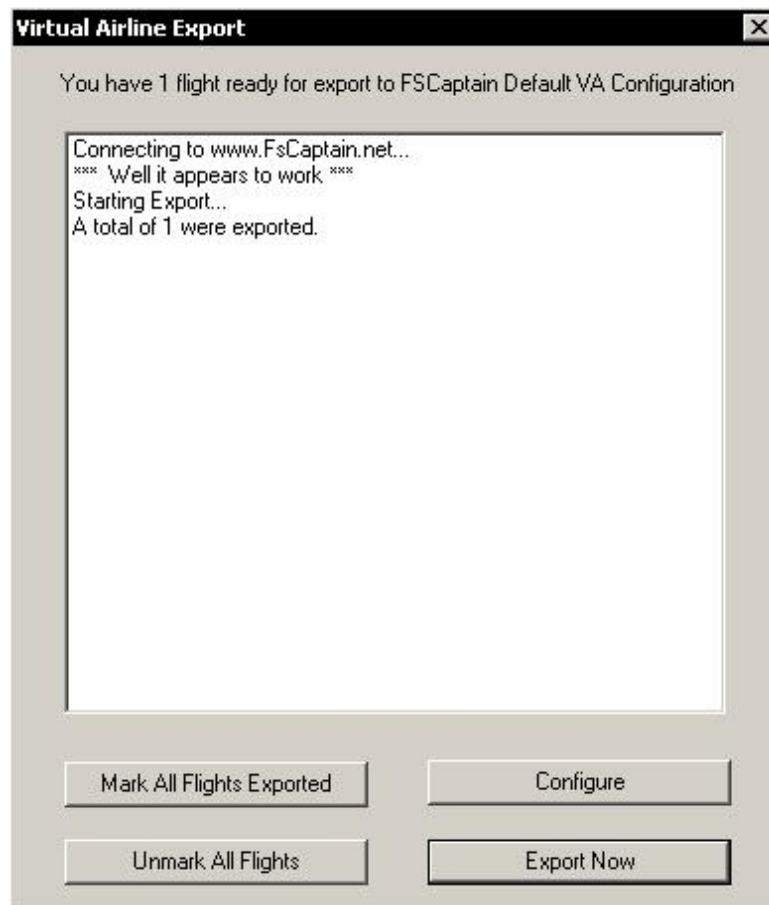
In the normal, successful case you will see something like the display above. If there were problems, you will see error messages. In the example above ""*** Well it appears to work *** is the welcome message from the virtual airline which is likely to be something along the lines of "Welcome to ABC Virtual Airlines" but this depends entirely on how the system is configured for each airline. The last line will say "A total of X were exported", or "No flights were exported."

It is possible to receive several error messages during this process:

Windows TCP/IP Socket Init Failed: There is a serious problem with your internet connectivity. It's likely you can't get on the internet at all and you must resolve this problem before you can export any flights.

Unable to connect to host: Probably the "Site URL" option in the configuration is not typed in properly, or the VA's website is temporarily down.

Connection Timed Out...Disconnected: The "Site URL" is properly typed in, but when trying to connect to the VA's website the connection could not be made. Probably, the website is down. You should try again to see of you connect.

Invalid or Unknown Answer from Host...Disconnected: A connection was made but the response data from the web site could not be interpreted. This is an issue you'll have to work out with your VA.

Invalid Username or Password...Disconnected: The user name /password pair was not accepted by the website processing script.

Unable to send...disconnected: After getting a valid acceptance from the VA, attempts to send the flight data were not able to be completed. This could be a temporary Internet condition and you may want to try again, if the problem persists you must contact your VA.

Send timed out...disconnected: This could be a temporary condition, but if it persists you must contact your VA to resolve the issue.

Flight X Already Exists in Database: The flight you sent appears to already exist in the VA's database (at least that's what they told us when we sent it.) This happens when a flight is sent with the same Flight ID and the same departure, destination and times as an existing flight.

Flight X was NOT exported: If any error occurred on a flight export you will see this message. If you do not see any error message, each flight was exported successfully.

Section 3 – Flight Dispatch

This tab allows you to browse for available flights using a set of criteria, select one that you want to fly; then using an existing FS flight plan along with weather information (from an external source) you can determine an accurate Block Time and Fuel burn, and finally you can book the flight so that it is a committed flight that the FCDU will recognize when you appear in Flight Simulator at the scheduled airport in the scheduled aircraft type.

The process of creating a flight on this tab proceeds in three phases:

Phase 1 – Selecting a Flight

You are required to enter a date (today's date will be provided as a default date.) You may option-ally enter an airport ICAO if you wish to fly from that airport – the last airport you landed at on an FSCaptain flight will be preset as your departure airport, although you are free to change that. You'll also need to choose the type of flight: passenger, cargo, and ferry. (If you select "ferry" as the flight type you'll be required to enter a destination in the flight details dialog.) Optionally, you can enter a time constraint (in minutes, with the default coming from the airline definition.) Be-low the time constraint is a button "Specify Flight Details.   This allows you to precisely define a specific flight to be made. See **Specify Flight Details** below for details on how to use this feature.

Important note: all aircraft in your flight simulator aircraft folder are scanned for inclusion, but only those that have their types defined with an aircraft characteristics file will be shown in the selection list. See the section "aircraft characteristics" in this manual for more details. Another important criterion is the presence of an atc_id. To be included on this list an aircraft type must have at least one of its liveries [fltsim.x] assigned with a non-blank atc_id. Also, to eliminate AI type airplanes any aircraft with a blank 'atc_model' in their aircraft.cfg files (in the "[General]" section) will not be selected. Only the first 'atc_model' in the "[General]" section will be honored.

If you are flying with the optional 'Economic Mode' enabled, then you are further restricted to choosing aircraft types which your airline has listed in its [airline-name]_Aircraft.cfg file.

If you use airport sceneries which have parking spots customized to include airline parking codes, you can configure FSCaptain to attempt to assign you those parking spots upon landing. In the real world, some airlines operate on the principle of "codesharing" whereby the aircraft owned by one airline is making a flight under the "code" of another airline… or under the code of several airlines. (So a Landmark Airlines-liveried aircraft could be making a flight *for* Pacifica Airlines.)

If your airline requires assigned parking, you can change the "airline code" before you select a flight under which your flight will be parked. This means if you're a Pacifica Captain, and you're making a flight in Landmark livery, your data will be recorded into the Pacifica Airlines log, but you will receive Landmark parking at your destination. (Codeshare assignments persist for each leg of the flight.) If your airline doesn't require assigned parking, the "Codeshare" textbox will be disabled.

Once you have entered the above information you will have a choice of two buttons:

List Flights: If any flights are found matching your criteria they will appear in the list box below. You can scroll through this list, and if you see the flight you want click on the flight number (the actual number not the line) and then click on the "Select" button to proceed to Phase 2. If you don't like the list that's presented, you can press the "Reject" button and make another selection using different criteria. (In the case of charter flights simply pressing "Reject" and selecting "List Flights" again may present a new selection of charter flights.)

The selection list you see here is equivalent to the flights presented in the FCDU when you use the "Select Mission" option from and the same rules that apply there apply here concerning charter flights and time constraint. There is one significant difference: *all* scheduled flights from this airport for your current airline that qualify for the date and aircraft type you gave in the search criteria will be displayed regardless of the time of day the flight departs (unless you chose the special time constraint option described above.) The other difference is when you enter a specific destination you will see only one flight presented -- a charter flight to there.

Get Assignment: All available flights are scanned, and one is chosen as your assignment. The initial set of flights considered is the same one that would have been listed if you had clicked on **List Flights** but instead of being listed they are evaluated for eligibility as your next assignment. Any flight with a projected duration longer than your Time Constraint will be rejected. The current
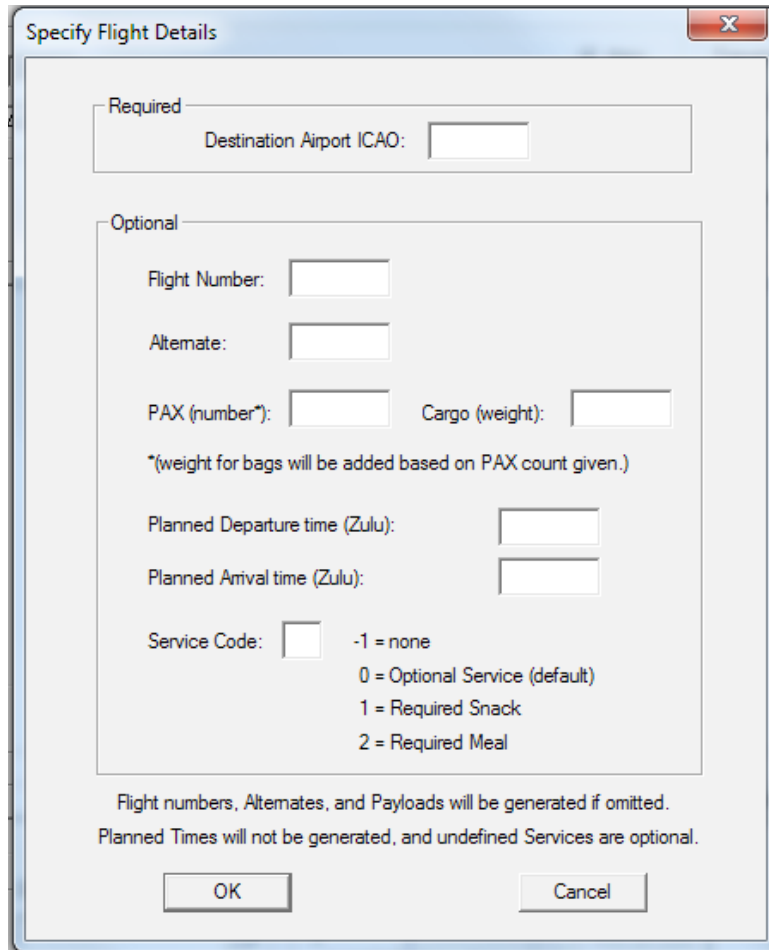
date and time (on your PC while you are doing this) is considered: if you are searching for an assignment for today no flights earlier than 1 hour past the present time will be considered. If you are searching for a date in the future departure time is not filtered. Once a subset of eligible flights has been filtered, one will be selected randomly as your assignment.

You also must specify a departure airport and cannot specify a destination airport.

Specify Flight Details

When you use the "Specify Flight Details" button this dialog will appear:

Any information you insert here will be used to define a charter flight, and any that's omitted will be filled in by the system… except for the destination airport. If you fill in any of the optional information, you must supply a destination airport ICAO ID. That is the only field that must be filled out on this dialog. (If you are flying a ferry flight, you must use this to supply a destination.)

The other fields are optional. If you don't supply a flight number one will be generated for you. The same with specifying an alternate airport; you can choose your own, or allow the system to pick an appropriate one.

You can specify how many passengers for either a cargo or a passenger flight. This cannot exceed the seating capacity of the airplane you have chosen. (Cargo aircraft may have a small number of

seats for ride-along passengers.) It is typical for no passengers to ride on a cargo flight. If you leave this blank, the system will assign the number of passengers for the flight. A reasonable load will be generated for passenger revenue flights, and your airline's Load Factor will be considered to calculate how much payload you will carry.

You can specify a cargo weight for either type flight. For a cargo flight this will be the total weight carried as payload, *including those in jumpseats.* For a passenger type flight, this is extra cargo above and beyond the weight of the passengers and their baggage. The total payload in that case will be the weight of the PAX, plus their baggage (actual weight per PAX is defined in the FSCaptain 'Items.cfg' file on the first line and baggage is randomly between 20 and 60 pounds per PAX) plus the weight you specify here for other cargo.

You can enter your weights as an integer - "2500" for instance – and we will take that as specifying "2500 pounds". You can enter a weight with the Kilogram suffix – "1500KG" for instance – and we will attempt to convert to pounds.

You can include an optional departure and arrival time. (The dialog will remind you if you need to enter Local or Zulu times – the setting **Use Zulu Time** controls this.) FSCaptain arrival time rules (defined on the airline configuration dialog) will apply if needed, and you'll need to start within the standard times defined on your Airline Configuration screen, or your gate will not be ready for departure.

If your company has checked the option "Score Actual Arrival Time" on their configuration, you will be scored on whether you arrive on time or not (there are windows in which you will not be considered late, after that penalties will start, and build based on how late you are.)

You can include a service code for the flight if it is a passenger flight. This will determine what services are available to your passengers during the flight:

- A code of -1 (minus one) means no service will be provided on the flight.

- A code of 0 (zero) is the default, and it means that optional service is available. Optional means you won't have a penalty accessed against you if you don't provide the service. (You will, however, risk a penalty if the service is started but not completed.) If your flight is long enough to possibly account for a snack and a meal, then you will be able to offer a snack, followed by a meal. If your flight isn't long enough for that, then you will be able to offer a snack service. In either event, please judge your time enroute to ensure that you'll have enough time to complete your service(s).

- A code of 1 means a snack service is required. You will get a "poor service" penalty if you don't complete at least one snack service. A snack service is shorter than a meal, and takes on average about 30 seconds per passenger plus a start-up time interval.

- A code of 2 means "Required Meal Service". This is the same as a snack service except to serve a meal takes longer time in preparation so therefore longer to complete it. Usually, you can figure on a meal service taking about 50 percent longer than a snack service.

Do realize that the initial service on a Meal flight will be a snack or a "drinks" service – to get your passenger's appetites ready! This snack will be followed by the meal. If there's time after the meal, the next services will be snacks again.

After you have completed filling in this dialog and pressed "OK", you will not see the flight appear automatically.   You'll need to click on "List Flights" for it to appear. You will see it at the top of (potentially) a list of other flights you could choose.   Often, it will be the only flight available. (You cannot specify a destination if you would rather use the "Get Assignment" method.)

You'll then proceed to click on the flight number and proceed to Dispatch Planning, described next.

Easter Egg: If you enter 1 or 2 in the "Service Code" for a Cargo flight, your Dispatch will try to assign you a "special flight" with some random combination of Priority, Live and Fragile cargo. These flights will give you bonus points if you complete the flight according to the criteria, but if you fail to meet the criteria, you'll lose extra points!!

Phase 2 – Dispatch Planning

Dispatch planning is different from flight planning. It is concerned with getting three things right: an alternate airport, the estimated Block Time enroute, and the estimated fuel burn. In addition, weather factors are analyzed to both to ensure that the time and fuel burns are accurate and to assure that weather conditions are above minimums for safe flight. The route chosen is a function of flight planning which you do with an external tool (or the FS built-in flight planner) and doesn't concern Dispatch Planning – except that it influences the estimated Block Time for the flight.

What is "Block Time?" Simply speaking, Block time is the amount of time that an aircraft takes between going OUT and going IN. (It approximates what you may think of as "gate-to-gate time," but is more accurately thought of as the time an aircraft is under its own power.) This time is logged for each aircraft to show how much wear and tear its systems has experienced.

It's also what most passengers expect as the duration of their flight, so making your flight closely track the expected Block Time can influence how happy your passengers will be on arrival.

Once you have selected your flight from the list the buttons and controls on the top left part of the tab will be disabled (grayed out) and the ones in the planning section will be enabled. The default flight plan is GPS Direct with no wind flown at the standard altitude defined in the aircraft characteristics file. This usually doesn't match reality and the dispatch planning process is a method of reconciling the ideal with the real.

Your next step should be to select a flight plan (if you have one… and you should!) by using the "Select Plan" button. You will see a list of FS flight plans you have stored in your "Flight Simulator Files". Having the Dispatch office aware of your actual planned route will in-

crease the accuracy of the estimates but it is not officially required. *You* as Captain assume the risk of not making the flight on time if you don't select a plan and use a direct route here.

If you are dispatching a flight to a new destination you should plan the flight with your favorite flight planner before using this dispatch planning tool; or alternatively you can plan the flight while this dialog is up, just be sure to save or export your plan into the standard FS9 or FSX folder before selecting it here. Once the plan is loaded the information in the "Flight Plan" edit box will change to the title as defined in the flight plan and the "Altitude" will change from this aircraft's standard cruise to that defined in the plan. If you press the "< -- Recalculate" button the Block Time and fuel burn will be updated to reflect the impact of the flight plan, both in revised distance and possibly a different altitude than the standard. Usually, the Block Time and burn will go up, but in some cases, it can go down if a short flight is planned at a lower altitude than the standard.
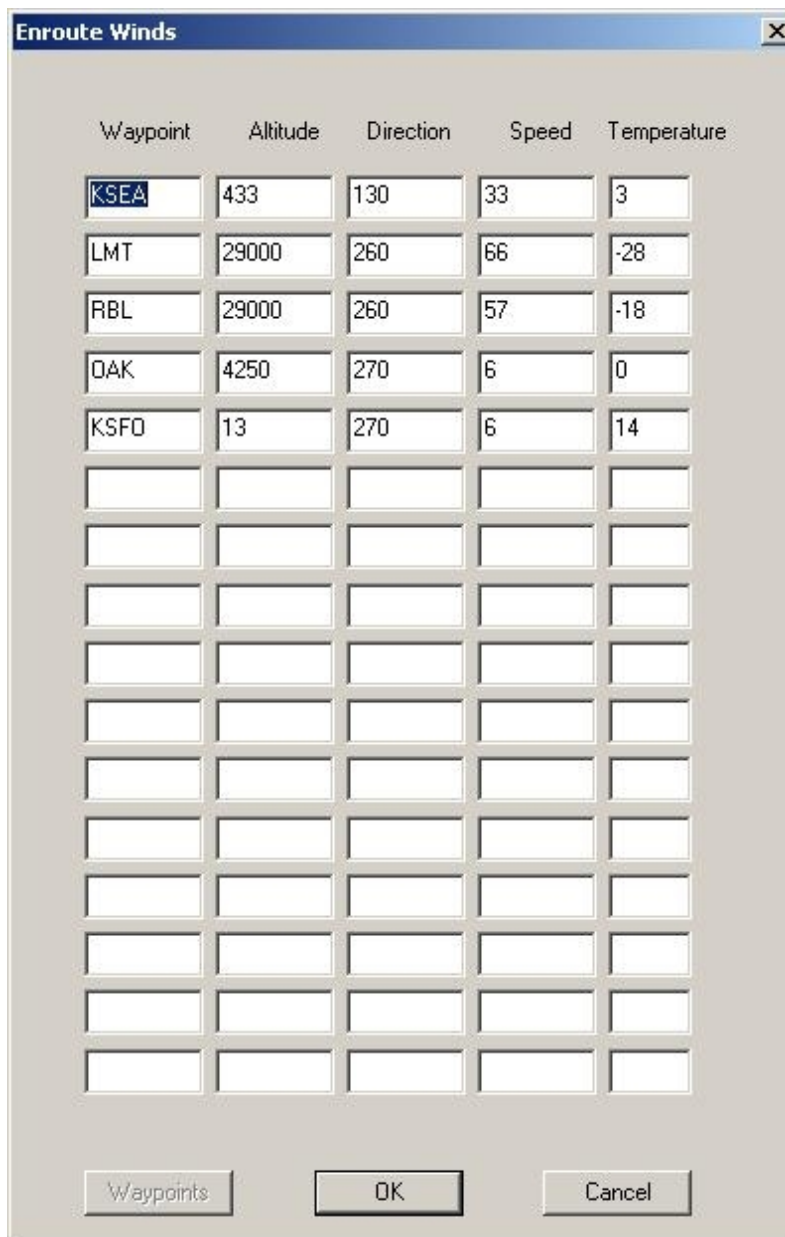
The next step is usually to retrieve weather information and apply it to the planning. Use the "Get Weather" button above to obtain the latest weather data from your installed weather add-on program (such as Active Sky, FSGRW, Opus, REX, or others) if you've configured the weather options (a button on the "Profile and Settings tab"). METAR and TAF data can usually be obtained from the external program. Winds aloft are more uncertain. Active Sky and FSGRW products include winds aloft data; the original REX did not, but newer versions do. If valid winds aloft data could be found for your flight route a table of winds aloft data will be built from the available data, if not this table can be provided manually. Pressing the 'Enroute Winds' button will display a dialog where you will have access to this winds data *for only a few waypoints*.

When winds data is obtained from an external source the program uses your flight plan to determine a set of "wind points" along your route. Not every waypoint will be a "wind point". The selection rules are simple: any planned way point that is an airport, or that is 50 or more miles away from any previously selected wind point will be included. (The 50-mile limit is configurable by including a statement in the *options.cfg* file – see the Appendix for details.)

Each line will be populated with the wind direction, speed, and temperature that is current for the altitude band the aircraft is calculated to be in at each point in the vertical flight path. You can change these figures, or the calculated altitude, or add winds data for a planned way point not automatically selected. If you add a wind point it must be for a way point in your flight plan.

If no winds aloft data can be found, this table will be blank. In that case, you may enter winds aloft data manually. To help with this you may press the "Waypoints" button on the Enroute Winds dialog and all the likely wind points and altitudes for your plan will be placed in the table with directions, speeds and temperatures preset to zero.

Here is an example of the Enroute Winds dialog box:

Clicking on OK will update the internal winds data used for calculation; pressing Cancel will ignore any changed or added data in this dialog.

Once this data entered (whether you modified enroute winds or not) you can press "Recalculate" to have your Block Time and Fuel recomputed using the current flight plan with the current weather *and altitude* factored in. It's important to realize the effect that altitude can have on Block Time and Fuel. To calculate this, the program assumes that the standard cruise speed defined in the aircraft characteristics is the no-wind TAS of the aircraft at its defined standard cruise altitude (since there is no wind this is the same as the ground speed.) Using this as a base, the TAS will be adjusted lower for lower than standard altitudes and upwards for higher. This will be shown in the "Speed" data item and obviously this affects Block Time and thus Fuel burn. Often the selection of the right altitude for a flight is a trade-off between higher TAS at higher altitudes versus potential

headwinds at those altitudes. If you didn't load a flight plan and the program is assuming a direct route you can change the altitude and recalculate to see the effect on Block Time and Fuel burn.

If you wish to see the effect altitude and winds are having on your timing you may use the 'View Release' button to display a working copy of the dispatch release document. On there, your flight plan will be displayed with each way point and the speed adjustments made at each point by the recalculation process.

If you do not select a flight plan a direct plan will be generated for you. If you do not click on Get Weather and don't enter any winds data manually then the winds along your route will be assumed to be nonexistent and the temperature standard for each altitude band.

"I have another flight planner…."

Many Captains use external flight planning software that calculates Block Time and Fuel Burn values to a very high precision. If you choose, you can override the values that the Administrator generates by entering the values you prefer into the Block Time and Fuel textboxes, holding down either SHIFT key on your keyboard, and clicking "Recalculate".   If you change your mind and choose to go with the Administrator-generated values, simply press "Recalculate" without pressing a SHIFT key.

ACME Fuel Planning

Fuel planning using the ACME system is more involved than trying to calculate how much fuel you need to get from takeoff to landing. FSCaptain is an ATP simulator and its rules are modeled upon US FAA domestic operation rules in order to give you safe flights:

1. Minimum fuel that your aircraft requires to remain in tanks. (Noted as "MIN".)
2. Enough fuel to fly to your Destination. (Noted on your Release with the Destination ID.)
3. Plus, the fuel to fly from there to the Alternate airport. (Noted with the Alternate ID.)
4. Plus, the fuel for 45 minutes Reserve at cruise speed. (Noted as "RSV".)
5. Plus, the fuel for 15 minutes of ATC holding. (Noted as "HOLD".)
6. Plus, the fuel for normal taxi operations at both airports. (Noted as "TAXI".)

The values for #2 and #3 are calculated using Aircraft Performance and Fuel settings. The values for #4 and #5 above can be adjusted on the Profile and Settings tab in your Administrator. The value for #6 can be adjusted using the "Ground_Times" configuration files... see Appendix 5 for its details.

The total fuel amount to be loaded is always subject to any adjustment which the Pilot In Command orders, but Dispatch is bound to offer the amount of fuel which they feel is *safe*.

Multi Leg Flights

If the flight you are planning has continuations to other airports, you can plan those extra legs exactly like you plan the first leg. In the top left of the planning section there are two buttons "<<" and ">>". On a multi-leg flight, you must use these buttons to go forward or back among the legs of the flight – if you don't confirm each leg, the Administrator will not allow you to commit to this flight. The current leg number is shown between the buttons. On a single leg flight both buttons are inactive. Each leg is initially assumed to be planned as a great-circle direct plan with no way points and no winds until you supply flight plan, weather and cruise altitude information and press the Recalculate button to determine an adjusted Block Time and fuel burn.

You must plan each leg of a flight because you may be asked to make all of them.

Phase 3 – Committing the Flight

After loading the flight plan, weather, and recalculating the Block Time and Fuel for each leg you are about ready to log the flight. You can, if you choose, manually change the Block Time and Fuel, the assigned parking, your alternate airport, or even your altitude level. No matter what you enter here, those figures will be the official dispatch figures for the flight when you start up the FCDU in your airplane – so choose carefully.

You can always press the "Reject" button to return to the flight selection process before you choose "Commit" and nothing will be logged.

Before you press the "Commit" button you probably want to review your flight using the "View Release" button on the left. This will show you a preliminary version of the dispatch release document. Here you can see the details of the fuel calculations, the weather information, and your flight plan with timing and fuel calculations.

Once you are satisfied with the flight, you can press the "Commit" button. You'll be asked to confirm, and once you do your flight will be entered into the airline's log in "Open" status, assigned to an airport and an aircraft type but not to a specific aircraft registration number. A manifest will be generated at this time, and a more finalized copy of the dispatch release.

Once in the log, the flight will be treated as if you had set it up using the FCDU but not taken off. That is, it is subject to be dropped or canceled and reassigned depending on the rules of your airline (see the "Flight Commitment" option on the airline definition tab.) The date and time of the flight commitment is the windows system date and time when you pressed the "Commit" button.

If the flight had multiple legs only the first leg will be committed in the log but the preflight information, manifests, and a preliminary copy of the release document will be written to the Manifests folder. When you later fly these extra legs, this information will be picked up by the FCDU on each leg.

To fly the flight, you must be certain you are in *the assigned aircraft type at the departure airport at the correct time (if scheduled).* Even if you picked a scheduled flight, you do not have to arrive

within a certain time window to fly it – when you log in to the FCDU and an open flight matches the current aircraft type and airport the FCDU will start up that flight and not allow you to select any other until that flight is closed or removed.

In general, whenever possible, you should not allow much time to elapse between scheduling and dispatching a flight from this tab and getting into the cockpit and flying it. You can plan the flight using the Administrator available from the drop-down menu in Flight Simulator if you like, then immediately power up the FCDU and start the flight. However, you are not permitted to select a flight (the button won't be enabled) if you are in flight simulator and the FCDU is powered up.

Multiple Commitments and Updating a Flight

You are not permitted to make more than one commitment of a flight for a given aircraft type from a given airport. If you attempt to select any flight from the same airport and for the same type as an existing commitment, you'll get a message asking if you want to update that commitment. If you don't, you'll be returned to the selection process. If you do, you'll be placed in the planning stage where you can change whatever you'd like. When you press the "Commit" button the existing logged committed flight will be updated to reflect any changed alternate, Block time, fuel, PLN, and weather.
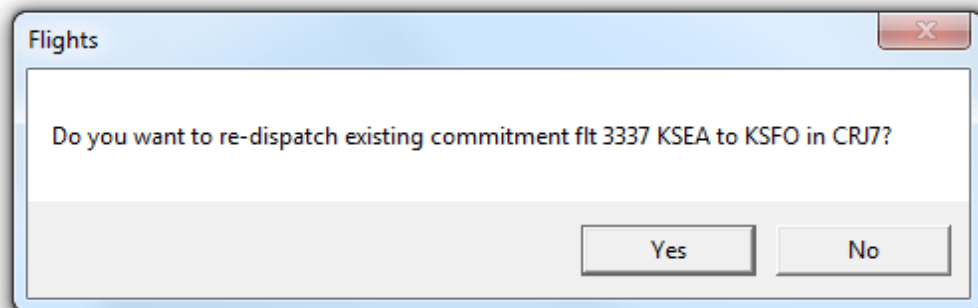
You are also not permitted to book a flight under a unique flight number if another flight has been booked but not yet closed under that same flight number.

How Dispatch Uses Weather

When the 'Get Weather' button is pressed the Administrator program attempts to retrieve three types of weather information from the best sources available at the time it is being used. Currently, those sources are 1) Any external weather add-on you have configured in the Weather Options tab of the Profile and Settings, or 2) from the simulator itself if it is running and Administrator can establish communications with it.

The three types of weather we look for are METAR, TAF, and Weather Aloft. METAR information is retrieved for the departure, destination, and alternate airports. First, if you have configured an external weather program the Administrator will look at the database you configured and extract the weather data from there. You will be warned if the data is out of date (you define "out of date" on the Weather Options.) If no weather is available then METAR, TAF, and Weather Aloft data for the airports will be retrieved from the Internet. The Weather Aloft data is a part of the

weather data retrieved from the simulator if there is a connection, but if necessary the Administrator will attempt to download the latest winds aloft from the Internet.

The METAR and TAF information is used as part of the dispatch preflight analysis, and is printed on the dispatch release document for the pilot's information. The Weather Aloft data is used to compute a more accurate Block Time and fuel burn. If no data can be downloaded for your plan, you can obtain the current information from external sources and enter the data into the dialog box.

You must press "Recalculate" anytime you change anything and want an updated calculation of Block Time and fuel burn. When weather is successfully retrieved the 'Get Weather' button is disabled. Pressing the "Recalculate" button re-enables the weather button. Occasionally, the Internet site is down or some of the information doesn't get successfully downloaded. You can view the dispatch release document to see the results of the weather retrieval at any time. Sometimes getting weather again will correct a 'not available' notation for a METAR or TAF.

For those not familiar with it, the coded weather information looks like a meaningless jumble of letters and numbers. But it is in fact a compact and unambiguous way of displaying all the weather data a pilot needs to know. There are many sources on the Internet to help you decode it all; simply search for METAR or TAF using your favorite search engine.

I Don't See My Aircraft in the Dispatch List!

Many Captains (*okay,* Most *Captains*) purchase new aircraft just to try something new... or for something *better* in some aspect. But what if you install the latest whiz-bang jetliner that everyone's talking about... *and you don't see it in the Flight Dispatch Aircraft Type list*??

It's simply because there isn't an Aircraft Override Configuration file to match it. To be visible in this dropdown list, you need the aircraft to be installed... plus you need an FSCaptain configuration file to match. If you only have an Aircraft Type Configuration file, you wouldn't have a separate entry for your new aircraft. (Although you could use the Type Configuration entry to Dispatch the flight and simply spawn in your simulator using your whiz-bang aircraft....)

You can read about our Aircraft Configuration files (both Type- files and Override- files) in Section 5 of this User Guide. There is a lot of information about how to create and edit them in the additional documentation file: "FSCaptain Airplane Configuration How-To".

Section 4: Profile and Settings

The Administrator contains a tab to control your profile, plus some optional settings which apply to all airlines:

Current Simulator: This drop-down list contains the name of the current flight simulator, as derived on the initial installation. *Please Do Not Change this value unless you know it to be incorrect*, as both the Administrator and the FCDU will alter their behaviors based on this value!!!

Current Airline: Select from the drop-down list the current airline you are working for. This is an alternative to the "Change Airline and/or Pilot" button of the first tab. They accomplish the same thing. You can only work for one airline at a time. You may have several pilot profiles but only one can be active at any one time.

Pilot Options: Use this drop-down list to select the current pilot profile. In this area, you can add a new pilot profile, change an existing pilot's profile, or delete a pilot. When you add a new pilot, you can select the employee ID. This can be important because if you run both FS2004 and FSX and want to share a career between the two, the pilot defined in one must match the employee number of the other in order for their careers to match.

Yes, you can fly as different pilots for a single airline, *no one will judge*. We've seen Captains have different Pilot Profiles based on PAX or Cargo flights, and even on different aircraft types ("Tina Turboprop," "Jake Jetliner," "Paul Pistonhead.")

Failure Percentages

There are five separate areas to look at here. 'Mechanical Failure' applies to all random failures potentially triggered by FSCaptain that pertain to a specific instrument, engine, or system of the user aircraft. 'Bird Strike' applies to the potential to hit a bird or birds. 'Blown Tire' applies to the potential for a tire to blow out on landing, takeoff, or taxi. 'Cargo shift' is the likelihood that the weights in your payload stations could change in-flight due to inadequately secured cargo containers. And, 'Cabin Emergency' is the percentage chance that an emergency could develop in the cabin during a passenger flight only. Examples of cabin emergencies include a serious medical condition or the presence of smoke in the cabin indicating a potential cabin fire.

The percentages are down to the decimal point. Writing 2.0 in this field means there is a two percent chance of failure. 0.5 in this field is ½ of one percent chance of failure. Etc. A two percent chance means it's likely (but not certain) that of 50 flights, one will have a failure of some kind. In the case of a mechanical failure this may be as major as an engine fire or as minor as the magnetic compass sticking. A 0.5 percent chance means out of 200 flights one might have a failure. You might not even notice the failure if it's minor enough.

Mechanical failures are assigned three-digit numeric 'fault codes'. Fault codes below 200 are considered MEL items – you can fly with them failing. Anything above 200 is a major failure and may require the declaration of an emergency if discovered mid-flight. You can see the fault code in the log (use 'View Details' in Administrator or 'Justify' in the FCDU) after a flight has ended. If you check the option "Display Fault Codes on FCDU" then when a fault occurs, the FCDU will display the fault code in red numbers underneath the title on each screen during the flight. (See Appendix 3 in this manual for a list of the codes.)

External failures: Everything said above only applies to failures created by the FSCaptain system. Some add-on aircraft or other programs outside the scope of FSCaptain have their own failure generator. In many cases FSCaptain cannot detect these externally generated failures and therefore you could be in a situation where a major aircraft system has failed in your add-on but FSCaptain doesn't detect it. *Exceptions:* So long as the add-on failure generator uses the standard FS9/FSX failure signals FSCaptain will detect and honor the failure as a valid reason to declare an emergency. This is most common on engine failures (you can test this by triggering an engine failure using the FS menu items.) In all simulator versions FSCaptain will detect most of the official systems failure modes except for hydraulic failure (because of a bug in FS that falsely reports hydraulic failure, the detection of this has been disabled.) With a properly configured interface in FSX and P3D, FSCaptain can detect and honor externally triggered engine fires.

Note that you can *always* declare an emergency from the FCDU using the EMER button or the EMERGENCY selection from the Flight Status screen, and dispatch will accept your declaration. However, should you be successful in making a safe landing, the bonus points awarded will be linked to the type of failure. If FSCaptain hasn't detected any failure (yet one did happen due to an external trigger from an add-on aircraft) you will be awarded an average of 10 bonus points.

Rescan Aircraft: This push button will re-scan your Aircraft folders, as is done when the Administrator launches. This is only visible when you have enabled the setting "Autoscan A/C on Startup".

Weather and Hazards: This push button will allow access to a dialog (described below) that can be used to specify the location of a database used by an external weather generator program.

FCDU Installer: Pressing this button will run the FCDU Installer program. Use this if you prefer the "panel gauge" version of the FCDU.

Require an FS Parking Location to Unload: By default, you can unload your passengers and cargo at any point at your destination airport. (Some early users of FSCaptain would even unload on the runway to avoid a late penalty!) Checking this option will change that rule and require you to unload your PAX or cargo only within the limits of a defined Flight Simulator parking location.   You will not receive an "Unload" option on the FCDU, even when you set your parking brakes and shutdown engines (if required) unless you are within the radius of a parking spot.

Checking this option also enables the airline option "Assign Parking", which will have the airline assign you to a specific gate when your flight is accepted – see "Airline Definitions" in this manual for more information.)

Checking this option increases the realism of your FSCaptain experience, but the potential down side is that finding a parking spot (or an assigned gate or ramp) can be quite difficult because parking spots are not often well marked at Flight Simulator airports, and the actual name of the gate or ramp is never shown at a stock airport and seldom at an add-on airport. The FCDU does provide guidance to gates in the form of a heading and distance. Read the section "Understanding Gates" for more information on how FSCaptain handles this.

Cargo Preload Percents: Usually, when a cargo pilot gets to the aircraft most of the cargo has already been loaded into it. This option determines what quantity 'already loaded' really represents. Each aircraft volume class can have a separate percentage to have been loaded when you get to it. Usually, the smallest airplanes will have the lowest percentages. The point of all this is so you don't have to sit and wait for long periods while the cargo is loaded at a realistic pace. Tiny airplanes are smaller and have less cargo space, so it doesn't take long to load most of it.

Cargo Preload Percents	
Tiny:	30
Small:	40
Medium:	60
Large:	70
Heavy:	80

PAX Load Timing: This section contains a series of five entries that allow you to control how fast or slow passengers board any aircraft during the FSCaptain boarding process. The interval of delay between passengers is measured in "ticks", where each tick is 1/18 of a second.   So, to specify a one second delay would be 18 ticks, two seconds would be 36, and so on. Each interval controls the boarding of a pair of PAX within that interval the two may board together or separated by a random number of ticks, but each pair will take up no more and no less than the number of ticks you specify in the interval.

PAX Load Timing	
# PAX:	Ticks Per PAX
0	40
50	20
100	15
200	20
300	40

1 tick = 1/18 second

There is room for five interval levels, with each level distinguished by a number of passengers. The first row consists of the number of PAX and the interval in ticks. Read this as meaning "if the flight has this number of total passengers or higher the interval for each pair will be this number of ticks." The reason for the levels is so that you can board larger aircraft faster if you wish. The default numbers do this: The first level is 0 PAX 80 ticks. This means for any number of PAX from zero to the next level (25) it will take 80 ticks to board each pair (or 40 ticks per person, slightly faster than 2 seconds each). The next default level is 25 PAX 60 ticks, so if a flight has between 25 and 49 passengers the number of ticks per pair will be 60 (about 1.5 seconds each). For some people this is much too fast, for others, it is right. This option is so you can adjust these rates to suit yourself.

Log File Folders: Normally FSCaptain stores the logs of your flights in a file named for each airline in a folder called 'Data'. Before each flight, the program also makes a copy of the affected log file in a backup folder, in case something awful happens to your log (log data represents lots of time and effort on your part and we make every effort to keep it safe.) The default locations for these files are listed in this option, for example, ".\FSCaptain\Data\" means the Data folder within the FSCaptain folder in the FS root folder directory (the dot means current directory which is the Flight Simulator root directory.)

You may have FSCaptain installed in both FS2004 and FSX. You may wish to have the same career in both simulator versions.   FSCaptain handles this by letting you change the location of your log and backup files.

There are two basic schemes you can use. The simplest is to think of one version as your "master" version. The other simulator version (which maybe you play less often) will have its log file loca-

tions changed to point to the log file locations of the "master" version. For a simple example, let's say you use FS2004 most of the time, and have it installed in C:\FS2004. But you also have an FSX installation on the same drive in C:\FSX. You would install FSCaptain into both versions. (Although the Administrator is the same program in all versions it will recognize the specific folder it beings to and access the data files for that particular installation of FSCaptain.) In the one for FSX, in the log files put this:

```
┌─Log File Folders────────────────────────────────────────────────────────┐
│                                                                          │
│  Logs:    │C:\FS2004\FSCaptain\Data\                                   │ │
│                                                                          │
│  Backups: │C:\FS2004\FSCaptain\Backup\                                 │ │
│                                                                          │
└──────────────────────────────────────────────────────────────────────────┘
```
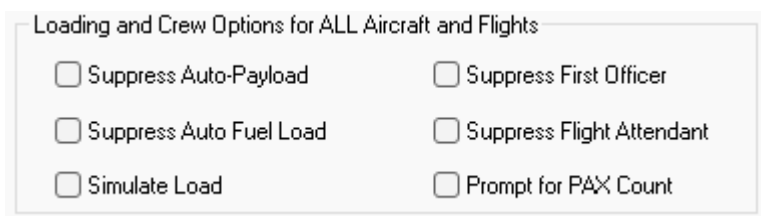
Notice that we replaced the dot with the explicit location of the FS2004 folder. Now, when the FSX version of FSCaptain goes to read the log files it will access the FS2004 logs. The two formats are compatible; FSCaptain will not know the difference.

A second option is to place a log folder in a separate location (perhaps a network drive) and have both versions point to it. There is no need to have it be called "Data", you can name it anything, and as long as it's referenced here and is find-able from your computer FSCaptain will access it.

Note that to share a career not only must you point the logs to the same data folder, but you must also have the same pilot ID flying for the same airline name.

Loading and Crew Options For ALL Aircraft and Flights

This set of options exists so that if desired you can turn off certain portions of the FSCaptain system so that other add-on programs can fulfill these roles without "fighting" with FSCaptain for control. The primary use of these options is to accommodate special-purpose automatic loaders and add-ons or aircraft that provide their own crew. Any options checked here will apply to *all* airplanes used with FSCaptain. If you want to make special exceptions for individual airplanes, see the similar set of options on the Load Maps tab in this manual. Note: If you use one of these "Suppress" options you cannot "un-suppress" it for individual aircraft. These are "system-wide" switches.

```
┌─Loading and Crew Options for ALL Aircraft and Flights──────────────┐
│                                                                    │
│   ☐ Suppress Auto-Payload         ☐ Suppress First Officer        │
│                                                                    │
│   ☐ Suppress Auto Fuel Load       ☐ Suppress Flight Attendant     │
│                                                                    │
│   ☐ Simulate Load                 ☐ Prompt for PAX Count          │
│                                                                    │
└────────────────────────────────────────────────────────────────────┘
```

Suppress Auto-Payload: If this option is checked, FSCaptain will not generate payloads for flights or automatically load any payload aboard the aircraft during the loading process. Instead, FSCaptain assumes that the payload weight that's already on board the aircraft at the time a flight is reviewed or selected is the correct payload weight, and FSCaptain will generate a valid manifest that matches that total weight. The payload weight referred to is the payload actually loaded aboard the aircraft's load stations (all of them). It does not matter to FSCaptain how that payload weight

got there – it could have been loaded via the FS menus, or from another loading program. But the correct payload weight you want to use for the flight must be loaded and ready, or whatever is there will be used.

Simulate Load: This option is only effective if the option above "Suppress Auto-Payload" is checked. If you choose to not automatically load a payload, checking this will simulate the boarding process for passenger flights only, showing the count of passengers boarding the aircraft just as if they were being loaded by FSCaptain – but they are not. If you check the "Suppress Auto-Payload" option and leave this option unchecked, the loading process will be nearly instantaneous since fuel is loaded immediately.

Suppress Auto Fuel Load: If this option is checked, FSCaptain will not load fuel on board the aircraft during the loading process. You are responsible for having the correct amount, as FSCaptain will not after it. Your fuel can be loaded from an external loader program, or manually, it does not matter but you must have at least minimum fuel in the tanks to be cleared for departure.

Suppress First Officer: Even if an aircraft has a first officer designated as part of the crew, the FSCaptain first officer will not speak nor provide any other function (such as managing the seat belt sign). It will be as if he or she isn't there at all. This option is most likely to be used if you have add-ons which provide co-pilots that you would rather use in all of your aircraft.

Suppress Flight Attendant: Even if an aircraft has a flight attendant designated as part of the crew, the FSCaptain flight attendants will not speak nor provide any other function (such as cabin service to passengers). It will be as if he or she isn't there at all. This option is most likely to be used if you have add-ons which provide flight attendants that you would rather use in all of your aircraft.

Prompt for PAX Count: This option is only effective if you have checked the "Suppress Auto-Payload" option above. The intent of that option is to accept an already-loaded payload weight as having been produced by another add-on program. Often, such a loader program has loaded a certain number of passengers for a passenger flight, but FSCaptain has no way of knowing exactly how much of the payload weight is passengers. But since FSCaptain records the number of passengers in its logs, you may wish to be sure that the passenger count in FSCaptain matches that of the external program that did the initial loading.

Checking this option will cause a special screen (57 - PAX Count) to appear whenever FSCaptain accepts an already loaded payload. On this screen you can specify, using the number keys on the FCDU, the number of passengers on the flight. You will only see the PAX Count screen if you create a flight using the Destination option from the Dispatch Online screen (ID 10), or you have resumed a flight and the payload weight does not match the original payload weight. You will not see this screen appear if you accept a flight generated by the FSCaptain system, that is, when you are using the Select Flight option from Dispatch Online. Those flights are generated internally and although their payloads will match the already loaded weight the number of PAX generated cannot be altered.

<u>Example of using the Auto-Loader and Crew Options:</u> If you use the FSPassengers program and want to use FSCaptain along with it, your problem is that both provide a first officer, flight attendants, and automatic loading of passengers and payload. The solution is to turn off those parts of FSCaptain that FSPassengers provides (since it is not possible to do the reverse.) A good combination of options to check for FSPassengers compatibility is:

- Suppress Auto-Payload ON
- Suppress Auto Fuel Load OFF
- Simulate Load OFF
- Suppress First Officer ON
- Suppress Flight Attendant ON
- Prompt for PAX count ON

When using FSCaptain with FSPassengers, you may log in to Dispatch at any point before the passengers have all boarded, but you should not use the Destination option to start the FCDU process until all the payload is loaded from the FSPassengers boarding process. Once you use the FCDU to enter your destination to match the FSPassengers destination you will see Page ID 57 PAX Count. Enter the number of passengers for this flight. Once you accept the correct number you will proceed to the normal Flight Review screen. After making any adjustments necessary once you ask for a Normal Load you will go to the Load in Progress screen where FSCaptain will load your fuel. Since you had the "Suppress Auto-Payload" option checked and the "Simulate Load" option not checked, the three rows should show green READY messages within a second or two. You can then proceed to start the flight normally with a pushback or whatever suits your needs. Operate the FCDU normally from this point on.

Another example comes from Multi Crew Experience, a voice control solution. MCE has the ability to add a virtual First Officer to any FS9, FSX or P3D aircraft – one who will reply to your cockpit commands, and while one of the standard MCE FOs sounds awfully like one of the standard FSCaptain FOs, it's possible that Captains might want to suppress the FSCaptain FO in lieu of the MCE FO in all of their aircraft.

ACARS Configuration
These options apply to how the FCDU looks and functions during flight.

Font Name: You may enter the name of a Windows font here and that font will be used to display the alphanumeric characters on the FCDU.   However, many cautions apply, and we recommend you leave this blank and let the FCDU choose its own font. The first important caution is that if you enter a font name here you must spell it precisely. The second caution is that if you don't use a mono-spaced font the display data on the FCDU will not line up properly. There were only three mono-spaced fonts distributed with Windows over the past dozen years or so: "Courier", "Courier New", and "Fixedsys". Of these three only "Courier New" is TrueType font that will adapt to any size you make the FCDU. Both "Courier" and "Fixedsys" will remain the same size. For all these

reasons, we strongly recommend leaving this option blank unless you *know what you are doing* and want to experiment with changing the look of the FCDU.

Enable GPWS: The FCDU has an optional Ground Proximity Warning System built in. By default, this is turned off, as many aircraft have their own GPWS system and you don't want to have two systems making double altitude call-outs for you. However, you can enable it here by checking this box. If you do, then altitude call-outs will be made in any airplane except those that have had their characteristics set to "Equipped with GPWS". In this case, the default FCDU GPWS will not be enabled for that aircraft. This setting can be changed on the Aircraft Characteristics tab for an aircraft type, or on the Load Mapping chart for a specific airplane.

No Reset Warning: When using the Administrator program inside Flight Simulator, whenever you make changes while the FCDU is powered up and logged in, a warning message box is displayed re-minding you that any changes you make in the Administrator will only apply to the FCDU device once it is reset and you log in again. This warning could get annoying once you know this fact well, so here you can stop it from happening by checking this box.

Display Measurements

These settings control how certain measurements are displayed on the FCDU and your Dispatch Releases. There are five types of measurements that you can control:

Weight: Weights can be displayed in Imperial Pounds (LB), or Kilograms (KG).

Speed: Speeds can be displayed in Knots (nautical miles per hour) (KT), or Kilometers Per hour (KMH, or KH as displayed on the FCDU.)

Distance: Distance measurements can be displayed three ways: Nautical Miles (NM), Statute Miles (SM), or Kilometers (KM).
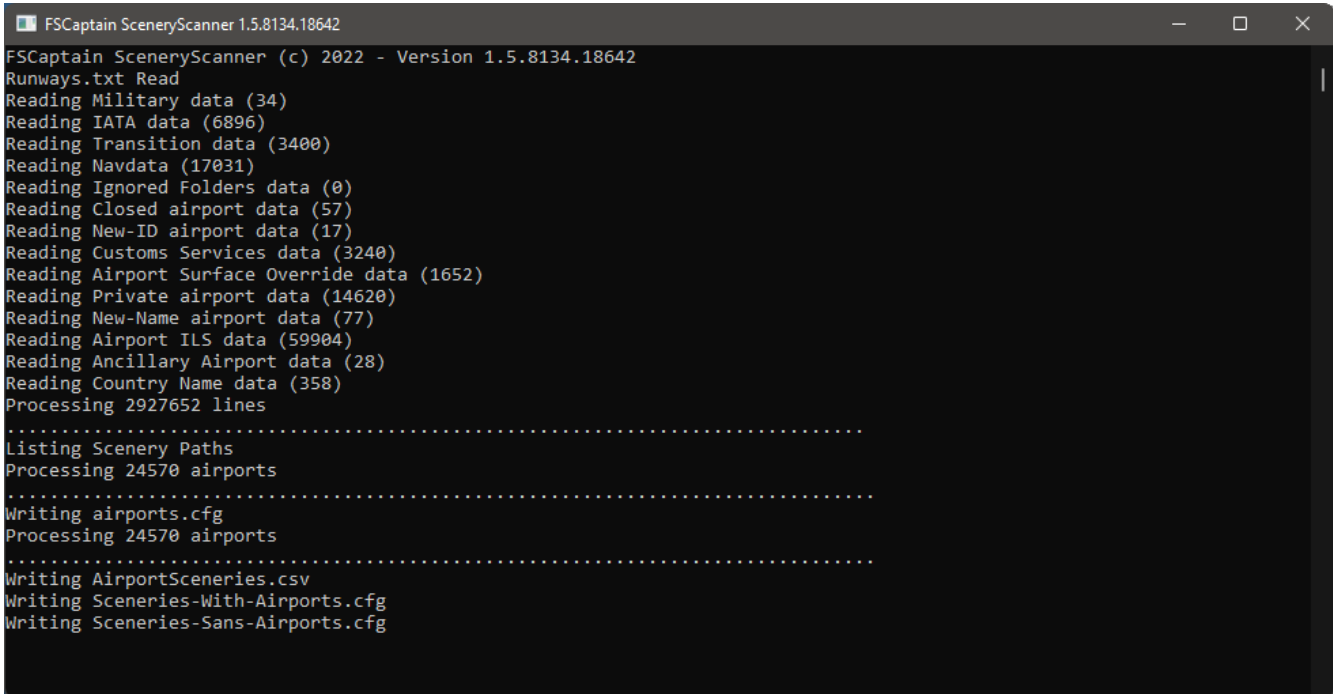
Altitude: You can choose to display altitudes in Feet (FT), or in Meters (M).

Liquids: When liquid measurements must be displayed (for example fuel or oil quantities) you can choose to display them in pounds (LB), Gallons (GAL or GL as displayed on the FCDU), Kilograms (KG), or Liters (LT).

Note that internally, the FSCaptain system keeps all measurements in US standard values (pounds, knots, nautical miles, and feet). Standard formulas are used to convert these quantities to the other measurements for display on the FCDU. Every measurement display will always be followed by its standard two-letter unit designator; for example, 145KT or 16325KG.

Rebuild Airports Database

FSCaptain keeps its own data file of the location and attributes of airports in your Flight Simulator. The database which is distributed with FSCaptain is built from the default airports.


```
FSCaptain SceneryScanner 1.5.8134.18642                                    —  □  ✕
FSCaptain SceneryScanner (c) 2022 - Version 1.5.8134.18642
Runways.txt Read
Reading Military data (34)
Reading IATA data (6896)
Reading Transition data (3400)
Reading Navdata (17031)
Reading Ignored Folders data (0)
Reading Closed airport data (57)
Reading New-ID airport data (17)
Reading Customs Services data (3240)
Reading Airport Surface Override data (1652)
Reading Private airport data (14620)
Reading New-Name airport data (77)
Reading Airport ILS data (59904)
Reading Ancillary Airport data (28)
Reading Country Name data (358)
Processing 2927652 lines
..................................................................
Listing Scenery Paths
Processing 24570 airports
..................................................................
Writing airports.cfg
Processing 24570 airports
..................................................................
Writing AirportSceneries.csv
Writing Sceneries-With-Airports.cfg
Writing Sceneries-Sans-Airports.cfg
```

SceneryScanner requires the Microsoft .Net 3.5 Framework to be installed on your PC. That has been part of the Microsoft OSes since around 2006, so if you are running Vista 32 or 64, Windows 7, or Windows 8, you should have that already installed on your PC. If you're running Windows 10, you can enable Framework 3.5 via the Windows Control Panel – Windows Features – Turn Windows Features On and Off.

In the \FSCaptain\Config\ folder there are some data files derived from some "Aviation Authorities". These data files contain lists of airports that are only available for Private Use, airports which have closed since your simulator was built, airports with defined Customs operations, or airports which may have had their ID change since your simulator was originally built.

These files come in pairs:

- closed_fsc.txt and closed_user.txt
- customs_fsc.txt and customs_user.txt
- new-id_fsc.txt and new-id_user.txt
- new-name_fsc.txt and new-name_user.txt
- private_fsc.txt and private_user.txt

Things change constantly, and if you know of new data, you can add it to the "_user" files – they're there for you to customize your setup. If you wish, you can advise us of any additions that you've made. If we agree that your changes are valid, we could publish them in a future version.

The "_fsc" files have been loaded with data that we at FSCaptain have obtained. They're read-only to prevent accidental editing, but if you wish to dispute an entry that we've made please email us with your information and we'll update our lists as needed.

Other \Config\ files make their own impression on your airport database.

- airports_surface_override.txt
- exceptions.cfg
- ground_times.txt
- ignored_airports.txt

The format of all these files are described in Appendix 5: Special Options and Features.

Run Makerwys as part of Rebuild: This option is pre-selected each time you run the FSCaptain Administrator. If it is selected when you click "Rebuild Airports Database" then the MAKER-WYS.EXE utility from Peter Dowson will run against your active scenery.cfg entries, and create a new set of output files which the SceneryScanner will use to build the FSCaptain airport database.

Running Makerwys.exe against a large set of scenery entries can take time, so if all you are doing is updating some FSCaptain airport data configuration files (such as "private_user.txt") then you can safely unselect this option before clicking "Rebuild Airports Database".

However if you are adding a new airport scenery, then you should leave this option selected so that Makerwys.exe runs before the SceneryScanner. (Also if you intend to use the option to require you to park at a gate or ramp you must use this function if you change your Flight Simulator scenery entries.) Essentially, if you have any modified or added airports in your installation, FS-Captain may not see them or may not see them correctly. Keeping this checked will rebuild the FSCaptain airport database from the data currently active for Flight Simulator.

If Makerwys.exe needs to run the Lorby-SI LorbySceneryExport tool, it will do so.

SceneryScanner will also output extra files that aren't currently used for FSCaptain, but which may be of interest to Captains with large scenery collections. These files are:

- Sceneries-With-Airports – a listing of all scenery layers with their airports listed per layer.
- Sceneries-Sans-Airports – a listing of all scenery layers without airports.
- AirportSceneries.csv – the same data as airports.cfg, but with scenery information included, and renamed for easier loading into Excel or any other CSV file viewer.
-

We've found that disabling scenery layers that are not needed for a particular flight can help in managing a reasonable VAS usage in our 32-bit simulators. The Sceneries-With-Airports file can be very helpful in finding the addon scenery areas that would be needed for a particular flight.

The Sceneries-Sans-Airports file can be used to disable scenery layers to avoid having Make Run-ways.exe scan a layer without any airports (texture-only layers or mesh-only layers, etc.)

Settings

Many of these options apply to how the FCDU functions during flight.

Use Zulu Time: By default, FSCaptain tracks flights with Scheduled Departure and Arrival Times in "Local Time" - that is, the local time of the airports involved. When this option is selected, FSCaptain will use Zulu Time instead. Your schedules will not be altered, so any flight that is scheduled to depart at 0800 (Local) will now depart at 0800 UTC.

If you've had issues in trying to get your local schedule times to be exact, this option allows you to ignore the (un-) correctness of your simulator time zones.

Honor Ground Services: With this option selected, FSCaptain will accommodate certain actions requested of GSX Ground Services and react accordingly.

For example, if all PAX have boarded but refueling or catering is still underway, you will not be allowed to call Clear for Departure. If GSX were to close PAX exits before the FCDU had counted all passengers have been boarded, the FCDU will continue counting.

Some minor FCDU actions will auto-commit in response to GSX actions. If you are on the Ready to Load screen and you start GSX Boarding, the FCDU will advance to the Load Progress screen where you can begin counting PAX.

Likewise, if you follow the directions to synchronize with GSX Refueling (noted on Page 33 of this guide), you'll see the refueling truck arrive and give you the amount of fuel you need to have the proper fuel load for your flight.

Use "Personal Oxygen": In the first few years of FSCaptain, all unpressurized aircraft were required to keep their altitude below 11000ft, else passengers or live cargo would begin to suffer effects of hypoxia. (And the Captain would be dinged considerable points, but at least the Captain always seemed to have oxygen.)

With this option checked – and as long as you are flying for an airline in Economy Mode – your passengers will be supplied with personal oxygen, so you can take your Cessna Caravan across the Rockies with no ill-effects.

Why does this require "Economy Mode"? Because the price of the personal oxygen has to be paid for somehow, and your usage will be added to your Flight Cost. ☺
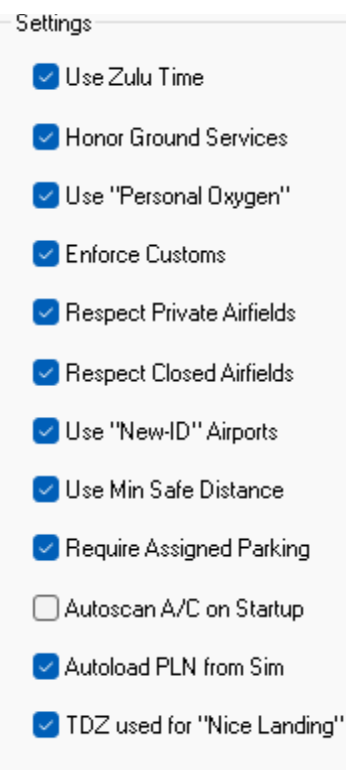
Enforce Customs: Our simulators allow us to fly practically *any aircraft* from *anywhere*, to *anywhere*. Enabling this option limits the choice of airports when an International Flight is being planned.

FSCaptain has a fairly strong dataset of airports which are listed as Points Of Entry, as well as airports which have a limit of how many Souls On Board which they can handle in regards to Customs enforcement. You can make your own edits to this dataset as you wish, and as real-life events change.

The next three options each have their own dataset which like the ones for Customs can be altered to suit your needs. We go into detail about these datasets in Appendix 5.

Respect Private Airfields: There are quite a few airfields in our simulators which are not noted as "Public Use" in real life. With this option enabled, you will not be able to dispatch a flight from a Public Use airport to a Private Use airport – although you would be allowed to dispatch from a Private airport to a Public airport.

Respect Closed Airfields: This option applies to airports which have been deemed as Closed or Abandoned. If enabled, you cannot dispatch to or from such airports – even if they are alive and bustling in your simulator.

Use "New-ID" Airports: Some airports have changed their ICAO ID over the past few decades, and FSCaptain has noted some of these changes. Two prominent examples of this are change from FAJS to FAOR, and the change from KFCA to KGPI. With this option enabled, you can refer to airports using the newer ID – possibly useful when flying in a shared environment – whether it's online ATC or your VA.

Use Minimum Safe Distance: Raise your hands if you've ever taken a simulated aircraft flying beneath a bridge... or swerving around skyscrapers! In real life, an ATP Captain would face serious repercussions from flying too low when too distant from their Departure and Arrival airports.

With this option, you can count on receiving a reprimand from your airline, along with a loss of points for not observing a Minimum Safe Distance from the ground when not taking off or landing.

Details – for example, 'what is *too low*?' and 'what is *too distant*?' – can be found in Appendix 8.

Autoscan A/C on Startup: This setting applies to the Administrator, not the FCDU.... By default, when you start your Administrator, it scans your simulator's stated list of aircraft, and builds a list of available aircraft for you to use. This takes a few seconds for most Captains, but some Captains with large sets of aircraft have reported the startup scan can take a minute or longer.

So if you uncheck this option, on your next startup the Administrator will write its aircraft data to a small file in an \FSCaptain folder, and use that data on subsequent startups.

When you do make a change to your aircraft folders – adding a new set, or removing ones that you don't fly any longer – you can update this data by pressing the "Rescan Aircraft" button on the left side of the same screen.

Autoload PLN from Simulator: With this option enabled, your FCDU will automatically load PLN files that have been loaded into the simulator by yourself or by another add-on. If disabled, you can manually load PLN data from the simulator via the FCDU.

Autoloading PLN data can be helpful if you have an ATC or flight-assist utility that will change your PLN data mid-flight. However if your utility can make multiple PLN changes within a few moments, you make want to leave this disabled and load the PLN data yourself.

TDZ used for "Nice Landing": Traditionally, a bonus for a "Nice Landing" was only given for a landing where the touchdown rate was 200fpm or less. Some Captains argued that such a "soft kiss" touchdown was not realistic, and that slightly greater landing rates were needed.

Still other Captains argued that at least for jetliner flights, landing in a runway's "Touchdown Zone" (TDZ) was much more important – you have more space in which to apply braking / re-versers, and as long as you land with a reasonable vertical rate, that's what many airlines ask for.
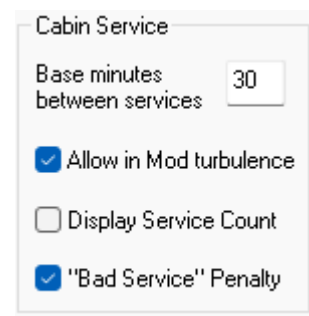
So if you enable this option and land on a hard runway, you will qualify for a bonus only if you have a reasonable landing rate (500fpm or less) and manage to land in your runway's TDZ.

For FSCaptain's purposes, a Touchdown Zone for runways of 6000ft length (or longer) is defined as the first 3000ft of a runway beginning at the defined Threshold. For runways shorter than 6000ft, the Touchdown Zone is the first half of the runway beginning at the defined Threshold.

Always check if the runway has a "Displaced Threshold," noted as "(Offset)" in your Dispatch Release because that area is not part of a runway's TDZ. For example, KBFL 30L has a 3400ft Displaced Threshold, so its 7703ft length would be reduced to 4303ft for landing – a TDZ of only 2150ft!

Cabin Service: There are quite a few factors that guide how passenger cabin service is conducted. One factor – Cabin Service Altitude – is handled on the Aircraft Configuration tab, these are some other ones….

> **Base minutes between services:** The amount of time after the completion of a drink / snack service lasting until the *next* service begins. This time is doubled after meals. This time is

quadrupled between 2200 and 0500 local, with the assumption that most PAX are sleeping. The default value is 30 minutes, and valid values are from 25 to 50.

Allow in Mod(erate) turbulence: The normal maximum level of turbulence at which cabin service can be allowed is "Moderate (2)." Unchecking this option reduces the maximum level to "Light (1)."

If you would rather, you can specify service to continue in Heavy (3) conditions by manually editing the option SERVICE_MAX_TURBULENCE in your options.cfg file.

Display Service Count: By default, the number of Passengers Served and Total Passengers will appear on several FCDU screens while Passenger service is underway. If you're the type of Captain who would like a little uncertainty about this process, you can uncheck this option and the values will not be displayed.

Allow "Bad Service" Penalty: If this option is checked and you have to stop Cabin Service with some Passengers having not received a drink / snack / meal, then you may receive a Penalty at the end of your flight.

Minutes of Reserve Fuel: & Minutes of Holding Fuel:
Our fuel allocation for ATP flights follows a few simple rules. You are allocated enough fuel to:

- Maintain the Minimum Fuel for your aircraft. This is usually 0, but some aircraft do require a minimal amount of fuel to stay in their tanks.
- Fly to your Destination – This is calculated for Climb, Cruise and Descent – either direct, or under guidance of a flight plan. Your aircraft's Performance and Fuel System values are key here. If Upper Level Winds are available, they are also factored in.
- Taxi – These calculations are based upon the size of the Departure and Destination airports are used. You can influence these calculations for individual airports by using the "ground_times" files referred to in Appendix 5.
- Fly from Destination to Alternate – if you have an Alternate airport designated for a flight, you must be able to fly directly from the Destination. The calculations are the same as the "Fly to your Destination".
- Allow for ATC Holding – By default for fixed-wing aircraft, this is 15 minutes at Cruise and none for rotorcraft. You can change those values here.
- Hold in Reserve – This amount of fuel is meant to allow for any unplanned needs, such as diverting around weather, Missed Approaches, and unanticipated headwinds. By default, this allows for an extra 45 minutes of Cruise for fixed-wing and 15 for rotorcraft. You can change those values here.
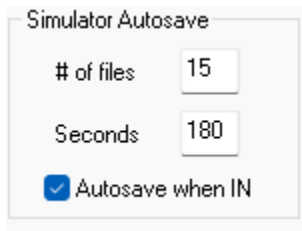
Another setting only editable in your options.cfg file – `DISPATCH_REQUIRES_MIN_FUEL` – allows your Dispatch center to ignore the Holding as well as Reserve requirements. Use this with care, and only when dispatching flights at the outer limits of your aircraft's possible range. (EGLL – YPPH, anyone?)

Simulator Autosave: During a flight, FSCaptain can regularly save both the state of the FSCaptain flight as well as the simulator's state as well. (Just as if you've used the "Save Flight" command from the simulator's keyboard.) Check out the section titled "**Auto saving your Simulator Flight Data**" on page 38 of this User Guide for details.

# of Files: This is the number of autosaved simulator files to generate per flight. The file names will be "Autosave_FSCaptain_#" – numbered consecutively starting with 1 and continuing to this value before wrapping around again. The maximum number of autosave files is 16. Setting this value to 0 will disable all autosaves.
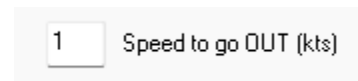
Having only one file is good enough to ensure that your flight data is safe, however many Captains will keep 6 or more autosave files active *just in case* they need to re-fly a tricky approach.

Seconds between autosaves: How often files will be saved, in seconds. The valid range here runs from 30 to 1800, with the default setting being 180 seconds, or 3 minutes.

Autosave when going IN: If you've made a good flight – such as not incurring damage or not having a rough landing – this option will make a separate autosave using a filename of "FSCaptain_IN_[airline shortname]_[aircraft type]". This can be useful if you like to make airline flights with the same aircraft, and you prefer to start your next flight in the exact same aircraft livery at the same airport. (Some simulators will even match your date / time and parking position.)

This autosave file is handled separately from the in-flight autosave files, however you will need to have in-flight autosaves enabled to have this special autosave occur.

Speed to go OUT: This is the groundspeed at which your FCDU will consider you to have gone OUT at the start of your flight.

No matter if you use the built-in simulator pushback function, the ACME pushback, or a third-party pushback, and if you want your Block Time Clock to start after your pushback completes, then set this value to be greater than your pushback utility's tug speed. But not too great!!

If you want your Block Time Clock to start when your aircraft begins to move, no matter which Pushback you use… or even if you simply release your parking brakes and barely crack open your throttle, then set this to 1.

Media Control

From this dialog, you can adjust the volume levels of your FO and FA and your aircraft music library, and can listen to sample audios. You can also customize your MP3 playlist – tagging your tunes to play during BOARD, TAXI, UNBOARD, or ANY ground phase of passenger flights.

Background: During boarding and deplaning of passengers, the FSCaptain system will play background ambiance sounds to enhance the feeling of "being there". You can choose to not play these sounds by leaving this box unchecked.

Monitor PA: This option will allow you to listen to your Flight Attendants' public announcements to the passengers. It is checked by default to preserve the functionality of previous versions where this wasn't an option. If you uncheck this you will still hear all FA communications with the cockpit over the intercom, but not the announcements (except, possibly, faintly through the door.)

Music in sequence: If you have more than one MP3 to play in any given ground phase, you can have them play *in the sequence you've entered here* by checking this option. Leaving this unchecked will result in a random sequence of playback... including the possibility of *repeats*.

If you have an active airline-specific sound file, it will be edited here. Otherwise the general "\Config\Sound.cfg" file will be edited.

Weather and Hazard Options

Many users of FSCaptain also own one or more external weather generator programs to supple-
ment the weather options in Flight Simulator. These programs operate outside the simulator to
download weather information from real world sources and set the weather inside the simulator to
match.

Normally, if no external weather data source is described in this dialog, FSCaptain will use an avail-
able interface program (FSUIPC or SimConnect) to query the weather settings at the FS weather
stations and report that to the pilot on the FCDU. The advantage of this is that the weather report
you see displayed comes directly from the data that's used to simulate weather. The drawback
comes in that often third party external programs do not set weather at all stations but only for
those within a defined range of the user's aircraft. Thus, FCDU weather queries for weather sta-
tions far away (say, the destination airfield) have no weather to report.

FSCaptain has the capability to search the text databases that certain external weather engines have
downloaded to display the weather that they are using, or will use, to set the simulated weather in-
side Flight Simulator. This dialog configures the setup.

Configure Defaults: Select one of the four options above and press this button, and the data items below will be populated with the location and type of the databases, assuming the third-party program was installed in its default configuration. If you installed it somewhere else, you will need to modify the location but this will provide a good starting point.   Note: choosing "Other Weather Program" means you will need to do the entire configuration yourself. If you have a version of ActiveSky other than 6.5 or Evolution, chose Active Sky Next FSX or Active Sky P3D as the best starting point.

METAR / TAF / Winds Data Source: The path and name of a text file that contains a list of weather stations followed by METAR information; or, in the case of the ActiveSky series, a list of ICAO codes followed optionally by METAR, TAF, and Winds Aloft information. FSCaptain will automatically recognize the ActiveSky & REX format. If the file is not in ActiveSky format, it must contain the ICAO of each weather station as the first item on each line, followed immediately by METAR information.   Extra information (such as a time or a blank line) is acceptable between METAR lines.

This Location is: Here you select which type of path the Data Source above is. For ActiveSky, Opus, FSGRW, REX Essentials, or other products that have a METAR text file, select **A text file listing METARs and optionally TAF and Winds Aloft Data**. For users of the original REX, select **A Folder with Text Files containing METARS inside them.**

The "**Configure Defaults**" button will place the default location, name, and type of the data source. You must modify this if your source folder is not in its default location.

The Name of This Data Source is: Enter a short (up to 8 characters) name of the data source, which will be displayed on the FCDU whenever data from this source needs to be identified. This text will only be used for display purposes.

Test the Data Source: This button will trigger a retrieve and interpret function. If the function fails to find and identify the data source as a list of METAR information, you will be told this. If it succeeds you have properly configured your data source.

Initial FCDU Data Source: When you first query weather in the FCDU, this is the source it will use, and the source that will be used to make decisions for the Dispatcher. You can, on the weather display screen, easily change this source. This is only the initial presentation.

Initial Format of Weather Data: Allows weather data to be "descriptive" or METAR format in the earlier FCOM devices. This function is currently under review.
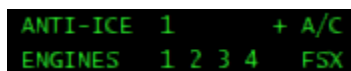
Hazard Pack Enhancements: FSCaptain can "enhance" (make more severe) the effects of certain detectable weather and other conditions you may encounter in Flight Simulator.   Currently the weather areas which receive our focus are thunderstorms and icing conditions. Both these are significant hazards in real world aviation but their effects have been so muted in the Flight Simulator environment that they pose no real threat to pilots. Checking these Hazard Pack (HP) options will add the threat to your flights!

Engine icing can cause engine flameout (HP)

Engine icing is simulated in both FS9 and FSX/P3D. In piston aircraft, this is manifested as "carburetor icing," and will significantly degrade engine performance if not countered with "carburetor heat." For turbine-powered aircraft, engine icing is simulated in the simulator and engine anti-ice switch functions are available… but field research indicates that no matter how long engine icing can accumulate with the anti-ice switches left off there is no adverse effect on the engine performance. FSCaptain restores this hazard by computing a simulated level of engine icing on all aircraft, and when this level reaches an extreme point the engines can fail. Use of the engine anti-ice switches will prevent ice from accumulating, or will clear ice already accumulated. Note: FSCaptain will never fail all engines on an aircraft unless you adjust an options.cfg value to fail the engine on a single-engine aircraft.

Engine ice will build whenever precipitation (rain or snow) is visible to you as the pilot and the external temperature is around the freezing point. The longer you fly (or taxi) in these conditions without turning on your engine anti-ice the higher your possibility of a flameout. If you have not disabled the FSCaptain co-pilot they will warn you verbally when in icing conditions and the engine anti-ice is not enabled.

Note that some aircraft may not have working anti-ice switches. To work correctly a switch must turn on the internal simulator anti-ice signal (or be recognized by an FSCaptain aircraft interface… more on this later). You can test this in the FCDU – in offline mode select the **Information** screen, then the **Systems** screen, then **Systems Page 4**. You'll see the current state of your engines and their anti-icing signals. If an engine is running, its number will appear – if not, the space will be blank. The same applies for each engine's anti-ice system. A number indicates the engine's anti-ice is on, lack of a number signifies that engine is not protected from ice.

```
ANTI-ICE   1          + A/C
ENGINES    1 2 3 4    FSX
```

Here we have a four-engine aircraft, but only engine 1 has its anti-ice systems operational. That could be a problem for our Captain if it's not noticed in time….

Flip your switches and verify if the signals change. If your switches don't work, you can use the "Engine Anti-ice INOP" option on the Aircraft Characteristics tab to turn off this hazard enhancement when flying this aircraft. (You can also send this to the attention of the FSCaptain support staff, and we could consider providing an interface to your aircraft.)

Icing can occur due to clouds (HP)

It's easy to understand that flying through freezing rain or snow would cause an aircraft's engine to ingest 'chilled precipitation.' However there have been real flights where simply by flying through clouds for long periods of time have caused engine icing problems.

This setting will *very slowly* accumulate freezing precipitation if your aircraft constantly flies through clouds without engine anti-icing being active.

Runways can be contaminated by precipitation and degrade braking action (HP)

Although FSX shows wet runways there is no effect on braking. FSCaptain can enhance this effect for both simulator versions by degrading your braking action when runways or taxiways are considered "contaminated." None of the simulators have any internal indication of this contamination so FSCaptain computes this as described here:

Surface contamination is determined by the type and severity of the precipitation reported to the FCDU by the current weather source. If you have configured an external weather program and use that as your FCDU data source, then the METAR data for the airport you are at (or are flying towards once you become airborne) is used to compute the contamination level. If you don't have an external program configured, then the weather data as reported by the simulator is used.

The type of precipitation is either rain or snow. The severity can be trace, light, moderate, heavy or extreme. At the first look at the conditions at an airport FSCaptain sets a level of contamination as a braking condition based on these factors plus some randomness: dry, good, fair, poor, or nil. A dry or good runway has no effect on FS braking action. A fair condition will degrade braking somewhat, a poor condition will degrade braking *significantly,* and NIL will render braking *mostly ineffective.* Braking only applies to wheel brakes: the action of spoilers and reverse thrust will not be affected by FSCaptain at all.

When braking is reported as *fair* you should allow as much as 25 percent greater length for stopping. If *poor,* you should allow at least 50 percent more room assuming you are using spoilers and full reverse thrust. More if these are not available. You should *never* attempt to land on runways reported NIL except in an extreme emergency.   Dispatch will consider reported poor or nil condition as valid grounds to divert to an alternate airport. As Captain, it's your choice to divert or attempt to land. However, you will be expected to land at your destination when runways are reported good or fair and the other weather conditions are above minimums. Factor this into your flight planning if you are assigned an airport with short runways in bad weather.

Braking action applies to taxiways as well as runways. Be very cautious and taxi slowly when conditions are reported less than "good".   Bad taxiway conditions are never considered a reason to cancel a flight by Dispatch.

Runway and taxiway conditions will change over time as airports attempt to clear the runways. You may ask Dispatch for a runway conditions report using the Dispatch Requests screen from the Communications screen.   The amount of time to upgrade conditions will vary by airport size and the type and severity of the reported precipitation. Random factors are always thrown into the conditions and they could degrade rather than upgrade. You must keep updated with the reported braking action reports and roll with the punches.

Use SNOWTAR when available (HP)

Runway contamination is normally decided using the current METAR's precipitation and temperature values to generate an "anticipated decision value for braking". Enabling this option allows any published SNOWTAR or Runway State Group value to override the anticipated value.

Improper wheel brake use can incur damage (HP)

Currently, aircraft brakes are highly simplified in our simulators. Pressing a button, or depressing a pedal, engages the simulator's aircraft wheel brake systems. Aircraft gears, tires, wheels and wheel brakes undergo a tremendous amount of physical force during taxi, takeoff and especially landing.

Checking this option will have FSCaptain monitor your wheel brake use (both pedal brakes and "parking brakes") and possibly damage your wheels & gear if you've abused them. If you would like to test this feature, try landing with your parking brakes already engaged. ☺

Enhanced buffeting with possible engine/systems failures inside thunderstorm cells (HP)

There are thunderstorms in our simulators and they will toss you around a bit, but they are perfectly safe to fly into with any type airplane. This is not true in real life! Therefore, FSCaptain can make thunderstorms much more dangerous. Being "inside" a thunderstorm is detected not by weather data (as in the runway contamination simulation) but by a combination of external conditions around the airplane: 1) you are inside a cloud, 2) there is precipitation outside, 3) the sea level barometric pressure is below 993 millibars, and 4) at least one extreme vertical wind gust has been detected. If any of the first three conditions are not present you are not in a thunderstorm. If all are present, then the enhanced effects are not enabled until the first vertical wind gust is detected. Once any of the first three are no longer present you are not considered inside the cell and the detection of the wind gusts is reset.

When FSCaptain detects you are in storm conditions as defined above (regardless of the **reported** weather) the following things can happen to you: 1) Engines can fail whether piston or turbo (FSCaptain will never fail all engines on a multi-engine aircraft however.). 2) Aircraft systems can fail randomly, particularly the electrical system, and 3) Turbulence effects can be made more severe by uncommanded deflections of the rudders, elevators, and ailerons. The longer you are in the cell the higher the likelihood of failures happening. Getting out of the storm cell resets all conditions and counters.

Engine Malfunctions can occur in CAT (HP)

With this option enabled, turbine-powered aircraft can lose engines in nothing more than Clear Air Turbulence (CAT) as long as the aircraft's "continuous ignition" is not enabled.

Enhanced Structural Ground Ice Simulation with ground deicing procedures (HP)

If you choose to enable this, you are choosing to add a realistic, very sophisticated and potentially deadly layer of realism to your cold-weather flying past anything you have experienced in Flight Simulator. This enhanced option extends both the occurrence and the consequences of icing dramatically beyond what is built into the standard sim. Complex and authentic deicing procedures are a part of this package because when you turn on this option they suddenly become *necessary* for safe flight in any aircraft from two-seated GA airplanes to the largest airliner. Ice can and will kill you – just like in the real world. It must be taken very seriously.

Ice can accumulate during taxi (HP)

Originally, FSCaptain would not add ice to an aircraft once it had started to taxi. However since some very large (and icy) airports have taxi times of 20 minutes or more, this option will allow ice to accumulate if current weather conditions warrant that to happen.

Consider you have departed a cold but dry parking spot and have started your taxi to the departing runway. With this option checked, should precipitation begin during your taxi, your aircraft may begin to pick up ground ice… which would call for a deicing procedure!

Off-stand deicing possible at Designated Deicing Facilities (HP)

Originally, all deicing occurred at the aircraft's initial parking spot – before going OUT. This option adds the possibility of deicing "off-stand" at a remote deicing spot… which we refer to as Designated Deicing Facilities (DDF).

Please read the document *Using Designated Deicing Facilities in FSCaptain* to understand more about this feature. If you would like to define DDFs of your own, the document *Building Designated Deicing Facilities in FSCaptain* will explain how.

The Standard Icing Simulation

Many of us that fly in a simulator don't believe there is any icing simulation beyond those we often encounter which is pitot tube freezing (countered with pitot heat) and carburetor icing (countered with carb heat in piston aircraft.) The FSCaptain weather hazard **engine icing can cause turbojet and turboprop flameout** extends this engine icing hazard to turbine-powered aircraft.

In fact, the last two FS versions (2004 and FSX) and the current Prepar3D simulate both structural icing and propeller icing. Cloud layers in the simulator have an attribute named "icing" which can be set any level of severity from "trace" to "severe." If the ambient temperature outside the aircraft is zero Celsius or below, and the icing severity is greater than "none," invisible ice will form on propeller blades and on the aircraft's structure. The simulator itself does not provide any visual model, but the accumulation of ice will slowly degrade the airplane's performance, and increase stall speed, such that prolonged time spent in severe icing without clearing the ice can result in loss of control and a crash. Leaving an icing layer either by seeking warmer air, or a layer without the icing attribute turned on, will result in the ice melting. The ice can also be removed from propellers (and prevented from forming on them) by the "Propeller anti-icing switch," and structural icing can be prevented or removed with the "structural anti-icing switch" (sometimes called "wing ice'" if those are present in the aircraft.

So many ask why they have never seen these effects even when they fly in winter conditions. There are two reasons. First, the icing attribute seems to be rarely set either by the internal weather engine or by external ones, and *very rarely* is extreme icing set. Secondly, the ice accumulates so slowly that in any setting other than extreme the buildup will be so slow that only a very long flight in constant icing will show the effects in a way that gets the pilot's attention. Couple that with the relative rarity of the icing even being turned on and in practice you're safe from icing in all but the rarest cases.

In the real-world icing is a deadly enemy that every cold-weather pilot fears. In the simulator, it's a paper tiger than can be safely ignored. This option of FSCaptain changes all that!

Ground Structural Icing

In the simulator, you almost never have airframe icing on the ground because it can only be set in cloud layers and these layers don't often extend to the ground. FSCaptain adds ground icing completely outside the simulator. You can accumulate ice while on the ground, and quite often in winter conditions your airplane will have already accumulated a layer of ice by the time you climb in the cockpit. IFR regulations around the world clearly state that you may not take off with ice accumulation on your wings or other surfaces. This ice must be removed. FSCaptain provides highly realistic deicing and anti-icing services at many airports, for you to accomplish this.

Enhanced In-Flight Structural Icing

Once airborne, FSCaptain retains the level of any non-cleared ground ice and can impose restrictions on flight controls and aerodynamics accordingly. FSCaptain also monitors the accumulation of structural ice from the simulator (originating from the presence of the icing attribute in cloud layers and the temperature below zero), and will enhance the effects of this ice so that it realistically accumulates much faster and the effect on flight is much more dramatic.

How do I know I have ice on my airplane?

Before 2020, flight simulators did not model visible ice, and without extensive modifications to the aircraft's model and textures no add-on can show icing on wings and surfaces; therefore, FSCaptain can't show visible ice due to simulator restrictions. If we could we surely would. Therefore, we have a number of warning systems in place for you on any FSCaptain flight. If you have a first officer, they will warn you about the presence of ice with statements to that effect. Your dispatcher is also looking out for your safety and when icing is a hazard you'll receive messages to that effect. In addition, you can perform a contamination check yourself from the **Request** menu if you are on the ground, or on the **Information** screen either on the ground or in the air. On the Information screen, on the left-hand side, there is an item named **Xtra Weight**. If this is non-zero you may have ice on your airplane and this is the weight of it. If you watch it, you will probably see it increase or decrease.

While you are on the ground, the Request screen gives you the option to request deicing services. This will offer a detailed report on the outside conditions and ice on your surfaces and the trend, as well as recommendations on what do to about it.

Weather-wise, FSCaptain considers many factors, from active frost and freezing fog, to ordinary rain and snow in applying ice to your aircraft. Outside Air Temperature, relative humidity, and wind speed also play their parts. Even if the air itself isn't freezing if you land at an airport after flying hours "at altitude" you may have what pilots call "Cold Soaked Wings" where the icy cold fuel in your wing tanks can cause condensation to form… or they could be subjected to non-freezing rain… but in either case begin to collect ice.

Dispatch will place a **Weather Hold** on your flight if you have any ice on your aircraft surfaces and you will not be cleared for departure until it is removed, or you specifically request a release. Attempting takeoff with ice on your wings is very dangerous and can result in a crash. *Don't do it.*

How do I get the ice off my airplane?

If you are on the ground most aircrafts' internal anti-icing systems (if they have them) won't work or are simply not recommended for use on the ground. You will need to request the deicing crew at your airport to remove the ice, and if conditions are ripe for further accumulation, put anti-icing fluid on your surfaces to keep them clear. The subject of deicing is complex and covered in detail

below in the section "Deicing Procedures" but if you don't want to study all these options you can simply accept the defaults provided you by the deicing crew – they know what they are doing.

If you are in the air, you must rely on the anti-icing equipment on your airplane. Not every FS airplane has a structural icing removal system, and even fewer have one that actually works. There are arcane rules and requirements for anti-icing and these are covered below in the section "Structural Anti-icing Systems." We *strongly* encourage you to test the anti-icing abilities of any airplane you use to make FSCaptain flights when you have this hazard enhancement turned on, and if your airplane does not have working systems, avoid or quickly remove yourself from any icing conditions – just like real world pilots do. You can test anti-icing systems by using the 'customized' weather option in Flight Simulator to create a cloud layer with temperatures below freezing and the icing attribute set to 'Severe'. Fly in this layer and observe the 'Xtra Weight' on the Information Page (this can also be accessed from the Offline menu; you don't have to book and fly an official flight.) Flip on your structural anti-icing switch and see if the ice weight returns to zero. If not, your structural anti-icing system is failing. This can be fixed – see the section below, "Structural Anti-Icing Systems."

Ground Deicing and Anti-Icing Procedures

With FSCaptain, nearly every airport in the world has some form of deicing and anti-icing services. This may not be true in the real world, but in this simulator, we are making it so. ACME Industries is a very aggressive conglomerate of course!

There are two phases to deicing: the removal of accumulated ice (*deicing*) and the application of anti-icing fluids to prevent the ice from re-forming while you are taxiing (*anti-icing*). Each phase is separate and can be requested and controlled separately. (You will need to deice before applying anti-ice, obviously.)

Deicing (and anti-icing) services fall into two broad categories: **manual**, and **fluid**. You should think of the manual services as a crew of rampies with brooms and scrapers or heated forced-air blowers who can remove the ice with their individual human labor. This is the service that is present by default at every airport. Larger airports (those with a control tower, usually) have fluid services available. This is usually a truck with a spraying device that can spray heated deicing or anti-icing fluid on your airplane.   In addition, medium sized airports (those with an ILS but without a control tower) often have a combination of manual and fluid services – deicing may be done manually, but an anti-icing fluid can be applied by smaller hand sprayers.

At smaller airports, you will have only manual procedures available. These usually take longer to perform than fluid sprayers, but they work just as well. The airport deicing crew may can spray you with simpler (and less effective) anti-ice fluids also.

You request and control all ground deicing services from the Deicing screen (ID 70). You reach this screen in two ways. If you are placed in a Weather Hold because of structural icing (or even the threat of such), you will be given the option to proceed to the deicing screen. We suggest that you receive any weather release before undergoing deicing as your Holdover Time will start when

the deicing has completed. Otherwise at any time on the ground, once the flight has started, you may navigate to the Request screen (from the Communications screen).

You'll initially see the status of the icing situation – the ambient conditions, whether and how much ice you have on the airplane, the trend (accumulating or melting… and how fast), along with a set of two recommendations, one for deicing and the other for anti-icing. Under different conditions either service may not be needed, may be suggested, or may be required. If required, you will see the recommendation in red and with all caps. This is to get your attention! If either service (de- or anti-icing) is needed you will see a PROCEED option.

The next step is to select the options for both services. The options available will vary based on the airport you are in, and the type of aircraft you are flying. In every case, what you will see is a set of recommendations which you can accept by clicking on PROCEED again. If you wish to modify the options, click on the LSK next to each one to cycle through the possibilities. The result of deicing is that icing is removed from your surfaces. Anti-icing may be available, and if requested a fluid can be applied that will prevent icing for a while. How long is dependent on the fluid and the ambient conditions. This time is referred to as the "Holdover Time" or HOT. This is how much time you have to get to the active runway and take off before your chemically-enhanced immunity to icing wears off, and a lot of factors come into play in its calculation.

Holdover Time: When viewing and deciding on options, you're showed a "projected HOT" in hours and minutes. You can see this change if you switch options. Usually, the default suggestions will result in the longest HOT. What you want to be sure of is, if possible, you get a HOT that allows you time to take off with time to spare.   Available anti-ice fluids vary by aircraft type and airport, and their longevity is largely determined by the mixture. (FSCaptain is proud to use ACME brand fluids.)

Holdover time is *critical to flight safety*. Once you have been issued a holdover time, keep very aware of it. The deicing status screen will tell you how much is remaining, and your co-pilot (if you have one) will warn you if it's getting low. Once the holdover time has elapsed, ice will start accumulating on your surfaces again. Ice accumulation can and will negatively impact the performance of your aircraft. If you can't take off before your HOT expires, you may need to return to a parking space *to remove the accumulated ice and re-apply anti-icing fluid if available*.

Fluids: Type I fluids are considered "deicing" fluids - they remove ice from surfaces. They're often mixed with heated water, and then applied to the surfaces of aircraft. They are thin liquids and so generally they quickly run off, onto the ground. They have negligible "anti-icing" effects.

Type II, III and IV fluids are "anti-icing" fluids. They're thick liquids and thus slightly adhesive when sprayed. These fluids are designed to capture and hold onto water & ice as the aircraft taxis, and then to slide off the surface during takeoff. Ergo, they must be applied to "clean surfaces"

Of these three types, Type II and IV fluids are mostly meant to be used on jet airliners. These types offer the best anti-icing protection because they are very thick, but because of that reason, they should not be applied to aircraft who cannot achieve 100kts on takeoff. In contrast, Type III fluids

are anti-ice fluids designed for aircraft with V_R speeds less than 100kts. Think of Type III fluids as being slightly thinner than II and IV.

Type III fluids could be used on "fast" aircraft, but Type II and IV fluids should not be used on aircraft that can't reach 100kts for takeoff. These types need the force of rapid air movement to clear the aircraft's surfaces before the aircraft reaches V_R speed.

All types of fluids have a value known as the Lowest Operational Use Temperature (LOUT) - that's simply the lowest temperature at which a fluid can safely be used. ACME Brand fluids conform to standard SAE guidelines (hence ACME's Fluid Dynamic Division's new slogan, "We're Standard!") for aluminum airframes and have a LOUT of:

```
Type   I = -35C degrees at a 75%/25% mixture with heated water.
Type  II = -27C degrees at 100%.
Type III = -14C degrees at 100%.
Type  IV = -27C degrees at 100%.
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Your ramp agent and ice crew are aware of these items and will suggest what they feel you should apply given current conditions. However, as Captain of your flight, you may override their opinion. Just remember though, as Captain *you are the one who will bear the ultimate responsibility*.

There is another type of fluid mixture that's known as "Alcohol mix" – it's sometimes available at medium airports, or smaller airports in very northern latitudes. Mixtures are always available in 50, 75, or 100 percent levels. Generally, the higher the level the more effective and long-lasting the fluid will be. For Captains who fly in Economy Mode, it will also be more expensive….

Conditions for Ground Deicing treatment: Certain basic conditions must be met for the granting of deicing and anti-icing services at the airport. If you don't meet these conditions your services won't start (or will be suspended if they have started.) You must:

- Set your parking brake *and otherwise not move*. (Unless parking brakes are INOP.)
- Close all doors/exits. (Unless exit checking is INOP.)
- For on-stand deicing, all engines must be shut off. The ramp workers' union is very adamant about their members not getting limbs and digits nicked by rotating blades. (For designated deicing, turbojet engines may continue to operate.)
- If you are undergoing fluid deicing, you need to extend your aircraft's flaps in order that every nook and cranny of your aircraft's surface is treated with deicing fluids. (Unless flaps are INOP.)
- You may define certain airports to enforce a requirement to have all deicing performed at a "Designated Deicing Facility (DDF)" otherwise you may have ground deicing performed at your parking position. Check the document *Building Designated Deicing Facilities in FS-Captain* for details.

In-Flight Structural Anti-Icing Systems

As previously mentioned, FS simulates structural (wing) icing, and simulates anti-icing. It always simulates icing (given the conditions of the temperature below freezing and the icing attribute set above "none" in a cloud layer) but FS only simulates ice removal under certain parameters. Many FS simulated aircraft (default and add-ons) fail to meet these parameters.

First, the airplane must have a structural anti -icing switch available to the pilot. If such a switch is in your cockpit, it may be labeled various things, like "Wing Anti-ice" or "Boots". The intent is that turning this on will clear the ice weight on the airplane and remove the effects on the flight envelope. If the aircraft's anti-icing system works it will do this, although the effect may be startling when it does ... the sudden removal of a significant amount of ice can cause pitch-ups and other unexpected effects. It's nothing you can't handle if you are prepared for it, so just be ready.

```
ANTI-ICE  1        + A/C
```

You can test your anti-icing switch by using the facilities of FSCaptain. From the **Information** screen (accessible from the Offline menu, or from the **Progress** screen during a flight) you can select **Interface**, and from there **Interface Page 2**. Look for the line ANTI-ICE and if you see a plus sign "+" your aircraft's structural anti-icing is working… a minus sign "-" indicates that structural anti-icing is not active. Flip your cockpit switch and see if the status on the FCDU changes. If not, your switch is a dummy switch. (Only rely on the data presented on the SYSTEMS screen – not the SIGNALS screen.)

The next question is, if the switch works by toggling the signal, does it remove the ice weight? Aircraft that do not have a properly coded AIR file will not remove the ice even if the signal is turned on. Many simulated aircraft do not have this properly coded. If ice weight is not removed by the signal, then your structural anti-icing switch (whatever it is called) might as well be a dummy switch, it is useless.

The only way to test this is to get ice weight on your airplane, and see if the switch clears it. You can do this without flying. At the airport of your choice, get into the airplane, and use the 'customized weather' options of Flight Simulator to define a cloud layer that extends to the surface (that is, below the little airplane on the visual display) and set the 'Icing attribute' to Severe. And be sure your defined temperature is several degrees below freezing (that's 0C or 32F) I also recommend turning the 'rate of change' in your General options of Flight Simulator to 'none' because if you don't FS may take away your icing layer before you can test it – it seems to like removing icing whenever it can!

Once you are in the icing cloud layer, go into the Offline Menu on your FCDU and then go to the **Information** screen. On the left-hand side, there is a value for 'Ice Weight'. If you have successfully gotten yourself into an active icing layer, you'll see this number increasing. The larger the airplane, the faster it will be building. Now once you see that, flip your cockpit's anti-icing switch. Does the ice weight go back to zero instantly and stay that way? If so, you have a working structural anti-icing system on the airplane.

But it didn't work, now what? It is possible this can be fixed but it involves modifications to the airplane's ".air" file, and the nitty-gritty details of doing this is beyond the scope of this manual. As a general guide, search for the "AirEd" program and install it. This will allow you access to the details inside the .air file in a fairly accessible manner.

What you need to look at and possibly modify are the 1513, 1518, and 1519 records. The 1513 record contains two numbers. I do not know what these numbers represent but I know that if this record is missing or the numbers are zero, anti-icing won't work on the airplane. On the default FS9/X airplanes that have the 1513 record, for jets the first value seems to be 1 and for all others it is .15; but it doesn't seem to make a difference that I notice. I always use 1. The second number always seems to be 18. So, if your airplane doesn't have a 1513 record, place one with values of 1 and 18 in the two numbers.

The 1518 and 1519 records are very simple. The 1518 record is a switch with a value of 0 or 1, which enables prop anti-icing. This is a value that is overridden by the setting in the aircraft.cfg. Obviously, set this to 1. The 1519 record controls wing anti-icing. There are three possible values: 0, 1 or 2. Zero means no wing anti-icing is available. I suspect that 1 or 2 selects between the two common anti-icing systems (heaters or boots), however, in actual practice I can't see any difference in the results. So, let's just say that a non-zero value here enables wing anti-icing.

Freeze Ground Traffic Threats

AI Aircraft *in taxi* can be a wondrous thing. No, not really. But they always try their little hearts out to get where they're supposed to be. For the most part, everything runs fine… but then we've all seen two AIs face one another in a game of "deadlock" where neither can move until the AI controller makes one (or both) disappear.

It's less fun when an AI aircraft is facing *you* on a "no side exits available" taxiway. Nine times out of ten, they'll be stopped by ATC, but if you have Collision Detection on (which we advise against because we can't protect against that!) or if you have FSCaptain's "Collisions with SimObjects" enabled (there's more about that on the next page) you'll be stuck waiting for them to disappear while your Block Time clock is running. *And hoping there's no one behind them….*

Our solution to that is to freeze AI SimObjects that could be in danger of colliding with your aircraft. This can allow you to maneuver yourself clear of collision.

This AI Freeze effect applies to aircraft as well as ground traffic – as long as it's AI-driven SimObjects. We can't affect traffic under the control of other add-ons.

There are several options to change the Freeze Protection Radius, the angle at which they are approaching your aircraft, and even the height you are at if you're in a helicopter.

Use A/C Lights to disable Freeze

This option allows you to use your aircraft's Landing / Taxi Lights to enable and disable the "AI Freeze effect." As long as your aircraft's lights aren't INOP, just have one set turned on to have the Freeze effect enabled, and turn both sets off to disable the Freeze effect.

This option can come in handy in certain situations – picture yourself ready to enter the runway for takeoff, but an AI directly opposite you is given clearance first. The AI begins to take the runway, and enters your Freeze Protection Radius, and comes to a halt. Just turn your Landing and Taxi Lights off, and the AI will be freed to proceed. Once they're out of your way, turn your Landing Lights on again and you'll be protected.

Single Engines can fail

Dutch originally wanted to always leave one engine "un-failed" to keep a Captain's options open. But we convinced him to allow a separate option for those Captains who dare to suddenly find themselves in command of a fuel-filled glider. (Or in the case of helicopters, "in command of an autorotating anchor.")

Display Voicetext (via SimConnect)

Sometimes during a flight, there's a lot of noise in a cockpit. The roar and thrum of engines and pumps. The whine of APUs. ATC calling *yet again*. Sometimes it's easy to lose hearing of your FO and FA. What did they say, "Set Landing Lights"? Or was it, "We're starting cabin service"? Of course it might have been, "Cap, I think it's time we ditch this bird".

Well, for SimConnect Captains, it's possible to list what was said on-screen; in a green box with yellow text. That's what we call *Voicetext*.

This option enables Voicetext with default settings. After you've selected this, those settings (how long the text appears, what colors are used, etc.) can be adjusted in your options.cfg file if you desire.

Require A/C Inspections when damage occurs

In some flights, you can have random things occur such as bird strikes, cabin smoke, system failures. In other flights, actions of a Captain might result in things such as a runway overrun, a too-hard landing, or a collision with another SimObject.

With this option enabled, at the end of such a flight, the FCDU will give you a message from your Company detailing how long your aircraft will be out of service for inspection and / or repair.

If your flight had included another leg or two, you will be denied the ability to continue… which is the safe approach to take. Think about it – in real-life, if you were to land after your aircraft's engines had swallowed a few birds, would you want to take off with those engines *not having been inspected – much less replaced*?

Do know that if you're using the FCDU.EXE, there's nothing to prevent you from closing the EXE and restarting it just to continue your flight. ☺

There are more details about Inspections in Appendix 9 of this document.

Collisions with SimObjects are modeled

This is an exciting feature for only FSX and P3D Captains, as it requires SimConnect to be active. It also requires its own section for explanations….

The simulator-based "Collision Detection" feature is very precise in determining if you have collided with something, but has one significant drawback which renders it nearly useless for FSCaptains: should the simulator ever detect a collision, your flight is immediately over, and the simulator prepares to close down / reset.

That puts a damper on any open FSCaptain flight, as some items that can be "collided with" are invisible scenery objects, as well as meandering ground traffic vehicles that could strike your aircraft even before you start your engine! These things are beyond the control of any simulator pilot, which is why we strongly suggest that all FSCaptains fly with the simulator's Collision Detection switched off!

But doing that gives you the ability to taxi through other aircraft and ground traffic. While that may seem unprofessional, there are many instances where the ATC that's guiding ground traffic can set you on a collision course with other aircraft or with ground vehicles! Since they're now harmless, most Captains tend to ignore them if they find themselves in a tight situation.

So, you can now take advantage of the ACME Collision Detection & Consequences (ACDC) feature, what does ACDC allow? Simply put, it can check all surrounding SimObjects and determine if you have collided with them, and then optionally apply various levels of *consequences*.

It doesn't care about 'scenery objects' so if there's a building crowding onto your taxiway, it won't check to see if your wing had sliced through the ground floor. For our initial rollout, it won't consider ground traffic, although we plan to offer an option to do so for a future release. Ground traffic can be highly hazardous!!

And ACDC does have a few "escape clauses" built-in so it can be not as *flight-threatening* as the simulator's collision detectors are.

First, you are in control of how the collision reports are manifested. At a minimum, a red COLLISION notice will appear on your FCDU, and a "bang" audio will play. That's to let you know that FSCaptain feels that there was a collision with a moving object.

Optionally ACDC could generate a series of system failures (engine failures, hydraulic failure, depressurization, etc.). Finally, it could also generate flight control failures (locking control surfaces so they can't move). (You can find these options on the Weather and Hazard Pack dialog.)

Second, for a collision to be recorded both you and the other SimObject must be moving. Why so?? Well, consider that you might find yourself on a taxiway with no outlet when some traffic turns and begins heading your way. The AI driver might stop, or it might not. But what they won't do is move aside, nor retreat. You're both in a deadlock situation!

Whether the AI stops or not, *they want to be where you were,* and *you want to be where they were* – both behind one another. So, if they don't stop *you can*, and then they can drive through you with no penalty. *Contra*, if they were to stop (either by orders from their AI controller or by your FSCaptain Freeze Effect) you could safely drive through them with no collision recorded!

Section 5: Configuring Aircraft

Because FSCaptain simulates an airline dispatch office with its flight planning and monitoring functions, it needs more information about a given aircraft than that provided within the Flight Simulator program.   Having an accurate set of characteristics is vital to the realistic performance of the dispatch office and the proper monitoring and operation of your aircraft systems during flight.

Examples of characteristics are normal cruise altitude, cruise speed, fuel burn in pounds per minute at climb, cruise, and descent. The characteristics also contain a chart for loading fuel and payload into your aircraft, and this chart must match the aircraft's fuel tanks and payload stations for it to be used.

(There is a separate document in your \FSCaptain\Documentation\ folder – "FSCaptain Airplane Configuration How-To". It is a detailed walk-through of how to take a new aircraft and build the configuration & interface files for FSCaptain.)

The characteristics files are separated into three categories. First, the "generic" characteristics for an aircraft type are created and maintained in the \FSCaptain\Aircraft\ folder where you access them from this tab. These are keyed by the aircraft model type code (for example, B734 or C172.) Secondly, there is an "Overrides" folder inside the Aircraft folder where characteristics files can be keyed by the name of the folder where they are defined inside Flight Simulator. This is rarely used but can solve the problem where two different designers of two different airplanes use the same model type code for their airplanes, creating a conflict. The "exception" is placed in the "Overrides" folder. Thirdly, there is a "Maps" folder inside the FSCaptain Aircraft folder where load maps can be defined for specific simulations of the generic model types. Normally this does not have to be used but some aircraft have special payload and fuel requirements. See Section 5 "Load Maps" in this manual for more information on this feature.

This is how the characteristics system works. When you log in to the dispatch office using the FCDU in an airplane, the type and registration number are used to find the characteristics file in the FSCaptain database like this:

The type (taken from atc_model in the aircraft.cfg file) and the registration number are combined and the FCDU looks for that file in the \FSCaptain\Aircraft folder. Example: a Boeing 737 registration number N737AC might have an atc_model of 'B734' (taken from the "[General]" section of the aircraft.cfg file). So, the FCDU would look for a file named 'B734_N737AC.cfg' in the \FSCaptain\ Aircraft folder. If the type from the aircraft.cfg cannot be matched to an FSCaptain aircraft configuration file, , then the aircraft cannot be used with FSCaptain until this is corrected.

There are two sorts of configuration files – *Type Configuration* files and *Override Configuration* files. The Type files match against your aircraft's "[General] atc_model" value, and the Override matches against your aircraft's SimObject folder name....

If the type-reg file isn't there, then the FCDU will next look for a file in the 'Overrides' folder that is named the same as the folder the aircraft is defined in (where the aircraft.cfg is) but with the ex-

tension .cfg and if this file is found it will be used as the characteristics file. An 'Overrides' plus registration file would be the first attempt to map, then just the 'Overrides' name.

If this file is not found then the generic type 'B734.cfg' is looked for in the \FSCaptain\Aircraft folder. If this is not found either there is no record of this aircraft in the database and the FCDU will then create a characteristics file by a special set of default rules and name it using the generic type.

In our example, it will create a file named 'B734.cfg' in the \FSCaptain\Aircraft folder. It will also issue a warning screen saying that it did this, what the file is called, and suggest that you review the file in the Administrator – which is what this section is all about. (These default rules are in the text explaining each data item on this tab, look for the phrase 'by default' in each paragraph.)

Some values from an FCDU-created configuration file will have values of "-1" to indicate they are simply "not set" and so they will not be used for some flight calculations. For example the Max Takeoff Weight on a new configuration file is set to "-1" because that's a value which requires more data than the FCDU has access to. (It's usually best to work with the aircraft manufacturer's published data.) Likewise, the Min and Max Runway Lengths best start with the manufacturer's data.)

Keeping these values at "-1" only means your Dispatch Release won't warn you if you're going to take off too heavy… or take off on a too-short runway.

Now if the FCDU finds an aircraft characteristics file in any of the locations, it will then look for a Load Map file inside in the \FSCaptain\Aircraft\Maps folder that matches exactly the name of the folder the aircraft.cfg file is located in. If this is found the FCDU will use the specifications in that file to override the fuel and payload maps in the generic configuration.

This system is elaborate, but it is necessary to solve the problem of the many different ways that aircraft are designed and packaged in Flight Simulator without requiring the FSCaptain user to tweak their FS data files. The 'Maps' folder inside \FSCaptain\Aircraft allows the database to contain one generic Boeing 737, but many different simulations of it with different payload stations and even different fuel tanks. The 'Overrides' folder solves the problem of two different designers using the same atc_model code in their aircraft.cfg files to represent two different aircraft.

It's important that you have accurate characteristics files available to use with FSCaptain, otherwise, you may find the program not behaving realistically. With bad fuel numbers, dispatch may give you too much fuel – or too little. Without accurate speed numbers, dispatch may expect you to arrive at your destination unrealistically fast – or slow. Without accurate fuel and payload maps the payload and fuel may not be loaded correctly, particularly in complex or deeply realistically simulated airplanes.

Here's the *"Aircraft Characteristics"* tab with an aircraft already loaded, and all values entered:
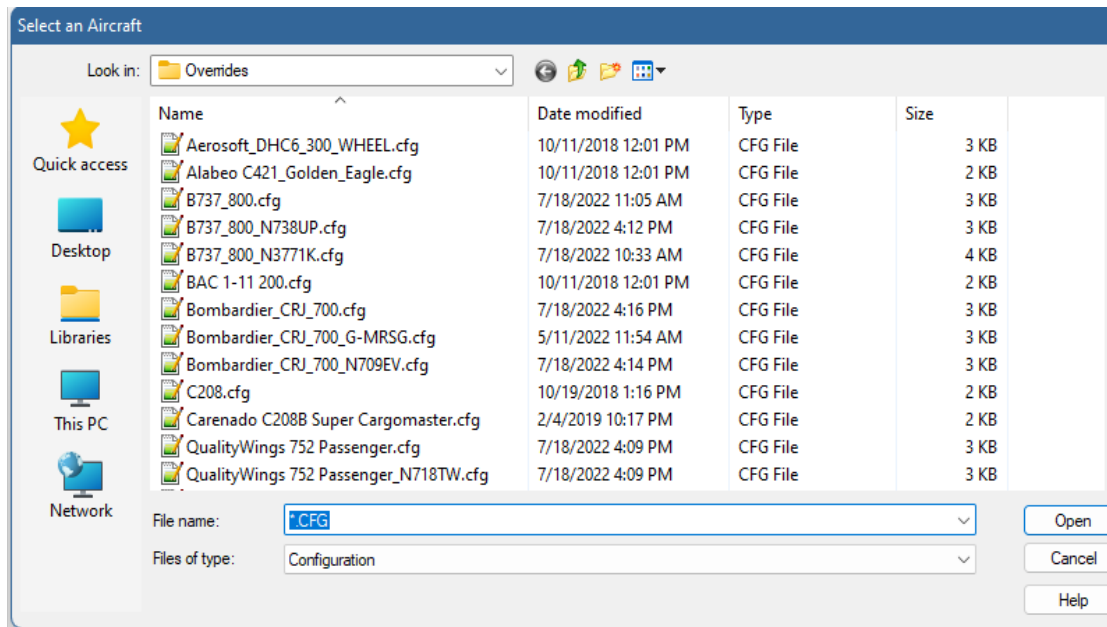

When you first access this tab, it will be mostly blank. At the top, you would see a text box that says "(No aircraft file loaded)" and three buttons: Select Airplane, New Airplane, and Delete Airplane.

We can see the database files and begin to modify an airplane by clicking on "Select Airplane" which takes us to the \FSCaptain\Aircraft\Overrides\ folder:

Here we see several default and third-party aircraft. (The list is alphabetical, so please don't think there's any preference given to any of the publishers….)

For FS9, FSX and P3D Captains, these files are a database of files used by the FSCaptain team (as well as files submitted by other Captains) which works like this:

If your simulator has an Aircraft / Airplanes folder with a folder named "\C208\" inside, it would match our "C208.cfg" file and you would have that displayed in your Aircraft drop-down list on your Flight Dispatch dialog. Likewise, if your simulator does not has an Aircraft / Airplanes folder with a folder named "\B737_800\" inside, it would not match our "B737_800.cfg" file and you wouldn't see it in the Flight Dispatch dialog.

(You may notice files in the screenshot above which have an underscore and a registration number. Those are examples of livery-specific Overrides: targeted to a specific airplane with that registration number. We don't distribute these files, as they are specific to individual Captains… for example, Travis has a default FSX B738 with a livery containing the registration number "N3771K" which matches one of the Override files seen above. It's likely that you don't, so we don't distribute that file.)

Most aircraft should be obvious to you by name. Select a file by clicking on it and selecting "open", as usual.

Once you have selected a file the airplane's data will be populated on the tab. Here we give details on what each data item means to FSCaptain:
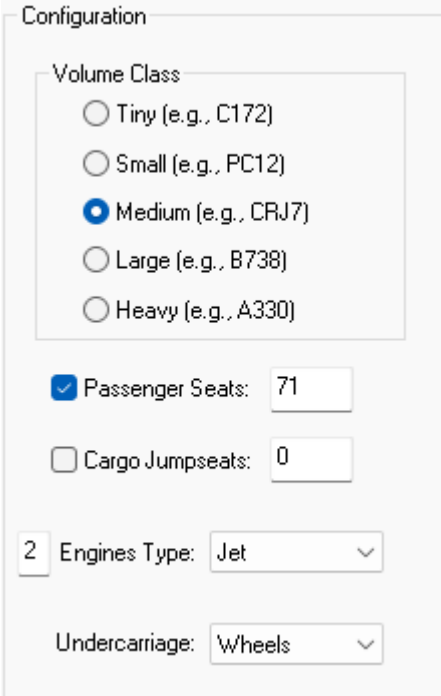
Type: This is the official type code and it should match the type in the filename. By default, this comes from the 'atc-model' in the aircraft.cfg file, or if this is blank from the first 10 characters of the 'atc-type'.

Name: The spelled-out name of the aircraft, so you can verify it's what you really want to modify. By default, this is the 'title' from the aircraft.cfg file, but you can change it. The name is meaningless to the sim, and is only for your attention. Usually if the FCDU creates your Override Configuration file, this could include the airline or livery name, although a generic Override Configuration file is not livery-specific.

Reg: This is an optional item and should only be used if you are intending to apply this configuration file to a single aircraft with a specific tail number. *In addition, you would need this file if you intend to apply a Load Map to such an aircraft.*

<u>**Volume Class:**</u> Different airplane types are obviously different sizes. This is usually signified by gross weight. But what particularly concerns us in our cargo simulation is: how large a container will fit inside this aircraft? For reference, FSCaptain divides the sizes into five broad categories:

- **Tiny**. These are your 2, 4 and 6-seat single engine airplanes or small helicopters. Most are small General Aviation airplanes such as a Cessna 172 or Piper Warrior. Only a few relatively small boxes can fit as cargo, but PAX flights normally only take baggage as cargo.
- **Small**. This has a larger space but it's still a small airplane. It could be a single-engine or a small twin. A larger box or container, perhaps the size of a casket, could fit in one of these. A Cessna 208 or Pilatus PC-12 would be a good example of a small airplane.
- **Medium**.   These sizes are the larger GA airplanes or smaller commercial aircraft. An example would be a small to medium regional jet, or a DC-3, or a Convair CV-580. Quite a sizable container of cargo can fit, but not a large one.
- **Large.** These are large aircraft designed to carry a heavy load of passengers or cargo. All but the largest size cargo items can fit. A Boeing 737, Airbus A320, DC-6, 7, or 9. A Boeing 707 or DC-8 might be the top end of this class. Any standard cargo container can fit in these but not the largest items, such as a truck or tank.
- **Heavy.** These are the big specialist airplanes, such as the 747 or A380.   Almost nothing transportable is too big to fit in these, including trucks or tanks.

This "volume class" is also used in scheduled operations (whether passenger or cargo) to designate what size aircraft is required to fly a specific route. See the next section "*Creating an Airline*" for
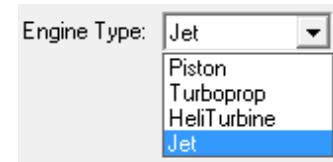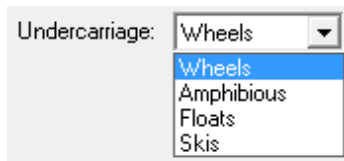
details. By default, the volume class is estimated from the aircraft's empty weight. It is 'tiny' up to 5,000 pounds, 'small' to 30,000, 'medium' to 90,000, 'large' to 180,000, and 'heavy' if over that.

Passenger Seats / Cargo Jumpseats: A type can be configured for passengers, cargo, or both. *The aircraft configuration determines whether a flight will be passenger or cargo.* By default, aircraft are configured with both checked, which means it's "convertible". This means when you fly in this type for a passenger-primary airline (or if your pilot profile preference is for "passenger") you'll make a passenger flight. For a cargo-primary airline, the same type will be flown on a cargo flight. But if the airplane is configured only one way, then that's the type flight it will make regardless of the primary role of the airline. By default, both are checked – the aircraft is convertible.

For passenger aircraft, you can enter number of seats for passengers (of all classes) in the aircraft. This, plus cabin crew and flight crew, are the maximum number of "souls on board" for a passenger flight. For a cargo-only aircraft, this should be zero. By default, this is the empty weight divided by 1,000, but never less than two.

Cargo-configured airplanes often have a small set of seats for ride-along (non-revenue) passengers. It's quite possible you'll be having company employees riding along with you on cargo flights. This is the maximum number. By default, this is the empty weight divided by 5,000.

Engine Type: This designates the type of engine(s) which the aircraft type uses. Select one of the four commercial FS engine types from the list provided. (FSCaptain currently does not model gliders, or Part 460 craft for commercial purposes, so *none* and *rockets* aren't supported.)
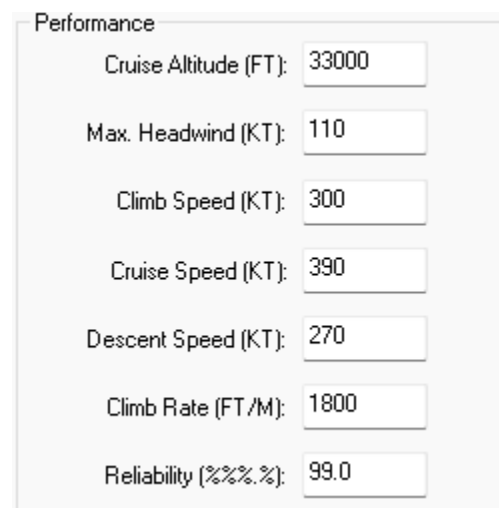
Undercarriage: This is the type of landing gear which the aircraft type uses. By far most aircraft use a type of Wheel, but there are Amphibious (land and water capable) aircraft, aircraft with Floats (water only) and skis. (Currently FSCaptain does not support ski-equipped aircraft.)

Performance

Data in this group is used by your Dispatch Office to calculate the suggested Block Time for all flights in the given aircraft. If you find that you are always ahead of schedule (or late behind schedule!) these are the values you would begin adjusting.

Cruise Altitude: This is the *average* altitude in feet that the airplane *normally* cruises at. <u>It is not the maximum altitude or ceiling.</u> For an unpressurized airplane, this might be

8,000 to 14,000. For low-range pressurized propeller aircraft, it might be 16,000 to 18,000. For higher flying pressurized propeller aircraft, 20,000 to 23,000. For lower flying jets, 25,000 to 29,000 feet. For the big passenger jets, 30,000 to 42,000 feet. Rarely anything flies above that, even though a specific flight might be higher.

Dispatch uses this for accurate Block Time calculations; they must determine how much of a flight's distance is climb, how much cruise, and how much descent. To derive a default, these are the rules: unpressurized aircraft: 8,000 feet. For pressurized aircraft: for piston-powered airplanes it is 20,000 feet; for jets and turboprops it is based on their normal cruise speed: 200 to 300 knots, 25,000 feet; 300 to 450 knots, 30,000 feet; over 450 knots, 35,000 feet.

Max. Headwind: This is the *maximum* headwind *likely* to be encountered by this aircraft at its normal cruise altitude. Dispatch needs this to establish boundaries for flight durations. Since Dispatch will know the normal cruise speed and cruise distance for a flight, it will make a worst-case limit based the maximum headwind, and a best-case limit based on the same velocity tailwind.

These are the parameters which determine the minimum and maximum Block Time that you can specify for a flight in this aircraft. I usually assign 40 for an unpressurized airplane, 50 for the ones that fly in the teens (12,000 to 19,000 feet), 60 for low cruisers (20,000 to 29,000), and 80 for the high fliers.

However if you find yourself flying in very high jetstream speeds, you can enter up to 200 here!

Climb Speed: Dispatch needs to know the speed of the aircraft while climbing, during cruise, and while descending. This is the climb speed. By default, this is the cruise speed divided by 2, although it should be the average climb speed from takeoff to cruise altitude.

Cruise Speed: Dispatch needs to know the speed of the aircraft while climbing, during cruise, and while descending. The proper rule for calculating this data item is: this is the True Airspeed the aircraft normally cruises at the altitude defined above as the "Cruise Altitude", assuming no wind and standard temperature and pressure. This is a crucial item to get right if you expect dispatch to calculate accurate Block Time information. When a flight is planned at other than the standard cruise altitude, dispatch will assume that this is the True Airspeed at the cruise altitude and adjust the True Airspeed for lower or higher altitudes as appropriate.
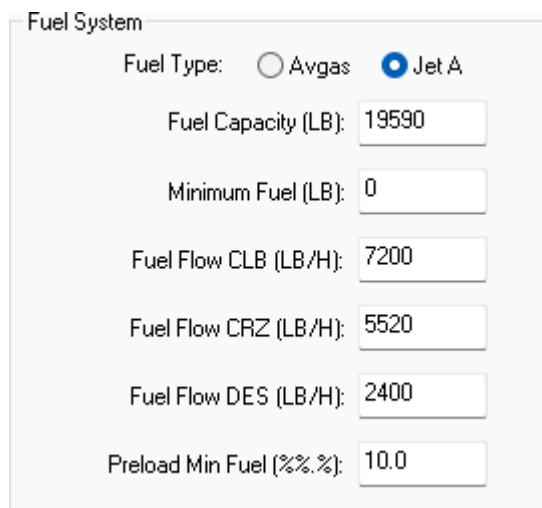
By default, this data is obtained from the "cruise_speed" parameter written by the designer in the aircraft.cfg, unless there are 5 or more flights in the log by this aircraft. If so, the average speed of those flights will be substituted for the speed coming from the simulator. Sometimes these speeds provided by the designers are accurate, other times they are way off. Since this parameter doesn't seem to adversely affect the performance in Flight Simulator, its accuracy is a matter of some casualness for designers. Much of the assumptions we make about defaults are based on this speed, however.

Descent Speed: Dispatch needs to know the speed of the aircraft while climbing, during cruise, and while descending. This is the descent speed. By default, this is 75 percent of the cruise speed, although it should be the average speed while in descent.

Climb FPM: Dispatch needs to know how fast the airplane climbs and descends on average, in feet per minute. By default, this is 700 for unpressurized piston-powered aircraft, 1000 for pressurized pistons, 1200 for turboprops, and 1800 for jets. It should be the average speed for the aircraft from takeoff to cruise altitude.

Reliability: This is a percentage factor that potentially will override the "mechanical failure percentage" on the *Profile and Settings* tab. It is how reliable this particular airplane is, and it's the opposite of the failure percentage: this is the percentage of flights in this aircraft *that will not have a problem*.

When comparing the general failure percentage and the reliability percentage, FSCaptain will take the "more positive" of these two factors to determine the likelihood of failure. So if the general failure percentage is 1.0% but this airplane has a reliability of 98.0% (giving us a 2.0% "unreliability" rate), there will be a 1.0% chance of failure. If on the other hand this plane has a reliability of 100.0% but the general option says 2.0% failure, there will be no failures in this aircraft. It's "perfectly reliable."

Fuel System

The data in this grouping is used by your Dispatch Office to calculate the initial Fuel Loads for each flight in this aircraft. If you find that you are landing heavy… or having to make time-costly refueling stops… these are the numbers that you should look to adjust.

Fuel Type: Check whether this airplane uses Avgas or jet fuel. By default, is comes from the 'fuel_type' variable in the aircraft.cfg file.

Fuel Capacity: This is the total usable fuel in all tanks, in pounds. By default, this is the sum of all the capacity of all the fuel tanks in the aircraft.cfg.

Minimum Fuel: This is an amount in pounds to be added to the normal fuel calculation in order to reserve fuel that should not be used. (Some aircraft need to maintain a small amount in their tanks.) Normally this is zero. This should *not* be used to reserve fuel for holding or for regular Flight Reserve needs – your Dispatch office will handle those amounts for you.

Fuel Flow CLB (PPH): Fuel flow, in pounds per hour, when this aircraft is climbing. By default, this is 'Fuel Flow CRZ' times two, but it should be the average fuel flow during climbout.
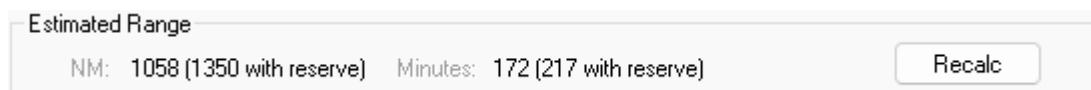
Fuel Flow CRZ (PPH): Fuel flow, in pounds per hour, when this aircraft is cruising. By default, this is derived from the "ESTIMATED FUEL FLOW' variable provided by Flight Simulator.

Fuel Flow DES (PPH): Fuel flow, in pounds per hour, when this aircraft is descending. Together, these three fuel flow factors, plus the climb and descent rate, plus the cruise altitude and speeds of climb, cruise and descent will determine the estimated Block Time and fuel burn for a flight. By default, this is 'Fuel Flow CRZ' divided by 2 however it should be the average fuel flow rate during descent.

Preload Min Fuel: When you initially load your aircraft in the simulator, it will contain a preset amount of fuel - often what's entered in the aircraft.cfg file - which could be more fuel than you would need to fulfill your flight.

Setting this value to a low percentage will drain your tanks when you first log into Dispatch using your FCDU, giving your ACME fueler (or other Ground Service fueling system) ample time to add fuel to your aircraft when its time. The range of values here runs from 7.5% to 45%. This simulates arriving at an aircraft which has flown in to your airport – the tanks certainly wouldn't be empty, and likely they would not be over half full either.

This setting does not apply if you have disabled auto-fuel loading globally or for a specific aircraft via its load map. (More on that later.)

Estimated Range

NM: 1058 (1350 with reserve)   Minutes: 172 (217 with reserve)   Recalc
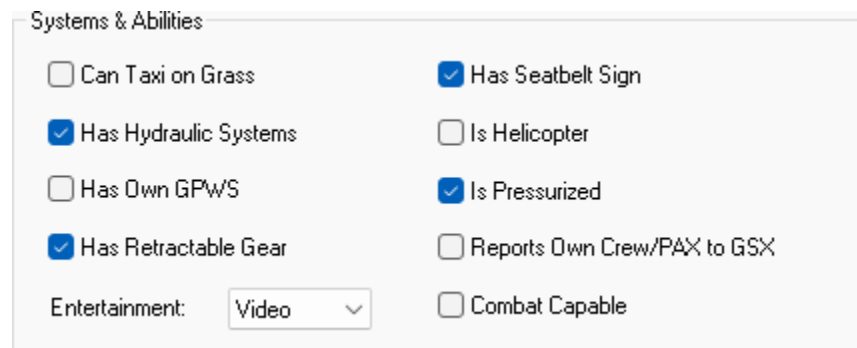
Estimated Range: This is the estimated flight range for the current aircraft in both NM and in Minutes. (Both with and without Reserve Fuel – see the Profile and Settings tab to adjust the possible Reserve Fuel setting.)

If you change any of the Performance and Fuel System values which apply to the Estimated Range, just click on the "Recalc" button to revise these values.

Technical Note: These Estimated Range values are not written to any configuration file – they are the values which Dispatch uses to judge an aircraft's range: First the Climb Distance is calculated using the Climb Rate and the Fuel Flow CLB values. Then the Climb Minutes are calculated using the Distance and Climb Speed. Next, the Descent Distance and Minutes are calculated similarly with their values. Next, any Reserve Fuel Distance and Minutes are calculated. Finally, any Minimum Fuel needs are taken away from the remaining Fuel value, and the Cruise Distance and Minutes are what remain.

Systems & Abilities

These are some of the items and abilities that each Airline Captain must decide for their fleet of aircraft. Each of our simulators can model hydraulic systems or retractable gear, but some aircraft designers will use their own process outside of the simulator. Likewise, some light aircraft cannot taxi on soft surfaces, while other heavier aircraft can. This is where you tell FSCaptain what your aircraft *can do*.

Can Taxi on Grass: Check this if your airplane is authorized to taxi off the hard-surfaced taxiways and runways. Normally, jets are never authorized. Propeller aircraft often are, except for the very heavy ones. By default, this is assumed 'no' for all jets and turboprops, or any aircraft at or over 100,000 pounds.

Has Hydraulic Systems: Check this if the airplane has any hydraulically operated flight systems. By default, this is assumed 'yes' for all turboprops and turbojets, or any aircraft with a maximum gross weight of 20,000 pounds or above.

Has Own GPWS: If this aircraft has its own GPWS altitude call-outs, then checking this box will disable our FCDU call-outs so you don't get repeats. However, caution: If you are modifying aircraft characteristics in the \FSCaptain\Aircraft folder (which is the normal mode) if you click this option then *all* implementations of this aircraft are considered to have a working GPWS. For example, you may have bought an add-on Boeing 737-800 that has a nice GPWS system and you don't want to hear the FCDU call-outs when you fly it. But if you check this box on the "B738" type aircraft, you are saying *every* B738 has a GPWS call-out – which the FSX default 737-800 does *not* have.

If this doesn't matter to you (if you don't fly the default FSX 737-800) then check this. But be aware of this problem. You can enable this option on a specific Override implementation of an airplane.

Has Retractable Gear: Check this if your aircraft has these. By default, this is derived from the simulation variable "IS GEAR RETRACTABLE" and if not available, it is assumed 'yes' for all jets and turboprops, or if any aircraft is 20,000 pounds or over.

Entertainment System: Choose the in-flight entertainment system the aircraft has, if any. Any aircraft that has a movie or digital system is also assumed to have music. Movies and digital are exclusive to one another: 'digital' represents individual IFE devices, whereas 'movie' represents a movie screen shown to groups of passengers. By default, this selects 'none' for any aircraft under 20,000 pounds, 'music' for any above that; 'movies' for any jet aircraft at or above 100,000 pounds, and 'digital' for any jet aircraft at 200,000 pounds or over.

Has Seatbelt Sign: Does this airplane have a seat belt and smoking sign that has been modified to interface to FSCaptain? (See Appendix 3 in this manual for instructions on how to code this interface.) If so, check this, and FSCaptain assumes that you (or your FO) are in control of the belt sign when flying in FS9. If not, leave this unchecked and you won't be penalized for improper seat belt control. If this is checked, then FSCaptain assumes that you (or your FO) can control the sign when flying under FSX.   By default, this is 'yes' for any volume class over 'small'.

Is Helicopter: If this is a helicopter, check this box. Do know that you will have to select an Engine Type of either "Piston" or "HeliTurbine."

Is Pressurized: Check this box if the airplane has a pressure-controlled cabin. FS2004 does not consider pressurization, so FSCaptain simulates this for you. FSX & P3D *does* factor in pressurization, and airplanes can be configured to include it. If you check pressurized here, and your FSX/ P3D aircraft is not configured to properly report the correct cabin pressure altitude, FSCaptain will assume the pressurization system is malfunctioning. (You can correct this by checking the INOP – Pressurization option discussed later. By default, this is assumed 'yes' for all jets and turboprops, or if the aircraft is 100,000 pounds or over.

Reports Own Crew/PAX to GSX: The GSX Level 2 addon allows external programs to specify the number of Cockpit Crew, Cabin Crew, and PAX for flights. FSCaptain can do this for all aircraft, but some highly-detailed aircraft can communicate this data to GSX on their own if the aircraft's systems are used correctly.   If your aircraft can communicate this data to GSX, and if you prefer that your aircraft to do this rather than FSCaptain, just check this box, and on your next flight with this aircraft, FSCaptain will not pass this information to GSX. FSCaptain also will not suppress Crew exchanges on turnarounds, and will not suppress Crew loading on your initial boarding.

Warplane Capable: This is a setting that only applies for SimConnect-32 and SimConnect-64 aircraft that are used in the FSCAI environment. If you use FSCAI, and want to have this aircraft to be considered a ready-for-Combat aircraft, check this. It has no other meaning outside of FSCAI.

Weights & Runways

Max Gross Weight (MGW)— A/C Empty Weight: These values come from either the aircraft.cfg or from the simulator, and help us calculate the maximum load for an aircraft.

Weights & Runways (LB / FT)

Max Gross Weight:	74945	A/C Empty Weight:	43500
Max Takeoff Weight:	72750	Min Takeoff (@MTOW):	5100
Max Landing Weight:	67000	Min Landing (@MLW):	4600
Max Payload:	15960	Max Landing VSpeed (FT/M):	800

Max Takeoff Weight (MTOW) — Max Landing Weight (MLW): Amazingly, these numbers are not stored in the aircraft configuration within Flight Simulator. You must calculate it for each airplane and store it here. For some smaller aircraft, they're the same as the maximum gross weight but for many larger planes they're less. This can usually be found in the aircraft's documentation or on the Internet. FSCaptain needs this number for accurate fuel and runway allowance calculations. By default, the MTOW is assumed to be the MGW of the aircraft, but could be less.

Max Payload: Normally an aircraft's maximum payload is determined by how much weight is available after factoring in the required fuel for the trip. However, you may specify a figure here and this figure will become a maximum amount of payload that can be loaded into this aircraft regardless of all other factors. A zero or any figure less than zero means this option will be ignored. Also, if you have entered Detailed Load Map values, a Maximum Payload that's calculated there will override this value.

Minimum Runway: These are the minimum runway lengths in feet that the airplane requires to takeoff or land. The simulator refers to this as an "ATC suggested runway" but it is often not precise.

Min Takeoff (@MTOW): The takeoff value will be used to caution you via the Dispatch Release if the longest appropriate runway at your departure airport is too close in length (110%). If no runway at your departure airport is long enough to handle your chosen aircraft, it's possible you may be allowed to depart at considerably reduced weight. If you have entered a value for the aircraft's Max Takeoff Weight, your Dispatch office will be able to adjust the takeoff roll length to account for the airport's altitude and temperature. Airports at high altitude (where the air is thinner), with

high temperatures, or with wet runways will require longer takeoff runs. Always be aware of your aircraft's performance!!

Min Landing (@MLW):   The landing value will primarily be used to determine destinations for charter flights: those airports with a runway less than the minimum will not be offered, nor selected as an alternate. Airports with runways within 110% of an aircraft's Landing Runway Length will also be noted in the Dispatch Release. By default, you can specify a flight to an airport without runways of this length, but you will be cautioned on the Dispatch Release. (There is an option that would deny such requests, if you prefer never to take such risks.)
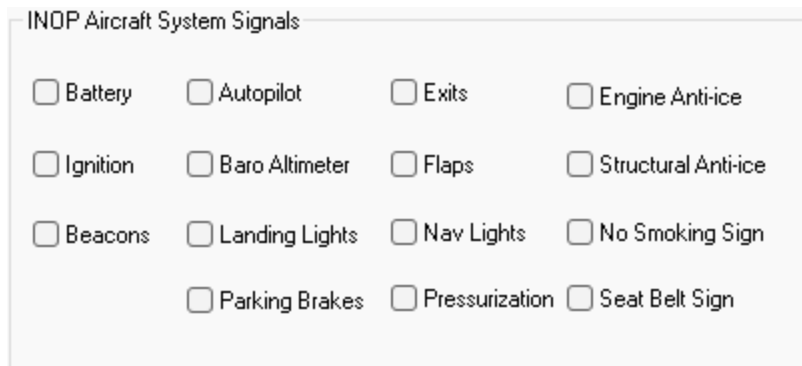
Max Landing VSpeed: This is the maximum vertical speed on landing to avoid an Aircraft Inspection. (If Inspections are enabled... see the Profile and Settings tab to enable Inspections.) The default value for new aircraft is 600fpm for tiny, 700fpm for small, 800fpm for medium, 900fpm for large, and 1000 fpm for heavy aircraft.

Do know that these are simulator-friendly values, because it's difficult to gauge your landing rate just looking at a monitor. If you would rather use real-world values, use 500fpm for tiny and small aircraft, and 550fpm for all others. Landings are the most stressful periods for aircraft, and all of that stress (weight, speed and landing rate) is placed onto the tires and landing gear!

Again, if Aircraft Inspections are not enabled, this value is ignored.

INOP Systems

Some aircraft developers don't model certain aircraft systems in a manner that can be read by FSCaptain. Here is where you can disable our monitoring of such systems on an aircraft-specific basis.

INOP Aircraft System Signals

☐ Battery   ☐ Autopilot   ☐ Exits   ☐ Engine Anti-ice
☐ Ignition   ☐ Baro Altimeter   ☐ Flaps   ☐ Structural Anti-ice
☐ Beacons   ☐ Landing Lights   ☐ Nav Lights   ☐ No Smoking Sign
☐ Parking Brakes   ☐ Pressurization   ☐ Seat Belt Sign

Battery: Some aircraft don't follow the standard simulator signal for the aircraft's main electrical power system. If you're being told to "Power up your aircraft" before loading passengers, check this box.

Ignition: If you use the option "ENABLE_DEFAULT_IGNITION" (see Appendix 5) for turbine-powered aircraft and a particular turboprop / turbojet aircraft doesn't seem to produce an ignition signal, check this option.

Beacon Lights: If your airplane doesn't properly set the FS Beacon Light signal then you can check this option to suspend detection of the signal. This is useful if you are getting penalties. You can test this using the FS signal testing functions of the FCDU – in offline mode select the Information screen, then the Systems screen, and to the third page therein. You'll see the current state of your Beacon Lights signal. Flip your switch and verify if the signal changes.

Autopilot: In order to take advantage of the "I'll Be Back" feature during flight, one requirement is that your aircraft's autopilot has to be engaged.105.94 However if you find that one of your aircraft's autopilot isn't being recognized by FSCaptain, you can check this box and the FCDU will not perform this check for your aircraft.

Baro Altimeter: Some aircraft don't follow the standard simulator signal for the altimeter's barometric setting. If you experience "transition altitude penalties" in an aircraft where you have followed the practice to set standard pressure, check this box.

Landing Lights: The same as for Beacon Lights, except this applies to Landing and Taxi Lights.

Parking Brakes: Another standard requirement is to have your aircraft's parking brakes set before and during loading and unloading. If the FCDU is telling you to "Set your parking brake" while your aircraft has its parking brakes engaged, check this box.

Exits: If you're being told to "Open aircraft exits" before being able to load passengers or cargo, it's likely that your aircraft isn't using the standard simulator signals that indicate if your main exit is open. If that's the case, tick this box and the normal "exit checks" won't occur.

Flaps: This is primarily used to silence First Officer callouts that you have not extended your flaps for takeoff, as well as to remove the requirement for fixed wing aircraft to extend their flaps when undergoing fluid-based Ground Deicing.

Nav Lights: The same as for Beacon Lights, except this applies to Navigation / Position Lights.

Pressurization: It's come to our attention that some aircraft – while pressurized in real-life – have not been modeled as such in our simulators. If you experience "hypoxia penalties" in an aircraft which should be pressurized, check this box.

Engine Anti-ice: If your airplane doesn't properly turn on the "Engine anti-ice" signals inside FS, but you have the Weather Hazard Enhancement to detect engine icing turned on, then you can
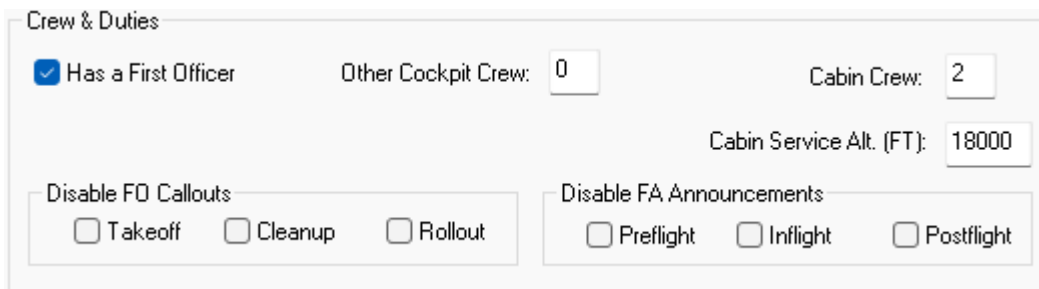
check this option to suspend the effects of engine icing for this airplane. You can test this using the FS signal testing functions of the FCDU – in offline mode select the Information screen, then the second Systems screen. You'll see the current state of your engines' anti-icing signals. Flip your switches and verify if the signal changes.

Structural Anti-Ice: The same as for Engine Anti-ice, except for Structural / Pitot systems.

No Smoking Sign: If your aircraft doesn't provide a signal for the No Smoking signs, check this box.

Seat Belt Sign: If your aircraft doesn't provide a signal for the Seat Belt signs, check this box.

Crew & Duties

While you can Captain a flight by yourself – with no others on board for a ferry or cargo flight… or just you and a group of passengers… you have the ability to call upon a First Officer who will handle certain flight items, and a crew of Flight Attendants who will keep an eye on any passengers, while possibly supplying them with food and beverages.

Has a First Officer: Check this box if you will have a First Officer riding with you on this type of airplane. By default, volume classes 'tiny' and 'small' do not have First Officers, all others do.

Other Cockpit Crew: If this aircraft has any other cockpit crew (for example, a flight engineer or a navigator) you can record the total number of them here. Don't include yourself and your FO!

Cabin Crew: The standard number of flight attendants serving passengers on this airplane. By default, this is the number of passenger seats divided by 50, plus one, except for volume classes "tiny" and "small" which by default are zero. (Intercontinental aircraft usually have a higher crew ratio.)

Cabin Service Alt: This is the altitude, *above ground level*, below which no cabin service will be performed.   In practice, this altitude has several effects:

- Flight Attendants will not automatically start cabin service until you are above this height, and will (politely) refuse any orders to do so below it.
- If cabin service is in progress and you descend below this height, the service will be terminated (not suspended, *but terminated*, often provoking passenger complaints.)
- When climbing above this height, your lead Flight Attendant will announce to any PAX that "we are now climbing towards our cruise altitude." (A separate announcement, only on turbojet aircraft, "you are now allowed to use your portable electronic devices" is triggered when the aircraft ascends over 10,000 feet pressure altitude.)
- If your First Officer oversees the passenger signs they will ensure that the Seat Belts sign is turned on below this height.
- When descending below this height your lead Flight Attendant will make an announcement, "we are now descending towards our destination, please insure your seat belts are securely fastened."

Disable Takeoff Callouts: Some detailed aircraft (or other add-ons) can have their FO make V1/V2/VR calls, as well as calls to set flaps, and calls of "eighty knots" on takeoff. Checking this box will disable an active FSCaptain FO from making these calls.

Disable Climbout Callouts: Some detailed aircraft (or other add-ons) can have their FO make "gear up" calls, as well as calls to check / raise flaps on climbout. Checking this box will disable an active FSCaptain FO from making these calls.

Disable Landing Callouts: Some detailed aircraft (or other add-ons) can have their FO make calls of "eighty knots" and "sixty knots / sixty knots, reversers off" on rollout after landing. Checking this box will disable an active FSCaptain FO from making these calls.

Disable Preflight Announcements: There are some announcements which the Chief FA makes which can be suppressed (PAX welcome, safety briefing, "prepare for takeoff") and with this checked, the ACME FA will not speak them. However, some emergency-related announcements ("The Captain has aborted the takeoff!") will be made.

Disable Inflight Announcements: There are some announcements which the Chief FA make that can be suppressed () and with this checked, the ACME FA will not speak them. However, some emergency-related announcements (asking for a Doctor, etc.) will be made!

Disable Postflight Announcements: There are some announcements which the Chief FA makes which can be suppressed ("we have arrived at our destination") and with this checked, the ACME FA will not speak them. However, some emergency-related announcements ("Evacuate the aircraft!") will be made.

The differences between "Type" Configuration vs. "Override" Configuration Files

To accommodate all of the aircraft in the FS9 – FSX – P3D simulators, we've come up with a system that looks complex at first but which soon becomes second-nature, and best of all... allows for tremendous flexibility in virtually every case we've ever seen. You may have read mentions of "Type" files and "Override" files. What are the differences between them, and is one *better* than the other?

"Type" Configuration files are matched to aircraft by the aircraft's type – a small alpha-numeric identifier which represents an aircraft's manufacturing type. So an Airbus 321 has a type of "A321". A Cessna 172 Skyhawk has a type of "C172". Etc.

Type Configuration files serve as a template for all aircraft which share the same "type" – the value found as the "atc_model" in an aircraft.cfg file. So the same A321 "Type" Configuration file would apply the same values to the FSX default A321 as it would to any study-level A321 you would have.

Conversely, "Override" Configuration files are linked to your aircraft's containing folder name. So you can have one Override Configuration file for study-level A321 #1, a different Override file for study-level A321 #2, and even a separate Override file for the default A321.

Do be aware that many third-party aircraft developers will separate different models of their aircraft into different folders. The differences may be engine types, undercarriage types, or PAX and Freighter types. They could even be different variants of the base type, such as a "-100", "-200" and "-300" which would differ in size, PAX and payload, and fuel capacity.

If you use the Aircraft Selector to open the \FSCaptain\Aircraft\ folder, you will see a list of Type Configuration files like this one here.

You may notice files that have similarities in their names, such as "ATR 72.cfg" and "ATR_72.cfg" together with "AT75.cfg" their real-world "type". This is due to some simulation aircraft developers using non-standard conventions when making their aircraft.cfg files. In cases such as this, there is one type file with the data, and other files act as an *alias*... pointing FSCaptain to the real data. So if you try to open "ATR_72.cfg" the Administrator will actually open "AT75.cfg" for you to edit.
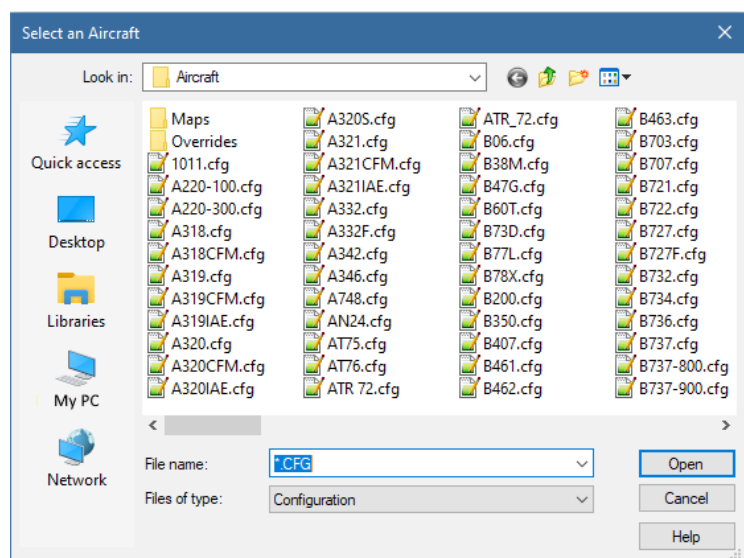
Please Note: You only need to edit a Type Configuration file only under special circumstances. If you've already added an Override Configuration file and you need to make edits in order to change Administrator and FCDU behavior, you need to edit the Override file – not the Type file!

Before FSCaptain 1.8.3 SP, the FCDU would read an Override Configuration file if it was present. But if one was not present, the FCDU would read a Type Configuration file. In several cases, this lead to Captains adjusting values in their Type Configuration file depending on which aircraft variant they flew. That's now changed….

The FCDU now only reads Override Configuration files – if there is not one present for your aircraft, the FCDU will generate an Override Configuration file with data from either a matching Type Configuration file, or plain old dummy data.

It's up to you to check the data in all new Override Configuration files and correct anything that's wrong. Don't worry, you'll get a notice on your FCDU screen when you log in with an aircraft where the FCDU has just created an Override Configuration file!

Section 6: Load Maps

Aircraft characteristics files provide the basic information that FSCaptain needs for its dispatcher functions to accurately construct a flight profile. Another function of the program that needs extra information beyond what Flight Simulator provides is the automatic loading process.

Default load rules are simple, and every airplane has enough information to use them without a special load map. For fuel, every tank defined on the aircraft (in the [fuel] section of the aircraft.cfg) is filled evenly until the required amount of fuel is loaded. For payload, every payload station is filled evenly until the total payload is loaded. Simple enough. But sometimes, this results in a poor distribution – often on the more sophisticated simulations that go for maximum realism over simplicity.

A fuel example: A real Lockheed Constellation L1049G aircraft has nine fuel tanks – four main tanks (one for each engine), a center tank in the fuselage, two auxiliary tanks, and two tip tanks. The fuel protocol for loading the real Connie calls for the four main tanks to be filled equally, then the two auxiliary tanks equally, then the center tank, and then finally the two tip tanks. Filling all nine tanks evenly with the total fuel load using the default loading rules simply won't work for an accurately simulated Connie.

A payload example: some designers of simulations allocate detailed payload stations containing things like pilot, co-pilot, cabin crew, and even oil and other consumables. Normally fixed weights are provided in the aircraft.cfg for these stations which are not intended to hold actual payload. But the default rules would clear these payload stations and fill them evenly. In the case of the DC-3 for example, filling the very up-front "pilot" and "co-pilot" stations with an even distribution of the revenue payload would not just be unrealistic but would heavily front-load the airplane – dangerously so in a DC-3 which is prone to tipping over.

These reasons and more are why we have load maps for payload. Not every aircraft simulation needs a load map, but some do and all but the very simplest would benefit from having a load map defined.

An FSCaptain load map allows for three levels of load control: simple, medium, and very precise. It also allows for some special options to override some features of an airplane that are defined in its standard configuration.

If you are not flying passenger aircraft with the Economic Mode activated, if you don't want to use exit mapping, if you don't care how loaded fuel is distributed, and if you plan to manually load your aircraft yourself, then your need for a load map for your aircraft is not as great.

This is a view of the Load Map tab:

There are five buttons which allow you to control the current load map:

Clear: All data on this dialog is cleared.

Load: A file selection dialog will appear allowing you to select an existing load map and fetch it into these data items to be potentially changed and saved.

Import: Calls up a dialog allowing you to import default load maps from airplanes defined inside your flight simulator installation, which you can then modify and save as a load map. The proper filename will be placed for you based on the folder name where your aircraft is defined. The import function makes this a fairly easy process, and is described later on in this document.

Save: Saves the currently displayed load map data into the file named in the "File name" data item, with the ".cfg" extension added, in the \FSCaptain\Aircraft\Maps" folder.

Save As…: This allows you to save the currently displayed load map data into the Pax, Cargo or Combi sub-folder.

These are the data items on the dialog and how they are used to make a load map:

A load map must be named exactly the same as the folder where its aircraft is defined.

Filename: B737_800

Type: B738   Reg: Name: Boeing 737-800

Filename: This is the name of the load map file. In order to be seen by the FCDU, it must match *exactly* the folder name of the aircraft it is intended to apply to. The Save function will automatically add the extension ".cfg" when the file is saved, and the Load function will remove that extension when a load map file is loaded using the Load button.

Load maps are stored in the "Maps" folder inside the regular \FSCaptain\Aircraft folder where the normal characteristics files are stored. It is crucial that they be named correctly — named for the folder where the specific simulated aircraft they apply to is defined (that is, where the aircraft.cfg is placed.) For example, the MAAM-SIM DC-3 has several variations of the MAAM-SIM DC-3. One goes in a folder named "**MAAM-SIM C-47A – Cargo**", another in one called "**MAAM-SIM DC-3 Passenger**" and so on. In order to have these simulations of the DC-3 load properly, we need to have a load map for each folder, named for that folder but with the extension .cfg. Thus, for these two folders we would have a "**MAAM-SIM C-47A – Cargo.cfg**" load map and a "**MAAM-SIM DC-3 Passenger.cfg**" load map. And six others, one for each of the eight folders the MAAM-SIM variations are distributed in.   The import option on the Load Maps dialog makes will place the correct name in this field for you.

Type: This is the type of aircraft this load map is normally attached to. When the FCDU locates a load map that matches the aircraft's folder name, this type code should match the model type code used to retrieve the airplane's generic characteristics file, but it is not required to match.

Reg: This is an optional item which would apply this load map to a single aircraft by its "atc_id" designation – its "tail number." This would be only used in a highly particular situation where one of your aircraft's liveries has a different set of layout, system or fuel requirements.

You would also need an Override Aircraft Configuration filename with a matching Reg value in order to have a Reg-specific Load Map to be used. It cannot be recognized without such an Override file.

Name: An optional text name for this load map. You would normally use this to specify which specific simulation this load map applies to. Often, this is similar to the "File name", but it doesn't have to be. For example, the default File value for the FS2004 default 737 is "B737_400" but the name here could be more informatively written as "Default Boeing 737-400". This name does not influence your simulator. It's just to help you select the correct Load Map at times.

Payload Stations: This is a table of all the payload stations FSCaptain will automatically load arranged in six columns:

Total A/C Stations: 9

Payload Stations

#	Active	Pri	Limit	Description	Type	Units	Size	Name	Value	A/C Stn
0	☑	0	170	Pilot	C	1	170	Seat	170	0
1	☑	0	170	FO	C	1	170	Seat	170	1
2	☑	0	680	Crew	C	4	170	Seat	680	2
3	☑	1	2720	Business	J	16	170	Seat	0	3
4	☑	1	4080	Comfort Coach	W	24	170	Seat	0	4
5	☑	1	10200	Coach	Y	60	170	Seat	0	5
6	☑	1	10200	Coach	Y	60	170	Seat	0	6
7	☑	1	3310	Forward Baggage	G	10	331	Bulk	0	7
8	☑	1	4520	Aft Baggage	G	10	452	Bulk	0	8
9	☐	0	0			0	0		0	

| Previous 10 | Next 10 | | Compute --> | Static Load (lbs): 1020 |
| Max Payload (lbs): 34390 |

#: The number of the FSCaptain payload station, beginning with 0. (The reason this value begins at '0' is to better match the Aircraft's Station number from the aircraft.cfg file which start at '0'.)

Active: Every payload station defined for the aircraft needs to have its active box checked – even if you don't want to load anything into it.   Stations are numbered sequentially starting with zero and on up to a maximum number for each aircraft. This version of FSCaptain will support up to station number 300.   If the aircraft.cfg skips some station numbers, you must ignore that and assign the stations in sequential order here from zero to the highest without any gaps.   The simulator also does this and assigns stations sequentially without skipping any regardless of the value of X on the station.X line and FSCaptain must match to the internal FS load station lineup.

Priority: Priority numbers range from 1 (highest) to 9 (lowest). All priority one stations will be filled before any priority 2 stations are loaded, and so on. By default all stations are priority one, but you can change this to set up a priority system with limits. See the next data item. *If you don't want a station to be loaded at all, place a priority of zero on it.*

Limit: If you use a priority scheme with more than one priority, you must place limits on all the stations that have any priority other than the lowest. This is because payload stations are not defined with any limit inside FS. For example, in order to load any priority 2 stations, you must set limits on all the priority 1 stations or they will never fill up, leaving nothing for the other stations.

Description: This is an optional text description of what this station contains.

Type: There are three broad types of weight: static weight that is present in a fixed quantity on every flight, passenger weight, and cargo weight. The code in this field defines the type of weight for each station:

> C – Crew (or Constant): this weight is specified here in the units multiplied by the size, and this fixed weight will be included in any manifest using the aircraft this load map is attached to.
> F – First class passengers only in this station.
> J – Business class passengers only in this station.
> W – "Comfort Economy" passengers only in this station.
> Y – Economy (coach) class passengers only (the default for PAX type stations.)
> G – General Cargo only. This will include baggage (if any) and any PAX weight that is included on the flight but which enough PAX capacity is not built in (this is most likely with ride-along passengers on cargo-configured airplanes.)

(You can see these codes in a tooltip if you hover over the column title: "Type".)

Units: The number of units this station holds. For types F, J, W and Y this is the number of passenger seats. For type C this is typically the number of crew seats (but it could be defined differently in special cases for other fixed weights.) For type G it is the number of cargo containers that will fit in the station.

Size: This is the maximum weight, in pounds, of each of the units at this station. For PAX (types F, J, W and Y) this should be a standard usually between 170 and 180. If you plan (or need to) use a loading system outside the FSCaptain auto-loader it's very important that this number match up to the standard number used by your auto-loader or you will find it difficult to reconcile the weights actually loaded versus what is planned. For example, the PMDG 737NGX loader uses a standard PAX weight of 175 pounds whereas the PMDG MD-11 and 747-400 both use 180.

For type C or G stations the important factor is the maximum weight that is defined by the number of units multiplied by the size. For type C stations that number will be placed in the station by the FSCaptain auto-loader and nothing will be added to it. For type G stations that number is the maximum capacity of the station. In computing random payloads for flights, the total capacities of all type G stations will be the maximum cargo capacity of the airplane regardless of any other factors. You will not be able to specify a cargo load greater than this total.

Name: This is the name of the unit that fills this station. For PAX type stations this will be "Seat" and that is the default for PAX types if left off. For crew, it may be "Seat" or some other name, for example a simulated airplane that defines an oil quantity in a payload station would be type C but "Seat" would not be appropriate for that station. For cargo, this should be the name of the standard container. "Pallet" or "Box" are both common, as is "Crate". But we encourage you to use standard modern freight container types where appropriate, for example "LD1" or "LD3" depending on

the size and configuration of the station. An internet search for "Air freight container types" will give you good guidance on this for your aircraft.

The next three fields are used to precisely control the loading of your payload stations. By placing data in any of these for any station you are choosing to exercise precise control. *This means you must define every station using precise control.*   You can't mix the two levels. Precise control overrides the standard loading mechanism of FSCaptain with a different model that is more complex and has realistic restrictions.   The limit and priority still apply but the fields here will place restrictions on the contents of the station by type. If precise control is defined for an aircraft the dispatch release will compute and print a "Load Plan" for the stations and the auto-loader will follow this plan (or you can follow it yourself with an external loader.)

Value: This is a read-only data item that will have unique numbers when a default load map is imported from the aircraft data inside flight simulator, being the weight value programmed into the station by the designer. Often, these are default weights which are intended to be overridden. But in some cases, they are never meant to be altered – as in the example of the MAAM-SIM DC-3, which expects the weight of the first three payload stations to not change (it actually reduces station 3, oil, as you fly!) Seeing this number will help you compute the "Static Payload" number, below. When loading a preexisting load map, the static weight of the station is used.

A/C Stn: This is the number which must correspond to the station number defined in the aircraft.cfg file.   It's critically important that you do not attempt to define stations here that aren't defined for the aircraft. FSCaptain will not create load stations for you. They must exist in the aircraft.cfg file. You will get an error message if you try to auto-load an airplane when its FSCaptain load map includes stations that do not match its aircraft.cfg configuration.

At the bottom of the payload station table are two read-only data items and three buttons:

Previous 10 & Next 10: These buttons advance and retreat ten stations per dialog, From Station 0 to 300.

Compute - - >: This button recalculates the next two items – the aircraft's non-revenue static payload, and the aircraft's maximum payload.

Static Load: This is normally the weight defined in stations that should not be changed by the auto-loading process (that is, the stations with a priority of zero). You can add up this field by pressing the "Compute" button in front of it. This will simply add up the station's values that are currently coded with a priority of zero. This number will be used by dispatch in accurately calculating payloads for your flights by subtracting this number from the payload weight available for loading.

Max Payload: Normally, this is the sum total of all active load stations. However you can edit this to lower the value if your aircraft can't carry the entire possible load of all stations. For PAX aircraft, you are limited to the minimum of a full PAX load plus the maximum possible baggage

weight. For Cargo aircraft, you're limited to the Static Load of the aircraft. (*Yes, that means your cargo aircraft couldn't carry any cargo – if that's what you desire.*)

Fuel Tanks: This is a table of the eleven possible fuel tanks defined in Flight Simulator. Most airplanes don't use all of these, in fact most use only two or three of them. There is no requirement that a particular simulation of a real aircraft match its simulated fuel tanks to the real ones on the airplane. By default, flight simulator draws fuel from all defined tanks equally until all tanks are dry. This allows the pilot of the typical airplane to not worry about fuel at all as long as he or she has enough to get to their destination. Often, designers will simplify the fuel tank situation on an airliner. When this is done, the default rules usually work well and no fuel load map is necessary.

Fuel Tanks	
Tank	Priority
☑ Center 1	2
☐ Center 2	
☐ Center 3	
☑ Left Main	1
☐ Left Aux	
☐ Left Tip	
☑ Right Main	1
☐ Right Aux	
☐ Right Tip	
☐ External 1	
☐ External 2	

But other times, a complex fuel system is simulated accurately, with pumps and crossfeed switches, and therefore the loading of the fuel tanks must be done realistically. This involves filling the tanks in a defined order so they can be drawn down in the correct order.
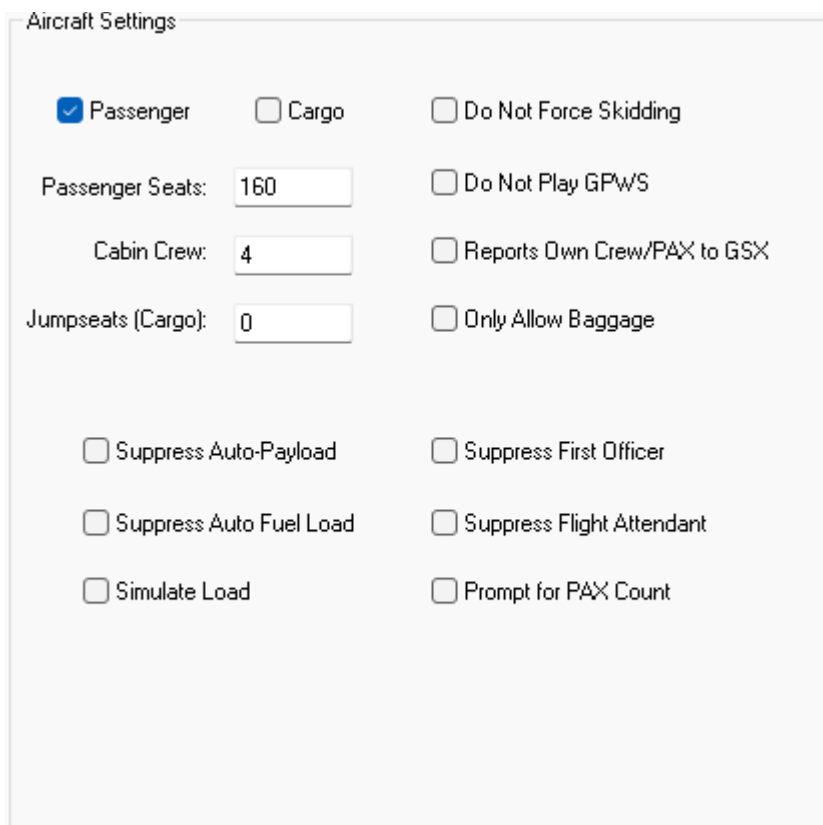
Tank: The eleven historic FS fuel tanks are listed, each with its flight simulator name and a check box next to it. You must be sure that all tanks that are defined in the [fuel] section of the aircraft.cfg for this airplane simulation are checked, and none are checked that aren't defined there.

If the mapping here doesn't match the tanks in the simulated airplane's aircraft.cfg this load map will be rejected by the FCDU and default mapping used instead. *Important note:* These fuel tank names may or may not correspond to the names of the tanks in the real airplane. Don't be thrown by this. Often to construct a proper priority sequence you must understand which simulator tanks are representing which real tanks. This can only be done by studying the documentation that came with the simulated aircraft.

Priority: This is the priority load order, from 1 (highest) to potentially 9 (lowest). All priority 1 tanks will be filled before any priority 2 tanks, and so on.

Aircraft Settings: This is a set of fields which, if specified, will overrule the corresponding data items on any aircraft characteristics for this airplane. This allows you to change some of the characteristics based on different situations.

Passenger or **Cargo:** Check one or both to specify a configuration for this simulation that will override the configuration specified in the generic characteristics. You should save Passenger-only load maps in the \PAX\ subfolder, Cargo-only load maps in the \Cargo\ subfolder, and "Combination" load maps in the \Combi\ subfolder.

Aircraft Settings

☑ Passenger   ☐ Cargo   ☐ Do Not Force Skidding

Passenger Seats: 160   ☐ Do Not Play GPWS

Cabin Crew: 4   ☐ Reports Own Crew/PAX to GSX

Jumpseats (Cargo): 0   ☐ Only Allow Baggage

☐ Suppress Auto-Payload   ☐ Suppress First Officer

☐ Suppress Auto Fuel Load   ☐ Suppress Flight Attendant

☐ Simulate Load   ☐ Prompt for PAX Count

Passenger Seats: This is the total number of passenger seats. This overrules all other definitions.

Cabin Crew: This is the total number of flight attendants. This overrules all other definitions.

Jumpseats: This is the total number of cargo jump seats. This overrules all other definitions.

Suppress Auto-Payload: If this option is checked, FSCaptain will not automatically load any payload aboard the aircraft during the loading process. Instead, FSCaptain assumes that the payload weight that's already on board the aircraft at the time a flight is reviewed or selected is the correct payload weight, and FSCaptain will generate a valid manifest that matches that total weight. To help remind you if you have this option checked, the FCDU will display the prompt message "Ensure Payload (and fuel) are Correct" in white letters at the last point where you could set the payload before it is processed into the FSCaptain system and a manifest is generated to match it. The payload weight referred to is the payload actually loaded aboard the aircraft's load stations (all of them). It does not matter to FSCaptain how that payload weight got there – it could have been loaded via the FS menus, or from another loading program. But the correct payload weight you want to use for the flight must be loaded and ready, or whatever is there will be used.

Suppress Auto Fuel Load: If this option is checked, FSCaptain will not load fuel on board the aircraft during the loading process. You are responsible for having the correct amount, as FSCaptain will not after it. In addition, you will not be required to meet your minimum fuel in order to be allowed to dispatch your flight. Your fuel can be loaded from any means you choose.

Simulate Load: This option is only effective if the option above "Suppress Auto-Payload" is checked. If you choose to not automatically load a payload, checking this will simulated the boarding process for passenger flights only, showing the count of passengers boarding the aircraft just as if they were being loaded by FSCaptain – but they are not. If you check the "Suppress Auto-Payload" option and leave this option unchecked, the loading process will be nearly instantaneous since fuel is loaded immediately.

Suppress First Officer: Even if an aircraft has a first officer designated as part of the crew, the FSCaptain first officer will not speak nor provide any other function (such as managing the seat belt sign). It will be as if he or she isn't there at all. This option is most likely to be used if you have another add-on (or a special airplane) that provides its own co-pilot for this aircraft.

Suppress Flight Attendant: Even if an aircraft has a flight attendant designated as part of the crew, the FSCaptain flight attendants will not speak nor provide any other function (such as cabin service to passengers). It will be as if he or she isn't there at all. This option is most likely to be used if you have another add-on (or a special airplane) that provides its own flight attendant for this aircraft.

Do Not Force Skidding: Check this if you are using the Hazard Pack's "Runways can be contaminated by precipitation and degrade braking action" but have poor or limited braking control for this aircraft. While FSCaptain strives to bring added levels of realism to our simulations, sometimes allowances must be made for aircraft that are deficient in one area or another.

Do Not Play GPWS: If this particular implementation has a set of GPWS altitude call-outs, check this to mute the FSCaptain altitude callouts when you fly in this airplane.

Reports Own Crew / PAX to GSX: As on the Aircraft Characteristics tab, if this aircraft reports its own Crew and PAX numbers to GSX Level 2, you can check here and FSCaptain will not report those numbers. FSCaptain also will not suppress Crew exchanges on turnarounds, and will not suppress Crew loading on your initial boarding.

Only Allow Baggage: When this setting is checked, this aircraft will only carry PAX and baggage. This setting is intended for small PAX aircraft (up to the size of a light regional airliner) to simulate the cramped space of their cargo areas not being suited to loading pallets of mail or crates of flowers. But if you would like to have a large jetliner filled with PAX and their bags... and nothing else... you can do so!

Examples of using the above options to suppress parts of FSCaptain include an aircraft that has its own loader to handle payload, fuel, or both. For example, CaptainSim has their ACE tool which can load the payload for an aircraft, but not the fuel. For that, check the "Suppress Auto-Payload" and "Simulate Load" options, but leave the others unchecked. For an aircraft like the iFly 747-400

which can load both fuel and payload you could check both "Suppress Auto-Payload" and "Suppress Auto Fuel Load". The Aerosoft Airbus has a fuel loader, and both a FO and a team of attendants. You may adjust each aircraft's loading abilities as you wish.

If you suppress the automatic loading of payload, and do not check "Simulate Load" there will be no period where the passengers begin to board the aircraft.

Aircraft aside, some Captains may use an add-on such as Multi Crew Experience or FS2Crew with a particular aircraft and may wish to suppress the FSCaptain crew in this case.

Exit Mapping													
Speed:	4	PAX:	1	0	0	0	Cargo:	2	0	0	0	Other:	3	0	0	0	Reset Exit Mapping

Exit Mapping: This is a set of fields which, if specified, will group exit numbers into "types" for this airplane. This can be used to manipulate more than one exit at a time for those Captains who wish to supervise loading and unloading from outside their aircraft.

Microsoft / ACES defined four exit indices for an aircraft along with several "exit types." The four exit indices correspond to the SHIFT-E, SHIFT-E #2, SHIFT-E #3, SHIFT-E #4 key commands we're all accustomed to. The "types" imply what each exit is used for – in ACME terms, Passengers, Cargo and all Other items (emergency exits, service exits, crew exits, and even APU panels). What Exit Mapping allows is for you to define the *type of exit* for each exit.

Looking at the example image several pages back, the venerable default FSX Cessna 208B uses SHIFT-E 3 to open/close the Passenger exit/steps. It uses SHIFT-E 4 for cargo. It uses SHIFT-E for the Captain's door, and SHIFT-E 2 for the front right door (used in an ATP situation for the First Officer.) So, we enter "3" for the PAX exit, "4" for the Cargo exit, and "1" & "2" for Other exits.

However if you prefer flying this aircraft *solo*, you could change "2" to be an additional PAX exit.

Some aircraft developers use other Flight Simulator signals to simulate non-typical exits, and we've allowed for those to be monitored here. "FOLDING WING"-controlled exits can be monitored using a "5" and "TAILHOOK"-controlled exits can be monitored using a "6".

The Speed value is the number of seconds that it takes to open/close an exit. If FSCaptain is told to open an exit and the simulator does not report that the exit is open in this duration, you will receive a message on the FCDU asking you to check the exit's status.

If you're having trouble customizing an exit map for your aircraft, click the "Reset Exit Mapping" button and it will reset these values so that SHIFT-E will operate both Passenger and Cargo exits.

But what if you don't want your crew to manage a particular exit? For example, you may have one aircraft that has its own Ground Support package which handles the Cargo doors on its own while

ignoring PAX and Other exits. In this case, you would enter the Cargo exit number as a negative – so in our example above you would enter "-3" for your Cargo exit. FSCaptain will wait until you or your Ground Support package handles Exit 3.

Creating a Load Map for your Aircraft

After all that formal definition, a load map may seem too complex to bother with. But when you log in to your FCDU for the first time in a "new" aircraft, the FCDU will create a Load Map for you. It's up to you to customize it to fit your needs.

Even without using the FCDU, you can use the Administrator's Import feature to build a Load Map for you.   When you're on the Load Map dialog and click on the "Import" button, you will see a listing of all the aircraft you have defined in your copy of Flight Simulator:
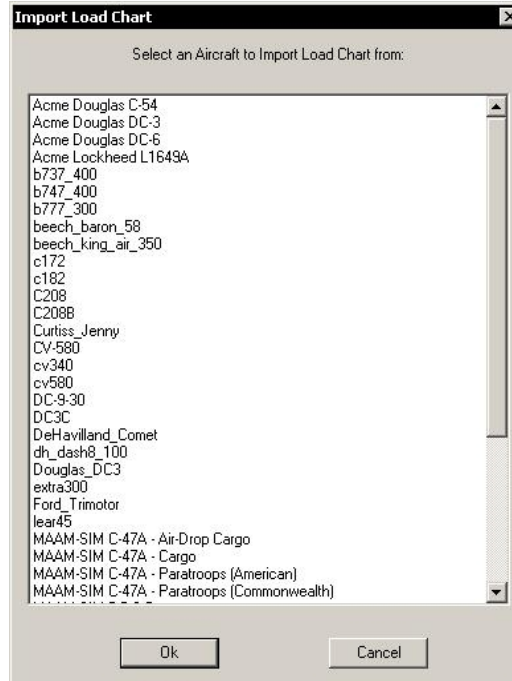
Simply find and select the airplane whose load map you want to import. The plane's configuration will be accessed and converted to FSCaptain format and presented in the data fields. You can then edit and save it. Most usefully, the exact folder name is placed in the "Filename" data item.

After you have a "Simple" Load Map from either an FCDU creation or an Administrator Import, you will have a picture of how FSCaptain will load your aircraft by default. So all the load stations will have been found and made active with the same priority and with no weight limits. Likewise, all the fuel tanks will have been found and made active with the same priority.   At this point, when the FCDU auto-loader does its thing the whole fuel load will be spread evenly through all the active tanks, and the whole payload will be spread evenly across all the load stations.

However, many add-on aircraft needs more control than this. When I start to customize a Load Map, the first thing I look at is the fuel situation. The way Flight Simulator works by default is that all tanks will feed all engines. But most add-ons are more realistic. For a simple example, on a Boeing 737 the center tank will be drained first, feeding both engines. Then the wing tanks are used, each feeding its own engine, with a crossfeed ready if needed.

If all three are filled equally this will work out… but oddly. However this is not how it's usually done in the real world. The two wing tanks are filled first and then if more fuel is needed, the cen-

ter tank takes the extra. To make this happen with FSCaptain, you should define the two wing tanks here with a priority of 1 and the center with a priority value of 2.

You can have up to nine levels of priority to make the fuel load match the way the real world expects it to be. But for this example, the two wing tanks will be filled before the center tank takes a drop. So on shorter flights, you may not have any fuel in your center tank, and you won't have to deal with switching tanks during your flight. (Just possibly starting a crossfeed.)

Staying with the concept of multiple variants of an aircraft, you may have 737 type aircraft from three different developers: The Captain Sim 737-100 and -200, the iFly 737NG airplanes, the Milviz 737-200, plus the set of PDMG 737NGX planes. (All of these *in addition to* the FSX default 737-800!) Several of these probably have the same type code of "B737", particularly the default and the 737-700 variants.

This is why there needs to be a separate load map for each one. For the default 737-800 we want to use the auto-loader to load the airplane and we want FSCaptain to provide GPWS altitude calls because the default doesn't. But for the PMDG 737-800s we would want to use the PMDG loader built into the MCDU and suppress the FSCaptain GPWS calls because the PMDG has its own. And in either case if we are using FS2Crew we probably want the FSCaptain crew to stay silent in favor of the FS2Crew voices. Note: these are examples. FSCaptain comes provided with load maps defined for many popular add-ons including all the ones mentioned here. But you should change them to suit your style of flying!

And last, but not least, the biggest and most complex task, the station configuration.

The most important decision is: how precise a control do we want to use? It's tempting to go for broke and use the most precise in every case, but this is often not necessary and brings on more work and problems that it solves.   In making this decision there are many factors.

Do you plan on using the FSCaptain auto-loader for this airplane or a loader built specially for it? (Some add-ons don't give you a choice; the PMDG MD-11 will not allow any but its own loader to be used. Others strongly recommend only using their loader in Very Scary Terms.) If you are using a non-FSCaptain loader but want to be able to use it to match the FSCaptain generated payloads precisely you will probably need to use the type-coded precise controls, in fact this is largely why they are there.

If you are using the FSCaptain loading system, then an even spread (or one with simple limitations) will often work surprisingly well.   If the station layout in the aircraft.cfg defines a set of stations evenly spread along the length of the airplane then probably an even spread will be okay, but watch for traps.   Some simulations define a spot for the crew up front. You don't want to put payload up there or you'll place the CG too far forward.   You can still use the simple method by making these stations have a priority of zero. That will keep the FSCaptain loader from filling them. It may be tempting to put a type C in the type field for Crew. But know that this is an all-or-nothing thing: if you put *any type* in to *any station* you must define precise controls *for every station*!

Putting in type codes, units and sizes will route the different types of payload into the appropriate stations at loading time. Passengers are allocated by unit and will be spread evenly across their stations with a slight bias towards the front of the airplane. Cargo is allocated by weight and an even distribution across all type G stations will be attempted, but maximums for each station will not be exceeded. Type C stations will always contain the weight you define here as the units multiplied by the size. The name field is only documentation and is not used in the computations.

It's important to realize that retaining the simple method of allocation gives you greater flexibility. An aircraft without precision controls can easily swing between passenger and cargo roles but one with a fixed definition by type will never be able to carry more cargo that is defined in its type G stations even with most passenger seats empty.

Configuration-based Load Maps

There are three special folders underneath the "Load Maps" folder in the data structure that can contain load maps that will be used based on the flight type being flown at a particular time. What this allows you to do is have the same airplane have a detailed load map for an all-passenger configuration, an all-cargo configuration, and a combination passenger-cargo configuration.

The three special folders are named:

- **Cargo:** contains a load map used when a cargo-type flight is being flown without any passengers.
- **PAX:** contains a load map to be used when a passenger-type flight is being flown.
- **Combi:** contains a load map used when a nominal cargo-type flight is flown with "ride-along" passengers.

These special load maps have the same format and are used in exactly the same way as standard load maps in the "Load Maps" folder, and they are completely optional. When the system looks to see if a load map is to be used for a flight, it determines which of the three categories the flight belongs to, and then looks in this folder to see if there is a load map matching the aircraft folder name. If one is found, that's the one used. If nothing is found, the system looks in the main Maps folder like it always did.

The reason these exist is to support the "detail load" option where types, units, and numbers are assigned to a load map. This way, you can reserve seats (type F, J, W or Y) for cargo flights with passengers, but mark the same station as type G for pure cargo flights.

The best way to create these special maps is to use Windows Explorer to copy and paste the base map from the Load Maps folder into one of these special folders, and then use the Administrator to select it and edit it with the "Load Maps" tab as described above. When a load map has been loaded from one of these special folders the "Save" button will automatically know to save it in the spot it was loaded from.

How to work with active Exit Maps during a flight

If you do make your own Exit Map you will need to open at least one PAX Exit and one Cargo exit to initiate loading and unloading a PAX flight. You will also need to have all PAX and Cargo exits closed before you are given clearance to start Block Time. (If you're making a Cargo flight, only the Cargo exit is checked for its open or closed status.)

The same rule applies if your aircraft has an Exit Map defined as part of its Interface. Check the *Aircraft Interface Matrix* PDF in your \FSCaptain\Documents\ and scan to the "Exits" column of your aircraft's entry.

If that value is an "A" and you have no special Exit Map in play, then the traditional automatic FS-Captain system will come into play to handle your exits for you. As noted in the last paragraph, you must obey the load map conditions for PAX and Cargo flights. If the "Exits" value is "I", the ACME system is "Interfaced" and should command all necessary exits open and close when necessary. If the "Exits" value is [footnote "8"] then the ACME interface cannot control the exits – you must operate the exits and the ACME system will monitor them.

Section 7: Creating and Managing an Airline

Airline Definitions

This section will explain how to create an airline from scratch, or how to modify one. Each data item will be explained in detail. Airlines are defined from the *Airline Definitions* tab in the Administrator:

***

At the top of this dialog, you see an area where an airline name can be typed. Next to that are the buttons to Select, Create, or Delete an airline. Your current airline should be presented when you first visit this section, but to look at an existing airline, and perhaps to modify it, click on the "Select Airline" button:
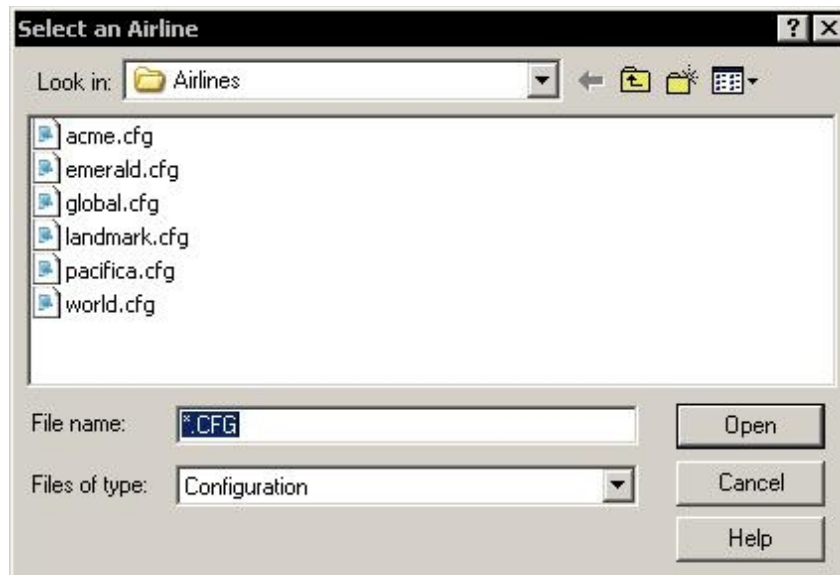
You will see all the airline definition files in the database. Click on the one to load and then click "Open", as usual.

To create a new airline, click on the "Create Airline" button. You'll be asked if you want to base this new airline on an existing one. This isn't required but it's very helpful – it will save you some typing.   Whether you do or not, the name entry field will change to "(newname)" and the items will either be filled with blanks, or be filled with the same data from the base airline you chose.

You should type the name of your new airline's file on top of the "(newname)", then change or fill in the data below. Here's an explanation of each data item:

Official Name: The name of the airline, officially. It's what's used on tax and other governmental forms and papers. You know, the *fun* stuff!

Short Name: A shorter version of the name, for display in restricted places on the FCDU. You must limit this name to eight characters or less.

Code: This is a one to four-character code to match flights against the airline code that can be placed on every parking spot. Your Airline will try to assign you to a gate with a matching code, so long as the gate is large enough to hold your aircraft. If no airline-specific parking spots are found at an airport you will be assigned another spot.

Set ID to Code: This is an option to internally set the aircraft ID to this code plus the flight number for the FSCaptain flight. Thus, if your aircraft is normally called "N3535P" for an FSCaptain flight

it might be temporarily renamed "ACME5256" when the code above and the current flight number are combined. This renaming is temporary for the current flight only and is not recorded in any files. It will not be effective in having the FS ATC call you by this name if you also have an airline name in the aircraft configuration – FS ATC will always prefer to call an aircraft by the airline name and flight number.

FCDU Display Name : This is what the airline calls the FCDU device. Some airlines like to customize this, for example, Acme calls it the "Acme Communicator".

ATC calls this name: This is the name of the airline as far as the FS ATC system is concerned. This should match a pre-programmed name if you want ATC to call your airline properly. For example, "Acme Aereo" is an airline built into the FS. All the MS default airlines and most of the real-world ones have a name to use there.

Must Match: Check this box if the aircraft's airline designation (in the parameter 'atc_airline' in the aircraft.cfg file) must match the above data item (**ATC calls this name**) for the airplane to be flown for this airline. For example, if you are flying for Landmark and you have "Landmark" in (**ATC calls this name**) then you could only fly aircraft that have "Landmark" as the 'atc_airline' value in their aircraft.cfg file.

Primary Role: The primary role of the airline, whether passenger, cargo or medical. This will determine what kinds of flights are flown in "convertible" type aircraft. Cargo-configured airplanes will always fly cargo flights; the same with passenger configured ones, regardless of this setting. There is a specialty setting here: "Medical". A medical airline is a cargo-oriented airline that specializes in medical flights. All flights for this specialty will be "priority", and all flights will contain medical type cargo, often including fragile cargo and even human patients.

Checkrides are: A "checkride" in FSCaptain is a set of standard maneuvers which the FCDU can monitor to see if the pilot performs them properly. They are: a steep turn, a stall recovery, an emergency landing, and six regular landings. This is a simplified version of the real-world checkrides that real professionals must perform. Options are:

- **Not Used**. A check-ride is never necessary for this airline.
- **Optional**. A check-ride screen is presented on the FCDU anytime the pilot goes to select a flight with a new aircraft type. However, the check-ride can be easily skipped on the screen. If in your pilot profile you are certified for this aircraft type the check-ride screen is skipped.

- **Required**. A check-ride must be performed on every new type of aircraft flown by the pilot before he or she will be allowed to fly revenue flights in that type for the company. If you have specified you are certified for this type aircraft on your pilot profile, you will have the option to waive the check-ride.

Maintenance: This option indicates the effectiveness of the airline's maintenance operation. "Excellent" means no adjustments are made to the base mechanical failure rates supplied by either the "Profile and Settings" tab and/or the aircraft's "reliability" rating. "Good" means these failure rates are made worse by 50 percent. "Marginal" means if the government was to inspect the maintenance operation they might well have their certificate pulled or at least be on probation. Selecting "Marginal" will *double* the failure rates over the base rates.

Flight Commitment: This largely determines how difficult the airline can be to fly for, and it has several effects. The options are:
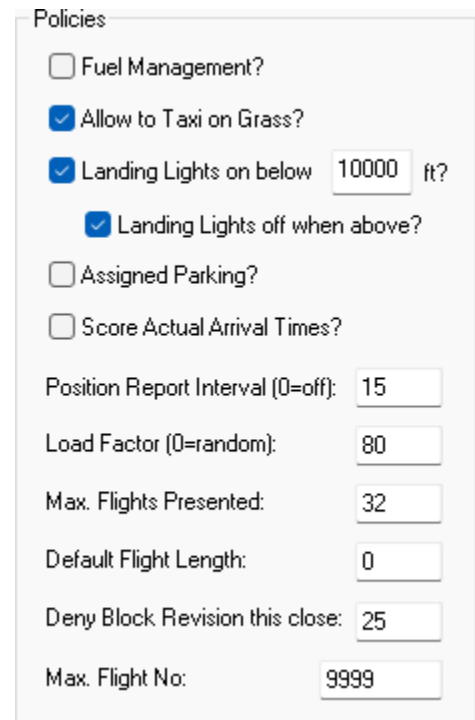
- **Committed and Logged at End (easy)**: You simply fly, and at the end of your flight the log entry is recorded. If you crash, the crash is not recorded in the log.
- **Committed After Load, Dropped if Elapsed (medium)**: Your flight is committed (that is, you must complete it) after the load is complete. If you fail to complete the flight, it will be held for you for a period (defined in the next option) but if you don't resume it, it will be silently re-assigned to another pilot without penalty to you. If you crash, your crash will be recorded in the log with a zero score.
- **Committed After Select, Canceled if Elapsed (hard)**: Your flight is committed (that is, you must complete it) as soon as you select it from the dispatch selection list. If you fail to complete the flight, it will be held for you for a period (defined in the next option) but if you don't resume it, it will be re-assigned to another pilot and recorded in your log with a low score. If you crash, your crash will be recorded in the log with a zero score.

Hours to hold flight after commitment: If you select the medium or hard options above, this factor is the number of hours FSCaptain will hold the flight open for you. The hours elapsed is calculated by comparing the current simulator time to the simulator time originally recorded in the log. Thus, you can make a flight open to you anytime by manipulating the simulator time.

Policies: These values define the rules which all Captains for the airline must follow. Essentially, they set a series of penalties which Captains can have applied to each flight. Unchecking all policy choices makes for very easy flying, but just nowhere near as rewarding as working under strict conditions.

Fuel Management? If this is checked the airline expects its pilots to not fly with excess fuel. The proper fuel burn, plus a reserve, is always calculated by Dispatch. You can request more fuel, and you have the option to request overrides if Dispatch complains about how much fuel you are loading. But, if this is checked, then Dispatch will monitor the amount of fuel left after the flight, and if that amount is greater or equal to the total amount required for the flight then your score will be docked for excess fuel on landing.

Allow to Taxi on Grass? Does this airline allow its airplanes to taxi off the runway and taxiways? Check this if yes, otherwise you risk a penalty if you don't stay on the tarmac. Note that does not allow heavy aircraft which shouldn't taxi on soft surfaces, to do so!

Landing Lights on below _____ ft?
Landing Lights off when above? These items correspond to policies in the real world where some airlines require pilots to leave landing lights on when below a certain altitude - 10,000 feet for instance. You may select any altitude from 6000ft to 21000ft to be your airline's default Policy Altitude.

This applies mostly to turbojet aircraft in the modern world, but if this option is checked it will apply to all aircraft flying for this FSCaptain airline. To avoid penalties, you should turn your landing lights on when you enter the runway, and leave them on while below the Landing Lights altitude. (There's a 1000 foot "cushion" either way.) On descent, make certain your landing lights are on before reaching this altitude. If you are in danger of violating this policy, the Date field on most FCDU screens will appear in white for 20 seconds – rather than the usual green. The Date field will appear in yellow / gold if a penalty has been assigned!!

There is another option that your airline may require, and that is to turn off your Landing Lights when above the same altitude. This option does not apply if your airline does not require Landing Lights to be on while below the Policy Altitude.

There are exceptions for very high-altitude airports. If your flight's Departure, Destination or Alternate airport's elevation is less than 4000 feet from your airline's Policy Altitude, then the elevation of the airport with the highest elevation will be added to the Policy Altitude (with a cap of 21000ft).

Example: Your airline has a default Policy Altitude of 10000ft and you have a flight from KDEN (elevation 5324) to KJAC (elevation 6449). The difference between KJAC and the Policy Altitude is less than 4000 feet, so the height of KJAC (rounded up to the next thousand, so 7000ft) will be added to the current flight's effective Policy Altitude – requiring you to keep your Landing Lights on while below 17000ft.

Example: Your airline has a default Policy Altitude of 12000ft and you have a flight from SPRF (elevation 14962) to SPHO (elevation 8805). SPRF has the higher elevation, and the difference between SPRF and the Policy Altitude is less than 4000 feet, so 15000 feet (rounded up from 14962) is added for a value of 27000ft, which is then capped to 21000ft, becoming the effective Policy Altitude for this flight.

The Policy Altitude for each flight is noted on your Dispatch Release, along with a reminder of your airline's policy when climbing through the Policy Altitude.

If your First Officer is enabled to give advice, they should also remind you when it's time to check your landing lights.

Assigned Parking? Checking this box means that your airline will assign you a parking spot at your destination which you must be inside before the FCDU will allow unloading of your cargo or passengers. Leaving this unchecked means you can taxi to and unload at any spot. This option will be ignored unless the option "Require an FS Parking Location to Unload" is also checked on the Profile and Settings Tab.

Even with this option turned on, it may not be possible for an airline to assign a parking spot at every airport. There may be none available. In that case, you will be told that you can unload anywhere at the airport.

If you are assigned a specific spot, you will see this mentioned on the final Dispatch Release document given to you after you are clear to depart. You can also see this on the Information screen accessible from the Enroute Progress screen (26) of the FCDU. The spot that is assigned to you may be changed by your dispatch office at any time until you arrive there. If it is changed you will receive a message from Dispatch to that effect on the FCDU. For more information on parking spots, read the section "Understanding Gates and Parking" earlier in this manual.

Score Actual Arrival Times? If the airline has a schedule and that schedule has arrival times on it, you can choose to have the airline include your performance against the scheduled arrival time in your score for each flight. The scoring is as follows: Up to 15 minutes after the scheduled arrival time is considered "on-time" and no penalty will result. Starting with being 15 minutes late, you will be assessed a two-point penalty, plus one additional point for each 10-minute period after that for a maximum of 5 penalty points.

This penalty is separate from being late according to your flight's Block Time Estimate given by Dispatch. You can be on-time with Dispatch, but late according to the schedule. Or *vice versa*. (Or even late all-around if you're not careful!)

But, if you can manage your arrival so that you're no more than 10 minutes late (or early) then *you can begin to score bonus points*. Anywhere from 6 to 10 minutes away from the scheduled arrival and you get 2 points. Anywhere from 3 to 5 minutes gets you 5 bonus points, and arriving within 2 minutes early (or late) gets you 10 bonus points! (There is an option to restrict these bonuses, if you feel that getting the flight safely and on-time is reward enough! Search this document for the option "ENABLE_ARRIVAL_BONUS" for details.)

> **Technical Note:** This option is effective if you are using the **Use Zulu Time** setting, or are using Local times and have verified that each end of your scheduled flight actually conforms to the "local time" at both departure and destination airports. *Common sense in regards to Local Time does not necessarily apply here!*

If you are using Local Times for your schedules, please consider the following example:

For example, in the real-world CYOW and CYUL are 81nm apart and in the same time zone, with most flights leaving CYOW arriving at CYUL within an hour. Yet some simulators have CYUL's time in a different 'time zone' one hour ahead, so a logically scheduled and executed Local Times flight would end up one hour late *according to schedule*.

Even if you use add-on scenery files which contain time zone definitions that are better than stock files, it's best to check all your scheduled flights can be made according to the schedule you're using.

One way to check such (in FSX) is to go to the Free Flight screen and enter your flight's departure airport, date and local time. *Note the Zulu (GMT) time that's listed.* Using our example, we want to schedule a flight leaving CYOW at 1805 local time. The Zulu time in FSX is 2305. (This is using stock time zone data – and yes, here over 10 years after FSX was published, the GMT time should be 2205… but that's immaterial to this check.)
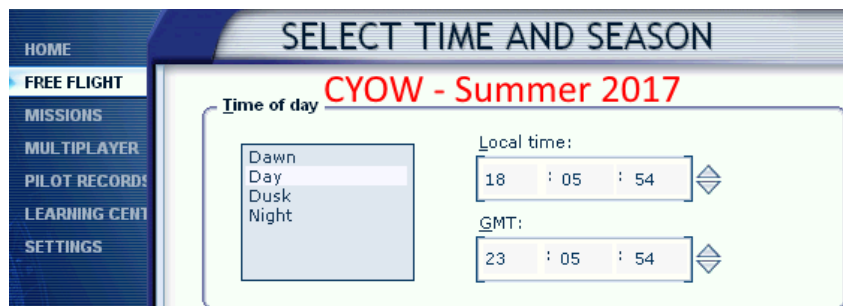
Now while still on the Free Flight screen change to your destination airport and set the Zulu/GMT time to be the same as your departure airports. Then finally add the expected duration of the flight to the Zulu/GMT time. The local time *listed there* should be used as your Dispatch Office's Local Arrival Time.

Still with our example, we change to CYUL and set Zulu/GMT time to 2305, then add 50 minutes. Notice the Local Time in FSX is 1955!
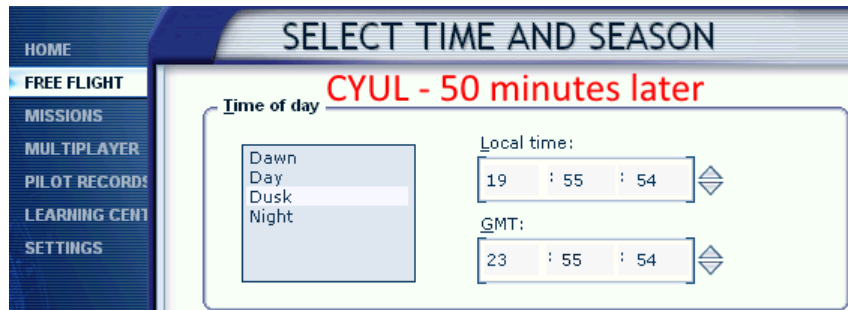
So, our Local Times schedule should have us departing at 1805 Local and arriving at 1955 Local.

Reminder… this has nothing to do with the estimated time of 50 minutes we feel our flight should take. Remember, your Dispatch Office and your Flight Schedule are two different masters that you're serving. Dispatch uses "Elapsed time" and Schedules use "Time on the clock."

> **Additional Technical Notes:** Captains who use Local Times for their schedules need to account for the variable of "Daylight Time" or "Summer Time" rules for both departure and arrival airports when using Local Time. CYOW and CYUL use the same rules, but not all airports do. As an example, in the United States 221nm flights between KLAS and KPHX have to account for the fact that KLAS has a "Daylight Time" change for part of the year, whereas KPHX's time zone doesn't change. Flights in June might need different Arrival times versus flights in December if Local times are used. Is it possible to arrive at a time that's earlier than the departure time? Unfortunately, yes.
>
> Captains who use Zulu Times for their schedule need never be concerned about "Daylight Time" or "Summer Time" issues, or arriving earlier than they departed.

Position Reports Interval? Air Transport Pilots are usually required to give position reports to ATC or their company dispatch at regular intervals. Entering a zero here will disable this requirement. Otherwise a value from 10 to 70 minutes will specify the interval at which reports should be made. Unless you use your aircraft's performance data to estimate when the initial TOC (Top Of Climb) report is to be made (see the list of Options in the Appendix), your airline will require your TOC to be made within two times this duration. (So, if you have a 15-minute Position Report Interval, TOC needs to be made within 30 minutes, etc.)

Load Factor: This is the base percentage used to calculate how "full" Dispatch will attempt to load your aircraft. It's a rough target, and you can enter "0" to have random loads assigned.

Max Flights Presented: How many flights, both scheduled and charter, will be presented on the FCDU when browsing for available flights.

Default Flight Length: The FCDU has a "time constraint" and it will not present flights to you that exceed this constraint, unless they are scheduled flights. You can adjust this constraint from the FCDU, but this is the default length used before you adjust it.

Deny Block Revision this close: You as pilot in command are responsible for estimating your Block Time before the flight takes off. But if unexpected events occur during flight that will materially affect the Block Time and thus the scheduled arrival time, you should send a Block Time revision to Dispatch while in-flight.   (Minimum and Maximum times are enforced.) Still though, Dispatch will not accept any normal Block Time revision when the aircraft is this many minutes or closer to the destination.

However if you've flown a missed approach, you may extend your Block Time. Likewise, if you've started descent, there is a minimum value that can be used. (So if you're 30 minutes early but have been cleared for approach, you can't reduce your Block Time so that you would be 'on time.')

MAX Flight No.: By default, FSCaptain will automatically number flights up to and including "9999". Some Virtual Airlines have rules which do not allow flights to have numbers that high. A value entered here that is below 9999 will be the new "cap" for this airline's flight numbers.

Note: non-optional policies: A hard-coded restriction at the 10,000ft level should be mentioned here. It is *not* optional and *is the restriction* to stay under 250 knots under 10,000 feet. Again, there are "cushions" around these limits, you need to be 256 knots or above while less than 9,500 feet or so to trigger the penalty.

The other hard policy is to set the altimeter to standard pressure (29.92 or 1013 millibars) above the transition altitude. The cushion here is about 1000 feet.

You may return to local pressure settings once you have passed down through the Transition Layer, or if you have been given Approach Clearance by your airline even while above the TL.
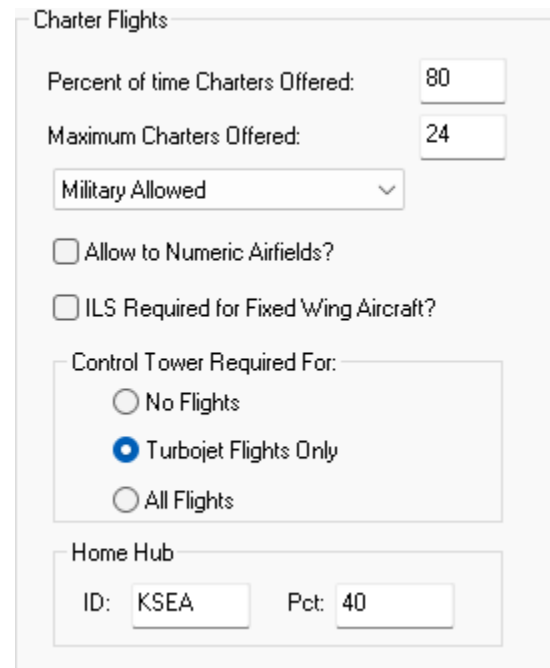
The values for both Transition Altitude (TA) and Transition Layer (TL) for each flight are noted on your Dispatch Release and in your FCDU.

Charter Flights: These are the options that guide selection of charter (random or ad-hoc) flights, as well as which airports may be chosen as a suitable alternate even on a scheduled flight.

Percent of time Charters Offered: How often will the pilot see charter flights offered on the FCDU? This is a percentage, where 100 represents you will always see charters (unless there are no airports available from where you are located given your airplane type and other restrictions.)

Maximum Charters Offered: This is the maximum number of charter flights that will be offered on a given session with the FCDU.

Military Airfields: This variable controls whether flights will be offered to or from military airfields. This airline option defines if flights can be denied to, allowed to, or preferred to military-only airports. Military airfields can be designated as "Civil-Military" and be permitted commercial traffic even if denied here!

Allow to Numeric Airfields? Smaller and sometimes private airports in the USA often have numbers in their airport codes. Check this to allow charter flights to these small airports.

Private airfields are can be handled differently than "Numeric Airfields". Private airfields are defined in a separate configuration file that lists their ICAO ID.

If this setting is enabled in your options.cfg file (see Appendix 4: Special Options and Features), flights to private airfields are permitted *only if departing from a private airfield.*

ILS Required for Fixed-Wing Aircraft? If this is checked, flights will not be allowed to any airport without an ILS if you're planning to fly a fixed-wing aircraft. (Helicopter Captains do practice and use ILS glideslopes, but they're more critical for fixed-wing aircraft approaches.)

Control Tower Required For: Select if No flights, All flights, or only Turbojet flights will be denied to airports without a control tower.

Home Hub: This is the ID of the primary "home" airport for your airline, as well as the frequency with which Charter Flights include a flight to this airport. (As long as all other requirements such as "Aircraft Range" and "Customs" are fulfilled.) Set the ID to your "Home Airport" and the PCT to

the percentage of Charter Flights which could consider this as a Destination. (Even for nothing more than a scheduled maintenance!)

Scheduled Flights: These are three data items that determine the parameters for picking up scheduled flights. "Crew must arrive no earlier than [X] and no later than [Y] minutes before scheduled departure." This means that to see a scheduled flight on your FCDU, you must be within X and Y minutes before the flight is scheduled to leave. (This is the "Crew Boarding Window".)

For an example, assume X is "no earlier 45 minutes before departure" and Y is "no later than 10 minutes before departure". (That's cutting it close, but you're the Captain!) If a flight is supposed to leave at 0800 (800 in the morning) to see it as an available flight on the FCDU you must be at the airport in the appropriate volume class aircraft between 0715 and 0750. If you are not within these times, you will not automatically be given the scheduled flight because you are either too early or too late to fly it.

Instead, you will be sent to the "Resolution" screen of the FCDU, where you will be given the essential flight details (Airports, Aircraft Type, etc.) as well as the Scheduled Departure time (either Local Time or Zulu Time), and guidance to the Crew Boarding Window.

Here are FCDU screens showing (left) a crew arriving 5 minutes before the Boarding Window opens, and one showing (right) a crew arriving 12 minutes after the Boarding Window closes.
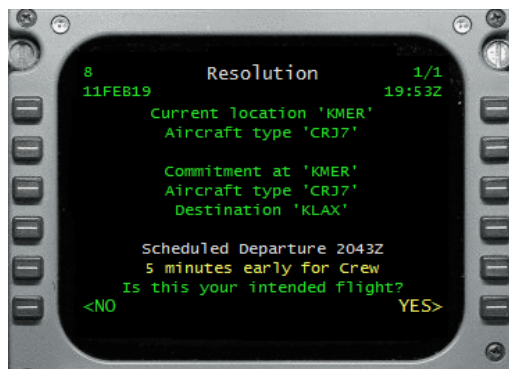
You may at any time choose "YES>" to start your flight, but please know that you will be either early or late for your flight. If you choose to arrive early, you need to consider how long to stretch out your pre-flight activities so you can make a possible Arrival Time deadline. If you choose to arrive late, you need to consider if it's possible at all to make an Arrival Time deadline. In either event, you may have chosen an incorrect simulator start-up time!...
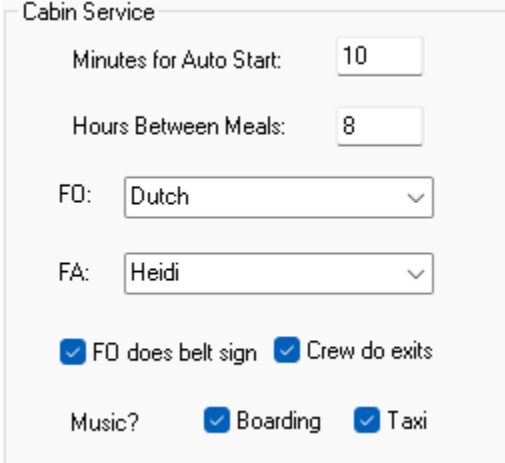
The last factor in the Schedule area, "Passengers will be allowed to board at [Z] minutes before scheduled departure" means exactly that. Therefore, if Z is 10, then if you & your crew arrive 30 minutes early, you will have a 20-minute wait before the boarding process can start.

Feel free to try and replicate the boarding-time process used by an airline you favor. Some airlines close their boarding gates at a specific period before a Scheduled Departure, and some airlines have more lax policies. While FSCaptain currently doesn't 'close' the boarding process (yet?), you can give yourself enough latitude for what is your "first flight of the session."

Schedule: This button will take you to a section where you can modify your airline's schedule. See the section "Creating and Modifying the Flight Schedule" later in this manual for details.

Cabin Service: These are options which affect how your team of attendants deals with passengers:

Minutes for Auto Start: Your flight attendants will manage the cabin service for you – you don't have to micro-manage them. This is the number of minutes before the first cabin service will start. Often, in practice, it takes quite a bit longer than this. This factor also determines the "cabin service interval" which will determine how long between services. At least 30 minutes will be added to the interval after the first service. Service intervals are extended during late night flights (to allow passengers to sleep), and during periods of dangerous turbulence.

FO: Here is where you select your preferred First Officer for flights on this airline. You may have a selection of First Officers available to you, loaded into FSCaptain. The program is distributed with some default ones and more are planned for optional download from the FSCaptain website. This selection doesn't affect what the FO does, only the voice that speaks to you. If you select "None" then you will not hear *any FO audios*, even though your FO should be telling you that an engine just caught fire.

FO does belt sign: The First Officer can manage the seat belts for you. If this option is checked, they will do this by default when the flight first starts (you can take over the belts anytime from an option on the FCDU.) If this is not checked, then when the flight starts you are in charge of the belts. You can give control to the FO anytime from the FCDU.

Crew do Exits: With this checked, the FA will close and open the passenger exits as you are going OUT and IN, and the FO will handle the exits on any cargo flight (and on a PAX flight if there is no FA onboard). There is a global option which could disable this for all airlines should you use another add-on which itself handles door/exit operations. (See Appendix 5 – options.cfg - for that.)
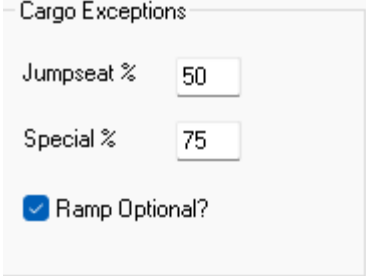
FA: Here is where you select your lead Flight Attendant for flights on this airline. You may have a selection of FAs available to you, loaded into FSCaptain. The program is distributed with some default ones and more are planned for optional download from the FSCaptain website. This selection doesn't affect what the FA does, only the voice that speaks to you and the passengers. If you select "None" then you will not hear your FA, even if there's a cabin emergency.

Music: Aircraft may be equipped with a sound system to play background music to sooth the passengers. You can choose to have the FA's switch on this music system when passengers are entering or leaving the airplane, when the airplane is taxiing, or never play any music at all.

Music is only played on PAX flights despite any calmative effects it could have on any live animals you may be transporting.

Cargo Exceptions: These options control how certain aspects of cargo flights take place.

Jumpseat %: This is the percentage of *cargo* flights in which ride-along company employees will be on the flight. If you are defining a medical specialty airline, this will help determine the percentage of flights that carry patients, as a patient requires attendants and will not be included on any flight that does not have any PAX.

Special %: This is the percentage of *cargo* flights that will have at least one of the special flags: priority, fragile, or live. The Priority flag doubles both penalties and rewards for on-time performance (or lack thereof), the Fragile flag reduces the G force and landing speed limits for cargo damage, and the Live flag means you are carrying live animals which are usually fragile and cannot be flown above 12,000 feet for long in an unpressurized airplane.

Ramp Optional? On normal FSCaptain flights, you are required to unload cargo at a ramp or gate or dock at your destination. Checking this means this restriction is lifted for cargo flights only (not passenger flights.) For a cargo flight, you may unload at any point on the airport.

Weather Minimums: Your Dispatch Office will follow these preset values to allow unfettered access from and to airports. If the reported weather is "worse" than what is noted here, you will receive either a "Weather Hold" to prevent departure or "Authorization to Divert" to an alternate.

Minimum Ceiling: The ceiling at the departure airport must be at least this high (in feet) for you to take off. It must also be this high at the destination (or the alternate) for your landing to be approved by Dispatch. If the ceiling is below minimums before departure, you will be placed on "weather hold", but you can request that the hold be lifted. If the ceiling is below minimums at the destination airport, you would be authorized to divert to your alternate. When you divert, you will be assigned another alternate. This process can be repeated.

Weather Minimums	
Minimum Ceiling (feet):	200
Minimum Visibility (feet):	3000
Max Surface Wind (kts):	79

Minimum Visibility: The visibility at the departure airport must be at least this high (in feet) for you to take off. It must also be this high at the destination (or the alternate) for your landing to be approved by Dispatch. If the visibility is below minimums before departure, you will be placed on "weather hold", but you can request that the hold be lifted. If visibility is below minimums at the destination airport, you are authorized to divert to your alternate. When you divert, you will be assigned another alternate. This process can be repeated.

Maximum Surface Wind: This is the maximum allowed surface wind reported at an airport, above which you are not automatically authorized to take off. If the winds are this high or higher at your destination an approach or landing will not be approved by Dispatch. If the winds are above maximums before departure, you will be placed on "weather hold", but you can request that the hold be lifted, and you can attempt the flight. If the winds are above maximums at the destination airport, you will be authorized to divert to your alternate and assigned *another alternate*. This process can be repeated.

Be aware that one day it's possible certain "weather holds" at your destination *might not be lifted*.

Pay Levels: As described in section 2, - *Your Career* – an airline has 10 pay levels. Here you can specify the hourly rate to pay at each level, and the name of the level. The name must be 19 characters or less, and as you can see it can be as serious as you wish. If you want to have fewer than 10 levels, leave the pay rate zero and the pay level name blank on a level you don't use.

Pay Levels	
25	Probationary
75	Coyote
125	Road Runner
200	Pilot I
250	Pilot II
325	Captain I
375	Captain II
450	Senior Captain
550	Acme Eagle
650	Acme Ace

Creating or Modifying the Flight Schedule

Flight schedules for all airlines can be easily modified from the Administrator, and new schedules can be imported from external databases or fantasy schedules generated according to a set of specifications.

Airline Schedule ⊠

Schedule for Piedmont Airlines

Flight	From	To	Min A/C	Time	Weekdays	Leg 2	Leg 3	Leg 4	Leg 5	Leg 6
1	KINT	KTRI	None	1443	6					
6	KTRI	KCLT	None	55	246	KFAY	KMYR	KILM		
21	KGSO	KINT	None	1203	35	KHKY	KTRI	KHTS		
26	KLUK	KHTS	None	2308	135	KTRI				
27	KTRI	KLUK	None	36	1					
28	KLUK	KLEX	None	229	1	KTRI	KINT			
30	KLUK	KHTS	None	1329	135	KCRW	KROA			
33	KROA	KCRW	None	1531	135	KHTS	KLUK			
34	KRIC	KORF	None	2240	12345					
37	KORF	KRIC	None	2204	123456					
38	KLUK	KHTS	None	154	24	KCRW	KROA	KLYH	KRIC	KORF
39	KFAY	KPHF	None	3	1	KRIC	KLYH	KROA	KCRW	KHTS
40	KINT	KROA	None	1314	12345	KLYH	KCHO	KDCA		
52	KLEX	KTRI	None	1629	246	KHKY	KCLT	KFAY	KMYR	
53	KILM	KFAY	None	1308	246	KCLT	KHKY	KTRI	KLEX	
72	KSDF	KLEX	None	1800	123456	KROA	KRIC	KORF		
73	KORF	KRIC	None	1847	24	KROA	KTRI	KLEX	KSDF	
85	KDCA	KCHO	None	1643	12345	KLYH	KROA	KTRI	KTYS	
87	KDCA	KCHO	None	148	23456	KLYH	KROA	KINT		
88	KTYS	KTRI	None	2137	123456	KROA	KLYH	KCHO		
300	KAVL	KCLT	None	1359	23	KFAY	KILM			
301	KCLT	KAVL	None	1204	2	KTRI	KLOZ	KLEX	KSDF	
304	KTRI	KINT	None	1728	16	KGSO	KRDU	KFAY	KMYR	KILM
305	KILM	KFAY	None	2024	23	KCLT	KAVL	KTRI	KLOZ	
307	KILM	KMYR	None	2059	12	KFAY	KCLT	KAVL		
308	KSDF	KLEX	None	223	4	KLOZ	KTRI			
314	KROA	KLYH	None	39	1356	KCHO	KDCA	KCRW	KBLF	KPKB
315	KDCA	KCHO	None	1909	2356	KLYH	KROA	KBLF	KBKW	KCRW
316	KAVL	KTRI	None	2004	1234567	KROA	KCHO	KDCA		
317	KDCA	KCHO	None	1529	1234567	KROA	KTRI	KAVL		
319	KDCA	KCHO	None	2019	7	KLYH	KROA	KTRI		
342	KROA	KLYH	None	1739	7	KCHO	KDCA			
344	KSDF	KLEX	None	1624	247	KBKW	KBLF	KROA	KLYH	KCHO
349	KDCA	KCHO	None	9	123456	KLYH	KROA			

Instructions: Flight numbers must be unique. 'From' and 'To' must be valid ICAO airports. Time is 24-hour local departure time. Weekdays are '0' for all days, 1=Monday to 7=Sunday; use any combination. Legs 2 through 6 are optional ICAO airport codes. Click on a flight number (not the line - the actual number) to use the 'Change Flight' and 'Delete Flight' functions.

Add Flight	Change Flight	Delete Flight	Save	Cancel
Clear	Generate Hub	Remove Hub	Import	Print

To access the schedules for an airline, click on the 'Schedule' button on the Airline Definition tab. Each flight is shown on a single line. The first five columns are sortable – you can click on the header to re-arrange the listing by that item. Clicking twice will reverse the order of the sort. The columns are:

Flight: The flight number. By default, the list is ascending by flight. Each flight number must be unique in the complete schedule for this airline.

From: The departure airport's ICAO code.

To: The destination (or first leg if multi-leg) airport's ICAO code.

Min A/C: The minimum aircraft volume class required for this flight. The options are "None" (any aircraft can fly the flight), "Small", "Medium", "Large", or "Heavy". Volume classes are defined in more detail on the Aircraft Characteristics tab, explained in this manual.

Departure Time: The scheduled departure time in 24-hour format. By default this is Local Time, but with the **Use Zulu Time** setting, this will be interpreted as Zulu Time.

All scheduled flights need at least a Departure Time. Having an Arrival Time is optional (more on this later)….

Weekdays: A set of up to 7 numbers, each representing a day of the week. 0=All days of the week, 1=Monday, 2=Tuesday, 3=Wednesday, 4=Thursday, 5=Friday, 6=Saturday, and 7=Sunday.

Leg 2 ... Leg 6: Up to five optional additional destinations, allowing a single flight to have six total legs. There must not be gaps in the legs if you use them – Leg #2 must be filled in before you can place something in Leg #3. When you fly a multi-leg scheduled flight, the FCDU will automatically set up the next leg each time you land until the final destination is reached. Each leg is logged as a separate flight in the flight log. If you start a leg for an early-commit airline and FS crashes for some reason, then your status is preserved as usual and the remainder of the flight will sequence the remaining legs correctly.

At the bottom of the display are a set of buttons you can use to manage your airline's schedule:

Save: Click on this button to write your schedule data out to the database. This will not be enabled until you have made some changes.

Cancel: Abandons any changes and returns to the Airline definitions tab. If you have made any changes you'll be asked to confirm.

Clear: Remove all schedule entries, after confirmation.

Generate Hub: A dialog (explained below in "Generating a Hub Schedule") will appear, allowing you to enter parameters to specify how to generate the hub schedule.

Import: A dialog will appear (explained below in "Importing a Schedule") allowing you to specify the location of an external database from which to build your airline's schedule.

Remove Hub: You will be asked for an airport ICAO, and an option to delete only flights that have a return following them. All schedule entries from or to the airport you enter will then be removed from the schedule.

<u>Print:</u> Print the complete schedule on a printer of your choice.

<u>Add Flight:</u> This will allow you to add a new flight to the schedule. A dialog will appear where you can enter the flight data. It is the same format as the 'Change Flight' dialog below.

<u>Change Flight:</u> This brings up the Flight dialog where you can change the information on a line.

<u>Delete Flight:</u> This button will delete a flight from the list.

Important: To change or delete a flight, you must first select the flight by clicking on the flight line in the list./

This is the dialog used for adding and changing flights:

The data items in this dialog correspond to some of the data items on each line of the schedule display. The flight number will be grayed out when changing, and enabled when adding.

Those not displayed on the schedule display but that are here are optional, but their use will trigger certain features when you fly a flight where they are present:

Arrival Time: The time when the flight is expected to arrive. If not specified (left blank) there is no arrival time. By default this is Local Time, but if the **Use Zulu Time** setting is enabled, this will be interpreted as Zulu Time.

Specifying an arrival time will trigger different options on the FCDU during a flight. On the "CLEARED FOR DEPARTURE" screen you will see the scheduled departure and arrival times, and whether and what type of cabin service is required (see below). On arrival, you will see a display on the Unload screen that will tell you how you did versus the schedule. If your airline has chosen the **Score Actual Arrival Times** option, your score will be affected if you are more than 15 minutes after the scheduled arrival time, or within 10 minutes (early or late).

Service: This specifies the nature of the cabin service required on this flight, if any. There are four possible values:

-1 No cabin service is required or allowed on this flight.
 0 Cabin service is optional at the Pilot's discretion. It will be an optionalMeal service on longer flights, and an optional Snack service on shorter ones.
 1 Snack service is required on this flight. Snack service is relatively short.
 2 Meal service is required.   Meal service takes much longer than snack service. Plus, if you have enabled "economic mode," know that *meals cost more than snacks*.

When meal service is specified, you must plan enough time for a meal to be served, as well as a snack / drinks service. Meals are never the first service for a flight – snacks/drinks come first. If you miss a required service, you will receive a complaint. If you have no service when a meal is called for, you can bet that someone will complain directly to your airline's CEO!

A/C Specific Type: If left blank, any aircraft that meets the **Min A/C** requirement (see above) may be flown. But if a type is specified here, only that type of aircraft can be used for this flight. The type code is the same code as used to designate the aircraft type to FSCaptain (the one you see on the post-Login screen of the FCDU, and the one used to access and change aircraft characteristics in this Administrator.)

Note: Arrival Times and Service Codes (the same as described above) can optionally be included on any leg of a multi-leg flight.

Generating a Hub Schedule

You may create a schedule for a typical airline hub. The program will generate flights to randomly selected destinations and return flights from those destinations to the hub. The flights may be a mixture of non-stop and multi-leg flights.   Any hub schedule you generate is added to the schedule entries you already have – so you can generate multiple hubs, or add your own fantasy hub to an existing schedule.

To generate a hub schedule, first specify the ICAO of your hub, and a starting flight number. Remember, flight numbers must be unique. You must enter a number that isn't already used in the schedule. All flights generated for this hub will start with this number and then increment the number by one for each flight. To follow standard airline practice, you should make this an even number, so that all outbound flights will be even numbers and inbound will be odd.

If you are generating a hub schedule to add to an existing airline schedule, you should try and choose a starting flight number that will allow all the flights you generate to have numbers assigned that do not conflict with existing flight numbers. The generator will not allow duplicates – it will keep incrementing its newly generated numbers until there is no conflict. But this would disrupt the even/odd numbering suggested in the paragraph above.

There are five rows, corresponding to the five aircraft volume classes in FSCaptain. The first row will generate flights that have no volume class restriction (any FS airplane can fly them). The second row will generate flights that require *at least* a small volume class aircraft (a "tiny" won't qualify.) And so on, up to "heavy" which can only be flown by large wide-bodies. You do not have to

generate flights for all rows – put a zero "Flights per day" item for a row and no flights will be generated for that minimum volume class.

Each row has these data items that control the flights generated for that minimum volume class:

Flights per Day: This is the number of *outbound* flights generated from this hub each day for this minimum volume class aircraft. Each outbound flight will have a corresponding return flight generated for it with a flight number one higher than the outbound flight (unless a duplicate prevents this in which case it will be the first unique flight number higher than the outbound flight number).

Start Time:
End Time: These are two 24-hour time limits that define the "day" the flights are generated over. Normally the Start time is early and the End time is late in the day. The number of flights per day defined above will be spread evenly over the day from the start time to the end time. For a simple example, an eight-hour day defined as starting at 0900 and ending at 1700 with 16 flights per day would have a flight leaving every 30 minutes on average.

This can also be used to support local airport "curfews" for departures. For example, KSJC (Silicon Valley's closest hub airport) currently has a curfew from 2300 to 0700. If you want to place a hub there, you can structure all your start times so your aircraft will not leave within those hours. (Arrivals are another thing… without a time zone database keyed to your simulator's time zone structure, we can't structure return trips to match "curfew hours.")

Minimum Distance:
Maximum Distance: These define the shortest and the longest flights that will be generated for this minimum volume class. This affects the airports eligible for inclusion: any airport closer than the minimum distance from this hub, or further than the maximum, will not have flights generated to it.

Runway Required: To be eligible for a flight from this hub, an airport must have this length runway. This can be used to limit flights to only larger airports. This is obvious for the larger aircraft, but even for a hub schedule generated for the lowest class (no restrictions) you can use this to ensure that your flights are only to major airports.

Percent Nonstop: This is the percentage of direct flights generated. Anything less than 100 will include some multi-leg flights.   For example, a 50 here would generate roughly half the flights as non-stop and half as having one or two stops. The generator doesn't generate a flight with more than two stops in this version.

Standard Speed: This is used to determine the departure time for the return flight. The time to make the flight at this speed, plus one hour, will be the return departure time.

> **Technical Note:** Because of the terrific variances involved with time zones, and summer/daylight rules, no scheduled arrival times are calculated. We suggest that you make several

test flights for each flight number and check the expected arrival time per aircraft as well as accounting for winds, holding, weather, etc. before committing to a scheduled arrival time.

The following buttons are available on the dialog:

Generate: This starts the hub schedule generation. This could take some time, depending on the number of flights generated.

Remove Hub: This allows you to undo the last generation, removing all new entries from the existing schedule.

Cancel: Leaves the dialog without generating anything.

Importing an AI Schedule

It is possible to convert AI schedules from Flight Simulator itself into FSCaptain schedules.
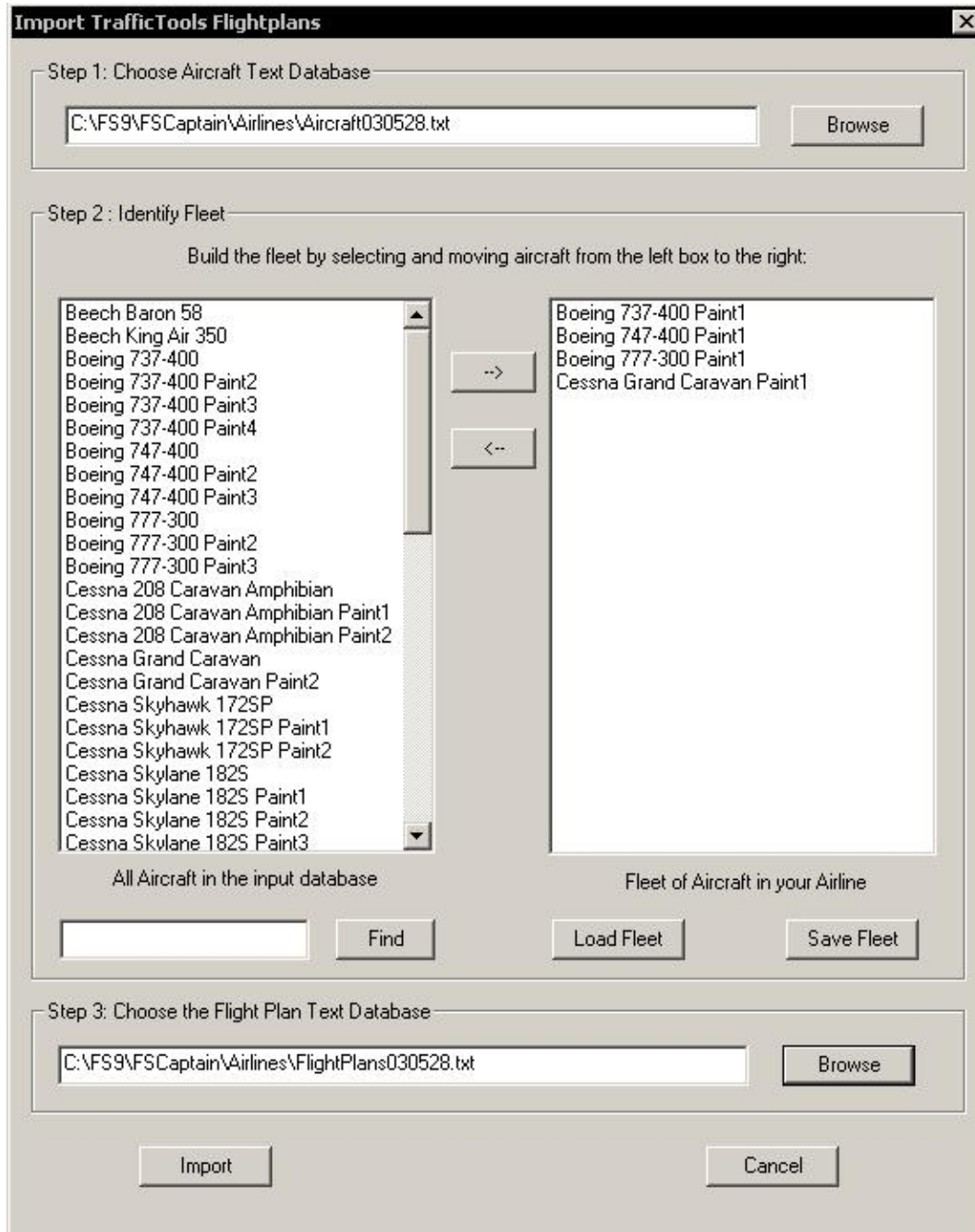
A third-party program called "Traffic Tools" is commonly used to import and export AI (Artificial Intelligence) schedules into and out of Flight Simulator. This program has a set of well-defined text file databases that it uses, and a "de-compiler" function that will extract the flight schedules from Flight Simulator and place them in this format. FSCaptain can read these Traffic Tools data files and convert them into the FSCaptain schedule format. This gives you the capability to take any AI schedule developed for Flight Simulator and turn into your airline's schedule.

The import process is a little bit involved and requires you to have a basic understanding of how Traffic Tools organizes its text files. Here's how it works in a nutshell: There are three text files that Traffic Tools uses: a list of airports, a list of airplanes, and a list of flight plans. FSCaptain does

not use the airports – we have our own database of those. The concept of conversion means that we (us, the human) must locate those airplanes in the Traffic Tools aircraft list that belong to the airline we want to build a schedule for. FSCaptain can then scan the flight plans, selecting only those that apply to the aircraft on our "fleet list", and convert those plans to FSCaptain format.

The illustration above shows how to build a schedule for Landmark Airlines from the default schedules provided with FS2004. The default traffic file for FS2004 is called "Traffic030528.bgl". When the Traffic Tools de-compiler is run, it will create three files from this: Airports030528.txt, Aircraft030528.txt, and FlightPlans030528.txt.

Importing is a three-step process. The first step is to enter (or browse for) the Traffic Tools aircraft file (in this case, "Aircraft030528.txt"). Once this file is located, the import dialog will open it and list all the aircraft in the file in the list box on the left-hand side.

The second stop is to identify the aircraft that belong to the airline we want to import (this cannot be done automatically). Although it is not obvious from the names, four default aircraft are painted in the Landmark scheme in out-of-the-box FS2004, and you see those four listed in our example on the right-hand list box. What I did is find those four in the left-hand list box, select each one and click the button marked "-->" to move the airplane from the left to the right. The airplanes listed in the right-hand box are our "fleet".

Note that once you build a fleet like this, you can use the "Save Fleet" button to save it, and the "Load Fleet" button to restore it – you don't have to go through this laborious process again.

Also note that unlike the Microsoft defaults, most third-party AI schedules and airplanes are clearly identified as to which airline they are painted for. Thus, it should be obvious from the names in the list on the left which you want to select.

The third step is to locate the Traffic Tools flight plans text file, which in our case is the aforementioned "Flightplans030528.txt". Once this is done, the "Import" button will be enabled, and you can press it to actually import the schedule. Once the import is done, the entries will instantly appear in the schedule.

It's important to realize that the formats, concepts and goals behind the Flight Simulator AI are not the same as FSCaptain. Thus, an AI schedule may not perfectly import into FSCaptain. The significant differences are:

- Flight Simulator does not have the concept of 'aircraft volume class'. A specific airplane is assigned to each flight, and we can't know what the volume class of that airplane is without guessing. Thus, all flights imported into FSCaptain are designated with no volume class restriction.
- Each leg of an AI flight plan can have a different flight number. FSCaptain uses the concept of a multi-leg flight with the same flight number. When different flight numbers are encountered in the same flight plan, the import process will create separate FSCaptain flight entries for each such leg.
- AI flights support an unlimited number of legs. FSCaptain supports only six. If the import function sees more than six legs of a flight plan with the same flight number, the extra legs are not imported.
- FSCaptain allows any combination of days of the week for a flight. The AI only allows one day to be specified per flight. In practice, this means that when "realistic" flight schedules are put into Flight Simulator multiple-day flights have separate flight entries with the same flight number but different weekdays. The import process will merge these into a single FSCaptain flight.
- The AI flight plan has the concept of "repeating" flights, that is, a single plan can repeat on a weekly or at an hourly interval each day. The import process ignores these repeats and generates a single FSCaptain flight for each AI unique flight number it finds. FSCaptain flights always "repeat" on a weekly basis.
- The AI allows a weekly repeating pattern with no weekday specified. If the import process sees this condition, the flight is imported as "all days".
- The AI flight plans always loop from a starting point through a series of one or more destinations and back to the starting point. The import process does not generate the return flight from the final destination back to the starting point, as this is not realistic in many cases.
- FSCaptain requires each flight to have a unique flight number. This restriction is not present in the AI flight plans. The import process always tries to merge flights with the same flight number according to these rules: 1) if the duplicate flight has a weekly repeating pattern with a different day of the week than the existing flight, the new day of the week is added to the existing flight; 2) If the days are the same, but the destination of the AI flight plan leg is not on the existing flight, it is added to the next available leg. If there is no available leg, the flight is ignored. If neither 1 nor 2 are true, the flight leg is not imported.

Replicating Real Airlines

Here's how to use the FSCaptain airline maintenance functions along with the schedule import facility to create a real-world airline for you to fly for.

Go to the World of AI website: http://www.world-of-ai.com/ (or to any other large AI group) and download the package for any airline you're interested in along with the installer package if you haven't already got it. Put both in some new folder all by themselves.

Execute the installer and select the airline package(s) you downloaded. Now **this is really important**. Unless you want to install that package as an AI airline in your FS, you need to extract it to a folder rather than install it into FS9/X. So be sure to check the **extract files for manual installation** box, and then the **decompile flightplans** box. Choose your target simulator (FS9 or FSX) and your target folder which will contain the output. After you click on extract and agree and then install that target folder will have a new folder named for the airline with everything you need to import the schedule into FSCaptain.

Now go into the Administrator and create an airline configuration that matches the airline you're creating. I'd base it off an existing one. Change the names and any policies you want to modify. Put in a new name in place of the (newname) and click on Apply. Then when you click on the Schedule button down at the bottom you'll see a blank slate. We're going to import the WOAI schedule into FSCaptain. Click on the Import button.

In step 1, aircraft, click on Browse and navigate to the folder created after you did the WOAI extract (it will be named for the airline you extracted by the WOAI installer.) You'll see a file starting with Aircraft_000 – that's your aircraft list. Select it.
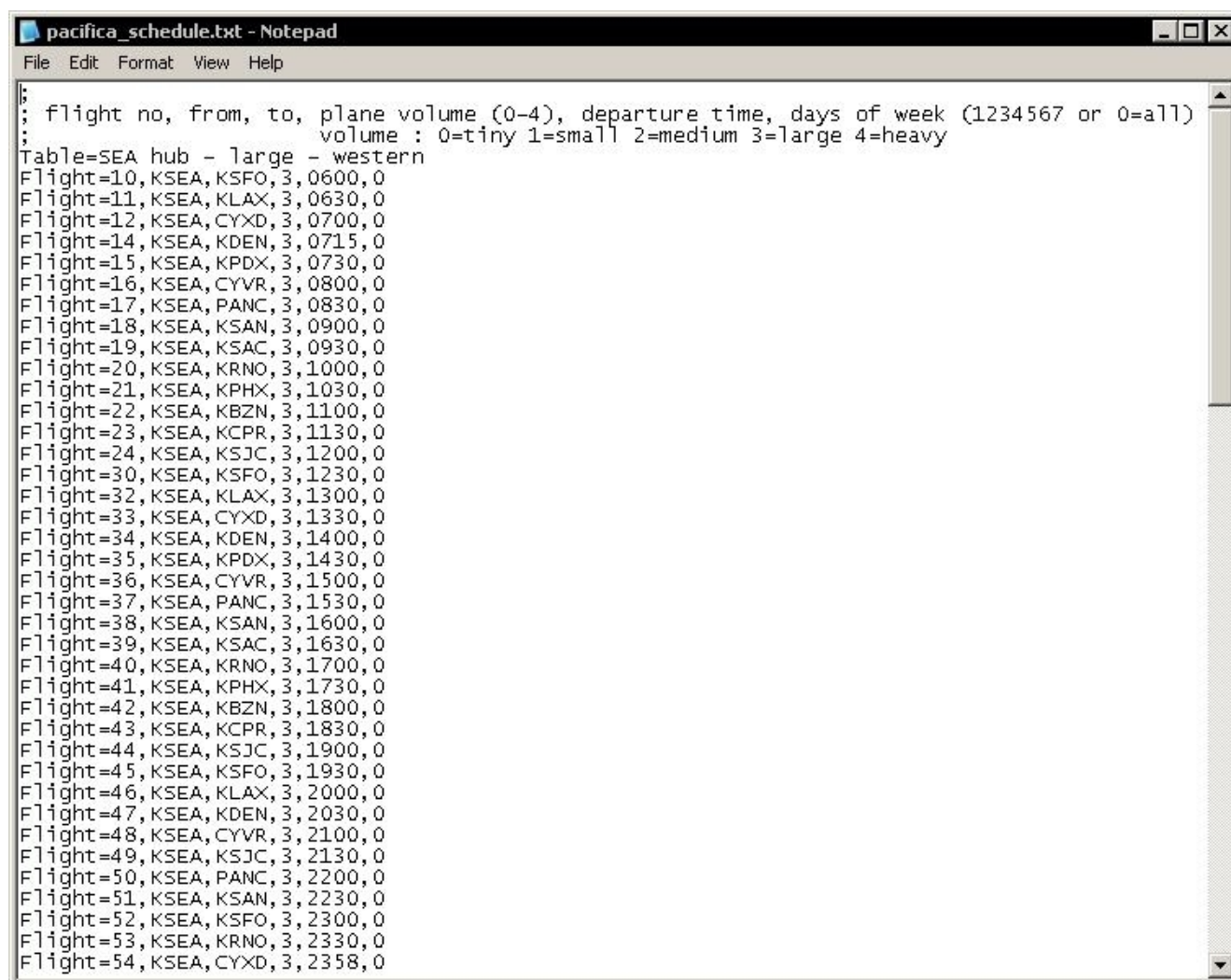
In step 2 you'll see the list of airplanes on the left and blanks on the right. Normally we'd want ALL the airplanes but if you only want flights for particular types just move them. If you're moving them all you don't have to select each one, just click on the --> button until all the planes have moved from the left side to the right side.

Almost done…. Now in step 3 use the browse button to navigate to the same folder you found the Aircraft_000 file inside and click on the file that starts with **Flightplans_**.

If you are using Local Times for your schedules, you can pick a GMT time adjustment and then click on Import below. (If you are using Zulu Times, this entry field is disabled.)

Editing Flight Schedules as Text Files

Flight schedules are stored as text files in the \FSCaptain\Airlines folder. They are named by adding the word "_schedule" to the airline's file name. For example, the schedule for Pacifica Airlines would be named pacifica_schedule.txt. The case does not matter. Note that the extension is .txt and not .cfg. You can edit the schedule in a text editor such as Notepad. Use Windows Explorer to navigate to the \FSCaptain\Airlines folder underneath your FS root folder. Double-clicking on a schedule file should bring it up in Notepad or Wordpad (either will do but you *must* save your changes in plain text format. Do not use word-wrap in Notepad for this editing.

Here's an example of an airline's schedule file:

```
pacifica_schedule.txt - Notepad

File   Edit   Format   View   Help

;
; flight no, from, to, plane volume (0-4), departure time, days of week (1234567 or 0=all)
;                     volume : 0=tiny 1=small 2=medium 3=large 4=heavy
Table=SEA hub - large - western
Flight=10,KSEA,KSFO,3,0600,0
Flight=11,KSEA,KLAX,3,0630,0
Flight=12,KSEA,CYXD,3,0700,0
Flight=14,KSEA,KDEN,3,0715,0
Flight=15,KSEA,KPDX,3,0730,0
Flight=16,KSEA,CYVR,3,0800,0
Flight=17,KSEA,PANC,3,0830,0
Flight=18,KSEA,KSAN,3,0900,0
Flight=19,KSEA,KSAC,3,0930,0
Flight=20,KSEA,KRNO,3,1000,0
Flight=21,KSEA,KPHX,3,1030,0
Flight=22,KSEA,KBZN,3,1100,0
Flight=23,KSEA,KCPR,3,1130,0
Flight=24,KSEA,KSJC,3,1200,0
Flight=30,KSEA,KSFO,3,1230,0
Flight=32,KSEA,KLAX,3,1300,0
Flight=33,KSEA,CYXD,3,1330,0
Flight=34,KSEA,KDEN,3,1400,0
Flight=35,KSEA,KPDX,3,1430,0
Flight=36,KSEA,CYVR,3,1500,0
Flight=37,KSEA,PANC,3,1530,0
Flight=38,KSEA,KSAN,3,1600,0
Flight=39,KSEA,KSAC,3,1630,0
Flight=40,KSEA,KRNO,3,1700,0
Flight=41,KSEA,KPHX,3,1730,0
Flight=42,KSEA,KBZN,3,1800,0
Flight=43,KSEA,KCPR,3,1830,0
Flight=44,KSEA,KSJC,3,1900,0
Flight=45,KSEA,KSFO,3,1930,0
Flight=46,KSEA,KLAX,3,2000,0
Flight=47,KSEA,KDEN,3,2030,0
Flight=48,KSEA,CYVR,3,2100,0
Flight=49,KSEA,KSJC,3,2130,0
Flight=50,KSEA,PANC,3,2200,0
Flight=51,KSEA,KSAN,3,2230,0
Flight=52,KSEA,KSFO,3,2300,0
Flight=53,KSEA,KRNO,3,2330,0
Flight=54,KSEA,CYXD,3,2358,0
```

The first three lines are comments because they start with a semicolon. The next line is an "official" comment telling FSCaptain what section of the schedule this belongs to. These table directives are optional.

Each flight has a line of its own. It begins with the word "Flight=" (not case sensitive) and then some comma-separated fields. The first field is the flight number which must be unique in the schedule for an airline (don't make two different flights with the same number.)

Next follows the departure airport and the destination airport. The next field is the minimum volume class of aircraft required for this flight. See the section *Configuring Aircraft* in this manual for more details about the volume class code, but briefly the classes are: 0=Tiny (C172), 1=Small (C208), 2=Medium (CRJ-700), 3=Large (B737), and 4=Very large (B747). Since this is a minimum, coding a zero in this field allows any larger aircraft to fly it, effectively making zero mean "no volume class restrictions".

Following the minimum volume class is the departure time, in 24-hour clock time. By default, this time is considered Local Time to the departure airport, but if you have enabled the **Use Zulu Time** setting, this will be considered Zulu Time. The time in your schedule won't change – only the time zone we will use to compare it to!

Following the departure time is a set of codes indicating which day of week the flight will operate. Zero means "all days". Other than that, any combination of these codes is allowed: 1=Monday 2=Tuesday 3=Wednesday 4=Thursday 5=Friday 6=Saturday 7=Sunday. For example, a flight scheduled to depart Monday, Wednesday, and Friday would be 135 in this field.

Following the days of the week are up to 5 optional extra leg destination airports.

How to fly a scheduled flight:

Flying a scheduled flight means showing up for work at the right airport, at the right time, and in the right sized airplane. If you do this, then the FCDU will show you the scheduled flights that will be departing within the time window defined for the airline (see c*reating an airline, scheduled flight parameters* for more information on this time window.

Basically, it's simple. Check the schedule for the flight you want to fly. Set the simulator time for about 15 minutes before the scheduled departure time for that flight. Be sure you are in an airplane that's the right volume class for the flight (don't park a DC-3 at a gate expecting to see a flight that's marked class 3 for 737-sized airplanes.) Note that this is volume class, not type. A propeller driven DC-6B is a class 3 airplane and will substitute on this flight as well as an A320 or 737 or DC-9. If you aren't sure, use the Administrator *Aircraft Characteristics* tab to look up the volume class for an airplane.

Appendix 1: Score Computation

Each flight is scored by starting with a base score of at least 85 points, then adding points for each thing above average that you did right, or subtracting points for each thing that you did wrong.

If you perform well in certain aspects, you will receive bonus points. If you perform poorly or violate airline regulations, you will lose points. Scores can go above 100, but never below zero. (If you crash your score is zero for that flight, period.)

Beyond that, your score starts at your base level and can have points adjusted for these reasons:

Early Arrival (details below)	-5 points
Late Arrival (details below)	-5 points each increment
Early Arrival – priority flight	-10 points
Late Arrival – priority flight	-10 points each increment
Priority flight on-time	+10
On-time with no Block Time revisions in-flight	+5
Not on-time even with Block Time revisions in-flight	-5
Block Time revisions filed in-flight	-2 for each revision above 2[*]
Completed with a serious mechanical fault	+15
Landed with Medical Emergency	+10
Cargo or aircraft damage assessment (details below)	-10 each level of damage
Fragile or live cargo delivered undamaged	+5
Correct position reporting during flight	+2
Hard landing reported by PAX	-5
"Rough flying" reported by PAX	-5
Breathing difficulties reported by PAX (due to high altitude)	-5
PAX complaints about late arrival	-3
PAX complaints about seatbelt signs that should have been on	-2
PAX complaints about seatbelt signs that should have been off	-2
Excessive ear pressure or pain reported by PAX	-2
An unbelted PAX injured when belt signs should have been on	-10
PAX complaints about interrupted cabin service	-5
PAX alarmed because you taxi too fast (over 30 knots)	-5
Cabin crew reports no alert from cockpit before takeoff	-3
Cabin crew reports no alert from cockpit before landing	-3
PAX compliments you on a smooth flight	+2 (+5 if passenger flight)
PAX compliments you on a gentle landing	+2 (+5 if passenger flight)
PAX comments that this was a very professional flight	+3 (+5 if passenger flight)
Failed to declare an emergency when called for	-25
False emergency declaration	-25
Successful emergency landing	Varies according to system.
Unauthorized cancellation due to weather	-25
Unauthorized cancellation due to mechanical fault	-25
Flight cancellation due to pilot error	-25

Flight reassignment due to pilot not completing commitment	-25
Unjustified delay due to weather report	-20
Unjustified delay due to reported mechanical fault	-20
Delayed arrival due to pilot error	-15
Unjustified diversion to alternate due to weather	-25
Unjustified diversion to alternate due to reported mechanical fault	-25
Failure to make required position reports	-3
Lights not set per company policy (NAV lights off, or if landing lights are off below 9500 feet, or on above 10500 feet)	-5
Altimeter not set to standard over transition altitude	-5
Gear damaged by over speed	-20
Gear speed exceeded with no damage found	-5
Flaps damaged by over speed	-20
Flaps speed exceeded with no damage found	-5
Exceeded 250 knots under 10,000 feet	-5
Fuel Quantity increased while in flight (cheater)	-30
Payload changed while in flight (cheater)	-30
Excess fuel on landing (fuel left after flight is equal or greater than the dispatcher's estimate for the whole flight.)	-5
Departed runway or taxiway	-5
Aircraft maximum red-line speed exceeded in flight	-10
Failed to promptly unload after landing	-10
Stalled aircraft while in flight	-10
Runway overrun on landing or takeoff	-20
Gear-up landing with no emergency	-20
No response to cabin emergency	-15

*If you are forced to endure a holding while on Ground, a holding in flight… or even to commit a go-around, you will receive an extra "free" Block Time Revision

Detailed definitions:

Late Arrival: You are always allowed to arrive up to 5 minutes after your scheduled arrival time based on the Block Time supplied by you to Dispatch before the flight (and possibly revised in-flight).

If your flight is more than 50 minutes in duration, you are allowed to be late by 10 percent of the total minutes. For a two-hour flight (120 minutes) you would be allowed to be 12 minutes late. (The percentage calculation is done from the actual time not the estimated time.) This number of minutes is called the "increment". Points are deducted by increment. For a 60-minute flight the increment is 5. If you are 16 minutes late, that is three whole increments, thus you would be charged 5 times 3 or 15 points for being very late.

Early Arrival: You are always allowed to arrive 10 minutes before your scheduled arrival time based on the Block Time supplied by you to Dispatch before the flight (and possibly revised in-flight).

If your flight is more than 60 minutes in duration, you can be early by 15 percent of the total minutes.   For a two-hour flight (120 minutes) you would be allowed to be 18 minutes early. (The percentage calculation is done from the actual time not the estimated time.) This number of minutes is called the "increment". Points are deducted by increment. For a 60 minute flight the increment is 10. If you are 21 minutes late, that is two whole increments, thus you would be charged 5 times 2 or 10 points for being too early. Note: you can't get around this by sitting on the tarmac outside the gate and waiting for the arrival time window to open. Dispatch times your arrival and won't allow you to do this – you'll be penalized if you do. They will send you a message if you are waiting an excessive amount of time to warn you before penalties start.

If you are flying Priority cargo (or special VIP or Groups of passengers) your Early Arrival window will be voided – you can arrive as early as you can safely manage. Be aware though that if you are allowed such, your penalty for a Late Arrival will be doubled!

Both of these definitions only apply to your Block Time from Dispatch – not to a Scheduled Arrival Time.

Damage Assessment: General damage to cargo or aircraft is assessed based on excessive G forces encountered in-flight or excessive landing speeds. There are 10 condition levels assigned, from 10 (undamaged) to zero (destroyed). There is never a penalty for a 10/10 condition. For each level below 10 extra points are deducted.

Emergency Landing Bonuses: Making a safe and successful landing while under the stress of an emergency will give you a bonus according to this list:

Mag Compass - 0
NAV1/NAV2 - 15
COM1/COM2 – 15
ADF – 10
RMI – 10
Transponder – 10
VSI – 5
Turn Coordinator – 5
Fuel Gauge – 10
Pitot Static Line – 15
Altimeter gauge– 15
Attitude gauge – 20
Airspeed gauge - 20
All Avionics – 20
Hydraulics – 20
Vacuum – 20

Electrics – 20
Pitot – 20
Brakes – 20
Pressure – 15
Flaps – 15
Gear – 20
Flight Controls – 25
Fuel Leak – 20
Oil Leak – 20
Hydraulic Leak – 20
Engine Failure – 10
Engine Fire – 20
Cabin (Medical) – 25
Cabin (Fire) – 35

Grades: You will see "letter grades" attached to the scores. This is a grading system familiar to most people who've been graded in American schools. An "A" is *excellent*. "B" is *above average*. "C" is *average*. "D" is *below average*. And "F" mnemonically stands for *failing*.

Here is the grading scale used by FSCaptain:

A+	95-100+
A	93-94
A-	90-92
B+	87-89
B	84-86
B-	81-83
C+	78-80
C	75-77
C-	72-74
D+	69-71
D	65-68
D-	60-64
F	Below 60

Appendix 2: Items.cfg and the Manifest Generator

All items loaded into an FSCaptain flight will be generated out of the Manifest Generator function, including passengers and baggage. You can customize the manifest generator to include many cargo items in addition to those provided by default. This appendix describes the format of the 'Items.cfg' file that controls the generation of cargo-type items.

There is a text file, located in the \FSCaptain\Config folder, called 'Items.cfg'. The entries in that file determine what can be loaded into an airplane. Each line specifies a different possible item. The file is a comma-delimited file which means it can be imported into a spreadsheet. There can potentially be 18 fields on each line although only 14 are currently in use.

You are limited to 1024 different individual items….

Field 1 – Weight Range. This is the minimum and maximum weight of each item or package, separated by a dash. The actual item will be randomly generated within this range. You can code a fixed figure here, not a range, by leaving off the dash. But generally, you should make ranges whenever possible – the generator will appreciate the flexibility this gives it to match cargo to the payload stations in an airplane.

Field 2 – Item Rarity. This is a percentage rarity factor, ranging from 100.0 percent (1000, the last digit is an implied decimal point) to 0.1 percent (1). This will determine how often this item will be generated on a given flight. Any number here above 400 will make this a commonly included item. Any number above 100 will make it quite frequently included. Any number below 30 is rare, and any number 10 or below is quite rare.

Field 3 – Volume Class. This is a range of aircraft volume classes that this item can be included with. This is a critical field! Do not code a Sherman tank with a volume class of 2 – it may be included in a flight on a regional jet, which is absurd. Only small boxes or items should be on classes 0 or 1. Medium sized items can be included for volume class 2. Larger items can be included on volume class 3. For example, a lion or tiger could be shipped on a 737 (class 3) but do not code elephants on any smaller than a class 4 (747 sized A/C). See the section *Configuring Aircraft* in this manual for more details about the volume class code, but briefly the classes are: 0=Tiny (C172), 1=Small (C208), 2=Medium (CRJ-700), 3=Large (A320), and 4=Very large (B747).

If the Item is too large to fit in a PAX aircraft's cargo doors, end the field value with a "C" to indicate that it can only be flown on a Cargo flight. For example, an Outdoor Sculpture cannot fit in the ULD-sized cargo door on a B757 Passenger aircraft, but it could fit in a special cargo door on a B757 Freighter, or on the nose door of a B747 Freighter.

Field 4 – Special Flag. Write a "1" in this field if this is a Fragile item. Write a "2" in this field if this is a Live item (e.g. a human kidney.). Write a "4" in this field if this item is a Priority item. Write an "8" if this item needs to be accompanied by a passenger. Leave it a zero if it is none of these.

These flags can be combined. For instance, to have an item that is both Priority and Fragile, you would enter a "5" here. Live animals generally aren't "buckled in" so they would need a Fragile and Live code… a "3". A "7" would indicate a Fragile, Live, Priority item.

Remember than an item cannot be selected if its special flag doesn't match the special conditions of a flight, and that your Items.cfg file must have at least one of each of these flags or the conditions of a given flight might not be able to be met.

You can add 8 to whatever number you code here to require the item to only be included if passengers are on the flight. The 8 can also be alone with no other number.

An example of using this feature would be a human patient being transported which could be coded 15 – 1 for Fragile, 2 for Live, 4 for Priority, and 8 for Requires PAX (that is, the nurses or paramedics flying along with the patient).

Field 5 – Container Name (singular):   The name of the container that contains the item(s). For example: Box or Crate or Pallet.

Field 6 – Pluralization: The suffix to append to the container to make it read as "more than one." For example, 'es' appended to 'Box' makes 'Boxes'.

Field 7 – Description: What the item is called. Examples are: "Electronics," "Television," "Wine," "Industrial Robot", etc.

Field 8 – Minimum Runway: This determines how large the airport must be before this item will be loaded at it. This is mainly to prevent huge items from being loaded at tiny airports.

The following fields are optional and can be omitted. However, if you require a field beyond Field 9, you must enter a 0 or leave the field blank in all intervening fields.

Field 9 – Special Status: This is a set of flags which for Cargo items indicate an item's "special transport status" that might draw the attention of Customs or other airport security officials. For "celebrity PAX" this will be the type of celebrity they are.

For Civilian PAX (VIPs or Groups):

```
Bit  0 = Performer
Bit  1 = Sports
Bit  2 = Politician or Minor Royalty
Bit  3 = Religious Authority
Bit  4 = Media
Bit  5 = Business/Military Authority
Bit  6 = Head of State/Religion or Major Royalty
```

For Civilian Cargo:

```
Bit  0 = Agricultural
Bit  1 = Foodstuff
Bit  2 = Wine & Beer
Bit  3 = Spirit strength alcohol
Bit  4 = Live Animals
Bit  5 = Currency / Negotiable Items
Bit  6 = Precious Metals & Stones
Bit  7 = Antiquities
Bit  8 = BioMedical
Bit  9 = Live Endangered Species
Bit 10 = Dangerous Goods (generic term)
Bit 11 = BioHazard
Bit 12 = Explosives
Bit 13 = Weapons/Ammunition
```

A 0 or a blank field here indicates that the item is of little special interest to anyone other than the shipper, or is an "everyday" Passenger or Cargo item.

Field 10 – Specialist Airline: This field is used to specify an item that requires a "specialist airline" type for transport.   Currently a value of 0 indicates an item can be carried by a standard Air Transport airline. A 1 will designate items which can only be carried by a Medical airline. (Such an airline would carry only these items.) There currently are only Medical specialist airlines. Other specialist airlines are planned for future releases….

Field 11 – Season: The date must be within this season or seasons for the item to be included. This is a mask. These are the season numbers: 1=spring, 2=summer, 4=autumn and 8=winter. Add the season numbers together and place the sum in this field. A value of 0 or 15 means all seasons.

Field 12 – Climate Zone: The departure airport must be within this climate zone or zones to be included. These are the zone numbers: 1=tropical, 2=temperate, 4=arctic. Add the zone numbers together and place the sum in this field. A value of 0 or 7 means all zones. As an example, bananas would not usually be shipped from any but a tropical zone.

Field 13 – Airport Affinity: The departure airport must be within a range (next field) of this airport to be included. Use the airport's ICAO ID as supplied in Flight Simulator. This can be used to load special items only available in certain areas. For example, "Florida Oranges" could be loaded only within a specified radius of the KCOI airport (Merritt Island, Florida). If multiple airport ICAO IDs are required, separate them with a space.

Here is a sample entry (with elements color-coded) followed by a color-coded explanation:

```
50-100,500,1-2,7,Box,es,Live Dungeness Crabs,2800,18,0,12,0,PAYA PAEL PAPG CZMT CBBC CAL9 KCLM,98
```

… will allow a 50.0% chance for Live Dungeness Crabs to be loaded in small (1) or medium (2) sized aircraft at any airport with at least a 2800ft runway in autumn (+4) or winter (+8) within 98 nautical miles of PAYA PAEL PAPG CZMT CBBC CAL9 or KCLM.

This cargo is Fragile (+1) and Live (+2), and it requires Priority (+4) handling. (That's a total of 7.)

Field 14 – Affinity Distance: The distance, in nautical miles, for the airport option in field 12. A positive integer needs to be entered for the "affinity" to exist.

Field 15 – Field 18: Reserved for future use – currently blank.

Special Requirements in the Items.cfg file:

The first two items in the file must describe passengers and their baggage like this:

```
170,0,0-4,2,PAX,,Passengers,0,1000
0-9999,999,0-4,0,Lot,,Baggage,0,1000
```

Do not alter these two items!

Examples of other general-interest items:

```
10-300,500,0-1,0,Box,es,Misc. Items,0,1000
100-400,500,1-1,0,Box,es,Misc. Items,0,1000
500-2000,500,2-2,0,Pallet,s,Misc. Items,0,3000
1000-2000,500,3-3,0,Pallet,s,Misc. Items,0,5000
2000-4000,500,4-4,0,Pallet,s,Misc. Cargo,0,5000
500-1000,10,2-4,0,Box,es,Air Conditioner,0,3000
200-500,10,1-3,0,Box,es,Automobile Parts,0,3000
500-2000,10,2-3,0,Box,es,Automobile Tires,0,5000
500-1000,10,2-3,0,Box,es,Aircraft Parts,0,5000
50-200,10,1-2,0,Crate,s,Flowers,1,3000,0,3,2
```

Explanation: The first item here is a small box that can be between 10 and 300 pounds which can be loaded on a "tiny" or "small"-sized aircraft. It is called "Misc. Items". The next four lines define increasingly larger kinds of "Miscellaneous Items" for loading into each volume class. "Miscellaneous" is a very common cargo description in the real world, since often all kinds of things are placed on cargo pallets for shipment. These boxes and pallets have a rarity of 500 (50%) which means they'll be on many flights.

From line 6 onward, we have some specific items. An air conditioner (an industrial sized one) weighing in at 500 to 1000 pounds, that can be loaded any anything from size 2 up. It requires at least a 3,000-foot runway at departure to be seen in a manifest (such an item wouldn't be loaded from a tiny dirt airstrip.) That's followed by more parts and tires. Finally, Flowers have more detail – we see they need a runway at least 3000ft in length, do not need a special airline for transport (0), and would be transported in spring and summer (3) from a temperate zone (2).

Here are some regional items:

```
100-500,100,1-4,1,Crate,s,California Wine,4,4000,0,0,0,KCCR,110
100-500,100,1-4,1,Crate,s,California Wine,4,4000,0,0,0,KVBG,80
100-500,100,1-4,1,Crate,s,Kentucky Bourbon,8,4000,0,0,0,KLEX,100
50-200,50,0-2,0,Box,es,Ski Equipment,0,3000,0,8,0,KDEN,100
```

Here you have wine from (1) Northern and (2) Central California, (3) bourbon from Kentucky, and (4) ski equipment from Denver – all items that are awaiting transport. Note the use of the airport radius – any departure or arrival airport of the correct size within the radius of the airport coded here can have these items included on the manifest.

Other regional items include Cognac & Escargot from France; Poutine from Quebec, Canada; Pumpkins from the Half Moon Bay area of California; Oranges from Florida; Porto from the Douro Valley of Portugal; and fresh Stilton cheese from the Counties of Derbyshire, Leicestershire and Nottinghamshire in England!

Here are some animals:

```
50-100,10,0-2,2,Crate,s,Snakes,3000,16,0,0,3
100-300,30,1-3,2,Crate,s,Ferrets,3000,16,0,0,3
100-300,50,1-3,2,Crate,s,Chickens,3000,16,0,0,3
100-300,30,1-3C,2,Crate,s,Swans,3000,16,0,0,3
200-1000,50,2-3C,2,Crate,s,Sheep,3000,16,0,0,3
200-1000,50,2-3C,2,Pen,s,Goats,3000,16,0,0,3
500-2000,30,3-4C,2,Stall,s,Cattle,5000,16,0,0,3
500-2000,30,3-4C,2,Stall,s,Horses,5000,16,0,0,3
100-300,20,1-3,2,Tank,s,Live Fish,5000,16
15-50,100,0-2,3,Pen,s,Kittens,3000,16,0,0,3
15-50,100,0-2,3,Pen,s,Puppies,3000,16,0,0,3
```

All of these can come from or arrive at temperate or tropical (zone = 3).

Animals which require larger living areas (Swans, Sheep, Goats, Cattle, Horses) can only be flown on a Cargo flight, denoted with a trailing "C" on the aircraft Volume Class field. After all, there wouldn't be room to place a Horse's Stall in the under-cabin cargo area of a B737 or A320….

```
200-250,50,1-4,15,Bed,s,Patient,0,5000,1
```

This is a patient – one of the masks in its type (15) indicates the patient can only travel with an accompanying passenger (usually a nurse or paramedic, or some attendant). These patients need to be transported aboard "air ambulances" and not in the economy section of a discount air carrier. So the "Specialist Airline" flag is set to (1) so only a medical airline can transport.

And here are some really rare items:

```
300-400,1,3-4C,2,Tiger,s,Bengal Tiger,5000,512,0,0,1
2500,1,3-4C,0,Unit,s,Generator,7000,0
2500,1,3-4C,0,Unit,s,Gas Turbine,7000,0
2000,1,3-4C,0,Unit,s,Industrial Robot,6000,0
```

Note that the Bengal tiger must be loaded from or to a tropical zone (1) and all of these items can only be carried on a Cargo aircraft.

You can also transport celebrities, whether they are individual VIPs or GROUPs of celebrities.

Now you can have the chance to have your favorite sports team, singer, politician (?), athlete, band, media celebrity (??), tycoon, or actress to be aboard one of your flights!

While we decline to publish the names or trademarks of real individuals or groups as data, we have given enough examples to allow you to customize your own lists:

```
1700-3400,10,1-2,0,GROUP,,Famous Band,4000,1,0,0,0
61200-70000,10,4,0,GROUP,,Famous Choir,7000,9,0,0,0,KSLC LOWW,150
6800-17000,10,2-3,0,GROUP,,San Francisco Baseball Team,6000,2,0,7,0,KSFO,65
3400-5100,10,2-3,0,GROUP,,Zurich FC,6000,2,0,0,0,LSZH,50
170,10,0-4,0,VIP,,Famous Actor,4000,1,0,0,0,EGFF,100
170,20,0-4,0,VIP,,Famous Golfer,4000,2,0,0,0,EGPJ KAGS KMRY RJCH RJTF RKTN YSCB YMML,160
170,15,0-4,0,VIP,,Famous Mountie,4000,4,0,0,0,CYXE,1670
170,35,0-4,0,VIP,,Famous Cricketer,4000,2,0,0,0,EGSF NZWN TXKF VECC YSSY,132
170,10,0-4,0,VIP,,Famous Newscaster,4000,16,0,0,0,KCIN,1265
170,150,0-4,0,VIP,,Govt Official,4000,4,0,0
170,50,0-4,0,VIP,,MP (Parliament),4000,4,0,0,0,EGPF FAJS FLLC HECA HKJK HTDA NZWN VECC VHHX YSSY,410
170,20,0-4,0,VIP,,MEP (Parliament),4000,4,0,0,0,LEML LFBV EDTD EPGD ESPC LZKZ LIAP LWSK LTBF,330
170,10,0-4,0,VIP,,Nashville Singer,4000,1,0,0,0,KBNA,150
```

These "container type" values must be specified as VIP or GROUP. Their weights should be standard, they should be limited to the size of aircraft and airport that would be appropriate, and it's easily possible to limit their appearance to be seasonal, or limited to climate zones, or limited to airports!

After all, an American baseball team would only fly in Spring, Summer and (hopefully) Autumn (**Season = 7**).

GROUPs only appear on a charter PAX flight – not on scheduled flights. On the other hand, VIPs can appear on scheduled or charter PAX flights.

While the chances to have any of these celebrities on a flight are very low – there is a one percent chance to even have one aboard, plus each VIP or GROUP has an additional one percent chance of being included – it is possible with a large enough aircraft to have a flight with more than one VIP! *We credit fellow Captain "philtum" for bringing this concept to us.*

Currently, VIP and GROUP flights are considered as Priority, which means you can arrive early without penalty, but will be penalized moreso than a regular flight if you are late.

It's just another reason to check your Dispatch Release. *Who knows what* or whom *might be listed*???

Two files – NewItems.cfg and new Items.cfg

Sometimes when you are upgrading your FSCaptain from an earlier version, there will be a file in the \FSCaptain\Config folder, called 'NewItems.cfg'. This file has updated items over the original 'Items.cfg' which you can copy and paste into your existing 'Items.cfg'.

In some instances however (such as with 1.7.1), we will publish an 'Items.cfg' file directly – these are times when we have to modify the layout of the file, or the logic behind it.

If you have made modifications to your existing Items.cfg file, you will need to copy over your changes, taking into consideration any modifications we've made to the structure of the Items.cfg file. If you are not certain, you may email your existing Items.cfg to us, including notes on any changes you've made, and we will update them for you.

If you are doing a full install of FSCaptain, all "new items" are included in the 'Items.cfg' file.

Appendix 3: Aircraft Interfaces to FSCaptain (Internal and XML)

<u>Canned Interfaces:</u>   Some airplanes have support built in to the FSCaptain system and do not require an XML interface. We refer to these aircraft as having "Internal Interfaces."

Check the "FSCaptain Aircraft Interface Matrix" document for the current list of aircraft and their internally interfaced systems.

Some of our initial Internal Interfaces use some of the aircraft LVARs to help us identify the aircraft, where more recent Internal Interfaces use the aircraft's SimObject folder names to tell them apart. Two quite different problems have trailed alongside these choices for years.

<u>First problem</u> – *Incorrect reuse of LVARs.*

To take our most prominent example, the Carenado B200 was one of the first aircraft for which we wrote an interface. At the time, we looked for LVARs that an aircraft used, and if we found them, we assumed *this was the aircraft being used*.

```
// Carenado King Air 200 EX
// Look for the few variables that are non-zero before powerup
GetLvar("(L:ASD_SWITCH_EFIS_POWER_TIMER,number)", &flt64, NULL, NULL);
if (flt64)
{
    InternalDetected = IVAL_CARENADO_B200;
    strcpy(ExternalName, INAME_CARENADO_B200);
    break;
}
GetLvar("(L:Time_Cont_car,number)", &flt64, NULL, NULL);
if (flt64)
{
    InternalDetected = IVAL_CARENADO_B200;
    strcpy(ExternalName, INAME_CARENADO_B200);
    break;
}
```

This worked for those Captains who used the aircraft, but over the years it was discovered that Carenado re-used at least one of these LVARs in other of their aircraft. Now, they're all Carenado's aircraft, so that's fine for them to do. But until we were able to publish an update to FSCaptain, those newer Captains had to come to terms with an interface that didn't work with their aircraft. This usually led to incorrect light and seat belt penalties.

But starting with FSCaptain 1.8.3, these and future Captains only have to create an Aircraft Override Configuration file for their new aircraft, and enter this line manually, using your favorite text editor:

```
USE_THIS_INTERFACE=0
```

Then, our FCDU will use "Interface 0" which means "there is no interface," and flights won't be dinged with inappropriate penalties.

Second problem – *Publisher-changed folder names.*

FSLabs released their A320 back around 2016. Within a month or two, FSLabs Captains had contributed to an initial Interface, which expanded over several months, capturing the state of several aircraft systems.

Over the next few years, FSLabs released models for the A319 and A321 – both of which use the same interface as their A320. It took new releases of FSCaptain for these new aircraft to use the same interface, simply by adding their primary SimObject folder name into our Interface Detector:

```
if ((strstr(UpperAirFile, "\\FSLABS A320")) ||
    (strstr(UpperAirFile, "\\FSLABS A319")) ||
    (strstr(UpperAirFile, "\\FSLABS A321")))
{
    strcpy(ExternalName, INAME_FSLABS_A320);
    InternalDetected = IVAL_FSLABS_A320;
    break;
}
```

But now these and future Captains will only have to create an Aircraft Override Configuration file for any possible new FSLabs aircraft (A318? A320CJ? Freighter Conversion? Etc.) and enter this line:

```
USE_THIS_INTERFACE=31
```

Then our FCDU will use "Interface 31" which is the FSLabs A320 interface, and flights will have their systems monitored correctly.

Starting with FSCaptain 1.8.3, if you need to add a value to your Aircraft Override Configuration files' "USE_THIS_INTERFACE", the value to be used would either be "0" – indicating there is no interface – or one of these values:

A2A Constellation = 60	Flysimware C441 = 28
Aerosoft A330 = 69	Flysimware Lear35 = 29
Aerosoft AirbusX = 2	FSDS HS748 = 30
Aerosoft CRJ = 3	FSLABS A320 = 31
Aerosoft DC8 = 56	IFLY 737NG = 32
Aerosoft TwinOtterX = 4	IFLY 747 = 33
CaptainSim 707 = 5	JustFlight 757 = 61
CaptainSim 727 = 6	Leonardo Maddog / Maddog X = 34
CaptainSim 737 (Original) = 7	Lionheart Kodiak = 35
CaptainSim 757 / 767 (Original) = 8	Majestic Q400 = 36
CaptainSim 777 (Original) = 9	Milviz 737 = 37
CaptainSim C130 = 57	Milviz B350 = 70
CaptainSim L1011 = 10	PMDG 737 = 38
Carenado AT45 = 62	PMDG 737NGXU = 64
Carenado B1900 = 11	PMDG 747 = 39
Carenado B200 = 12	PMDG 747 V2 = 40
Carenado C208EX = 13	PMDG 777 = 41
Carenado C406 = 14	PMDG DC6 = 42
Carenado Citation = 15	PMDG JS41 = 43
Carenado DO228 = 16	PMDG MD11 = 44
Carenado F50 = 55	QualityWings 757 = 45
Carenado P300 = 17	QualityWings 787 = 46
Carenado PA46 = 63	QualityWings BA46 = 47
Carenado PC12 = 18	RAZBAM Metroliner = 48
Carenado SF340 = 58	RealAir Duke Turbine = 49
CLS BA146 = 19	Simcheck A300 = 66
CLS DC10 = 20	TFDi 717 = 50
Coolsky DC9 = 21	VirtualCol A220 = 65
DA Fokker = 22	VirtualCol ATR = 51
DM BAC111 = 23	VirtualCol CRJ = 52
FeelThere EMB = 24	VirtualCol EMBv3 = 53
FeelThere ERJ = 25	VirtualCol EMBv4 = 67
FeelThere Phenom = 26	VirtualCol SAAB = 54
FlightOne ATR72 = 27	VirtualCol SAABv2 = 68
	Vertx DA62 = 59

The rest of this appendix applies to the situation where no existing interface exists and one needs to be written. To implement an interface on your own, you can use a pre-written one as your starting point but you'll need to be at least somewhat conversant with FS9/FSX/P3D XML programming. You'll also need a tool to detect and read any XML variables that the add-on aircraft may be using or exporting its data to. The tool we use for this is called the LINDA Tracer, which can detect and

display the settings of any XML user variables while an aircraft is flying. The LINDA package is available on the Internet as shareware and has its own documentation.

There is a separate document – "Introduction to FSCaptain Interfaces" that you can find in the \FS-Captain\Documentation folder which gives an overview of how to use LINDA to capture the data needed to make an interface for an aircraft that we at FSCaptain Central Command don't own.

If you can contribute data so that we can write an interface – we will credit you with your work. If you can write your own interface, we ask that you please share it with the rest of the FSCaptain community via our forums so that others can benefit from your work.

<u>Interface basics</u>: FSCaptain looks for, and can set, several special XML variables that allow it to communicate with an aircraft that has gauge code written or modified to check and manipulate those variables. This interface is never required --- any FS airplane will work with FSCaptain. However, the realism of the experience is enhanced when an airplane communicates with FSCaptain.

<u>Seat Belt and No Smoking Signs</u>

In the real world, airliners have these two switches and they have important communications functions. The seat belt switch is used to communicate to passengers and cabin crew when conditions require the use of their seat belts. The no smoking switch can be used to communicate to cabin crew when certain key events are about to take place: in FSCaptain, when cleared for takeoff and cleared for landing.

FS2004 does not implement these switches at all. Many third-party airliners for FS2004 may have them, but they are no more than dummy switches which may sound a chime. FSX & P3D allow the implementation of these two functions in XML code, but many airplanes converted from FS2004 do not use them properly – although most of the default newer airliners do.

FSCaptain has an aircraft characteristic that lets you tell the program which condition is true: the belts do not work in this airplane at all, or they work in FS2004 but not in FSX/P3D, or they work in FSX/P3D but not FS2004, or they work in all versions. If the switches are designated as not working in the version you are flying, FSCaptain ignores them (and any score penalties are ignored). If they are designated as working, FSCaptain expects you to use them properly and may reduce your score if passengers or cabin crew complain.

Implementing the switch interface in FS2004.

FSCaptain looks for two XML variables called ACMEBELTS and ACMESMOKE. If these variables are not found (that is, they contain the value zero), then FSCaptain assumes that under FS2004 the airplane being flown does not have working belts and smoking switches. If however a non-zero value is found, FSC knows that the aircraft code set that value and so has a working FSCaptain interface. The values are simple: 1 for switch off, 2 for switch on.

```
Seatbelts_example.txt - Notepad
File   Edit   Format   View   Help
<Gauge Name="Seatbelts" Version="1.0">
    <Element>
        <Select>
            <Value>(L:Seatbelt sign, enum)</Value>
            <Case Value="0">
                <Image Name="switch_off.bmp"  Luminous="Yes" ImageSizes="27,39"/>
            </Case>
            <Case Value="1">
                <Image Name="switch_on.bmp" Luminous="Yes" ImageSizes="27,39"/>
            </Case>
        </Select>
    </Element>

    <Element>
     <Shift>
      <Value>
        (L:ACMEBELTS,enum) 0 == if{
            (L:Seatbelt sign, enum) 0 == if{
                1 (>L:ACMEBELTS,enum)
            } els{
                2 (>L:ACMEBELTS,enum)
            }
        }
        (L:ACMEBELTS,enum) 1 == if{
            (L:Seatbelt sign, enum) 1 == if{
                0 (>L:Seatbelt sign, enum)
            }
        }
        (L:ACMEBELTS,enum) 2 == if{
            (L:Seatbelt sign, enum) 0 == if{
                1 (>L:Seatbelt sign, enum)
            }
        }
      </Value>
     </Shift>
    </Element>

    <Mouse>
        <Tooltip ID="">Toggle Seatbelts Sign</Tooltip>
        <Help ID=""/>
     <Cursor Type="Hand" />
        <Click>
        (L:Seatbelt sign, enum) ! (>L:Seatbelt sign, enum)
        (L:Seatbelt sign, enum) 0 == if{
            1 (>L:ACMEBELTS,enum)
        } els{
            2 (>L:ACMEBELTS,enum)
        }
        </Click>
    </Mouse>
</Gauge>
```

It is important that your code set these variables as soon as possible so that FSCaptain can detect them. It is also important that your code check the values of these variables, because the FSCaptain First Officer may manipulate them during flight.

Here is an example of XML code for a seat belt switch:

Notice two things: first, the mouse clicks and visual display track a separate variable "`(L:Seat-belt sign,bool)`. This is so that this code will work any time not just with FSCaptain. Second, notice there is a separate <Element> section which monitors for changes in the interface variable made by FSCaptain and changes the internal variable appropriately.

This exact same code will work for the ACMESMOKE 'no smoking' variable too.

<u>Implementing the switch interface in FSX/P3D:</u>

The system used for FS2004 is not necessary in FSX/P3D, simply set on and off the two FSX XML variables:

```
(A:CABIN NO SMOKING ALERT SWITCH, bool)
(A:CABIN SEATBELTS ALERT SWITCH, bool)
```

However, if the aircraft uses the ACMEBELTS and ACMESMOKE variables FSCaptain will see and use them, just as in FS2004.

<u>Installing the Switches in an Aircraft</u>

(The following is an example of how to construct the switch code yourself. Several ready-made belts and smoking switches are available in the \FSCaptain\Panel folder for you to use.)

First create a folder in your airplanes 'panel' folder called 'FSCaptain'. Then copy the XML code I have provided in the appendix into Notepad and save it as 'Beltswitch.xml' in the 'FSCaptain' folder you just created. Also copy that code, change the ACMEBELTS variable in it to ACMESMOKE, and save it as Smokeswitch.xml in the same folder.

Then make (or find) two pictures of the switch you want to show on the panel called switch_on.bmp and switch_off.bmp. Put these in the FSCaptain folder you created.

Now in your panel.cfg file, place these lines in the [Window00] section at end of the list of gauges:

```
gauge60=FSCaptain!Beltswitch, 100,200,20,20
gauge61=FSCaptain!Smokeswitch, 130,200,20,20
```

The numbers in these two examples will have to be adjusted for your panel. the 'gauge60' and 'gauge61' will have to have the 60 and 61 changed to unique numbers on your particular panel.

The numbers after the name, in the belts example, are the location and size where the image goes on the panel. The 100,200 means the top left hand pixel of your "switch_on.bmp" picture will be placed on the 100th pixel to the right on the panel, and the 200th pixel down; and the size of your picture will be scaled to be 20 pixels high and 20 pixels wide. You'll have to experiment to get it exactly where you want it.

Cabin Comfort Variables

An aircraft can transmit to FSCaptain several XML variables that specify the cabin altitude, rate of climb, and temperature. From these, FSCaptain will measure passenger comfort and failure of the pilot to effectively manage these variables can result in passenger complaints against him. If these variables are not present (that is, zero, not transmitted) no such evaluation is done by FSCaptain.

`(L:ACMECABINALT,feet)`
        This variable is zero if not present, or it represents the cabin altitude in feet plus 1000. The reason for the additional thousand is that zero represents no data available, so an aircraft at an altitude of zero feet MSL would have 1000 in this variable.

`(L:ACMECABINROC,fpm)`
        This variable is zero if not present, or represents the cabin's rate of climb or descent in feet per second, plus 10,000.   Numbers above 10,000 represent climb, below represent descent.

`(L:ACMECABINTEMP,celsius)`
        This variable is zero if not present, or represents the cabin temperature in degrees Celsius plus 100.

General Status Variables

`(L:ACMEHEAT,enum)`

     This variable represents whether the window heat is turned on or not. Zero means no switches are present, 1 means heat is not turned on, 2 means it's turned on. On the case of multiple switches this will only be a 2 if all switches are turned on.   The effect of window heat being on is to decrease the odds of a depressurization event in the case of a bird strike.

`(L:ACMEIGNITION,enum)`

     This variable represents whether the turbine ignition switch is turned on or not. 1 means ignition is not turned on, 2 means it's turned on. On the case of multiple switches this will only be a 2 if all switches are turned on.   This will not be present unless the airplane is a jet or turbo prop type, it does not apply to piston driven engines.   FSCaptain monitors the status of this signal for jets and turboprops, and when it is not on during takeoff and landing, or during visible precipitation, the odds of a flameout are increased.

`(L:ACMECABINCALL,enum)`

     This variable is zero if not present, or 2 if the Cabin Call button has been pressed. It is not presently monitored in FSCaptain but may be in the future.

`(L:ACMEPOWER,enum)`

     This variable is zero if not present, or 1 if the Galley Power is turned off in the aircraft, or 2 if the Galley Power is on.   The pilot will be notified by the cabin crew if cabin service is necessary on the flight but the galley power isn't turned on.

`(L:ACMEBRAKE,celsius)`

     This variable is zero if not present, or represents the brake temperature plus 1000. This is monitored by FSCaptain and the pilot will be informed by the first officer if the brake temperatures exceed 399 degrees.

`(L:ACMELGTNAV,celsius)`

     This variable is zero if not present, or is set to 1 if the NAV lights are off, and 2 if the NAV lights are turned on. This can be used in those airplanes that do not manipulate the standard FS signals. It is not necessary in those that do.

`L:ACMELGTLL,celsius)`

     This variable is zero if not present, or is set to 1 if the landing lights are off, and 2 if they are turned on. This can be used in those airplanes that do not manipulate the standard FS signals. It is not necessary in those that do.

`(L:ACMEV1,number)`
`(L:ACMEVR,number)`
`(L:ACMEV2,number)`

     These variables can be used to transmit the settings of speed bugs to the interface. If these numbers are not zero, and the flight has a co-pilot, the co-pilot will verbally make these speed calls on takeoff when the aircraft's speed matches the numbers in these variables.

The Mechanical Failure Interface:

`(L:ACMEPRESSFAIL,bool)`

      This variable is set by FSCaptain and not by the interface. When set to 1 it means that FS-Captain has control of the cabin pressure variables ACMECABINROC and ACMECABINALT. It will set those and the interface should attempt, if possible, to read them at their standard values and set the airplane's variables accordingly. This means reversing whatever logic is used to translate the airplane's cabin rate of climb and altitude. Also, when this variable is set to 1 the interface should stop trying to transmit the airplane's values in the variables ACMECABINROC and ACME-CABINALT. In other words, this switch reverses the flow of those two variables from the normal airplane-to-FSCaptain into FSCaptain-to-airplane.

`(L:ACMEFLAG,bool)`

      The XML variable ACMEFLAG can be used by the interface to suppress all mechanical faults coming from FSCaptain regardless of the settings in the Administrator. Set the variable to 1 to accomplish this. This does not affect non-mechanical failures and problems such as bird strikes, blown tires, cargo shifts, or others. Use this if your airplane will generate all "failures" by itself.

`(L:ACMEFAULT,number)`

      This variable can be used by the aircraft interface code to alert FSCaptain to a mechanical fault triggered by that code. If this variable remains zero, there is no fault indicated. If this value is a valid three-digit Fault Code, FSCaptain will recognize it as a fault according to the list in Appendix 4.

`(L:ACME_FAULTS,number)`

      This variable is controlled by FSCaptain and is used to inform other add-ons of the number of faults which FSCaptain has caused *or is aware of*. (A zero indicates we are unaware of any fault.)

Should this value ever be non-zero, you can query additional LVARs (ACME_FAULTS_1 through ACME_FAULTS_nn, where 'nn' is the value of ACME_FAULTS) for a special value which represents the fault type in the "thousands position", and the three-digit fault number in the "hundreds, tens, and single positions". (All fault types and fault codes are listed in Appendix 4.)

Appendix 4: Mechanical Fault Codes

There are many systems onboard our aircraft which can fail and FSCaptain can detect many such failures which would occur if the aircraft designers deem a failure should occur, which might be triggered by another add-on, or by FSCaptain itself using the ACME Failure Generator. (Rule 1 of the ACME Failure Generator is, "the ACME Failure Generator cannot itself fail.")

If you have the option "Display Failure Codes on FCDU" set, then your FCDU will display a code of the failed system, along with the failure *type*.

There are six types (or causes) of system failures:

> 0 – External (either another add-on, or the aircraft itself)
> 1 – Mechanical – the percentage is set from the Profile and Settings tab in the Administrator
> 2 – Bird strike – the percentage is set from the Profile and Settings tab in the Administrator
> 3 – Ice – ice accumulation without engine anti-ice enabled
> 4 – Blown Tire – the percentage is set from the Profile and Settings tab in the Administrator
> 5 – Chilled Precipitation / Turbulence – not having engine anti-ice on in non-ice conditions

Here are the codes for the sixty-plus systems which can fail. Note that all codes below 200 are considered not to be part of the ACME Systems' Minimum Equipment List and do not warrant an emergency declaration or a cancellation of the flight if detected before airborne.

> 100 – Mag Compass
> 101 – NAV1
> 102 – NAV2
> 103 – COM1
> 104 – COM2
> 105 – ADF
> 106 – RMI
> 107 – Transponder
> 108 – VSI
> 109 – Turn Coordinator
> 110 – Fuel gauge
> 111 – Autopilot
> 112 – Ammeter
> 113 – Prop Deice
> 114 – Hydraulic Pump 1
> 115 – Hydraulic Pump 2
> 116 – Generator 1
> 117 – Generator 2
> 118 – Carb Air Temp Gauge
> 119 – Cylinder Temp Gauge
> 120 – DME
> 121 – Fuel Pressure Gauge

122 – Oil Pressure Gauge
123 – Oil Temp Gauge
124 – OAT gauge
125 – RPM gauge
126 – MAN Pressure Gauge
127 – Gyro
150 – Magneto 1L
151 – Magneto 1R
152 – Magneto 2L
153 – Magneto 2R
154 – Magneto 3L
155 – Magneto 3R
156 – Magneto 4L
157 – Magneto 4R
180 – Alcohol Leak
200 – Pitot
201 – Altimeter
202 – Attitude Indicator
203 – Avionics total
204 – ASI
301 – Hydraulics
302 – Vacuum
303 – Electrics
304 – Pitot Blockage
305 – Brake – all
306 – Brake – left
307 – Brake – right
308 – Cabin Pressurization
310 – Flaps
311 – Spoilers
312 – Gear
32X – Prop Governor X
33X – Prop Feather X
40X – Fuel Leak Tank X
50X – Oil Leak
60X – Hydraulic Leak
70X – Engine Failure
80X – Engine Fire
90X – Thrust Reversers
910 – Elevator Cables
911 – Aileron Cables

In the above, "X" represents the engine affected by the failure, 1 through 4.

All faults will be published through a set of LVARs. Other add-ons or utilities can check the LVAR named "ACME_FAULTS" for the number of currently active faults, and then look for "ACME_FAULTS_1" through "ACME_FAULTS_nn" up to the value of "ACME_FAULTS" itself.

The published failure codes will include the failure type in the "thousands place". For example if you were to then hit a bird after takeoff and lose engine #3, ACME_FAULTS_1 would equal "2703". If FSCaptain were to later generate a random fault in your gyro, ACME_FAULTS_2 would equal "1127".

Appendix 5: Special Options and Features

There are certain options in the FSCaptain system that can only be accessed by a text editor in this release. Future releases may provide access to some of these special options and features from the Administrator. None of these files are essential to the operation of the FSCaptain system and only exist to solve certain rare problems to provide very special features.

All FSCaptain configuration files are text files which can be edited by Notepad or any other text file editor. However, for many of these files, this is dangerous as the Administrator edits the content of these files to prevent bugs and crashes in the FCDU during flight. Editing some configuration file outside the Administrator is strongly discouraged for this reason.

The files *which can be edited by hand* are:

- airport_surface_override.txt
- closed_user.txt
- customs_user.txt
- exceptions.txt
- ignored_airports.txt
- Items.cfg
- new-id_user.txt
- notams_user.txt
- no_scan_folders.txt
- options.cfg
- preferred_alternates.txt
- preferred_parking.txt
- private_user.txt
- Profile.cfg
- TypeAliases_user.txt

Items.cfg has been discussed in Appendix 2. What follows are the guidelines for the remainder of these files.

The file "Profile.cfg" normally does not need to be edited by hand – it should only be done so under the guidance from the FSCaptain Support Team, *and since it contains your unique license key, it should never be shared with anyone!*

The airport_surface_override.txt File

FSCaptain gets its information about airport surface types (which can be Hard or Soft Ground, Water, Ice, and Snow from the Makerwys and SceneryScanner utilities. They read the active scenery files and list many different types of data from airport BGL files and convert them into a format for FSCaptain to use.

Some scenery designers have chosen to not include the correct runway surface type in their BGL files, instead only providing visually appealing textures, which unfortunately cannot be turned into recognizable data.

This file is to be edited by individual Captains to override the general runway types normally collected by Makerwys and SceneryScanner. It is not a detailed replacement for differently constructed sceneries, but it will allow Captains to make quick on-the-fly adjustments until they (or another scenery owner) can adjust the scenery directly.

The format of this file is simple. On separate lines are the ICAO code of the airports in question, followed by an equal sign, and then by a single character code denoting the primary runway types at that airport. The primary runway codes are:

> H — Hard surface (asphalt, concrete, etc.)
> S — Soft surface (grass, dirt, etc.)
> W — Water surface
> I — Ice surface
> N — Snow-bound surface

As an example, if your KJAX scenery is constructed with beautiful looking grooved concrete runways, yet the BGL file containing the simulator-visible information has them as grass surfaces, Dispatch will not permit flights in aircraft which cannot taxi on grass!

So, you would need to add the following line to the airport_surface_override.txt file:

KJAX=H

Then you would run SceneryScanner, and Dispatch will trust your declaration that KJAX has hard surfaced runways.

As of FSCaptain 1.8.2, a list of 1652 worldwide airports with "believed-to-be-hard runways" have been added to this list. Should you prefer to fly to a KJFK with all grass runways, you would need to modify this list….

The closed_user.txt File

This file supplements the official *closed_fsc.txt* file, allowing each Captain to customize their data.

These files are used only when the option RESPECT_CLOSED_AIRFIELDS=1 is added to a Captain's options.cfg file. (Detailed several pages from here.)

These files contain a simple listing of ICAO, FAA, TC codes for airports which have closed operations since FS9 / FSX were first published and which would not be used by commercial aircraft under any circumstances.

Taking the first four listings – in alphabetical order – from the (original) closed_fsc.txt, they are:

00CL
0Q6
25OR
2CL2

Each of these is an airport in the United States which is no longer listed in the FAA database.

We only have several dozen such airports listed – most in Northern California. However, if you know of an airfield near you which is no longer in use and is not listed in closed_fsc.txt, you can add its code to your closed_user.txt file and run SceneryScanner… your FSCaptain airport database will be updated.

If an airport is listed in closed_fsc.txt and you need to be able to make flights to or from the airport in question – for example, if your VA considers 2CL2 to be one of their airports – then add 2CL2 to your private_user.txt and run SceneryScanner and 2CL2 will be considered an operational airport!

The customs_user.txt File

This file supplements the official customs_fsc.txt file, allowing each Captain to customize their data.

These files are used only when the option RESPECT_CUSTOMS=1 is added to a Captain's options.cfg file. (This is detailed in another appendix.)

These files contain a complex listing of ICAO, FAA, TC codes for airports with known Customs services (including the lack thereof), as well as a bit/flag value of the airport's services. The airports contained in customs_fsc.txt have been compiled from various official and unofficial sources.

The purposes of these files are to establish which airports can and cannot participate in a flight between nations. It's not always possible to discern such from an airport's name. For example, KBIL – Billings Logan International Airport – despite its name it does not have Customs Services.

There are certain exceptions that prevent this from being a simple on/off arrangement. Some airports are understaffed and therefore limit Customs operations to a small number of crew and passengers. For example, CYZF – Yellowknife (the main base of Buffalo Airways) is designated as AOE/15 – Airport of Entry / 15… Customs there can only process 15 souls per flight. So, while the 7400ft runway at CYZF can handle a 737… you'd only be able to take 15 PAX and crew combined from any other country.

What follows is a detailed description of how these values are stored. This data is included in the header of each file – if there are any differences between what follows and either of the files in question, the header data should be considered as *most current*:

```
For airports of the Americas, Greenland, Ireland, Northern Africa, Oceania, the
current and prospective Schengen Agreement countries, and the United Kingdom: if
there is no listing here, it is ASSUMED that no Customs Services are available.


For all other countries, if an airport is not listed here it is ASSUMED that all
Customs Services are always available.


This is a character-based bitwise flag system, employed using the following
values/services:
1. SERVICES
      bit 0  = Full Passenger Service (if bit 15 is clear)
      bit 1  = Full Cargo Service (if bit 15 is clear)
      bit 2  = Special (Live) Cargo Service (if bit 15 is clear)
      bit 3  = Either Passenger and Crew Count -or- assumed on (if bit 15 is clear)
      bit 4  = Passenger and Crew Count (if bit 15 is set)
      bit 5  = Passenger and Crew Count (if bit 15 is set)
      bit 6  = Passenger and Crew Count (if bit 15 is set)
      bit 7  = Passenger and Crew Count (if bit 15 is set)
      bit 8  = Passenger and Crew Count (if bit 15 is set)
      bit 9  = Passenger and Crew Count (if bit 15 is set)
      bit 10 = No Unscheduled Service - Only scheduled flights are allowed
      bit 11 = No Scheduled Service - Only charter flights are allowed
      bit 12 = Alternate Use Permitted regardless of other restrictions.
      bit 13 = Future Use - Commercial Cargo Service
      bit 14 = Future Use - Export Control Service
      bit 15 = Limited Passengers and Crew with Cargo - Valid for Passenger flights
               only, and limits the number of Souls On Board to the value of
               bits 0 to 9. (Max souls of 1023.)
               E.g., a value of 32783 (bits 0, 1, 2, 3 and 15) would allow flights
               of 15 or fewer crew and passengers with related cargo – but not
               "cargo only" flights.


2. COMPREHENSIVE COUNTRIES LIST
The token "CCL:" is used to denote a list of "country names" used in FS default and
add-on airport sceneries where "comprehensive" data has been obtained.  If you were
to add 100 sceneries for the country "Freedonia" where XX99 is a full Customs en-
abled airport and all others not, you could represent such by adding "CCL:FREEDO-
NIA" and "XX99=15".  Any other airport with a matching country name would be pre-
sumed to not have Customs Services.
```
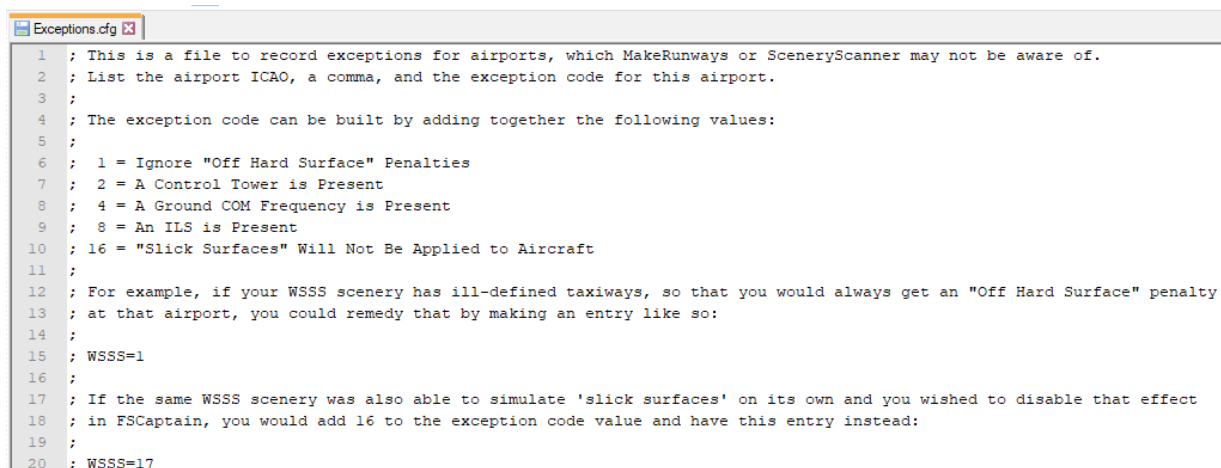
There's a lot of detail that can be applied here, but to make things simple, any airport with a value of "15" is considered capable of all standard Customs services, and an airport with a value of "8" is considered to not have any standard Customs services.

If you wish to update the data – to add a new airport whose status doesn't appear correct, or to enable international flights to or from the airport in question (for example, if your VA considers KBIL to be an airport capable of flights to or from another country) then add KBIL=15 to your customs_user.txt and run SceneryScanner and then KBIL will be considered a Customs-enabled airport!

The exceptions.cfg File

The exceptions file provides a way to fix certain problems with airport configurations, and is in‐
tended as a user-specific configuration file.

This is the default file as packaged in this release, with no data:

```
Exceptions.cfg
 1  ; This is a file to record exceptions for airports, which MakeRunways or SceneryScanner may not be aware of.
 2  ; List the airport ICAO, a comma, and the exception code for this airport.
 3  ;
 4  ; The exception code can be built by adding together the following values:
 5  ;
 6  ;  1 = Ignore "Off Hard Surface" Penalties
 7  ;  2 = A Control Tower is Present
 8  ;  4 = A Ground COM Frequency is Present
 9  ;  8 = An ILS is Present
10  ; 16 = "Slick Surfaces" Will Not Be Applied to Aircraft
11  ;
12  ; For example, if your WSSS scenery has ill-defined taxiways, so that you would always get an "Off Hard Surface" penalty
13  ; at that airport, you could remedy that by making an entry like so:
14  ;
15  ; WSSS=1
16  ;
17  ; If the same WSSS scenery was also able to simulate 'slick surfaces' on its own and you wished to disable that effect
18  ; in FSCaptain, you would add 16 to the exception code value and have this entry instead:
19  ;
20  ; WSSS=17
```

This will handle the problem of poorly constructed airports where it appears the taxiways and run‐
ways are in place but in fact they are not, and you can get penalties for what appears to be perfect
taxiing.

You can also use this to indicate an airport has a Control Tower, Ground Communications, and an
ILS. The presence of these services can influence the choice of an airport to be 'preferred' for your
airline.

If you have an airport scenery which can simulate 'slick surfaces' on its own, you can note that in
this file and if you are using the FSCaptain Hazard Pack item "Runways can be contaminated…" FS‐
Captain will not attempt to force your aircraft into a skid! You would receive the normal guidance
from Dispatch about degraded braking, but the airport scenery would be in control of enforcing
careful ground operations!

The ground_times.txt File

This file allows you to specify average taxi-out and taxi-in times for individual airports. These times are part of the Block Time calculations made for each flight. (Block Time starts when a flight goes OUT, and ends when a flight goes IN.)

Normally, your Dispatch Office uses general taxi times based on the size and capabilities of an airport, combined with some aircraft considerations, but this configuration file will give you the flexibility to assign specific times to any airport you choose. Just enter the ICAO ID, an "equals sign," your new taxi-out time, a comma, and your new taxi-in time.

For an example, here's Travis' entry for KSFO:

`KSFO=9,22`

This would give an average of 9 minutes for taxi-out estimates, and 22 minutes for taxi-in estimates.

There is a minimum of 0 minutes (which defaults to the 'general estimate' time) and a maximum of 60 minutes which you can apply. Any out-of-bounds value would invalidate the airport's entry!

You can put all of your changes in the master "*Ground_Times.txt*" file, or you can also put changes into airline-specific parking files that would go in your \FSCaptain\Airlines\ folder. Just name those files using your airline's "short name" followed by "*_Ground_Times.txt*". Taking our example above, you could add that line to "*\FSCaptain\Airlines\ACME_Ground_Times.txt*" just as easily – and no other airline would use that data.

FSCaptain will check for an airline-specific file first, and will not check the master file if an airline-specific data for an airport is found. One advantage to use an airline-specific file is if airline parking at a specific airport could result in markedly different taxi times.

Case in point – here's a diagram of KSFO, with its International Terminal and Domestic Terminals highlighted. The Domestic terminals are closer to the primary runways, so it would stand to reason that an American Airline flight would have shorter taxi paths than an Air France flight would. (Plus, the longer the distance, the more traffic you would may have to pause to wait for!)
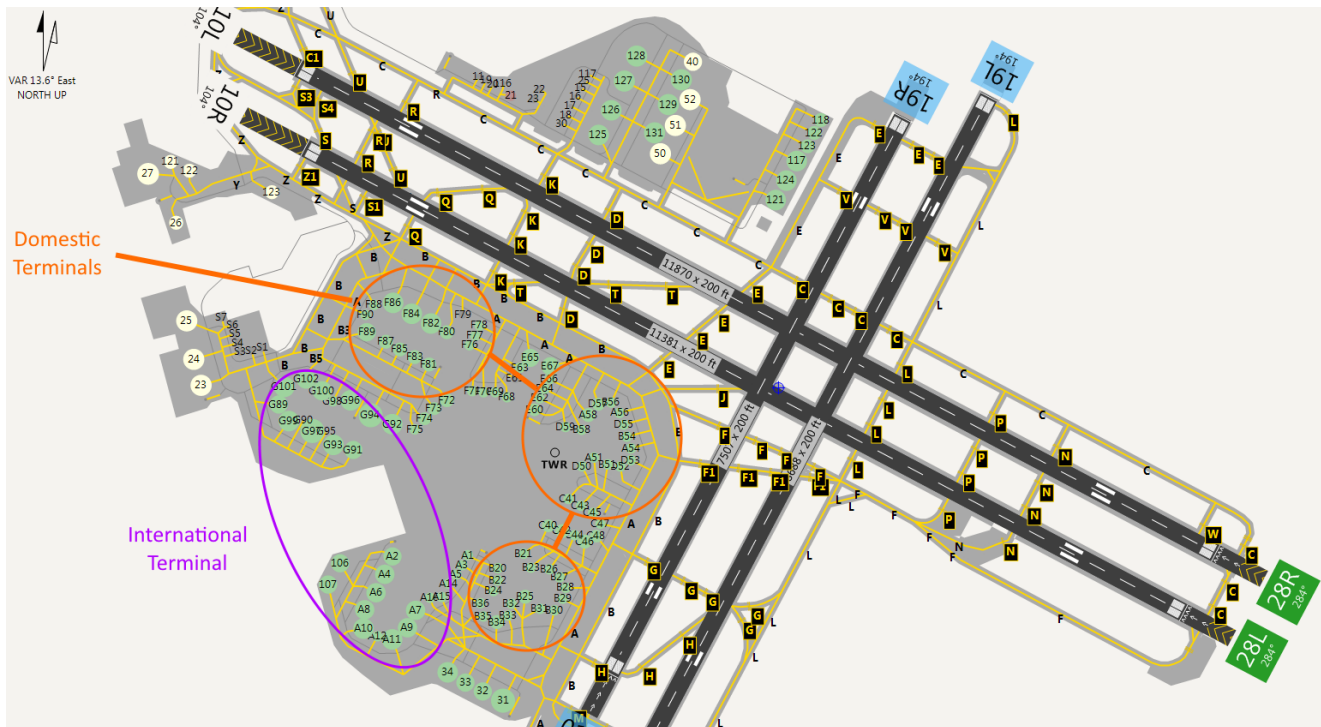
The ignored_airports.txt File

This file is another configuration file which can help to correct problems with airport which are too close to one another. It was formerly known as "ignored_airports.cfg" but we have renamed it (and will automatically rename any existing "ignored_airports.cfg" files.

This file contains the ICAO identifiers of airports which you wish to be utterly ignored by FSCaptain. These airports will not be listed in the airports.cfg file, nor any other file created by SceneryScanner.
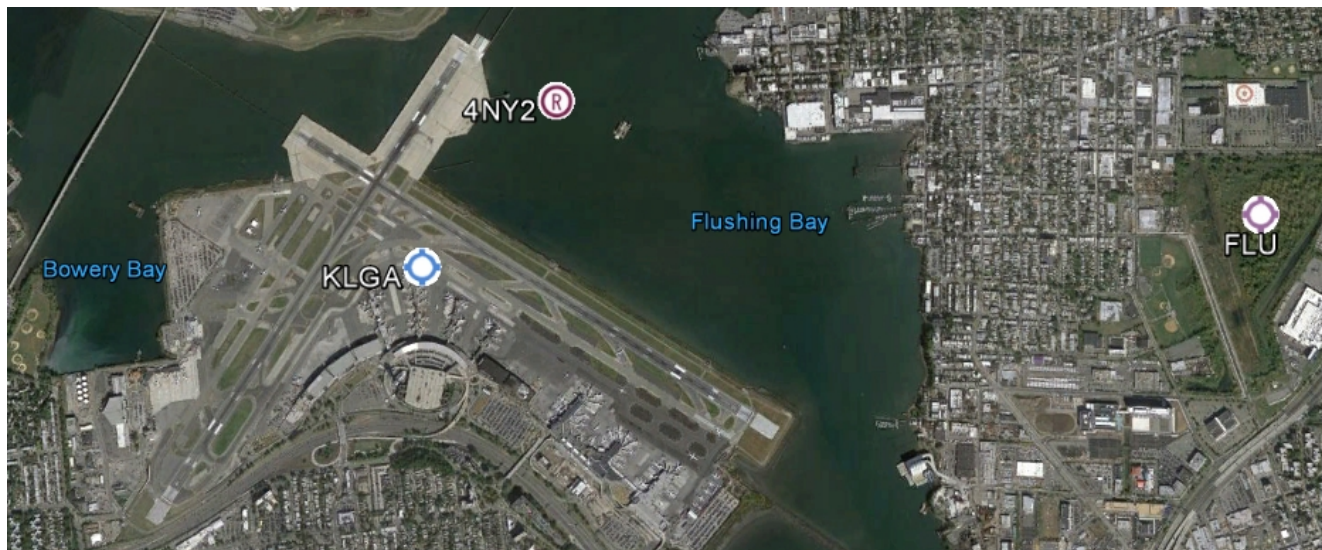
Looking at the Google Earth image above, you can see the Airport Reference Points (ARPs) for the major New York City airport hub LaGuardia – KLGA – along with a private seaplane base 4NY2, and a small civil airfield in Flushing, NY (FLU).

It is easily possible to log in to your Company Dispatch at the start of runway 22 or 31 and find yourself "closer" to 4NY2 or FLU than KLGA. (Some sceneries move the ARPs to other locations, allowing the distance differential to encompass some of the KLGA terminal gates.)

If you launch at certain airports and see on your FCDU that you're at another airport in the vicinity, you can add that airport to this file, and then run SceneryScanner to make a new FSCaptain airport database which has no knowledge of the other airport.

You may list any airport IACO identifiers in this file, one per line. By default, this file is empty – only using what airport sceneries which are problematic for you.

The new-id_user.txt File

Our simulators' built-in sceneries include elements that are well over a decade old.

Some changes include airports which have changed their "ICAO ID". Now, some scenery developers have created their own "New ICAO ID" airports, but not all airports have had such make-overs.

As an example, look at the FSX airport KFCA - "Glacier Park International" in Montana, USA because today, "Glacier Park International" answers to the ICAO ID of "KGPI". However in FS2004 and subsequent simulators, "Glacier Park International" retains the ICAO ID of "KFCA".
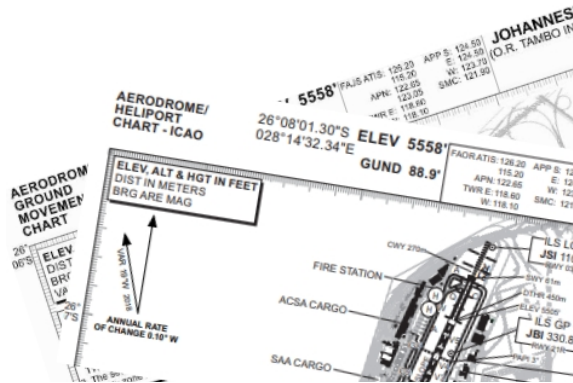
A more notable change is the one for the former FAJS – *O R Tambo International* in Johannesburg. In 2005, its ICAO ID was changed to FAOR, but FSX and P3D both retain the older "FAJS" ID.

Some other flight-simulator add-ons can recognize some changed ICAO IDs, but not all do. Now, FSCaptain can also recognize these changes, and can allow you to note your own changes.

Your options.cfg file has an entry titled "ENABLE_NEW_AIRPORT_IDS" and when set to 1…

```
ENABLE_NEW_AIRPORT_IDS=1
```

… your FSCaptain will use this data to 're-ID' all affected airports.

As of FSCaptain 1.8.4, there are nineteen airports in our database with a "New ID". They are listed in the file *new-id_fsc.txt*, which is kept as read-only.

If you encounter an airport that's not in our list, you may enter it in *new-id_user.txt* and then run SceneryScanner to update the FSCaptain airport database. (Running MakeRunways for this step is not necessary!) Just use the format…

[Old ICAO ID]=[New ICAO ID]

… for your entries.

The new-name_user.txt File

This file supplements the official *new-name_fsc.txt* file, allowing each Captain to customize their data as they see fit.

These files contain a simple listing of ICAO codes for airports which have changed their "airport name" since your simulator was first published. They consist of an ICAO code, a colon character (":"), and the new "airport name."

Taking a look at a few listings – at random – from the original *new-name_fsc.txt*:

```
KSDF:Louisville Muhammad Ali Intl
KSWF:New York Stewart Intl
KSTL:St Louis Lambert Intl
KTDZ:Toledo Executive
```
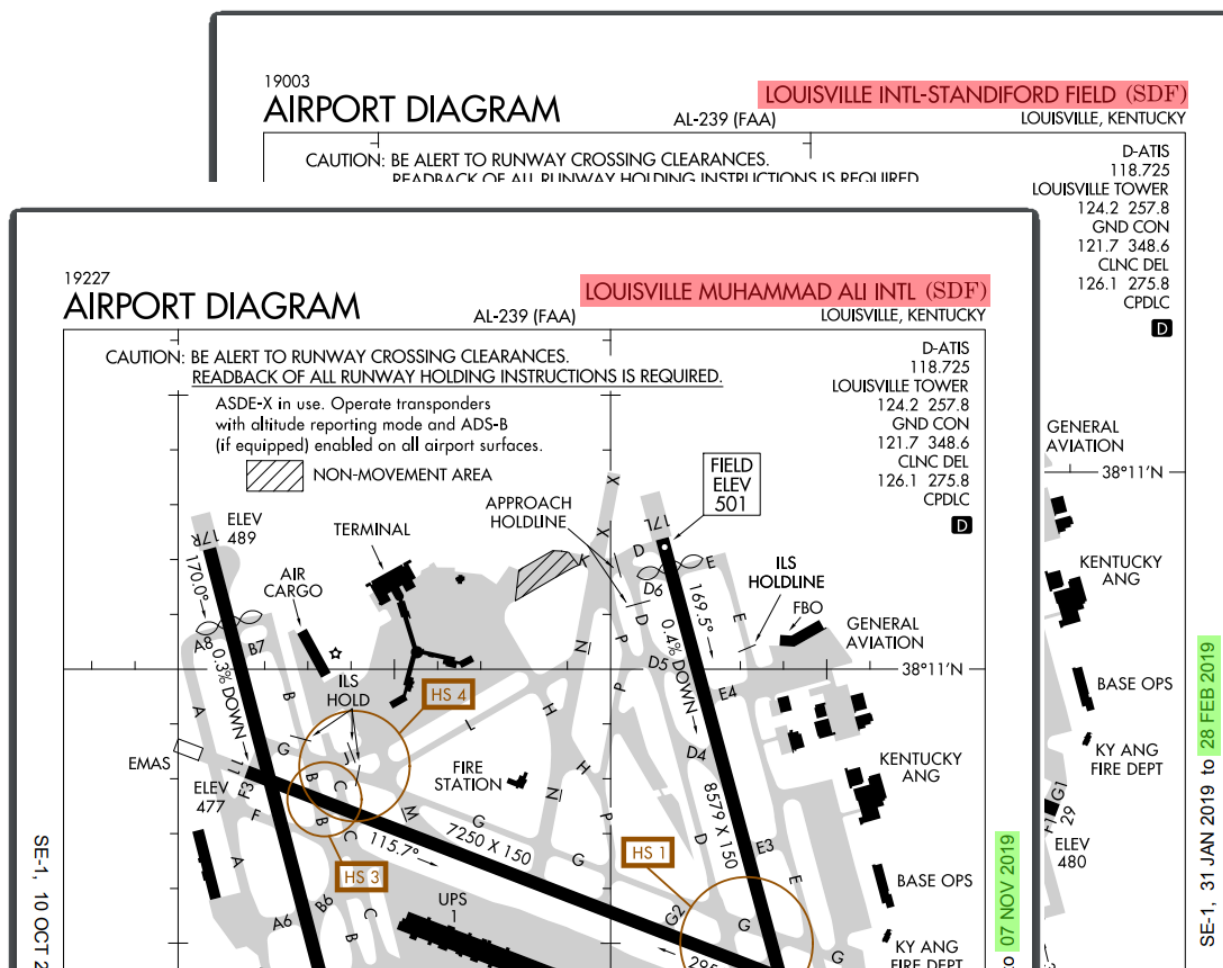

These airports' authorities have adopted "names" over the past few years which they feel will either reflect better their geographical location or to spotlight a local celebrity. However, some changes are little more than swapping "Regional" in place of "Municipal." These airport names may not be found in default or freeware or payware airport sceneries, but are included here for current relevance.

The data in your "new-name_user.txt" file will override any entries in "new-name_fsc.txt," so if your VA insists on KSTL being named "Lambert Field," you can add an entry to "new-name_user.txt" to make that happen. (If you add an entry consisting of the ICAO code and a colon character, *but no name*, SceneryScanner will use the name from the BGL sceneries and ignore any entry in the "new-name_fsc.txt" file.)

Note: If you're working with an airport where both the ID and the Name has changed since the BGL was published, you should use the ICAO code from the BGL, and note the ID change in the "new-id_user.txt" file.

The only restrictions to the name are the length of the name (FSCaptain can support up to 60 characters), and no colon character can be used as part of the name.

Otherwise, we place no restrictions on the names that you use. Would you like to rename KLAX as "Vin Scully LA International", or do you want to finally have "An airport named 'Sue'?" Now you can!

Of course, any change you make here will only appear on your FSCaptain Dispatch Release.

The notams_user.txt File

In real life, *NOtices To AirMen* (NOTAM) reflect changes (and challenges) that Captains need to account for on their flights. Some NOTAMs apply to enroute entities such as upcoming changes to an airway or a Navaid. But when it comes to airports, subjects of NOTAMs may be things such as changed or out-of-service items that include runways, taxiways, aircraft procedures, ILS systems, and various lighting systems.

Real life airport NOTAMs can also include temporary hazards on-or-nearby an airport, such as cranes, rigs, towers, and other construction equipment or personnel.

None of which freely apply to our simulators. Simulator Airways can be updated with each new AIRAC publication. Simulator Navaids only change if the Captain updates certain scenery elements. And simulator airports never have any Out Of Service items – again unless the Captain updates airport scenery elements.

But for Captains who choose to fly with the simulator option to "allow collisions" there are other issues with things such as scenery elements encroaching upon taxi areas. Another item to be considered is off-airport scenery autogen elements such as very tall trees or buildings placed exactly on a runway's centerline….

So FSCaptain has its own NOTAMs element which allows Captains to describe elements which could be a challenge to their own flights.

Before v1.8.3 FSCaptain Notams were handed in a single file – \Config\notams.txt. But now, FSCaptain uses "notams_fsc.txt" and "notams_user.txt" files to maintain these issues because our NOTAMs element will be more flexible and eventually will include items that can affect our flights.

The "_user" file contains items that each Captain wants to be reminded of… as previously noted in the notams.txt file.

The "_fsc" file contains items we have derived from various Aeronautical Information Publication (AIP) sources. The "_fsc" file initially includes data from US Class "A" airports, and some US West Coast will be updated online regularly, and it will be possible for Captains to download these updates which will expand the "official" set of items. (See below.)

So… what are the changes? Initially, airports which report an elevated occurrence of bird activity will increase the odds of a bird strike for those Captains who have chosen that flight risk. Airports which are "Cold Temperature Restricted" will only have these NOTAMs appear if the current temperate is appropriate.

Planned changes are to allow special-purpose NOTAMs for Customs flights, Rotary aircraft, and Noise Abatement.

The format to add or edit items in the notams_user.txt file has expanded from the prior format. Here are the fields and their meanings / values.

1.   ICAO ID
2.   DEPT=Departure
    APCH=Approach (in air)
    ARRV=Arrival (on ground)
    APDP=Approach and Departure
    ARDP=Arrival and Departure
3.   I=Information (Dispatch Release only)
    W=Warning (Dispatch Release & ACARS)
4.   A=Aerodrome
    C=Cold Temp Restricted Airport
    D=Dangers
    N=Navaid/Navigation
    O=Obstacle/Object
    I=Noise Abatement (future use)
    R=Rotary Aircraft (future use)
    U=Customs (future use)
    W=Wildlife
    X=WX - Weather
5.   D=Dawn
    L=Sunrise to Sunset
    N=Sunset to Sunrise
    O=Before midnight until Dawn
    U=Dusk
    V=Dawn and Dusk
    *=All times of day
6.   NOTAM text - max amount of 64 NOTAMs per airport, each with a max length
    of 512 characters.

Field 2 – Flight Phase – "Departure" includes both taxi-out and climbout. "Approach" applies literally to the approach segment of your flight. "Arrival" applies to the taxi-in phase.

Field 3 – Appearance – This field controls where the NOTAM appears, either as Information on your Dispatch Release, or as a Warning on your Release and on your FCDU.

Field 4 – Type – This field is the "Type" of NOTAM: Aerodrome-related items. Cold Temperature airport values. Dangers (reports of laser or drone activity, etc). Navaid or Navigation items (ILS alignment). Obstacles on airport surface. All other items are self-explanatory.

Field 5 – Time of Day – is currently unused, but will be used in future versions.

Fields 1 and 6 are self-explanatory.

Updates to the notams_fsc.txt file will be posted at http://fscaptain.net/downloads/notams_fsc.txt

The no_scan_folders.txt File

In the past few years, AI packages came in use which use the file "aircraft.cfg" rather than "sim.cfg" to contain each aircraft's basic information.

Some of these AI packages contain hundreds of aircraft (*thousands*, when liveries are considered). These packages overwhelm our Administrator and FCDU Installer, which each allocate a certain amount of memory to hold valid human-flyable aircraft data.

Also, Prepar3D version 4's system of 'distributed installations' means aircraft could be found in many more places… even alongside sceneries, utilities, and other add-ons.

So, we have developed a system for Captains who enjoy these packages to note distinguishing characteristics of their 'folder names' so that we can 'ignore' them. After all, why spend time scanning through your airport scenery collection looking for aircraft which you can't fly?

This file contains entries for you to enter 'folder names' which will then be ignored by FSCaptain.

If your Administrator crashes without opening, you should check the ADMIN log file and look for the latest AI packages that are listed and come up with your own rulesets to enter in this file. (Likewise for the FCDU Installer and its INSTALL log files.)

As an example, if you have an AI package which will have a Bat-Plane cruising around your skies and you would not want it to appear in your Administrator or Installer, you would look at its main folder name ("SimObjects\Aircraft\AI_BatPlane") and make an entry like so:

`\AI_BatPlane`

Each valid line is its own ruleset, and must contain an opening folder slash ("\") followed by between 3 and 32 filename characters, including spaces, but not including colons, or periods ("dots")! You may use a 'closing slash mark' within the first 4 characters so Prepar3D "\PBR\" folders can be ignored.

You may add a semicolon (";") to add a trailing comment to a ruleset line.

You are limited to 1024 entries / rulesets. If you need more space, please contact us by email or forum!

Entries containing the following substrings will be ignored... so you won't be able to cut off a whole set of critical folders!

- \PROGRAM
- \ADDON
- \SIMOBJECTS
- \AIRPLANE
- \AIRCRAFT
- \ROTORCRAFT
- \MICROSOFT
- \LOCKHEED
- \APPDATA

- \PROGRAMDATA
- \USERS
- \DOCUMENTS
- ~~\FLIGHT~~
- \FS9
- \FS2004
- \FSX
- \P3D
- \PREPAR3D

The options.cfg File

This file contains all of custom options used by FSCaptain. Several of these options can be edited from the Administrator, but the vast majority of them require use of your text editor.

If you are upgrading your copy of FSCaptain, newer options (with the default values) will automatically be added to your options.cfg file once you run the FCDU or Administrator.

Each option has a self-explanatory comment, but a few of the options could use some details….

```
;
; URLs to use in Dispatch Releases.
DISPATCH_URL=https://flightaware.com/live/findflight?origin=[DEP]&destination=[DST]
DISPATCH_URL=https://www.aviationweather.gov/airep/data?id=[DEP]&distance=300
DISPATCH_URL=https://www.aviationweather.gov/airep/data?id=[SRC]&distance=300
DISPATCH_URL=https://www.liveatc.net/search/?icao=[DEP]
DISPATCH_URL=https://www.liveatc.net/search/?icao=[DST]
DISPATCH_URL=https://www.liveatc.net/search/?icao=[ALT]
```

Dispatch URLs

The DISPATCH_URL option lets you specify a URL pattern that takes an airport ICAO ID, and will replace the airport ID using the [DEP] [DST] and [ALT] airports in your flight plan! When you view your Dispatch Release, the final URL will be displayed… and if you're viewing in a text editor, you can then copy it to paste in your browser… effectively becoming a 'shortcut.'

Taking the examples above, if we were flying from KPHX to KCVG we could have these (real) URLs in our Dispatch Release…

```
https://flightaware.com/live/findflight?origin=kphx&destination=kcvg
https://www.aviationweather.gov/airep/data?id=kphx&distance=300
https://www.aviationweather.gov/airep/data?id=kcvg&distance=300
https://www.liveatc.net/search/?icao=kphx
https://www.liveatc.net/search/?icao=kcvg
```

... allowing us to paste them into our browser to view real-time flight data, PIREPs, ATC chatter….

Any URL can be used – you can find real-time flights, ATC audios, detailed airport information including charts, etc.

Your limits are that you may enter a maximum of six Dispatch URLs, and the URL patterns must be no longer than 128 characters each.

```
; Current file path to write the LatestDispatchRelease.txt file.
PATH_DISPATCH_TXT=C:\Users\Me\Documents\FSCaptain\Common\
;
; Current file path to write the LatestDispatchRelease.htm file.
PATH_DISPATCH_HTM=C:\Users\Me\Documents\FSCaptain\Common\
```

Path for Dispatch TXT file

The PATH_DISPATCH_TXT option lets you specify a folder location for the "LatestDispatchRelease.TXT" file which contains the current active Dispatch Release. You may change / or bookmark this location for any other add-ons who can view the current Dispatch Release file.

Path for Dispatch HTM file

The PATH_DISPATCH_HTM option lets you specify a folder location for the "LatestDispatchRelease.HTM" file which contains the current active Dispatch Release in HTML format. You may change / or bookmark this location for any other add-ons who can view the current Dispatch Release file.

```
;
; Current file path of the designated Navdata database.
PATH__NAVDATA=C:\Users\Me\Documents\FSCaptain\Navdata\
```

Path to NavData

For the PATH_NAVDATA key, you need to specify the pathname to your provider's main folder… the one which contains both \Navdata\ and \SidStars\ folders.

The default path is to the 'sample Navdata' which has been installed in your Users' Documents' \ FSCaptain\NavData\ folder.

However, if you have a current NavData subscription and you have the option to install data in the AivlaSoft format (or "AivlaSoft 1 format"), then you can change our path to point to your AivlaSoft data. Thereafter, when you update your NavData you can re-run our SceneryScanner to give you updated Transition Altitude and Transition Level values, as well as enroute navaid and airport DME data.

For more details, see Appendix 6.

Etc….

For other options.cfg items, you can change the values of each option to disable (or enable) the documented penalty or function. Likewise, for the "distance" or "percent" options, you can use reasonable integer values in the distance type specified.

Logging

The options with the names that begin with "DISABLE_LOG_" have been included to reduce the size of your ADMIN, FSCAPTAIN and FCDU log files. These files record (in plain text) various events occurring in each flight you make, and can help the FSCaptain support staff to diagnose problems that you might encounter in any of your flights. Ideally you would leave these values as "0" so that all actions are recorded… but you do have the option to disable certain items from being logged if you find them tedious to read.

However, if you are using an Alpha or Beta test build all logging will be enabled! This is so when you make a bug report (with your log files!) *everything will be noted*.

For example, this line...

```
FCDU.GAU:: 10:24:48 Ground hold declared due to icing - Ice: 87 / 10
```

… indicates that soon after startup, your company dispatch issued a ground hold because of surface ice buildup. Then later…

```
FCDU.GAU:: 10:37:43 Ground ice hold released due to successful deicing procedure.  HOT: 20
```

… indicates that the ground hold was released after the deicing crew completed its tasks, and you were granted a holdover time of 20 minutes.

Key Assignments

You can override the key assignments for the FSCaptain menu shortcut keys if necessary. But be aware that the menu titles will not change to reflect your changes.

These options can be included:

```
KEY_BELTS=28          ;Ctrl-\, Hex 1C
KEY_SMOKING=29        ;Ctrl-], Hex 1D
KEY_FCDU=30           ;Ctrl-Shift-6, Hex 1E
```

The numbers are the ASCII values of keys that can be assigned to the distinct functions, in decimal. You will need to look up the values of the keys you want to use in place of these defaults and put them in these options.

For example, to make the seat belts sign use SHIFT-S (a capital S letter), code this:

```
KEY_BELTS=83          ;"S", Hex 53
```

Note for Prepar3D Version 4 / version 5: We are not seeing these keystrokes being reported to us in the simulator, and we consider those key assignments as non-functional in these simulators.

The preferred_alternates.txt File

FSCaptain has used algorithms to determine the correct Alternate airport for any Destination, and over the years, we've added conditions and checks to ensure that all Options can be considered.

Initially, we start by looking outward from your destination at various airports considering the Airline's ILS, Numbered ID, Military, and Control Tower policies. We also look to your Options which govern how to treat an airport's longest Runway, its 'Private' status, and its Customs status. Finally we consider the latest METAR so as to not send you into low visibility or thunderstorms!

However, some airlines have their own real-world list of "Preferred Alternates" for some of their airports, and now you can target specific airports in a very easy way.

Open your "preferred_alternates.txt" file in a text editor and you'll see each line in the file has a Destination airport ID followed by a list of possible Alternates. The format of the data is simple – the first value is the Destination, then up to 64 possible Alternates – each separated by a comma.

When you Dispatch a flight to one of the listed Destinations, FSCaptain will initially only consider your listed Alternates. We'll still apply the Airline and Option and METAR rules, but only to these airports. If good matches are found, one of the airports will be chosen randomly.

As an example, Travis' personally preferred Alternates for KSFO are as follows:

```
KSFO:KSJC,KLVK,KSUU,KSMF,KSCK
```

Here, he's chosen another local Customs-ready Bay Area CAT II major hub (KSJC), a local towered regional (non-Customs) airport with a 5325x100ft ILS runway (KLVK), a large CAT II civ/mil Airport of Entry (KSUU), and two other airports well over 60nm away – KSCK (the current no-Customs 'default' airport) and KSMF (another major hub – CAT III and Customs capable).

If all five Alternates could be applicable for a given flight, then one will be chosen at random. Some RJs and most Bizjets could be assigned to KLVK, but no heavies or jumbos could land there. If any other condition (current weather, Customs, etc.) would prevent an airport's choice, then the next 'best' alternate would be selected.

You can put all of your changes in your master "preferred_ alternates.txt" file, or you can also put changes into airline-specific parking files that would go in your \FSCaptain\Airlines\ folder. Just name those files using your airline's "short name" followed by "_alternates.txt". Taking our example above, you could add that line to "\FSCaptain\Airlines\ACME_alternates.txt" just as easily – and no other airline would use that data.

FSCaptain will check for an airline-specific file first, and *will not check the master file if an airline-specific data is found*. Otherwise there's no reason to prefer putting data in the master file or in an airline-specific file… use whichever method is best for you!

The preferred_parking.txt File

Lots of commercial, shareware and even freeware airport sceneries apply airline parking codes to spot when the time arises. Even if you fly a fictional airline (with a fictional code), there are airport editing programs that can let you add your codes where you would like to.

But what if you don't like to edit your sceneries? Or what if you edit a commercial BGL only to have your edits wiped out when the airport publisher issues an update?

Now you can put the airline codes you want into a master parking file, and/or into airline-specific parking files. FSCaptain will honor those codes when making parking assignment calculations!

You don't have to refer to parking spots that you're not concerned with. You can add codes to every parking spot at an airport… to just a few spots… or a single spot. (FSCaptain can manage up to 96 total airline parking codes for each parking location.)

Open your "preferred_parking.txt" file in a text editor and review the guidance in the header. Each line in the file is a separate parking spot at a specific airport. You'll enter the "Airport ID," followed by the "Gate name," and then the "Gate number" as noted in the MakeRunways' G5.csv file.

Go ahead and open G5.csv in either a text editor or spreadsheet – you'll need data from it later on.

First, don't worry if you're not adding codes for an actual "Gate" – that's the term used in the G5.csv documentation. Once you have your G5.csv file open, search for the airport you want to add your airline codes, and then begin to hunt for the parking spot(s) that you want to modify.

The first three values on each line are unique to everyone's airport sceneries, so it's best to start with the first three values on each line in *your G5.csv* – not necessarily your best friend's.

Those values are the ICAO airport ID, the "Gate NAME" value, and the "Gate Number" value. Despite their names, these values apply to all parking types - not just gates!

The eighth value of the G5 data line - the final number you would see - is the MakeRunways' "GateType" value... listed below and also in the header of the master "preferred_parking.txt" file. This data can be used to help find proper parking types.

```
        0 = none                    6 = Ramp Military Cargo
        1 = Ramp GA                 7 = Ramp Military Combat
        2 = Ramp GA Small           8 = Gate Small
        3 = Ramp GA Medium          9 = Gate Medium
        4 = Ramp GA Large          10 = Gate Large
        5 = Ramp Cargo             11 = Dock GA
```

Here's an example – let's place a few "ACME" parking codes at our KSEA hub. We're not going to be fussy about location, but we can see that Terminal C 9 is an 18-meter "Gate Small" (GateType of 8), Terminal C 15 is a 23-meter "Gate Medium" (GateType of 9) which includes a jetway, and Terminal C 22 is a 36-meter "Gate Large" (GateType of 10) which also includes a jetway.

KSEA	D	9	47.446655	-122.2999	18	139.4	8	Jetway	WJA
KSEA	D	8	47.446304	-122.300284	18	139.4	8		WJA
KSEA	C	9	47.44558	-122.303357	18	267.6	8		ASA
KSEA	D	3	47.444962	-122.302192	18	134.6	8	Jetway	ASA
KSEA	D	4	47.445231	-122.301779	18	134.9	8	Jetway	ASA
KSEA	D	5	47.445499	-122.301366	18	129.8	8	Jetway	ASA
KSEA	D	6	47.445809	-122.301062	23	130.1	9	Jetway	
KSEA	C	11	47.445917	-122.303366	18	270.4	8	Jetway	ASA
KSEA	C	15	47.446296	-122.30322	23	267.2	9	Jetway	
KSEA	C	22	47.446939	-122.304199	36	183	10	Jetway	
KSEA	C	18	47.446218	-122.304915	18	90.3	8	Jetway	ASA

It doesn't matter if there are current lessees at the places we would like to use – notice that C 9 has a BGL-created lease for ASA, whereas C15 and C22 have no current airlines assigned.

So we can start by copying the first three values of each line, and then add "ACME" as our parking code (remembering to include a single comma between each value):

```
KSEA,C,9,ACME
KSEA,C,15,ACME
KSEA,C,22,ACME
```

And that's it! We could even include airline codes for any flight we may undertake as a Codeshare partner. From time to time, Travis likes to fly North American sports teams on real-time flights, so he could add ", MLB, MLR, MLS, NBA, NCAA, NFL, NWSL, WNBA" to each line and when he flies one of his teams in or out from KSEA, he'll have the same parking spots offered to him. (A future NHL team could be added just as simply.)

You can put all of your changes in your master "preferred_parking.txt" file, or you can also put changes into airline-specific parking files that would go in your \FSCaptain\Airlines\ folder. Just name those files using your airline's "short name" followed by "_parking.txt". Taking our example above, you could add that line to "\FSCaptain\Airlines\ACME_parking.txt" just as easily – and no other airline would use that data.

FSCaptain will check for an airline-specific file first, and *will not check the master file if an airline-specific data is found.* Otherwise there's no reason to prefer putting data in the master preferred file or in an airline-specific preferred file… use whichever method is best for you!

The private_user.txt File

This file supplements the official private_fsc.txt file, allowing each Captain to customize their data.

These files are used only when the option RESPECT_PRIVATE_AIRFIELDS=1 is added to a Captain's options.cfg file.

These files contain a simple listing of ICAO, FAA, TC codes for airports which are "private use" and which would only be used by commercial aircraft in certain circumstances.

A "private use" airport is different that a "privately owned" airport. Several publicly used airports are privately owned – nearly 1000 such in the United States.

Taking the first four listings – in alphabetical order from (the original) private_fsc.txt, they are:

00AK
00AL
00CA
00CO

Each of these is a private use field in (respectively) Alaska, Alabama, California, and Colorado.

We've collected over 14000 such airfields from FAA and other official data sources. However, if you know of an airfield near you which is no longer public use and is not listed in private_fsc.txt, you can add its code to your Private_user.txt file and run SceneryScanner… your FSCaptain airport database will be updated.

If an airport is deemed private use, you can't fly to it directly from a public use airport. You can't even have one of these airports designated as an alternate for a flight.

However, you can charter flights from these airports to any public or private use airport that you wish. For the most part, private use airports generally do not have Customs services however, so you would likely be limited to flights within the same country / Customs area.

If an airport is listed in private_fsc.txt and you need to be able to make flights from public use airports to the airport in question – for example, if your VA considers 00CA to be one of their airports – then add 00CA to your private_user.txt and run SceneryScanner and 00CA will be considered a public use airport!

The Profile.cfg File

If you are a registered customer of FSCaptain, please understand that this file contains your license key information. <u>Under no reason should you ever share this file with anyone other than those on the FSCaptain Support Team (Dutch, Peter and Travis).</u>

This file contains basic information for FSCaptain to operate in a mode customized for your use. It contains items such as:

- All your possible airline choices, including the currently active one.
- All your Captain "profiles" including names (real or fictional) and birthdays.
- All "common" options such as Dispatchers, Display Units (feet / meters, kilometers / nautical miles), Hazard Pack options, PAX Timing, and WX Engine information.
- Your license key.

These items are normally edited via the Administrator. Manual editing is strongly discouraged, unless advised or performed by the FSCaptain Support Team.

The TypeAliases_user.txt File

This file supplements the official TypeAliases_fsc.txt file, allowing each Captain to customize their aircraft's "type" data which FSCaptain will alias to an existing Type Configuration file.

These files are used to define alternate "Aircraft Type" codes so that aircraft new to your FCDU and without Override configuration files can be used immediately in FSCaptain.

For example, an Embraer 170 has an ICAO type of "E170" and an IATA type of "ER7".

Yet after reviewing data from Captains over the years, several other "atc_model" values have been used, none of which match: "EMB170" and "EMB-170"

Likewise, Cessna 172s (ICAO: C172) have simulator-reported variants of "Cessna-172", "Cessna 172", "C-172", and "Skyhawk". The IATA code for C172 is "CN1" which is also used for C162s, C208s, and C210 Turbos, so it's not used here.

Hence, this set of files which list IACO codes (and unique IATA codes whenever found) along with sim-reported and sim-possible variants. So if you start up using an aircraft with an atc_model of "CRJ700", we'll treat it as a CRJ7.

The format is simple – each line contains comma-delimited type Aliases with no spaces surrounding each Alias. (There is a maximum of 20 Aliases consisting of 24 characters per Alias.)

As an example:

```
A319,319,32D,Airbus A319,Airbus-319,Airbus 319,A319CFM,A319IAE
```

TypeAliases_fsc.txt file updates can be found here: http://fscaptain.net/downloads/typealiases_fsc.txt

Appendix 6: Transition Altitudes / Transition Levels, and Navdata

It is required for all ATPs to maintain proper altimeter settings regarding "local pressure" (the pressure reading for the controlling airfield in question) and "standard pressure" – the "ISA standard" which is 29.92 inches of mercury and 1013.25 millibars of pressure.

This change occurs on ascent at what's known as the *Transition Altitude* (TA) – the altitude where a Captain changes from "altitude" to "flight levels" – from *local* to *standard* pressure.

There is an opposite change – from standard to local pressure – which occurs at an airfield's *Transition Level* (TL) which is the lowest flight level above TA, but except for countries which define Transition Levels as a fixed value (such as Australia), this value is very complex to determine.

If you receive your airline's Approach Clearance on a flight, you may thereafter safely set local pressure at your discretion.

In the real world, each country establishes its own standard for what the TA & TL should be – either the same across the country's airspace, or individually per-airfield. (Some countries join other countries in aeronautical consortiums in establishing joint standards, but all to the same end.)

> Taking a step backwards, in the Flight Simulator series, the default ATC has always operated under FAA rules of a global (get it?) standard of a Transition Altitude at 18000ft.
>
> If you've ever made a flight using default ATC with a cruise altitude below 18000ft, you've needed to maintain current local pressure, or ATC would complain that you've level busted and over 300ft off your assigned altitude. Then they would likely send you off chasing vectors into nowhere and transfer you to another controller….

But circa 2010, we (in conjunction with AivlaSoft's *Electronic Flight Bag)* created a very accurate and compact global database of real-world Transition Altitude values. Commercial vendors quickly followed up to provide AivlaSoft and us with Navdata updates on each AIRAC cycle, and soon several ATC replacement engines and other FS add-ons followed suit, and it's currently possible to run several FS add-ons that work off similar real-world data – FSCaptain long since being one of them!

With all that said, the key to the database is the \FSCaptain\Config\Transitions.cfg file. It's a condensed list of global airports and their Transition Altitude values. We maintained and updated this file over the years, but now there is a much speedier solution!...

Henceforth, if you have a subscription to a Navdata service you can then expect updated Transition Altitude *and Transition Level* values on each AIRAC. Just open your options.cfg file and enter the path to your "AivlaSoft-format" Navdata provider using the key NAVDATA_PATH= and the FSCaptain SceneryScanner will supplement the Transitions.cfg data with up-to-date data!

If you do not have a subscription to Navdata, you can point your NAVDATA_PATH to your \Documents\FSCaptain\Navdata\ folder. There – with arrangement with Aerosoft GmbH – are the Nav-

DataPro files from AIRAC 1808 necessary for SceneryScanner to have access to Transition Altitude and Transition Level data.

Please know that this is not current data! If you have a NavData subscription, then please know this sample data is from 2018. But if you don't have a NavData subscription, this will give you some recent data to enjoy a not-too-old set of data.

HOWEVER – should you prefer to use default ATC or to worry about keeping this data updated, you can delete the Transitions.cfg file and rename the file \FSCaptain\Config\Transitions_18.cfg to replace it. Rebuild your airport database with SceneryScanner, and all airports worldwide will have a Transition Altitude of 18000ft.

If you do this, then SceneryScanner *will not honor* the Navdata TA and TL values! Every aerodrome / airfield / airport / airstrip will have a TA of 18000ft and a TL of FL180.

FSCaptain now accepts values for PLN data which include navaids that are VOR, VOR/DME, or NDB beacons.

This allows us to populate your Dispatch Release's Flight Plan segment with the NAV frequencies, so you can plan forward and key those frequencies into your NAV1 and NAV2 receivers!

```
FLIGHT PLAN:       (CRUISE ALT: 32000FT)
VIA    POS  (NAV)   HDG   ALT    DIST  TIME BLOCK  FUEL     WIND DIR SPD ADJ
---------------------------------------------------------------------------
       KCLE          000  791FT     0  0:00  5:55  31504LB  23 250   0   0
       24L           226  1176FT    1  0:12  5:43  31099LB  23 250 140 -21
       ALT           229  1947FT    1  0:01  5:42  31064LB  23 250 150 -21
       DJB (113.60)  263  7346FT   12  0:02  5:40  30638LB  23 270 210 -22
       BRUNZ         239  FL193    17  0:03  5:37  30034LB  30 310 260 -16
       OBRLN         239  FL320    12  0:02  5:35  29608LB  49 350 260   0
       FBC (108.20)  259  FL320    47  0:08  5:27  28169LB  39 330 260  -6
       FWA (117.80)  271  FL320    64  0:10  5:17  27382LB  33 320 390 -21
       PIA (115.20)  266  FL320   209  0:34  4:43  24810LB  28 290 390 -24
J96    NORIS         256  FL320    17  0:02  4:41  24601LB  28 290 390 -23
J96    IRK (114.60)  256  FL320   114  0:18  4:23  23198LB  10 320 390 -12
       HLC (113.70)  263  FL320   356  0:57  3:26  18817LB  35 250 390 -21
       HGO (112.10)  261  FL320   160  0:26  3:00  16848LB  35 250 390 -34
       HBU (114.90)  263  FL320   161  0:26  2:34  14867LB  30 240 390 -31
       MLF (112.10)  270  FL320   280  0:47  1:47  11421LB  59 230 390 -36
       ILC (116.30)  264  FL320    65  0:11  1:36  10621LB  59 230 390 -48
       TPH (117.20)  264  FL320   125  0:22  1:14   9083LB  70 240 390 -56
```

Appendix 7: Working with Online ATC Services

Transition Altitudes, Transition Levels, and Altimeters

If you like to fly with an online ATC service such as IVAO or VATSIM, they may want you to follow their commands to dial your altimeter to a specific setting no matter what your altitude is!

If this is how you fly, then edit your options.cfg file, setting the DISABLE_STD option to 1 (one), like so:

```
DISABLE_STD=1
```

Doing so will disable our tracking of your altimeter settings, allowing you to follow online ATC commands without penalty. We won't publish TA/TL data in your Dispatch Releases, and we won't include TA/TL data on your FCDU's Information Screen.

Speed Limits

Also, if your online ATC service will never allow you to exceed 250kts when below 10000ft, you can set this option in your options.cfg file:
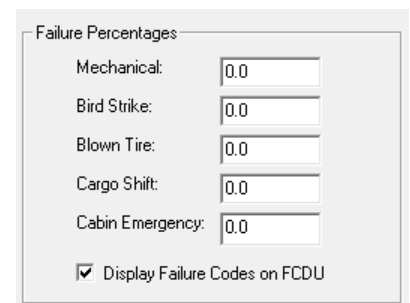
```
ODDS_TO_DECLINE_250=100
```

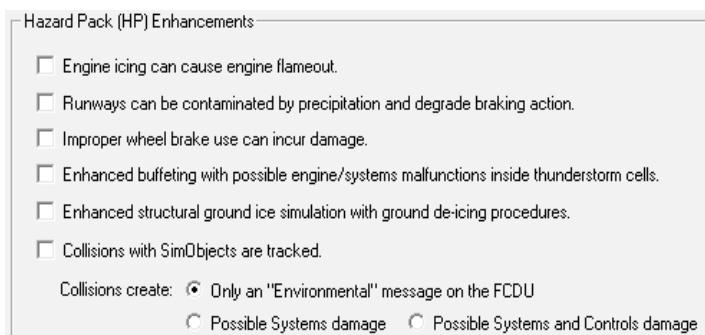Afterwards you won't be able to request a "speed limit release" from ATC via FSCaptain….

Emergencies, Failures, and other Hazardous Things

Unless your online ATC service will allow you to declare an emergency or a failure and change your flight plan, you may want to switch off all FSCaptain failures, and make the flight you planned!

Currently this is a "global switch" for FSCaptain. You have to go to the Administrator's "Profile and Settings" and set the failure rates to "0.0" percent for each type.

Likewise, all "Hazard Pack" items should be judged against whether or not you need them to be disabled! If your online ATC service cannot allow you to have Engine Ice or Thunderstorm-induced Engine Failure, don't enable those items. If the Contaminated Runways item causes your ATC sessions to be fraught-filled, don't enable *that*.

If having to stick to our Ground Ice Holdover Times is not a good thing – don't enable that either!

In fact, you should likely disable all HP items until you know you can safely use any of them with your ATC service….

Appendix 8: Minimum Safe Distances

Commercial aircraft need to operate in a manner that is highly safe both for the crew, the passengers, and the general public as well. One safety function is a requirement for aircraft to maintain a minimum safe distance from objects on the ground. While it is fun to skim the water beneath a bridge such as San Francisco's Golden Gate, if such were done in real life, there would doubtless be numerous complaints, jangled nerves, and possibly some arrests.

Captains can be under the optional requirement of maintaining a Minimum Safe Distance from ground objects, risking the wrath of complaining passengers and upset aviation authorities.

Now as FSCaptain can't detect individual buildings & obstacles with our sensors, we've decided that if you are beyond 4 nm from your departure or destination airport (9nm if it is in a mountainous area – see later), you must keep a minimum AGL level based on the surface type you're over.

The levels are:

- 500 feet for uncongested areas (water, sand, snow, ice)
- 900 feet for populated areas (forests & grassy areas)
- 1400 feet for congested areas (urban areas)

... with an additional 1000 feet added if you are departing or approaching in "mountainous" areas – with a corresponding distance increase to 9nm from the Airport's Reference Point. A mountainous area is defined as the airport's elevation being over 550ft – using the departure airport before the Descent stage, and the Arrival airport after. So, if you are flying from the heights of the Alps to the flats of Friesland, you would be departing a "mountainous" area to a "non-mountainous" one.

These values are based on the real-world requirements from the FAA for both 14 CFR 91.119 (VFR) and 14 CFR 91.177 (IFR) flights... with some allowances made for our simulators.

Your Dispatch Release will contain the expected levels for your Departure, Arrival and Alternate airports based on their type and size – private airports are thought to be in uncongested areas, large public airports in congested areas, and all other airports are deemed to be in populated areas.

If you do dip beneath the MSD level, you will start accumulating "violation points" (think of them as "eyeball views per second") and after a while you'll hear your FO caution you, and at that point you risk a 5 point penalty from a frightened passenger. Carry on a bit longer, and you'll definitely get a PAXCOM, and if you dawdle *too long too low*, you'll get a message on the FCDU from the airline telling you to stop it. By that time, you've lost 20 more points!

The FCDU will display MSD violation points at the top of each screen and page while they are being accumulated. Cyan indicators signal "no problem yet." Yellow indicators mean you're pushing your luck. And red indicators… are a sign that you're going to be written up on this flight.

MSD "violation points" will accumulate at a lower rate at night… owing to the simple fact that it's more difficult to visually gauge an aircraft's exact altitude in the dark….

Appendix 9: Aircraft Damage Inspections

Since FSCaptain can be used to simulate accidents, in-flight faults, and emergencies in a modern ATP environment, it stands to reason that some actions and events should have the possibility of consequences. Without them, you could potentially continue a multi-leg flight after suffering a cabin fire, blown tires, engine fires, or simply having been pelted by numerous birds.

In real life, aircraft used for civil transport constantly undergo numerous inspections of differing levels. And since FSCaptain prefers to focus on the flying side of Airline operations, you can enable "enforceable inspections" should certain events occur during a flight.

First, check that the setting 'Enforce A/C Inspections" is set. If not, no inspections will ever occur.

Next, *just wait until something* bad *happens*. ☺

It could be random, like an MEL-level systems fault, or a cabin fire. (See the image to the right.) It could be the result of your actions, such as landing overweight, or landing too hard, or just by departing a hard surface in an aircraft that shouldn't.

If you're in a SimConnect simulator, and you have enabled "SimConnect Collisions," then if you prang an aircraft waiting for taxi instructions, you'll have to face the music… hours or days of paperwork would be in your future….
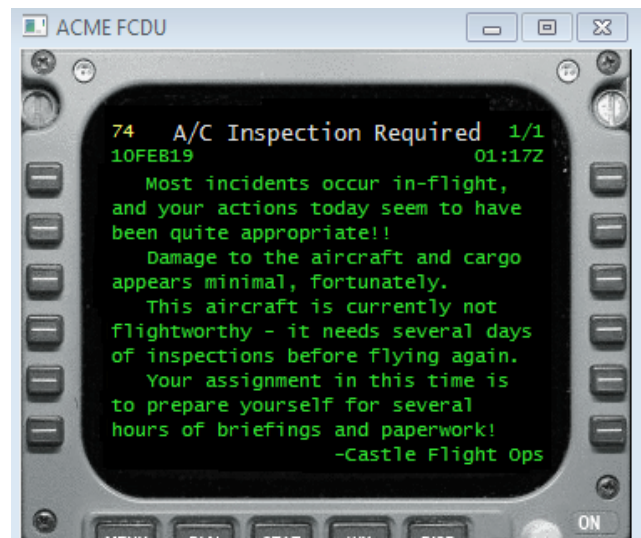
So… what actually happens? After you close your flight, if the FCDU has noted a reason for inspection, you'll be sent to a screen that tells you the duration of inspection – how long your aircraft should expect to be out of commission. (If it's your fault, you should expect to be chewed out!) At that point, the FCDU is locked out and you may not continue flying, so if you were planning to take your aircraft immediately to another airport, *you can't do that right now* – no matter what might be at fault, you have paperwork and interviews in your future!

In actuality, nothing would prevent you from closing down the FCDU.EXE and restarting it to continue your flight… or from picking up your flight later on if you choose. You are always free to set out on another flight with your aircraft… *just not in the current flight simulator session.*

The length of the inspection-to-come is related to the severity of the incident. Here is a list of events ranked by the inspection length:

- Cursory – An actual medical emergency. (*Possibly an hour or so for hazmat checks and possible decontamination*.)
- Minor – Slightly overweight landing. Simple bird strike. Possible cabin smoke. (*Hours.*)
- Medium – Gear or Flap damage. Severely overweight landing. Abnormally hard landing. Blown tires. Departing a hard surface when you shouldn't. A minor SimConnect collision with no damage. (*A day or so.*)
- Severe – MEL-level system fault. Cabin Fire. Large bird strike. A major SimConnect collision with some damage. (*Many days.*)
- Critical – An actual aircraft crash. (*Many weeks…* and that's being optimistic!)

You can always fly safely in the ACME system. There just may be (virtual) paperwork involved! ☺

Appendix 10: Zulu Time' Versus 'Local Time'

When FSCaptain first began, the decision was made for "Scheduled Departure" and "Scheduled Arrival" times to be considered as "Local Time".

Over the years, many Captains have written asking for the ability to use Zulu-based schedules, so as of FSCaptain 1.8.1, we're allowing all schedules as well as "Specify Flight Detail" entries to be calculated against the Zulu Time clock. You will find a checkbox on the Profile and Settings tab in the Administrator to enable this.

If you enable this setting FSCaptain will accept all "schedule times" as Zulu. Some Captains have found this easier to manage their schedules as Zulu Time is the same world-wide and no accounting for "bad time zone definitions" or even Summer Time rules need be made.

FSCaptain currently has no time-zone database based on your sceneries, so **there is no way we can currently change your existing airline schedules**. If you have a flight scheduled to depart KJFK at "0800" local time, enabling Zulu Time would have that flight scheduled to depart at 0800Z. Do not enable this option if you cannot adjust your own schedules!
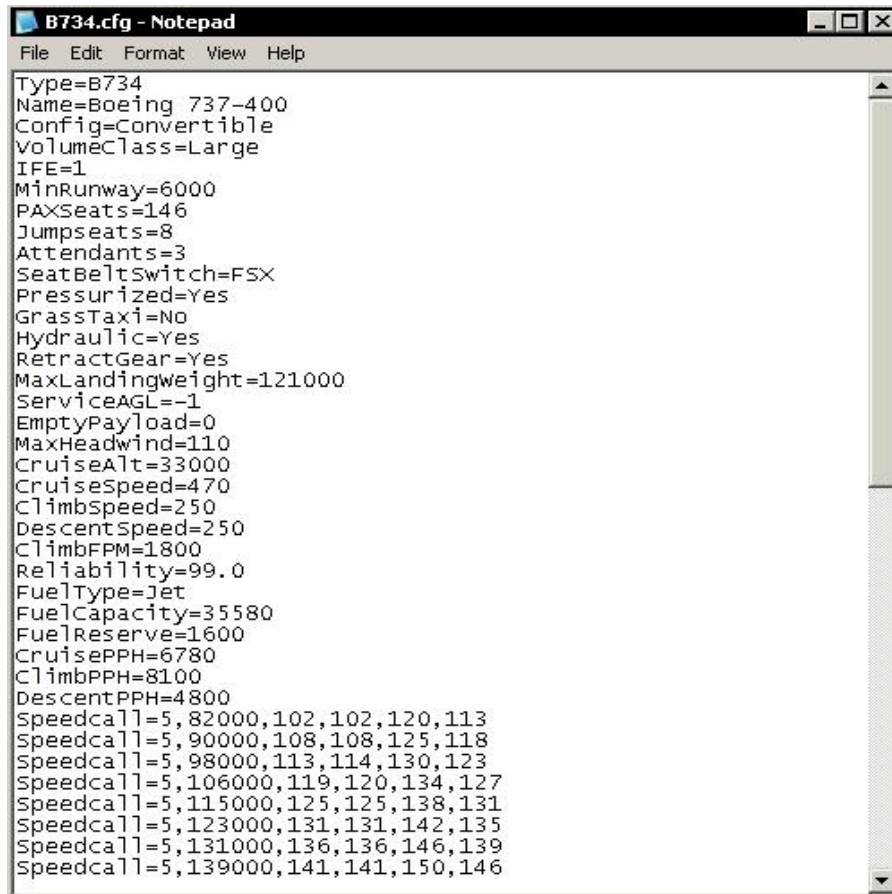
This option is intended for those Captains who want to build new Zulu Time schedules for their airlines, or who want to be able to specify Zulu Time on the Specify Flight Details screen. Many freeware and payware AI schedules appear in Zulu format, so building a new schedule for your real-world airline can be a piece of cake with this setting.

Do know that this currently is a global setting so all schedules for all Captains and all Airlines will be judged against Local or Zulu Time depending on your choice.

If you try this option and find that you're constantly too early or too late for your flights, just uncheck the setting and you should find everything will be back to normal.

Appendix 11: The Speedcall Table in the Aircraft Characteristics File

In addition to all the options maintainable from the Administrator, you may also include a table of "speed calls" in the file for an aircraft type. An example of this feature would be the definition for the default Boeing 737-400 in FS2004.   In the folder \FSCaptain\Aircraft you will find a configuration file for each aircraft type. One such is B734.cfg, a configuration for the Boeing 737-400 aircraft. If you open that file with Notepad or another plain text editor, you'll see about half of the entries correspond to the options maintained visually by the Administrator.   But the bottom half of the file consists of many entries with the keyword 'Speedcall':

```
B734.cfg - Notepad

File  Edit  Format  View  Help

Type=B734
Name=Boeing 737-400
Config=Convertible
VolumeClass=Large
IFE=1
MinRunway=6000
PAXSeats=146
Jumpseats=8
Attendants=3
SeatBeltSwitch=FSX
Pressurized=Yes
GrassTaxi=No
Hydraulic=Yes
RetractGear=Yes
MaxLandingWeight=121000
ServiceAGL=-1
EmptyPayload=0
MaxHeadwind=110
CruiseAlt=33000
CruiseSpeed=470
ClimbSpeed=250
DescentSpeed=250
ClimbFPM=1800
Reliability=99.0
FuelType=Jet
FuelCapacity=35580
FuelReserve=1600
CruisePPH=6780
ClimbPPH=8100
DescentPPH=4800
Speedcall=5,82000,102,102,120,113
Speedcall=5,90000,108,108,125,118
Speedcall=5,98000,113,114,130,123
Speedcall=5,106000,119,120,134,127
Speedcall=5,115000,125,125,138,131
Speedcall=5,123000,131,131,142,135
Speedcall=5,131000,136,136,146,139
Speedcall=5,139000,141,141,150,146
```

The presence of these speedcall entries in an aircraft configuration file will trigger two unique features of the FCDU: 1) the speeds will be displayed on Page ID 23 "Flight Status" and Page ID 26 "Progress" when appropriate (before takeoff and during approach). And, if the aircraft has a first officer aboard, he or she will verbally announce the speed calls during takeoff: "eighty knots", "V1", "rotate", "V2" at the appropriate points in the takeoff roll.

Each entry has six fields. The fields, in order left to right, are:

1. **Simulator Flap Setting:** This is one of the standard flap settings of the aircraft and it plus the next item determine when the four speeds on the rest of the line are appropriate. The value used here when positive is the "trailing edge angle" which comes from the simulator. **It is not the value displayed in the aircraft.**

2. **Gross Weight:** This, combined with the simulator flap setting above, determines when the four speed settings that follow are appropriate. If the aircraft is at least this weight, but not over the next higher weight entry for this flap setting, then the speeds on this line will be used.

3. **V1 Speed:** This is V1 for this flap setting and weight range.

4. **VR Speed:** This is the "rotate" speed for this flap setting and weight range.

5. **V2 Speed:** This is the V2 speed for this flap setting and weight range.

6. **Vref Speed:** This is the Vref speed (final approach speed) for this flap setting and weight range.

7. **Aircraft's Flap Setting (Optional):** This is the value seen in the cockpit, either near the flap lever, or on a flap setting indicator. If this value is omitted, the FCDU display will indicate the simulator's flap setting instead.

The Vref speed is not currently said by the First Officer, but it is displayed for reference on the FCDU.

Speed reference tables for many aircraft can be found on the Internet, and always in the aircraft's flight manual if you have access to it. We are aware that there are more factors involved in the accurate computation of V speeds than flap setting and aircraft weight, but these are the two factors most often used in printed V speed tables in flight manuals.

If you are not certain what the simulator's flap setting values are, you can load the FCDU and navigate to the 2nd Systems screen and you will see the current flap setting values there. Please note that the flap settings used by the simulator (and noted in the FCDU System screen) may not correspond to the real-world flap angles, nor even to an in-cockpit flap gauge. (The default FSX B738 is well-known in this regard.) If you're not getting the callouts and FCDU indicators you expect, check the flap values on the System screen.

Appendix 12: Manually Adding an FCDU Gauge to an Aircraft's Panel.cfg File

Although an automatic installer exists to automatically install the FCDU gauge and the FDR gauge into an aircraft's panel.cfg file, here are instructions for doing it manually if you have the need to do so, or if you are just curious as to exactly what is done where.

There are eight or nine steps to installing the FCDU and FDR in an aircraft. Whether the ninth step needs to be done depends on whether the aircraft has a virtual cockpit or not.

There are several versions of the FCDU, one called FCDU.gau and the other called FCDU9.gau. The first is for FSX & P3D and the second for FS9. You will need to be sure you use the appropriate one in each aircraft or the system will not function properly.

A bronze faceplace version of the FCDU is available as an option. To use it, add a "2" before the "!" character below. A "bright" faceplate can be used by appending a "B" to the name. (So "FCDUB" would be a bright gray SimConnect FCDU, and "FCDU92B" would be a bright bronze FS9 FCDU.)

Follow this procedure:

Find the panel.cfg file for the airplane (follow any aliases if necessary.) Then copy that panel.cfg file and name the backup something else, like panel_backup.cfg.

Open the panel.cfg with Notepad or another plain text editor (do not use a word processor) and observe the first section, titled [Window Titles]. Decide which window you want to make the FCDU appear in. Remember than Window00 is reserved for the main panel and you can't use that. Also recall that Window01 is accessed with the SHIFT-1 combination, and so on, so if you want to access the FCDU with SHIFT-6, place it as Window06 after the existing Window05.

If for example you decide the make the FCDU live in window 06, insert the following line after the one that reads Window05 : Window06=FCDU Then you must increment the numbers on all following windows by one. The old Window06 becomes Window 07 and so on.

Now, find the actual [Window06] section in the file. Increment the 06 to 07.

Insert the following code block before this Window07 line you just changed. Be sure to insert only one of the two FCDU lines, depending on the sim version you are using:

```
[Window08]
size_mm=380,320
position=8
visible=0
ident=24477
gauge00=FCDU!ACARS,1,1,380,320          (<---- for FSX/P3D)
gauge00=FCDU9!ACARS,1,1,380,320         (<---- for FS9)
```

1. Find all subsequent sections that define windows and increment their window numbers, so that the window following the new FCDU window becomes Window07 and so on.
2. Now it's time to install the FDR gauge. Find the first window, entitled Window00. This is the main window on the 2D panel. (If there is no 2D panel you can skip this step.) Scroll down the gauges until you find the highest numbered ones. For (as an example) the default Cessna 208 it reads:

```
gauge39=n_number_plaque!n_number_plaque,320,500,67,19
```

Then insert one of these two lines after that line:

```
gauge40=FCDU!FDR,1,1,1,1                 (<------ for FSX/P3D)
gauge40=FCDU9!FDR,1,1,1,1                (<------ for FS9)
```

The number 40 in the above example will probably need to be changed to be appropriate for the panel you are modifying, one higher than the highest gauge number already there.

3. Now to insert the FDR into the virtual cockpit. (You can skip this step of the aircraft doesn't have a VC.) The FDR has to be inserted in both places because otherwise it will not be executed when you are viewing that style cockpit in FS2004. In FSX this is not strictly true but it does no harm (to frames or otherwise) to insert it in both so we do it for safety. Find the section marked [Vcockpit01]. Scroll down the gauges until you find the highest numbered ones. For (as an example) the default Cessna 208 it reads:

```
gauge23=Cessna208B_XML!fd_ap_buttons,265,214,29,34
```

Then insert one of these two lines after that line, again making sure the gauge number is one higher than the highest gauge number already in the window:

```
gauge24=FCDU!FDR,1,1,1,1                 (<------ for FSX/P3D)
gauge24=FCDU9!FDR,1,1,1,1                (<------ for FS9)
```

(You will almost certainly have the change the 24 above to match your situation.)

Save your panel.cfg file and try to bring up the FCDU in the airplane. If you did all these steps exactly correct it should work. If it doesn't work, carefully review each step until you find the problem.

Appendix 13: Manually Removing an FCDU Gauge from an Aircraft's Panel.cfg file

Follow this procedure:

1. Find the panel.cfg file for the airplane (follow any aliases if necessary.)
2. Then copy that panel.cfg file and name the backup something else, like panel_backup.cfg, just in case you need to restore it if things go wrong.
3. Open the panel.cfg with Notepad or another plain text editor (do not use a word processor) and observe the first section, titled [Window Titles]. Find the line that says WindowNN=FCOM or WindowNN=FCDU (NN will be some number). Delete that line. Renumber all subsequent lines so that their window numbers are one less. For instance, if you deleted Window06=FCOM, then the next line should be Window07. Change that 07 to 06 and so on for all remaining windows. Remember which window number you deleted (let's call it NN).
4. Now search for the text [WindowNN] where NN is the number of the window you deleted. Now, delete all lines up to the next window definition [WindowMM]. Change the number on that line from MM to NN. Find all subsequent lines that start with [Window and change their numbers to one less. These lines must match the window numbers you changed in step 3.
5. Search for the text FCOM or FCDU in the file. (The FCOM was the original ACARS device, and is no longer supported.) You should see lines that have the text **FCOM** together with **! FDR**, as well as **FCDUxxx** together with **!ACARS**. Delete any line you find with those items on it.
6. Save your file, you are done.

Appendix 14: Backing Up and Restoring Company Log Data

All FSCaptain log data is kept in the folder \FSCaptain\Data. If you copy this folder you are backing up your log data. Alternatively (and this is what we do) you can back up the entire FSCaptain folder.

There is another folder called \FSCaptain\Backups. In this folder are copies of the log for each airline, with the state preserved either just before a flight is started or just after (or even both!). The naming convention is
`<airline>_flt_<number>_[START | END].log`. If your active log is messed up or destroyed, or you simply want to restore the state of your career to the point where it was right before you started a particular flight, you can follow this procedure:

1. Shut down any instance of FSCaptain – including your simulator. This prevents FSCaptain from overwriting the changes you are about to make!
2. Find the main log file for your airline in \FSCaptain\Data. For example, if your airline is Emerald Harbor Air, the file name will be `Emerald.log`. (The filename is the airline's short name as defined in the airline definitions tab in the Administrator.)
3. Rename that file to something else, for example `Emerald_Testing.log`
4. Copy the saved log file you want to revert to. For example, let's say we want to reset our career to the point right after flight 231 was flown. Copy the file
`Emerald_Flt_231_END.log` from \FSCaptain\Backups to
`Emerald.log` in \FSCaptain\Data\.

After doing the restore you should bring up the Administrator and check the status of your active log.

Appendix 15: Fun with your Airline's Nodes file

It's possible to restrict (or to heavily influence) the choice of your airline's charter flights to certain airports by implementing an airline "nodes" file and setting the option PERCENTNODE to a value of 0 to 100 percent. By doing this, you can influence the choice of destinations for both your Hub's scheduled flights, as well as your Charter flights from anywhere.

Take the airline SurfAir into account. It supports one aircraft type (PC12), and twelve nodes in California (and Las Vegas). If you were to set PERCENTNODE to 100 and tried to get a charter flight from Montreal or Atlanta, the Flight List will likely be empty – in our simulator, a PC12 can't fly (unrefueled) from CYUL or KATL to the closest SurfAir node (KLAS).

Another use of a "nodes" file can be to highlight your addon (third party) sceneries, which can be an effective way to showcase your purchased sceneries… especially if you have lots of them!

Open your \FSCaptain\Config\AirportSceneries.csv file in a spreadsheet utility (such as Microsoft Excel). Find the column which has either the Scenery Name or Scenery Path. Using the filtering system of the spreadsheet, filter out all references to "standard scenery areas" such as Scenery\ 0101, Scenery\0102, all the way through to Scenery\1105.
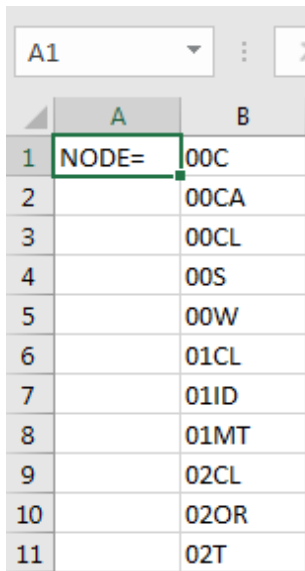

Now, only your addon sceneries should be visible.

If you like, you could even filter out any 'unpolished' addon scenery areas such as those used by AI Aircraft packages.

Delete the 'header row' of the spreadsheet. That's the row which begins ";ICAO".
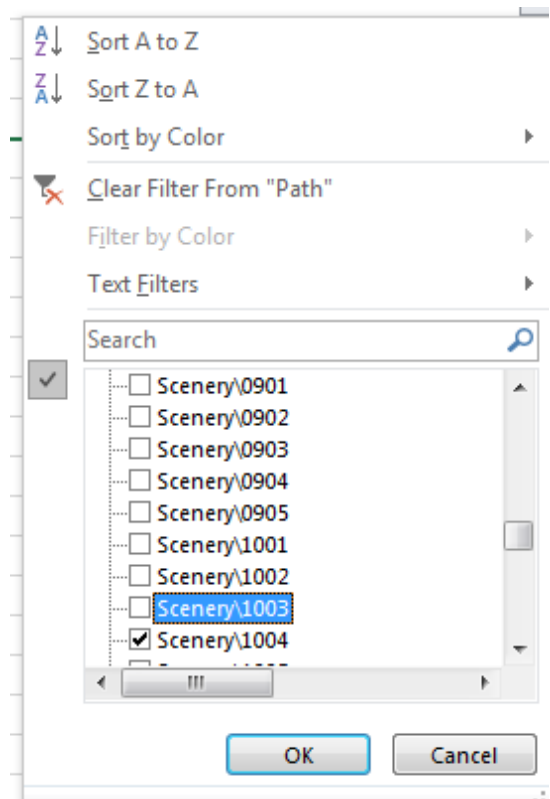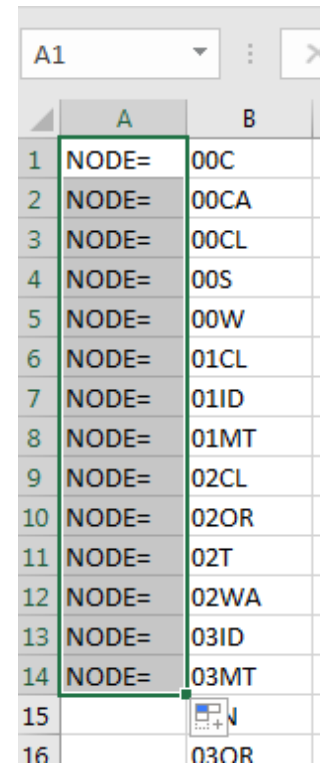
Now copy all the ICAO codes from Column A of AirportSceneries.csv, and paste them into Column B of a blank spreadsheet. (If you like, you can sort the blank spreadsheet by Column B just to get everything in order.)
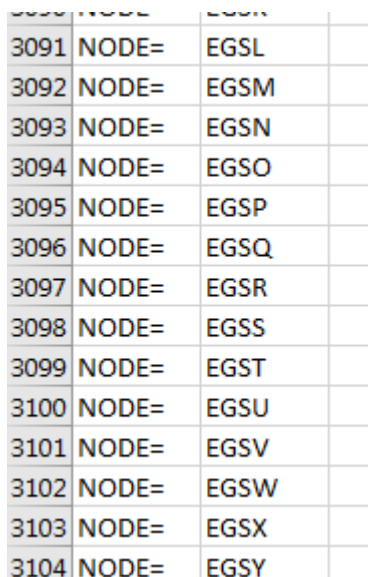
In cell A1 type in the string "NODE=". Use your spreadsheet's 'duplicative process' to replicate that string to all cells of Column A. In Excel, you would highlight cell A1 (image left) and drag the bottom right corner of that cell downwards until you reach the end of the ICAO list (image right).

A1				

	A	B
1	NODE=	00C
2		00CA
3		00CL
4		00S
5		00W
6		01CL
7		01ID
8		01MT
9		02CL
10		02OR
11		02T

A1				

	A	B
1	NODE=	00C
2	NODE=	00CA
3	NODE=	00CL
4	NODE=	00S
5	NODE=	00W
6	NODE=	01CL
7	NODE=	01ID
8	NODE=	01MT
9	NODE=	02CL
10	NODE=	02OR
11	NODE=	02T
12	NODE=	02WA
13	NODE=	03ID
14	NODE=	03MT
15		
16		03OR

Now you should have a spreadsheet that looks like this:

3091	NODE=	EGSL
3092	NODE=	EGSM
3093	NODE=	EGSN
3094	NODE=	EGSO
3095	NODE=	EGSP
3096	NODE=	EGSQ
3097	NODE=	EGSR
3098	NODE=	EGSS
3099	NODE=	EGST
3100	NODE=	EGSU
3101	NODE=	EGSV
3102	NODE=	EGSW
3103	NODE=	EGSX
3104	NODE=	EGSY

Here you select all items (Crtl-A works), copy all items (Crtl-C), and paste them into a blank text file (Crtl-V, of course). This text file will become your airline's node file.

Your text file may look like this – the string "NODE=" followed by a TAB character, and then by ICAO IDs:

If so, then delete all TAB characters.   I use Notepad++, so I double-click a TAB, press CRTL-H (for "Replace"), and replace all TABs with an empty string.

Finally save your text file as [your-airline's-short-name]_nodes.txt in the \FSCaptain\Airlines folder.

If your PERCENTNODES value is 100 (or otherwise very high), then you will notice that your offered charter flights will be to your addon sceneries!

|		
2443	NODE=	KDTW
2444	NODE=	KDUC
2445	NODE=	KDVO
2446	NODE=	KDVT
2447	NODE=	KDWH
2448	NODE=	KEAT
2449	NODE=	KEAU
2450	NODE=	KEB
2451	NODE=	KECP
2452	NODE=	KEDC
2453	NODE=	KEDJ
2454	NODE=	KEDW
2455	NODE=	KEED
2456	NODE=	KEEO
2457	NODE=	KEET
2458	NODE=	KEKA
2459	NODE=	KEKO

Just remember that if your aircraft has a limited range and you're planning a flight in an area where you don't have a lot of addon sceneries, then your possible destinations will be limited. In a case like this, you may want to have a PERCENTNODES value that doesn't rule out all non-addon sceneries.

Note: Working with your AirportSceneries.csv file is painless. The AirportSceneries.csv file is not read by FSCaptain, so you don't have to worry about making a mistake with it - it's only there for you to read and study the state of your current airport sceneries. Should you corrupt or delete it, just run SceneryScanner.exe again (without MakeRwys.exe) and AirportSceneries.csv will be re-generated.

Appendix 16: When launching FSX, you see "Flight Simulator has detected a problem with a third-party software program"

There is an issue with certain versions of Windows which appears after a failed shutdown of FSX (you may or may not have noticed anything when the failure occurred). This failed shutdown may have left some third-party DLLs – including the FSCaptain.DLL and/or the FSCAI.DLL – loaded into Windows. Windows doesn't like that ("Maybe it's malware!" Windows assumes), so Windows will create an entry in a specific Windows Registry location that says either FSCaptain.DLL or FS-CAI.DLL should not be loaded when you run FSX. (This does not apply to any other simulator that we know of – only FSX.)

You'll know about it when you run FSX (boxed or Steam) and see an error message like this:
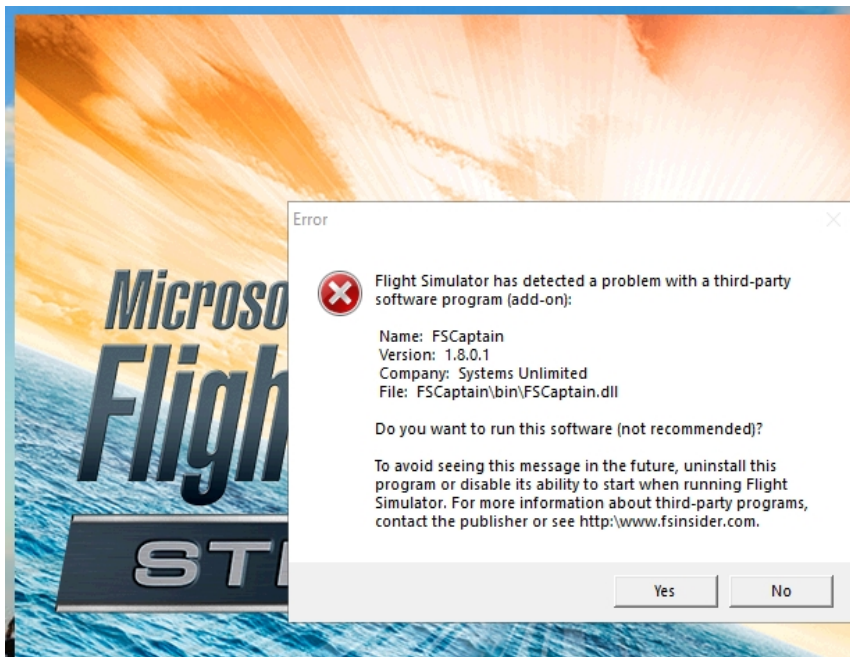

If you ever see this error message, go to your FSCaptain\bin folder and run the RegFixer.exe and or the RegFixer_FSCAI.exe utility.

They require the .Net Framework version 3.5 or newer, similar to SceneryScanner.

Both versions of RegFixer will open a console window, print a few lines of description and wait for you to press Y to start checking, or press any other key to exit. When you proceed, it will look at a certain location in your Windows Registry and list everything in there that it finds.
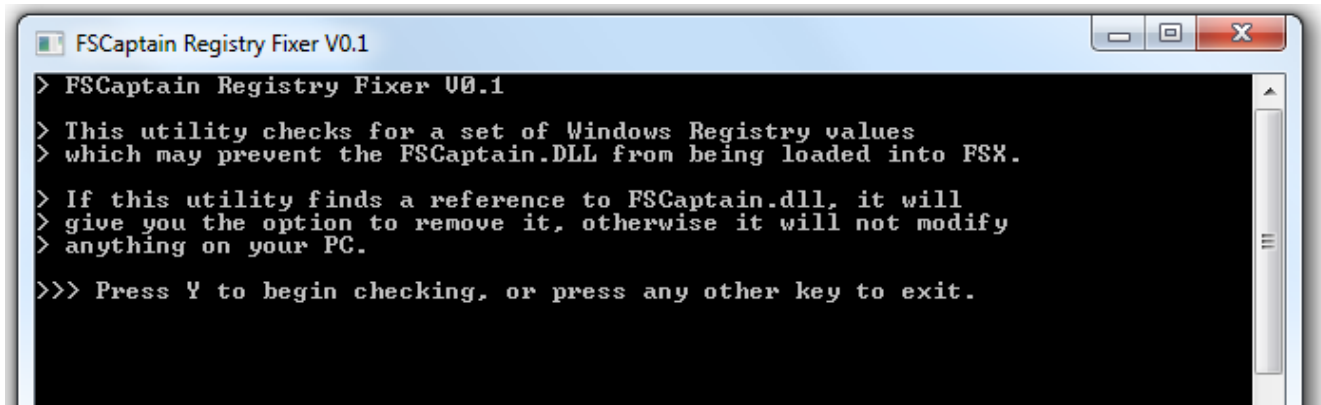
It will print the names & values it finds on separate lines. (I have 9 values for various things. Dutch has 3.) Then it will look for a reference to "FSCAPTAIN.DLL" (or "FSCAI.DLL") in each value and at the end of its work it will write if it finds a match or not.

RegFixer will write everything you see on screen to a text/log file which you can return to us, in case of a problem.

If RegFixer does say that it works, close all open files on your PC and reboot. Then try to run FSX with FSCaptain. A reboot should ensure that Windows starts fresh with the proper (clean) information.

Please send us any log files that our Fixer makes along with any screenshots of error messages. It's been in use since late 2017, with only positive reports!

These utilities are only useful with an FSX installation, and only for the "third-party software program" issue!

For any other simulator, and for any other issue, please submit a report via our forum or email.