

AI FLIGHT PLANNER

... a comprehensive, fully integrated AI flight planning tool for FS9, FSX and P3D

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1. GENERAL

AI Flight Planner provides all the facilities necessary to install, create, edit, analyse and compile AI traffic flight plans for both FS9 and FSX versions of Microsoft Flight Simulator (MSFS), Lockheed Martin's Prepar3D (P3D) and Microsoft's newest offering Flight Simulator 2020 (FS2020) - collectively referred to as "FlightSim". Either TTools-format .txt files (zipped or unzipped), compiled MSFS traffic .bgl files or UTLive .xml-formatted files (referred to as “UTX”) may be used as “source code” – or you may create your flight plans “from scratch” using timetable information from airlines, airports or elsewhere. (Please see Appendix “B” for a discussion of the differences between TTools and UTX flight plans and their handling.)

P3D is handled in exactly the same way as FSX. All references in this manual to FSX are equally applicable to P3D - with one exception. Regarding FS2020, due to its very different nature, certain of AIFP's features are not available, most notable aircraft/repaint installation and features that make use of the Scenery Library. The operation of most

other features is identical to those for FSX. FSX, all versions of P3D and FS2020 use FSX traffic file format.

1.1 The AI Flight Planner "System" - In addition to the features expected in any flight planning tool, AI Flight Planner:

- has a leg-oriented flight plan editor that can handle sub-24 hr, daily and weekly traffic in an identical manner;
- includes an integrated "universal repaint installer" that should handle just about any repaint format;
- permits entry of arrival and departure times based on any time zone or using local times;
- permits designation of airports with either ICAO or IATA codes;
- displays in airline schedule format all the arrivals and departures for any airport in a flight plan/traffic file;
- allows partitioning of the default traffic file (or, indeed any traffic or flight plan file) and creation of flight plan subsets based on any combination of aircraft types, specific aircraft, country, region, city or airport);
- allows data from either TTools or compiled traffic files to be merged with previously-loaded flight plan and aircraft data;
- includes in the compiled traffic file only the airport and aircraft information used by the included flight plans, reducing system overhead;
- incorporates a comprehensive airport traffic and parking analyser; and
- includes FS9->FSX traffic file converter and a host of other traffic file manipulation functions.

1.2 Regional Settings - AI Flight Planner has been "internationalized" to the extent reasonably possible. A comma (",") may be used as a decimal separator; time separators may be any non-numeric character, etc. However there are (at least) two situations which are not addressed.

- Use of a space as a decimal separator – AI Flight Planner may "hang" (i.e., enter an endless loop) or otherwise not respond properly when using a Windows regional option that uses a space as a decimal separator (such as Finnish). AI Flight Planner expects degrees, minutes and seconds in latitude and longitude entries to be separated using spaces. So, a space used also as a decimal separator will be misinterpreted.
- With certain regional settings, certain English-language characters are considered equivalent. The Windows implementation of some Scandinavian languages, for example, handle Vs and Ws as if they were the same character. Hence, in a sorted list, you'll find Vs and Ws intermixed. A case on point is *AirportList.dat* which, if sorted using the Norwegian Regional Option, has Venezuela followed by Western Sahara which in turn is followed by Vietnam. As well, when searching for ICAO codes including such characters - "CYWG", for example - Windows may return "CYVG" - without warning. Such situations may result in missing aircraft, airports and/or traffic.

There seems no way internal to AI Flight Planner around such situations. So, if you normally use a regional setting that exhibits either of these characteristics, you may have to switch to English (or another language that doesn't exhibit the observed problems) while using AI Flight Planner.

- 1.3 What You Need to Know - Successful AI flight planning with AI Flight Planner (and indeed, with any other utility) requires familiarity with not only the use of each flight plan and aircraft data field, but also some knowledge of how that data interacts with the Flightsim “AI engine”. Without this knowledge, AI flight planning is likely to be a rather tedious and unsatisfying experience. So, it is strongly recommended that “newbies” to AI flight planning study the TTools user manual, the most comprehensive source of basic flight planning information available. It is available from the author’s website <http://stuff4fs.com>. Alternately, you can download TTools from several popular download sites.

2 INSTALLING / UNINSTALLING / UPDATING AI FLIGHT PLANNER

- 2.1 Installing - AI Flight Planner is installed simply by unzipping or copying the files from the downloaded archive (“.zip” file) into a folder of your choice. Which, for the purposes of this manual, is known as “the AIFP folder”. All the files must reside in this folder. **Do not attempt to run AI Flight Planner from the zipped archive**, since Windows will place the executable in a temporary system folder – separated from the rest of the (zipped) files. It will not run!

AI Flight Planner does not affect the system registry. It is a VB NET.Framework 4.5 application. If NET.Framework 4.5 or later is not already installed on your computer, the “redistributable” can be downloaded from the Microsoft website at no charge.

If either AI Flight Planner or target versions of FlightSim are installed on your C: drive, users with Vista, Windows 7 or later versions will need to execute AI Flight Planner with administrator privileges. It is not sufficient simply to be the administrator for your system. AI Flight Planner must be “Run As administrator”, i.e., right-click on your AIFP icon and select “Run as Administrator”.

- 2.2 Updates - AI Flight Planner can check for updates each time it is started. If an update is available, you are asked if you wish to download it. The archive (.zip) file containing the update will be saved to your AIFP folder.

Using Options / Check for Updates at Startup, you may specify that AIFP check only for general releases, general and development (beta) releases or no check at all. If you specify no update checking and you later click these menu item - re-enabling checking for updates at startup - AI Flight Planner immediately looks for an update.

You may also check for updates at any time without re-enabling checking at startup using the Help / Check for Update function.

For security reasons, a new version will not automatically install itself. To install the update, simply close AI Flight Planner (if running) and unzip the new archive to the same folder, overwriting the earlier version.

- 2.3 Uninstalling - To uninstall AI Flight Planner, simply delete the AIFP folder.

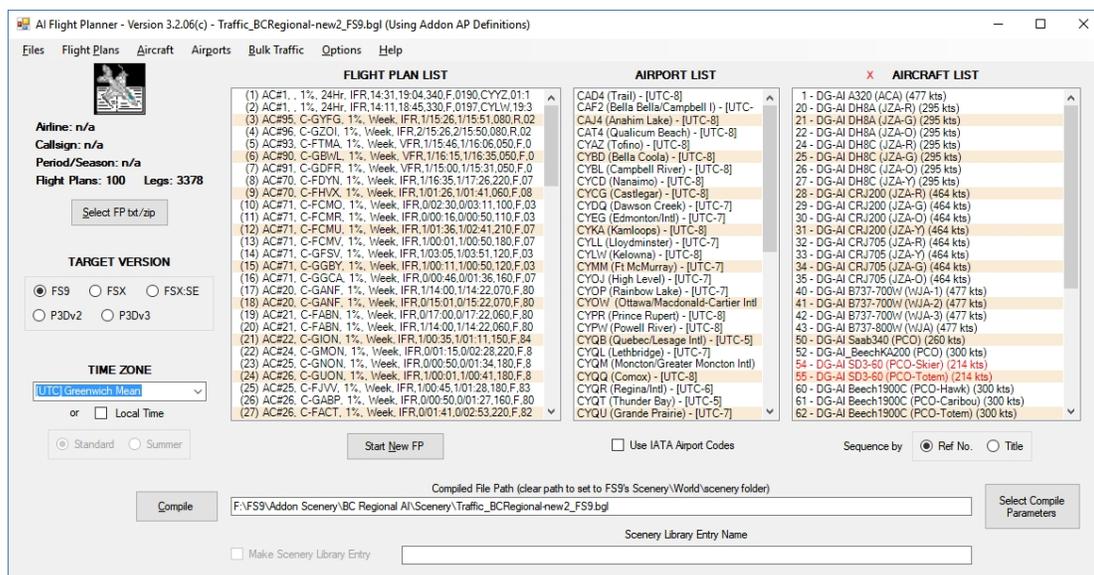
3 THE MAIN PANEL

3.1 The Main Panel - All AI Flight Planner functions are initiated from the Main Panel (see below). Its dominant features are:

- the Flight Plan List (on the left) - displaying the entire set of flight plans including leg details,
- the Airport List (center) – displaying the ICAO or IATA code, the city and airport name and UTC Offset in use for all airports referenced by the flight plans.
- the Aircraft List (right side) – displaying for all aircraft used by the flight plans their reference number used in the flight plans, their title and the cruise speed that will be used by AI Flight Planner (which may be different from the cruise speed given in the associated aircraft.cfg file.) The titles of already-installed aircraft are shown in black. The red “X” to the left of the Aircraft List title is displayed whenever there are missing aircraft. Titles of missing aircraft are also shown in red.

When UTX flight plans are processed, the Aircraft List and the compiler-related fields at the bottom of the form are omitted.

All three lists operate in essentially the same fashion. A single left-click selects the item under the cursor. (Several items in the Flight Plan list may be selected simultaneously using the <Ctrl> and <Shift> keys in the usual manner.) A right-click selects the item under the cursor (in the Flight Plan List, adding it to any previously selected items) and opens a context menu from which you may initiate a function to be performed on the selected item(s). A double click opens an appropriate editor. Generally, the same functions are also available from the Main Panel menus.



Main Panel

As well, optionally, hovering the mouse over a list item causes the display of a tool-tip. In the Flight Plan list, this tooltip is the entire flight plan formatted in a tabular fashion, In the other two lists, the tooltip displays associated data not included in the list.

Whenever a change is made to the Flight Plan List or the Aircraft List, a red ### indicator appears to the right of the list name to remind you to save the list.

Across the top of the Main Panel is a set of menu bars, notionally split into associated functions. At the bottom are the compile and traffic file save controls. These are discussed in the next chapter.

At top left is the flight plan summary data and airline logo. Other than the Flight Plan and Leg count, this data is sourced from an *aifg.cfg* file (see Appendix “A”), included in AIG flight plan archives and those from some other flight plan purveyors.

Center-left is the Flightsim Target Version selector. This collection of radio-buttons indicates which versions of Flightsim are installed and registered on your computer. The checked radiobutton is the version to which all operations apply except where an override capability is provided.

The time zone controls are at the bottom left. While times in flight plan and traffic file are normally referenced to GMT, all time data displayed by AI Flight Planner is referenced to the selected time zone. You may select a single time zone or Local Time (Standard or Summer).

- 3.2 Arrival and Departure Times – As noted above, arrival and departure times may be specified in either GMT, a time zone selected in the Time Zone combo box or, provided *AirportList.dat* contains full geographic information for all the airports used in a flight plan, local time - which may be either standard or daylight savings time. However, flight plans are not date-specific, so arrivals and departures specified in local time may be in error by an hour – especially during the transition periods to and from daylight savings time.

When using local time, you should appreciate that AI Flight Planner’s time zone database reflects real-world time zones – which may not match exactly the time zone calculated by Flightsim. Flightsim uses a geographic approximation technique to determine the time zone in the area where the user aircraft is located. Hence, there may be disagreement at airports close to the edge of time zones. Since Flightsim’s calculation of time zones can be affected by add-ons, such discrepancies cannot always be resolved by AI Flight Planner. As well, while significant efforts were expended in making AI Flight Planner’s time zone data base complete and accurate, time zone data for smaller airports, especially in developing countries, sometimes is not readily available. Hence, AI Flight Planner’s data base may be in error (but, is correctable using the Time Zone Editor – see Section 10.8) and any corrections will be “remembered”.

Please note that both FS9 and, at time of writing, also FSX use an incorrect UTC offset for Hong Kong and much (if not all) of China. This situation may extend to other countries in Asia. So, if you prepare flight plans involving airports in this part of the world and do not use an add-on that corrects this problem (such as FS Real Time), you should revise the UTC offset with the Timezone Editor to match FlightSim’s.

- 3.3 Airport Designators – There are two airport designation systems in common current use:
- ICAO (International Civil Aviation Organization) codes, which apply to every significant civilian airport worldwide, and

- IATA (International Air Travel Association) codes, which generally apply only to airports that handle airline traffic.

While Flightsim “understands” only ICAO codes, AI Flight Planner allows the use of either. This facilitates the creation/editing of airline AI flight plans.

AI Flight Planner’s main panel contains a checkbox labelled Display IATA Airport Codes. When unchecked, ICAO airport designators are displayed. When checked, airports that have IATA codes use their IATA designator; those that don’t show their ICAO designator prefixed by “*”.

AI Flight Planner allows entry of airport designators using either system – regardless of the checkbox status. Airport codes entered as four characters are unambiguous and deemed to be ICAO codes. Three-character codes entered when the Display IATA Airport Codes is checked are assumed to be IATA codes. However, if no IATA-match is found but there is an ICAO-match, the ICAO airport will be “returned” (and displayed with a prefixed *). If the three-character ICAO code is entered with the * prefix, there will no “indecision”. When Display IATA Airport Codes is unchecked, three-character codes are assumed to be ICAO. But, if no ICAO-match but there is an IATA-match, it will be accepted.

- 3.4 AI Flight Planner Usage Conventions and Other General Information - As a general rule, on any dialog, only those menu items, buttons and data entry fields valid for use in the current context are enabled. So, at any time, if a control is disabled, it is because that button, menu item or field is not useable at that time – probably because some prerequisite data is missing – or is not applicable to the flight plans being processed.

Shortcuts: Many buttons and menu items have keyboard shortcuts. If you don’t see the shortcuts, it is because Windows is preventing them from being displayed until you press the <Alt> key. You may override this feature of Windows using Control Panel. In Windows XP, the control to do so is found at Display – Appearance – Effects. In other versions of Windows it may be elsewhere.

Treeview Displays: Many of AI Flight Planner’s functions rely on you selecting files and/or folders from a “treeview” display. A “treeview” display is very similar to Windows Explorer (not Windows Internet Explorer). However, folders known not to contain files/folders of interest in the current context are dimmed and not expandable. Files other than those of interest are also dimmed. For example, if the purpose of the tree is to select traffic files, bottom level folders that do not contain traffic files and files other than traffic files are shown dimmed. Similarly, if the tree is for identification of aircraft folders, once you reach an expansion level such that no lower-level folder could be an aircraft folder, no further expansion is permitted. System, hidden and non-accessible files and folders are not displayed in directory/folder trees – irrespective of Windows settings – since they are not relevant to AI Flight Planner.

Columnar Outputs: Data is often output in columnar format using a “listview” control. When initially presented, that data will usually be sorted based on the leftmost column. You may sort on any other column by clicking on that columns header.

Progress Bars and the Abort Button: Lengthy AI Flight Planner tasks display a progress bar which includes an “Abort” button. As the name implies, if the Abort button is used, the operation is immediately terminated. This will result in only partial data being

available. Aborted functions can not be resumed. After an operation is aborted, you should reload the last-known good data.

Error Checking: AI Flight Planner performs extensive error checks when files are loaded, saved and compiled, and during editing operations. In general, any error that prevents a flight plan from being compiled or that, if compiled, would cause difficulty for Flightsim, e.g., a missing airport or invalid aircraft number, must be corrected. While you are permitted to save a file with such errors in text format, it can not be compiled. Warning messages for numerous other, non-catastrophic errors, e.g., departure time earlier than arrival time, total flight time exceeds repeat period, will also be issued but will not prevent compilation. While the AI traffic generated by Flightsim when the traffic file contains such data may not behave as intended, its presence should not create other difficulties. In each instance, however, you will be asked to confirm that the file is to be compiled/saved with errors. You may suppress warning messages using the *Options / Suppress Warnings* menu item. Messages alerting you to potentially catastrophic errors are always output. When an error message is lengthy, it is output to a separate window so that it may be preserved or printed while you work to correct the errors.

File Deletion: When a file is deleted, AI Flight Planner considers it to be in one of three categories:

- external and system files – generally, files created by AIFP for internal use or downloaded for further processing,
- user deletions (usually confirmed), such as obsolete aircraft and traffic files that can be restored from other sources, and
- backup files

External and system files are permanently deleted; backup files are saved either in the AIFP folder or sent to the Recycle Bin. The middle category, user deletions, may be optionally (*Options / All User Deletions to Recycle Bin*) sent to the Recycle Bin or permanently deleted.

4 LOADING AND COMPILING FLIGHT PLANS

4.1 Loading Flight Plan Data – From the *Files* menu, flight plan data may be loaded from/by:

- TTools-formatted text files (zipped or un-zipped) with *Open TTools-Style Flight Plan File (.txt or .zip)*;
- compiled traffic files with *Open Traffic File (.bgl)*;
- UTX .xml files with *Open UT Live Flight Plan File (.xml)*; or
- reloading the last-loaded or -saved file with *Reload Previous File*, (which is loaded in its currently-saved form - even if it is also the currently-loaded file).

Like TTools before it, AIFP expects TTools-formatted text filesets to comprise three files named: “flightplans_ *id*.txt”, “airports_ *id*.txt” and “aircraft_ *id*.txt”, where *id* may be any character string valid in a file name. The entire fileset is referenced using “flightplans_ *id*.txt”. Similarly, AIFP expects traffic filenames to start with “traffic_”.

By checking *Options / Reload Last File on Start-up*, you can have the last file accessed during the previous session reloaded automatically when AI Flight Planner starts.

Since AI Flight Planner maintains its own airport database (*AirportList.dat*), airport data (other than identifier, of course) contained in source data is routinely discarded.

However, if a flight plan refers to an airport not *in that database* and the location of that airport is provided in the file, AI Flight Planner will offer to add it to *AircraftList.dat*. If you choose not to, the loaded data will be saved in a file named *Airport_Temp.dat* (overwriting any previously-saved data for that airport) and used whenever that airport's location is needed.

FS9 and FSX flight plans in *.txt* format are identical save for day-of-week encoding. In FS9, Sunday is encoded as 0, while FSX uses 0 for Monday. AI Flight Planner always uses the FS9 day-encoding scheme when displaying flight plan data in text-file format, and FS9 day-encoding is assumed for UTX files.

When flight plan data is derived from compiled traffic files, AI Flight Planner can determine which encoding scheme is used. And, when AI Flight Planner saves a flight plan file in text format, it adds a line at the top of the file indicating which day-encoding scheme is used. However, there is no way for AI Flight Planner to determine automatically the day-encoding scheme used in text flight plan files not previously saved by it. So, when such flight plan files are loaded, AI Flight Planner will ask you to clarify the situation.

The *Flight Plans / Adjust Day Encoding* menu item provides a mechanism to adjust the day-encoding in the flight plan after opening a TTools-format flight plan file that has FSX day encoding.

Please be aware that the times in the flight plan information returned by the *Files / Open Traffic .bgl* function may not match exactly the times originally specified by you when you created the file (but the difference should not be more than 1 minute). This is because of the way times are stored in the traffic file. This is less of an issue with FSX format which uses a more precise time storage format. As well, AI Flight Planner's solution to the "37-minute problem" may result in aircraft cruise speed returned by the de-compiler being in error by 1 knot.

- 4.2 Appending/Merging Flight Plan/Traffic Data – Previously-loaded flight plan and aircraft data may be supplemented at any time by appending data from or merging it with other files using the *Files / Merge Current File* function from the FP Editor. Appended/merged data need not be from the same type of files as the original data, i.e., compiled traffic file data may be append to/merged with data original loaded from text-format file sets, and vice versa. Any number of files may be merged/appended.

If an aircraft reference number in the data being appended or merged is a duplicate of one already in use, a new, unique reference number will be assigned to the new aircraft and its flight plan references adjusted accordingly. If the title of an aircraft in the new data duplicates a title already in use, you will be asked if you want to consolidate the references to that second aircraft under the reference number of the first. Your response to this question will apply to all subsequent instances of this situation until a new file is loaded. Upon completion of the append/merge, a list of all such changes is displayed.

- 4.3 Validating Flight Plans and Traffic Files – The integrity of every flight plan and traffic file is automatically checked when the file is loaded into AI Flight Planner and prior to the flight plans being saved or compiled. Edited flight plans are also verified when returned/added to the Flight Plan List. You can validate the flight plans in the Flight Plan

List at other times by clicking *Flight Plans – Validate*. In all cases, a summary of all warnings (if not suppressed) and errors found is generated.

- 4.4 Open Timetable Data File – While many prepared flight plan packages for scheduled airlines are now available, these may not include the full schedule. Or, such packages for smaller airlines may not be available. As an alternative to preparing custom flight plans from scratch off-line or using AI Flight Planner’s leg editor, AI Flight Planner accepts timetable data in columnar format – data that is available from airlines, airports and other sources in ready-to-use or almost ready-to-use form.

To initiate creation of flight plans from timetable data, click on “Open Timetable Data File (.txt)” in the Files menu of the FP Editor panel. The process for converting the data is set out in the next chapter.

- 4.5 Saving Flight Plan Data in Text or XML Files – To save flight plan data as text file sets or a UTX .xml file, click:

- *Files / Save File Set* to update the text files from which the data was initially loaded, or
- *Save File Set As . . .* if you wish to specify a new file name for the text files or if the file was loaded from a traffic file. Once you save under a new filename, the traffic file path is updated and all future processing is based on that file name.

- 4.6 Compiling Flight Plan Data – When you are finished editing your TTools-style flight plans, they may be converted into traffic file format readable by Flightsim. This process is known as “compiling”. (UTX files cannot be compiled.)

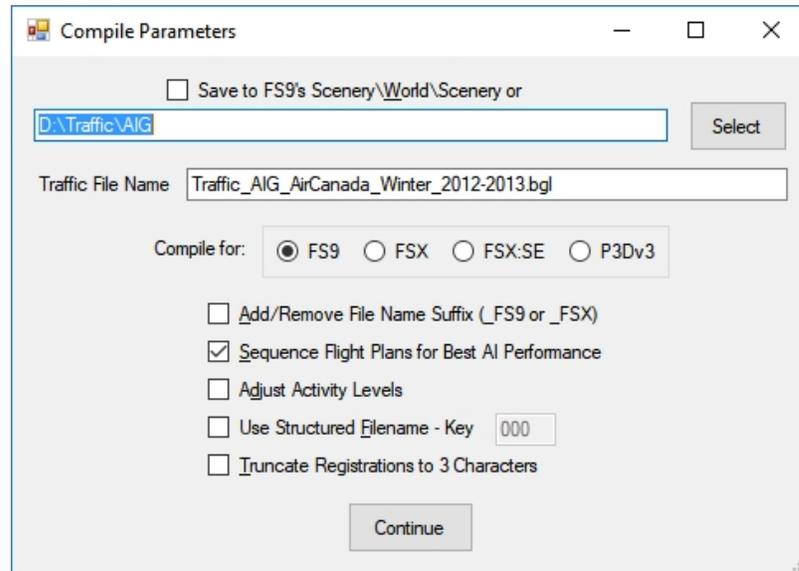
When flight plan data is loaded file, AI Flight Planner will suggest a name for the traffic file based on the name of the source file. If loaded from a .zip files and an *aifp.cfg* file exists, the traffic file name will be suffixed with the first two and last two characters from the "Season" entry from the *aifp.cfg* file. That name is displayed as part of the path specification in the Traffic File textbox near the bottom of the Main Panel. By default, the suggested destination folder will be the destination folder of the last compile. However, if *Options / Always Compile to Target Version S/W/S* is checked, the save folder will initially be set as the *Scenery\World\Scenery* folder of the target version.

If you are satisfied with the traffic file save path and have previously selected the applicable compile parameters, click on the Compile button. Prior to being compiled, the flight plan file is first checked for errors. If errors are found, you are asked if you wish to save/compile anyway. Please note that if you elect to compile with errors, depending on the nature of the error, the compile operation may not succeed, in which case you must either correct the error or save in text format.

You may override the suggested traffic file path name by entering a new path directly into the Traffic File textbox. If you are happy with the suggested file name but wish it to be saved to the current *Scenery\World\scenery* folder, simply clear the textbox and the new path will be created automatically.

To “navigate” to the desired traffic file save folder or to select other compile parameters, click the Select Compile Parameters button. This action will bring the Compile Parameters dialog into view.

The “Compile for” radio buttons will reflect the currently-selected Flightsim Target Version. You may compile for any other version by selecting that version on the Compile Parameters Dialog. When you do so, if the then-specified traffic file path “points” to a folder in the previous target version, AI Flight Planner will attempt to construct a parallel path to the newly selected target version. If the parallel path does not exist or cannot be constructed for some other reason, the default path (the *\Addon Scenery\scenery* for the new Target Version) will be displayed. You may accept that selection or specify another.



Compile Parameters Dialog

Five options are available from the Compile Parameters Dialog:

- Add/Remove File Name Suffix: When checked, if the name in the Traffic File Name text box is suffixed with a Flightsim version designator, that designator will be removed. If no such suffix, one will be added.
- Sequence Flight Plans for Best AI Performance: FlightSim assigns parking to spawning AI on a first come first served basis. While it assigns the smallest available parking spot of the appropriate type, at heavily used airports you may have small aircraft filling spots intended for larger aircraft, with the larger aircraft relegated to "overflow" parking. This situation can be avoided by ensuring that the larger aircraft are served first. When this box is checked, AIFP re-sequences the flight plans to accomplish this. Of course, if you later decompile the resulting traffic file, the original order of the flight plans will be lost. Since this box is checked by default, you must uncheck it if you do not wish the flight plans to be re-sequenced.
- Adjust Activity Levels: Checking this box causes the Adjust Activity Level dialog to be opened during the compile process. Note, however, any adjustment you make will only affect the flight plans in the file being compiled. The currently loaded flight plan list will not be affected.
- Use Structured Filename – Key: When an *aifp.cfg* file is present, AI Flight Planner will suggest traffic file names based on either of two criteria:
 - as default, the unique part of the flight plan (archive) file name, or

- a combination of the values of the Provider, Airline and Season fields in the *aifp.cfg* file together with a user-entered key field value (which may be any character string) in the format:

Traffic_Key_Provider_Airline_Season/Year

Once checked this box remains checked and the key-string persists until you change it/them. If no *aifp.cfg* file exists for the loaded flight plans, this option is disabled (greyed-out) and the default naming will be used.

- Truncate Registrations to 3 Characters: In many countries, after initial contact, ATC communications use only the last three characters of an aircraft's registration number. Flightsim has no equivalent capability. If this checkbox is checked, AI Flight Planner will truncate aircraft registrations in the traffic file, forcing Flightsim to use the abbreviated callsigns. Please note, however, the discarded characters are not saved in the file and, hence, are not recoverable. So, if you will ever need the complete registration, you should make an additional copy of the traffic file with the full registration or save the flight plans in text format. AI Flight Planner seeks confirmation of your intent prior to acting on this checkbox.

When all compile parameters have been selected, click the Continue button. Then, to initiate the compile, click the Compile button on the Main Panel

- 4.7 Where to Save Flight Plan and Traffic Files - Flight plan and, other than for FS2020, traffic files (see below) may be saved anywhere convenient. AI Flight Planner's installed folder structure includes two folders named *Flight Plans* and *Traffic Files*. These are default folders and will only be used if you do not specify storage elsewhere.

Compiled traffic files (.bgl) are treated by Flightsim as scenery files and, accordingly, when intended to be "seen" by Flightsim, may be saved to any location where Flightsim expects to find scenery files. Practically, however, this means one of two locations:

- the FS9 or FSX \Scenery\World\scenery folder (the default), or
- an add-on scenery folder.

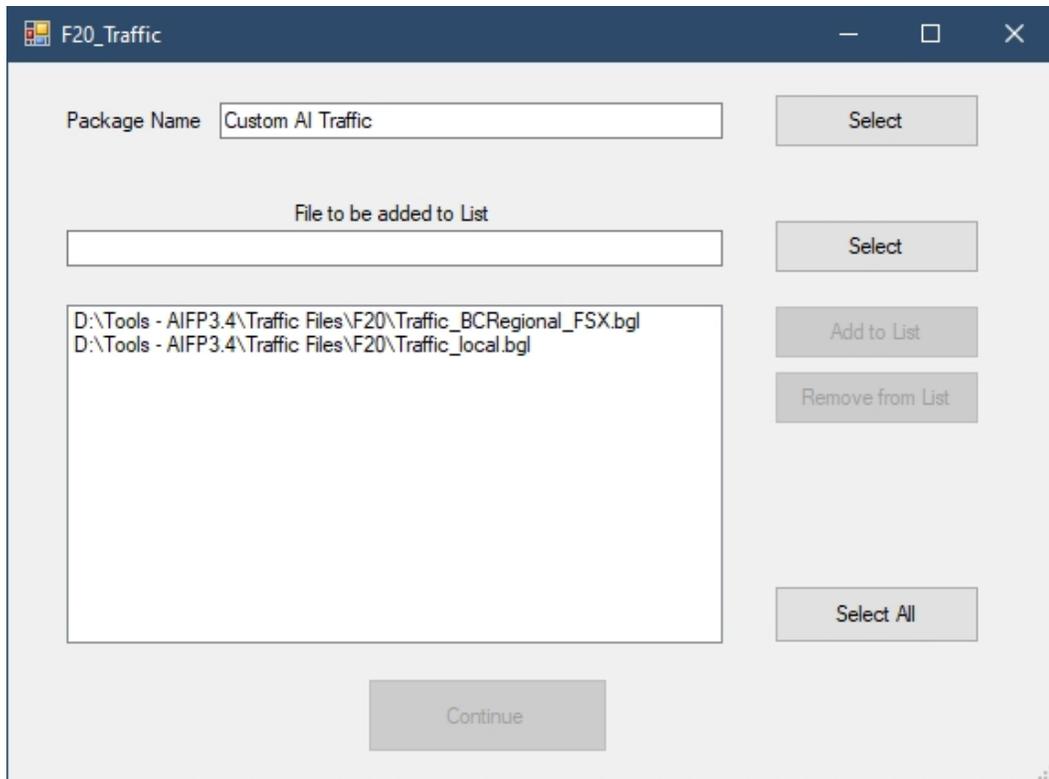
Purists will tell you that traffic files must be loaded prior to stock scenery files and, hence, should be saved to Scenery\World\scenery. However, I have not experienced any difficulties using a folder in Flightsim's *Addon Scenery* folder enabled in the Scenery Library. Using this latter approach has the added benefit that the traffic can be turned on or off independently, thus reducing system overhead, without deleting or disabling files. Bottom line, it's your choice.

If you do save elsewhere (e.g., in an *AddOn Scenery\scenery* folder), you may control the display of the traffic in the same manner as any other scenery add-on - by registering it in the Flight Simulator Scenery Library. AI Flight Planner will create the Scenery Library entry for you. Just check the Make Scenery Library Entry checkbox and specify a name for it. Once the Scenery Library entry has been created, or if AI Flight Planner finds an existing Scenery Library entry that "points" to the scenery folder in which the traffic file is to be saved, these two fields will be disabled.

Please note that there is no requirement that traffic files be named *traffic ...bgl*. While that naming is customary, it is not a requirement.

- 4.8 Microsoft Flight Simulator 2020 Traffic Files – Generating of AI traffic for MSFS2020 is identical to generating AI traffic for any other version of Flightsim with one exception: the placement of the AI traffic files. The destination folder for traffic files for all other versions of Flightsim is specified by the user at compile time. For FS2020, the AIFP compiler always saves the traffic file in the `\F20` subfolder of its *Traffic Files* folder. (You may, of course, move them to wherever you wish.)

AIFP's Files menu on systems on which FS2020 is installed will have an extra item: "Mount FS2020 Traffic Files". Clicking it will cause the following dialog to appear.



Mount FS2020 Traffic Files

When it first appears, the Package Name textbox will read "Custom AI Traffic" and the listbox will include all the FS2020 traffic files available. If you have traffic files saved other than in the Traffic Files\F20 folder that you want to include, you may add them to the list by selecting them one at a time using the Files to be added to list textbox and associated Select button and clicking the Add to List button. Edit the Package Name as you wish and select the traffic file(s) in the list to be included in the package. When ready, click Continue.

AIFP will create a FS2020 package and, following your confirmation, save that package in the FS2020 Community folder.

FS2020 populates a certain portion of unoccupied airport parking with static models. At time of writing, it appears that under certain as-yet-undefined circumstances, this process interferes with the operation of AIFP-generated AI traffic. FS2020 appears to accept and process the programmed AI, but sometimes the aircraft model executing the

AI function is not the one programmed in the AI traffic file. The frequency of this issue can be reduced (but not always eliminated) by setting FS2020's Options/General/Traffic/Ground Aircraft Activity slider to 0. It may also be helpful to disable default AI traffic by opening the FS2020 folder \Official\OneStore\fs-base-ai-traffic\scenery\world\traffic and add ".xxx" to the filename *trafficAircraft.bgl*

5 CREATING AND EDITING FLIGHT PLANS

Individual flight plans may be created and edited using either:

- the FP editor dialog, or
- the built-in plain-text editor.

As well, AI Flight Planner supports creation of flight plans (which may then be edited) from timetable data.

Flight plan data editing is straightforward. Nonetheless, a brief summary of each required field follows. For a fuller description, you may wish to download Lee Swordy's TTools and refer to its user documentation. (Lee's user manual is available at <http://stuff4fs.com>. Navigate to the Applications/AI Flight Planner page)

A TTools-type flight plan contains two types of data:

- base data, which governs the overall operation of the flight plan, including:
 - a reference to the aircraft used to perform the flight plan (i.e., the aircraft selected in the Aircraft List),
 - a tail/registration number of up to 7 characters (only required if one or more legs specify the registration number ("Reg.") as the ATC Callsign),
 - activity level (1-100%), which determines the Flightsim Settings/Display/Traffic activity level slider setting above which the flight plan will operate,
 - a repeat period (being one of 1hr, 2hr, 4hr, 6hr, 8hr, 12hr, 24hr or weekly), and
 - a flight rules selection (either IFR or VFR) which determines how ATC will handle the flight and, in some instances, how the aircraft will be routed for approach; and
- leg data, including:
 - day(s) of the week on which the flight operates (weekly flight plans only)
 - a touch 'n go (TNG) selection which, if checked, causes the aircraft to perform TNGs from the time it initially arrives in the vicinity of the destination airport until its scheduled arrival time,
 - a flight number in the range 1-65535 (only required if the ATC Callsign selection for the leg is FN),
 - departure time (in 24 hr format),
 - departure airport - ICAO or IATA code, as discussed above (only required for the first leg of a new flight plan; automatically updated thereafter),
 - destination airport -ICAO or IATA code, as discussed above,
 - flight level in 100s of feet,
 - ATC Callsign selection (flight number or aircraft registration), and
 - optionally, Override ETA (in 24 hr format), which allows you to override the system-calculated arrival time.

UTX flight plans do not use several of the fields in the TTools format. Those fields are set to “n/a” and/or the corresponding data entry fields in the FP Editor are either disabled or hidden. Further, UTX flight plans are not inherently related to a specific aircraft. Consequently, no cruise speed information is available to facilitate computation of a arrival time. When UTX flight plans are edited, the FP editor allows selection of a representative aircraft for this purpose.

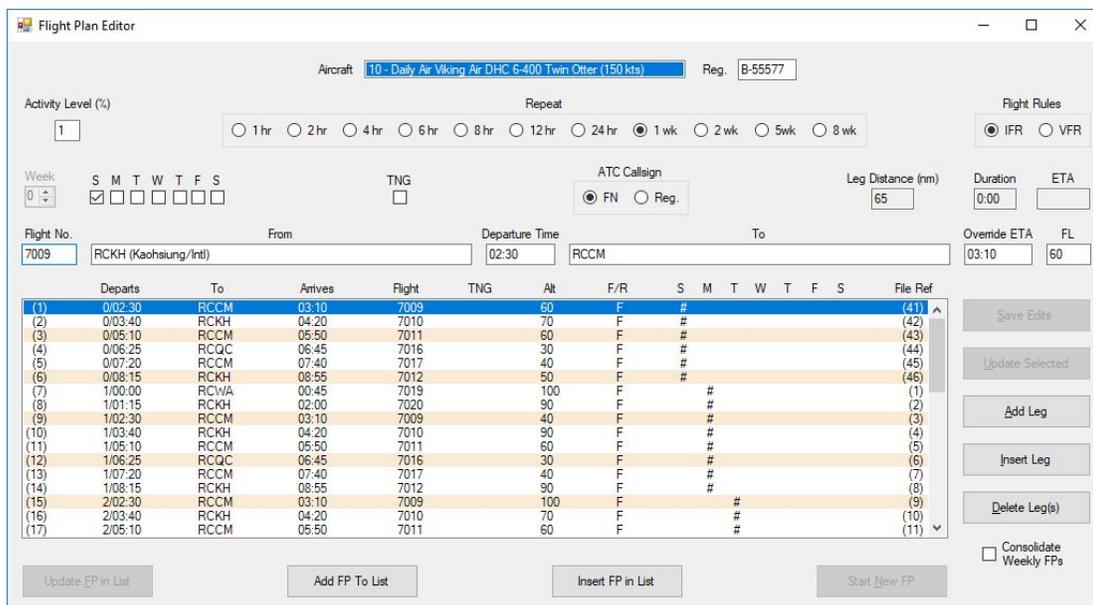
A Find/Replace function is also provided to allow changes to be applied individually or globally.

After editing of any kind, flight plans are error-checked.

Please be reminded that only those menu items, buttons and data entry fields valid for use in the current context of the editing tools are enabled. For example, in the FP Editor:

- all the fields of the Flight Plan base data must be completed before the fields and buttons of the leg editor are enabled;
- all leg fields except Override ETA (which may be left blank) must be completed before the buttons involved in placing the edited leg data (back) into the Leg List are enabled; and
- the buttons for moving a completed flight plan from the editor (back) into the Flight Plan List are enabled only when something has changed.

5.1 Editing an Existing Flight Plan - Double-click on the item of interest in the Flight Plan List on the Main Panel. The FP Editor dialog will be opened with the referenced aircraft title and registration displayed in the top line, the flight plan base data in the second line, each leg displayed in operational sequence in the Leg List and the various Leg List editor fields initialized to reflect the initial leg of the flight plan – which will be highlighted/selected.



FP Editor Dialog

If the flightplan being edited has a repeat period > 1 week, the departure times will be prefaced with a week indicator (0-7) and a Start Date button will be shown below the day-of-week checkboxes.

Edit the data for that leg as necessary. The Week textbox is enabled only when multi-week flightplans are being edited. Click Save Edits when done. To edit the data for any other leg, double-click on that leg in the Leg List. The current data for that leg will replace that in the editor fields. If you change the originating or destination airport, the leg distance, duration and ETA are recalculated. If you want a new FL to be assigned, delete the contents of the FL field before making any airport changes. (But, be aware, the intervening terrain is not considered in FL assignment. If there's a mountain in the way, it's up to you to adjust the flight level.) You may override the assigned ETA and altitude.

After editing the data for any leg, click the Save Edits. Whenever a change is made to the Leg List, a red ### indicator appears to the right of the list header to remind you to save the list. In general, error checking of an item of leg data is performed when the edited text box loses focus (i.e., you click on another control). Error checking of the leg as a whole is performed when the edited data is saved back to the Leg List, accomplished by using one of the three left-most buttons at the bottom of the FP Editor.

Unlike weekly flight plans, which always pertain to the week containing the simulated date, FlightSim locks multi-week flight plans to an interval reflecting the repeat period. So, the first day of such a flight plan in Flightsim may be one or more weeks preceding simulated date. This may not be satisfactory if you wish a given leg to occur on a specific calendar date.

To accomplish this, select a leg that you want to occur on a specific date and click the Set Start Date button. The button will be replaced with a "date picker" object. Select the calendar date on which you want that leg to be executed. (The day-of-week on the calendar must match the day-of-week of the selected leg.) That's all there is to it. The leg list may be "rotated" to make this happen, i.e., the selected leg will be offset from the start of the leg list such that its execution will occur on the specified data (and on all other dates differing from the selected date by a multiple of the repeat period). All other legs in the flight plan will be moved accordingly.

New legs may be inserted into or added to the Leg List as necessary. To insert a new leg, select the leg in the Leg List above which the new leg is to be inserted and click on the Insert Leg button. A blank leg is inserted into the Leg List at that point as a "placeholder" and some of the editor fields are cleared. To add a new leg at the bottom of the Leg List, click on the Add Leg button.

Please note, however, the sole reason for selecting a location in the Leg List for the new leg is to identify the departure airport for the purpose of computing the leg distance/duration/ETA (i.e., the destination airport of the leg immediately previous to where you placed the new leg.) When you later save the leg, it will be placed in the Leg List based on its departure time, irrespective of where you initially put it.

To move a leg from one position to another in the Leg List, double-click on the leg to open it in the editor, change it's departure and arrival times, and then save the leg (which will be inserted in the correct position).

To change the aircraft, left-click the Aircraft field, The entire list of aircraft for the flight plan set is displayed. Select the one you want. The list box will then collapse and arrival

times will be re-calculated based on the cruise speed of the newly-selected aircraft. To open the aircraft editor (for installed aircraft), right-click the Aircraft field.

You may also revise the flight plan base data. Note, however, changing the repeat period from weekly to daily or sub-daily and vice versa may require some further adjustments on your part.

- 5.2 Global Changes to Leg Data - To make identical changes to two or more legs simultaneously, select the legs of interest. Upon selection of the second leg, the leg data text boxes will be cleared.

Enter the new values for the data you wish to change into the appropriate editor field(s) and click the Update Selected button. The newly entered data will appear in the corresponding fields of each selected leg. Only the fields corresponding to those into which data is entered will be affected. Bear in mind, however, it is up to you to ensure (or to make further changes as may be necessary to ensure) the validity of the flight plan as a whole.

If, for example, you wish to change the day(s) of the week on which certain legs operate, select the legs in the leg list, check all the days on which you want those legs to operate (not just the additional ones) and then click Update Selected. The legs corresponding to the days on which the legs no longer operate, if any, will disappear from the Leg List and legs for any new days will be added.

- 5.3 Creating a New Flight Plan - On the Main Panel, select the aircraft to be used by the flight plan and click the Start New FP button. The FP Editor dialog will appear with the aircraft title and its default registration in the top line but all other fields blank. Alternately, if the FP editor is already open, select the aircraft to be used (if not already selected) and click the Start New FP button on that dialog.

Update the base data for the flight plan (the fields in second line) as necessary. Then enter the data for the first leg. When you enter the second of the originating or destination airport, the leg distance, duration and ETA are recalculated. A realistic FL will be assigned having regard for international flight rules. (As with editing, be aware of the intervening terrain elevation.) You may override the assigned ETA and altitude. When finished, click the Save Edits button; the first leg will appear in the Leg List.

Should it be necessary to change the data for any leg, double click on that leg in the Leg List. Its data will be copied back into the leg editor fields. Edit as necessary and click the Save Data button when finished.

As with edits, you may add new legs at the bottom of the Leg List. Insert them between existing legs and move them around.

When starting a new flight plan, you must enter a departure airport for the first leg, AI Flight Planner continues to regard that airport as the departure airport for the first leg until the flight plan is saved. When it comes time to save the flight plan, if the destination of the final leg does not match this airport, AI Flight Planner alerts you. You then have the option to either save the flight plan as it exists, with the destination airport of the last leg becoming the departure airport for the first leg, or to further edit the flight plan.

- 5.4 Editing Leg Time Fields - AI Flight Planner does not use TTools “@” and “TNG” prefixes for arrival times. The function performed by the “@” symbol is automatic with AI Flight Planner. (Any arrival time that differs by more than two minutes from the system-calculated arrival time is assumed to have been specified by you. This tolerance is necessary to accommodate “jitter” introduced by de-compilation.) Touch ‘n go operation is specified using a checkbox.

Also unlike TTools, all arrival times (not just user-specified ones) reflect nominal arrival at parking. AI Flight Planner compiler uses a standard 15-minute allowance for approach, landing and taxiing in all cases. Actual arrival times will depend on weather, traffic, aircraft performance, etc.

AI Flight Planner determines whether the specified arrival time is for the day (repeat period for sub-24 hr flight plans) of departure or the following day (repeat period) and applies an appropriate suffix where necessary. (Any arrival time in 24 hour format that is earlier than departure time is assumed to refer to the following day (repeat period). The suffix indicating a following day/after midnight arrival is “+1” – a notation used in many airline schedules. Where the flight crosses the International Date Line, the suffix may also be “-1” (eastbound flights leaving Asia just after midnight) or “+2” (westbound flight leaving North America just before midnight). You need not enter these suffixes; AI Flight Planner applies them automatically where appropriate. But, if you do, your entry is used.

When a sub-daily repeat period is selected, the hour value of the arrival and departure time entries must be less than the repeat period. For example, for a repeat period of 4 hours, the maximum acceptable arrival or departure time is 03:59. When the repeat period is changed to a smaller value such that previously-entered arrival and departure times in the editor are invalid, the arrival time and predicted ETA suffixes may become what appears to be nonsensical. Such a situation may not be detected and no error message issued until an attempt is made to save the flight plan.

In weekly consolidated mode (see below), the departure times displayed in the *Leg List* are in “day-time” configuration, i.e., d/HH:MM. This is to maintain proper sequencing of the entries. Departure time entries in the editor are always in HH:MM; AI Flight Planner derives its day-of-week information from the day-of-week checkboxes in the *Base Data* area.

- 5.5 Editing Airport Fields - When you enter or edit an airport designator (either IATA or ICAO code), the newly-entered code is validated as soon as you move the cursor to another field. If the code is valid (i.e., already in AirportList.dat), the airport is entered into the Airport List if it is not already there and the name of the city shown. If invalid, an advisory message is issued and you are given an opportunity to enter the airport into the system.

If unsure of the ICAO/IATA code for the intended airport, you may enter a “?” optionally preceded by a character string into either the originating or destination airport field. If:

- no character string is entered, i.e., just “?”, the Get Airport Information “airport tree” dialog opened; locate the airport of interest, select (click on) it and close the dialog box;
- the character string contains “>”, a list of ICAO and IATA codes where the city name or airport name contains the entered string pops up; or

- otherwise, a list of ICAO and IATA codes which start with the entered string pops-up. In the latter two cases, double-click on the airport of interest in the pop-up list. This closes the list and places the selected ICAO or IATA code in the relevant airport field in the editor.

5.6 Weekly Flight Plans - Except when the consolidation option for weekly flight plans is selected (see below), flight plan legs are listed in chronological order, commencing with the leg having the earliest departure based the selected time zone. For easy reference, each leg is numbered, that number appearing at the left-most end of the leg data line.

While flight plans in TTools-format text files also have their legs ordered chronologically, there is no requirement that the first leg be the one with the earliest departure. Indeed, often it is not. This creates a potential problem with error reporting. Flight plan error messages report the sequence number of the faulty leg. But, the sequence number of a leg in the text file may not be the same as that assigned when the flight plan is displayed in the editor. Consequently, a file-leg reference number is shown at the right-hand side of the leg data display when it is applicable. Error reports relating to file data will reference this latter number

For weekly flight plans, a leg which is flown on two or more days may be shown in either of two ways:

- “individual”, i.e., each leg in the flight plan shown individually, or
- “consolidated”, i.e., legs that operate on more than one day of the week but are otherwise identical consolidated into a single list item.

In “individual” mode, the legs are entered/displayed in operational sequence. The destination airport of one leg becomes the departure airport for the next, with the destination airport of the last leg being the departure airport for the first. In “consolidated” mode, the position in the Leg List at which a new leg is entered determines the departure airport for that leg – but only for the purpose of calculating distance, duration and ETA. When the data for a new leg is entered into the Leg List or when edited data is saved, AI Flight Planner automatically positions the edited leg based on departure time and day of week. The Consolidate Weekly FPs checkbox located in the bottom right-hand corner of the main window controls this mode.

When a flight plan leg is moved into the editor, AI Flight Planner must determine the departure airport so as to be able to calculate the distance and flight duration/ETA to the destination. For a daily (or more frequent) flight plan, this is a simple task – as noted above, it is the destination of the leg immediately previous in the *Leg List* to the leg of interest. However, when in the consolidated display mode, the previous leg is not necessarily the one shown in the Leg List.

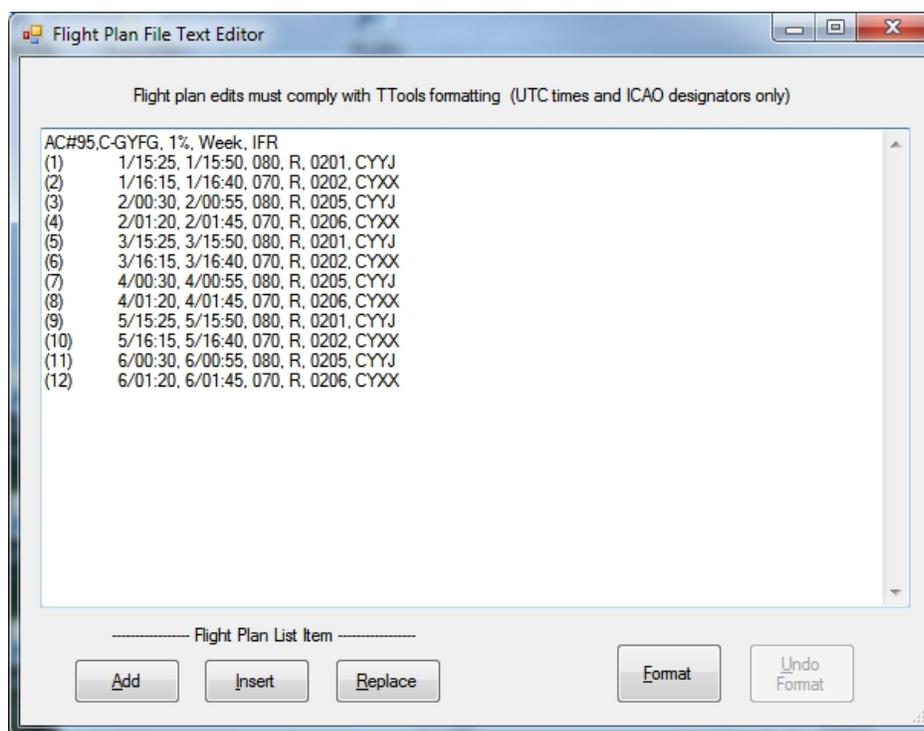
Consider, for example, the simple case of a flight plan that operates between airports A and B from Monday to Friday but makes an intermediate stop at airport C on Wednesday. Such a situation requires three legs to be specified; A to B on M/T/T/F and A to C and then C to B on Wednesday. In the Leg List, the sequence of the legs is A to B, A to C and then C to B. So, there are two intervening legs between the A to B leg and the ongoing leg from B. In such cases, AI Flight Planner looks back up the Leg List to find an earlier flight plan scheduled for the same day of the week.

Depending on the complexity of the flight plan, AI Flight Planner may not correctly identify the departure airport. (Fortunately, this is of little consequence, since the departure airport is only used to calculate the distance and duration and to predict the ETA of the flight – and you can always override the system-calculated ETA.)

When editing weekly flight plans in the normal (un-consolidated), you will load into the editor the leg for one day only. However, you may direct the editor to apply the change to the same leg that operates on other days of the week by clicking the appropriate day-of-week checkboxes. As you do, the relevant leg(s) in the Leg List will automatically be selected. At the completion of the edit, all selected items will be deleted and new, revised items for the checked days created.

When a new, blank leg is added to/inserted in a weekly flight plan, there is no day of the week information available. So initially, AI Flight Planner assumes that the leg originates at the destination of the leg immediately above it in the Leg List. However, once the days of operation are specified, AI Flight Planner attempts to refine its earlier choice by selecting a departure airport from an earlier leg that operates on the same day(s).

- 5.7 **Built-In Text Editor** – AI Flight Planner provides a simple text editor to allow creation/editing of flight plans and insertion of comments into, and editing of comments already in, the Flight Plan List.



FP Text Editor Dialog

To open the text editor for editing comments, double click on a comment line in the Flight Plan List. The text editor supports both single-line and multi-line comments. Each comment line must commence with either “;” or “//”. Each line in a multi-line comment except for the last must be terminated using the keyboard <Enter> key.

This text editor also supports editing of flight plans in a TTools-like format. For simple changes to flight plans, it may be more convenient to use the text editor rather than the leg-oriented editor. To edit a flight plan in the text editor, select the flight plan in the Flight Plan List and either right click over the Flight Plan List and select Open Text Editor in the context menu or click on *Flight Plans / Selected FP to Text Editor*. The data is formatted with line numbers to make each leg readily identifiable. However, if you enter a new leg or an entirely new flight plan, you need not enter the line number(s)

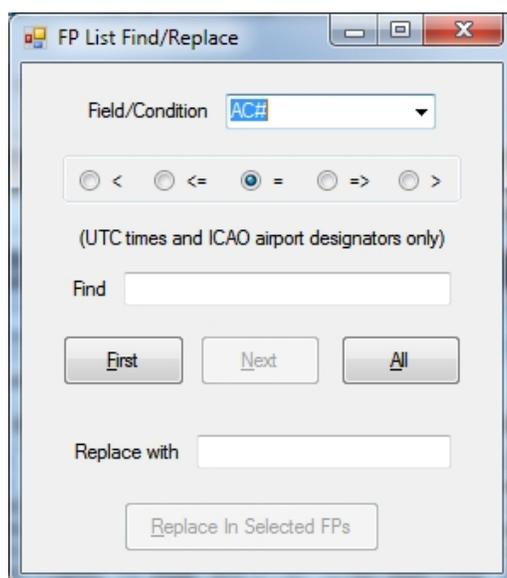
New/edited flight plans must comply with TTools formatting “rules”. Users not familiar with TTools formatting rules may wish to download TTools (*ttools202.zip* - available from popular Flightsim download sites) and refer to the “Source Files and Formats” section of its user manual (ReadMe.htm). Multiple flight plan legs may be entered on a single line.

Multi-week flight plan departure and arrival times may be specified in either of two formats: week/day/time (e.g., “2/5/1600” for 16:00 on Thursday of the second week) or multi-week day/time (e.g. 12/1600 – which specifies the same data). Display, however, will always be week/day/time.

The flight plan, including valid edits, may be re-formatted at any time with the Format button. If re-formatting is not successful (due to incomplete or erroneous edits), the Undo Format button will restore the edit window to its prior state.

In addition to replacing the Flight Plan List item selected when the text editor was opened, the contents of the text editor may be added at the end of the Flight Plan List or inserted immediately above the selected item. Full validation of a flight plan edited in the text editor is performed when an attempt is made to place it (back) into the Flight Plan List.

- 5.8 Find/Replace Functions – The *Flight Plans / Find/Replace* function allows flight plans to be selected based on the contents of one of their fields and to have similar changes applied to those flight plans. As well, flight plans may be selected based on whether or not the assigned aircraft exist on the user's system and if no aircraft is currently assigned (i.e., the assigned aircraft has been deleted from the Aircraft List.)



Find/Replace Dialog

First, select the field/condition of interest in the Field/Condition combo-box. Then, for fields, select the comparator as: less than (<), less than or equal to (<=), equal to (=), greater than or equal to (=>) or greater than (>) and enter the value to be found/replaced in the Find text box. You should always select the Field first since, to ensure a proper match, AI Flight Planner may apply a prefix or suffix based after you enter the “find” or “replace” value – allowing you to make abbreviated entries.

To select the top-most flight plan meeting this criteria, click on the “First” button. Subsequent flight plans may be selected using the “Next” button. To select all flight plans meeting the criteria, click on the “All” button. The “find” functions operate on the entire Flight Plan List, irrespective of the selected set of flight plans when First or All is clicked.

You may replace any field in the selected flight plans. First, select the field to be replaced in the Field/Condition combo-box. If you want all such fields in the selected flight plans changed to this value, clear the Find textbox. If you want only those fields containing a specific value to be changed, enter that value in the Find textbox. Finally, enter the replacement value in “Replace with” textbox. and click on Replace in Selected FPs. AI Flight Planner will seek your confirmation that the changes are to be made prior to updating the flight plans.

The Replace function may also be used independently of the “find” function by selecting the field of interest, entering the replacement value and manually selecting the flight plan(s) where the replacement is to occur prior to clicking on the “Replace In Selected FPs” button.

5.9 Creating Flight Plans from Timetable Data – AIFP can generate flight plans from airline schedule data in columnar format, e.g. (from an Aeronaves schedule):

```
AM;100;MMHO;KTUS;1445;1600;1234567;DC6
AM;101;KTUS;MMHO;1000;1115;1234567;DC6
AM;101;MMHO;MMCN;1200;1245;1234567;DC6
AM;102;MMM;MMLO;0700;0810;13;DC6
AM;102;MMLO;MMMZ;0825;0855;13;DC6.
```

The data must include, as a minimum:

- origination airport,
- departure time,
- destination airport,
- arrival time, and
- aircraft type

If the data is for weekly use, a day-of-week field must also be included. You may optionally add altitude and sit-time to apply to/before the next departure. Almost any field separator may be used. Simply specify the column number (1-based) in the appropriate text box and select other parameters as necessary.

Data formatting is flexible. Either ICAO or IATA airport designators and aircraft types may be used. Times may be UTC or, if AI Flight Planner has a UTC offset for every

airport in the file, local standard or daylight saving. Altitude is specified as Flight Level (ft.), e.g., 35,000 ft would be stated as 350. If you don't specify altitude, AI Flight Planner will assign altitude based on the performance of the assigned aircraft. If you do not specify a sit-time, the standard sit-time value will be used (*Flight Plans / ETD Preset/Standard Sit-Time (min).*) Day or week may be specified in any of three formats:

- 1234567 (either 1 or 7 may be used for Sunday)
- x|x|x|x|x|x|x, ("x" may be any alphabetic character and "|" may be most other non-numeric character), or
- Sun Mon Tue Wed Thu Fri Sat

While you have a choice of formats, all flight plans in the file must adhere to the same format.

Create Flight Plans from Timetable Data Dialog

After reading the timetable data, AI Flight Planner will scan your installed aircraft looking for titles that match or include the aircraft type designators. Installed aircraft type is determined from the following aircraft.cfg parameters in the order shown:

- ui_type (from fltsim.x entry)

- ui_type (from [General] block)
- atc_model (from fltsim.x entry)
- atc_model (from [General] block).

If you have an extensive installed aircraft "stable", you may want to filter by Airline or Parking Codes. (If exact matches to this criteria are found, all other matches by type only will be discarded.) Then, before the flight plans are created, you will be presented with another dialog to allow you to review, and to add to or delete from, AIFP's automatically-generated list of installed aircraft for each specified type. Once you are happy with the aircraft lists and click the Continue button, AI Flight Planner will create the flight plans, validate them and display them in the usual format. However, even if no aircraft are selected, you may still generate flight plans - the aircraft type being shown in the RegNo field of the generated flight plans.

AI Flight Planner has no "knowledge" of which legs are flown by a given physical aircraft. Flight plans are created by converting the timetable to a sequential list of legs for the day or week, as applicable, and then, starting with the first unassigned leg in that list, looking for the next unassigned leg that departs from the destination of the first leg following arrival of the first leg plus sit-time. This process is repeated until all legs have been assigned. So, it should not be surprising that, without special attention, at least some of the flight plans will not be circular (i.e., the final destination is not the originating airport of the first entry).

If you are looking for the fewest flight plans and can tolerate such anomalies, you're done. But, if you want your flight plans to more accurately reflect the timetable data, check Ensure Closure before clicking continue. In that case, where necessary, AIFP will add a "deadhead" leg back to the originating airport. Since doing so may necessitate removing the final leg (which would then have to be placed in another flightplan), the number of flight plans maybe greater.

Depending on the timetable data, you may get better results if you make an entry in the Priority to Same FN Within (mins) text box. When an interval is entered, following each "arrival", AIFP will check if there is a continuation leg for the flight number of the arriving flight within the specified interval and, if so, use it as the next leg.

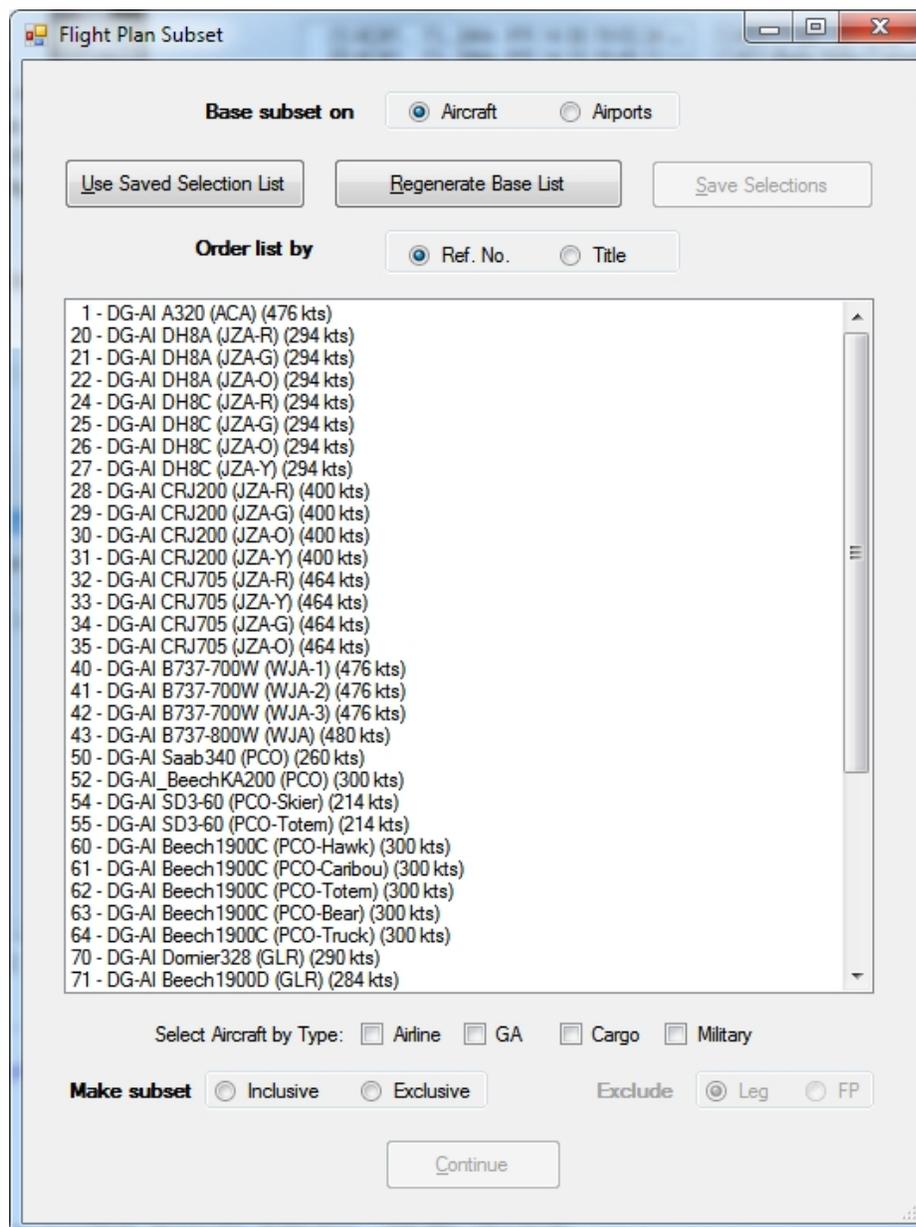
The critical parameter in determining the number of flight plans resulting from any time table data is default sit-time. When the Create FPs from Timetable dialog is first presented, the Default Sit Time textbox is initialized with the current ETD Preset/ Standard Sit-time value. You may adjust that value as necessary. Note, however, this value will not override sit-times specified in the timetable data.

To help you select the best value, AIFP's "Test Sit-Times" capability will report how changes in sit-time affect the number of flight plans generated. AI Flight Planner will test values of sit-time between 10 and 60 minutes in small increments using the specified Mode parameters and report the number of flight plans generated for each aircraft. Using that information, you can be sure you are generating the least-possible number flight plans.

- 5.10 Creating Flight Plan Subsets – AI Flight Planner allows the creation of subsets of the flight plans currently in the Flight Plan List based on a selected set of airports or aircraft.

Airports may be selected individually or by country in a tree-view structure. Aircraft may be selected individually or by type.

Subsets may be either inclusive or exclusive. An inclusive subset includes each flight plan that references any selected airport or aircraft, as applicable. For aircraft, an exclusive subset includes every flight plan that does not reference any of the selected aircraft, i.e. flight plans referencing any of the selected aircraft are excluded. For flight plans, exclusion may be performed on a per-FP or per-leg basis. For the latter, individual legs that designate any selected airport as the destination are deleted but the balance of the flight plan remains intact – provided there are at least two legs remaining. But recognize, however, simply deleting specific of legs may lead to nonsensical flight plans - especially where the selected airport(s) appear more than once in a flight plan.



Subset Dialog

Among other things, sub-setting allows:

- generation of regional flight plans from a flight plan file having broader coverage (airports, inclusive option);
- exclusion of designated airports from the default traffic files (airports, exclusive option); and
- partitioning of the default traffic file into aircraft categories, e.g., airline and GA (aircraft, either option)

To create a flight plan subset:

- click on the *Flight Plans / Subset* menu item; (the sub-setting dialog will be presented)
- click on the Aircraft or Airports radio button; (the contents of the Aircraft List or Airport List, as applicable, will be displayed in the dialog box); you may display the list data in either of two formats;
- select the airports or aircraft of interest;
- click on the Inclusive or Exclusive radio button; and then
- click on the Continue button.

AI Flight Planner will seek confirmation that you wish to generate the specified subset, whether or not aircraft not used in the subset are to be purged from the Aircraft List and whether comments in the Flight Plan list are to be preserved. The resulting flight plan subset will be placed in the Flight Plan List subset and unused airports will be purged from the Airport List. The *Files / Save File Set* menu item will be disabled to prevent an accidental overwrite of the original file with the original file. If you intend to overwrite the original file, use *Save File Set As ...*

To avoid you having to re-select a set of airports or aircraft, you may save the currently selected set of either in a file of your choice by clicking on the Save Selections button. However, if you plan to save your selections, do so before creating the subset since the Subset dialog box closes upon successful subset generation. If you wish to use a previously-created selection file, click on the Use Saved Selection List button and designate the file of interest. The contents of that file will replace the contents of list then in the dialog list box.

With current availability of AI flight plans for most airlines, it is convenient to be able to exclude default airline AI traffic while preserving default GA traffic at airports of interest. For example, suppose you have system-wide AI flight plans for Air Canada but your primary interest is AI only at several Western Canadian airports. As well, you probably don't want Airwave (default) Dash 8s showing up at those airports, but you do want the default GA traffic. AI Flight Planner allows you to do all those things, as follows:

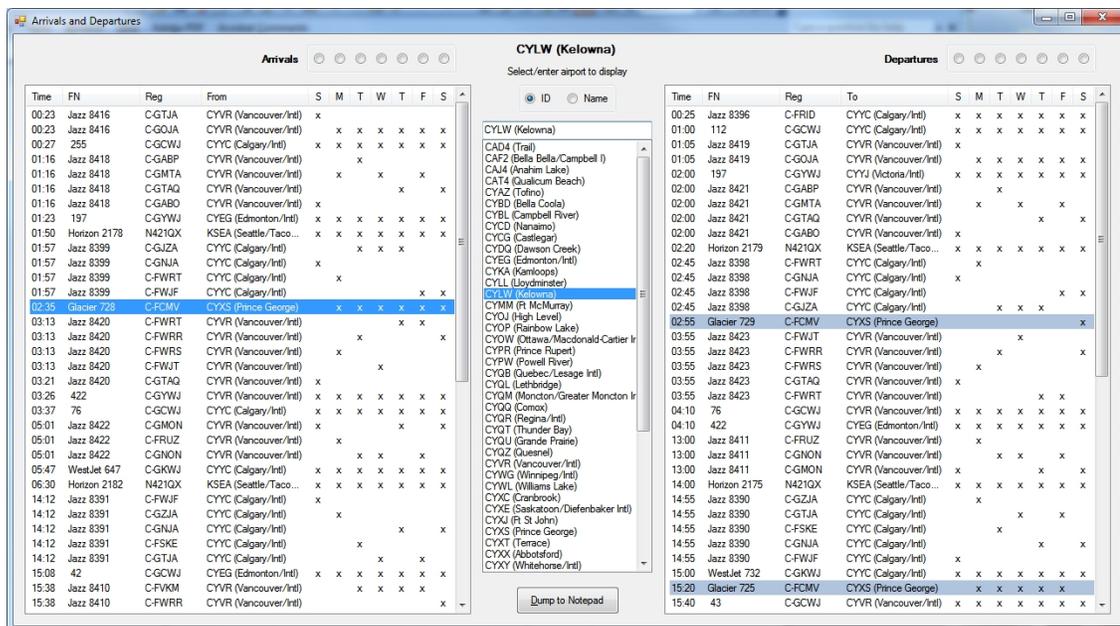
- load the Air Canada system-wide flight plans and aircraft set; make an inclusive subset for the airports of interest; save/compile the sub-setted flight plans to a new file (the new file will still include some other Air Canada AI traffic, but any flight plans not naming any of the selected airports as destinations will have been deleted); this subset is not strictly necessary but, for performance reasons, you'll probably want to exclude Air Canada traffic at airports not of interest;

- load the default traffic file; (it's located in the *Scenery/World/Scenery* folder; for FS9, it's named *traffic030528.bgl* and for FSX, *trafficAircraft.bgl*); make an inclusive subset based on aircraft by selecting GA aircraft (individually or by category), compile and save it back into the *Scenery/World/Scenery* folder under a new name, say *trafficDefault_GA.bgl*; before creating the subset, save the selected aircraft list;
- reload the default traffic file and the saved aircraft list and, this time, make an exclusive subset; compile and save it back into the *Scenery/World/Scenery* folder under a new name, say *trafficDefault_Airline.bgl*;
- further subset the Flight Plan List, exclusively, based on the Western Canadian airports; compile and save it back into the *Scenery/World/Scenery* folder under a new name, say *trafficDefault_Airline_exWesternCanada.bgl*;
- disable the original default traffic file and *trafficDefault_Airline.bgl*.

Now, you'll still get default GA AI traffic at all airports, no default airline traffic at the airports of interest and you won't be overloading the system with a bunch of unwanted Air Canada flights.

6 OTHER FLIGHT PLAN / TRAFFIC FILE OPERATIONS

6.1 Displaying Arrival/Departure Information – A detailed listing of arrivals and departures at any airport contained in the Flight Plan List may be obtained by clicking on *Flight Plans / Time Table*. This opens the Arrivals/Departures dialog which lists all the airports referenced by the flight plans – essentially a duplicate of the Airport List.



Timetable

Enter the Airport IATA/ICAO code into the airports combobox and press the Enter key or click on any airport in the list and all the arrivals and departures at that airport are displayed in time sequence. You may display only those flight plans that operate on a particular day of the week using one of the radio-buttons located immediately above the

day-of-week labels. Departure and arrival times for a multi-week flight plan will be preceded by a week indicator.

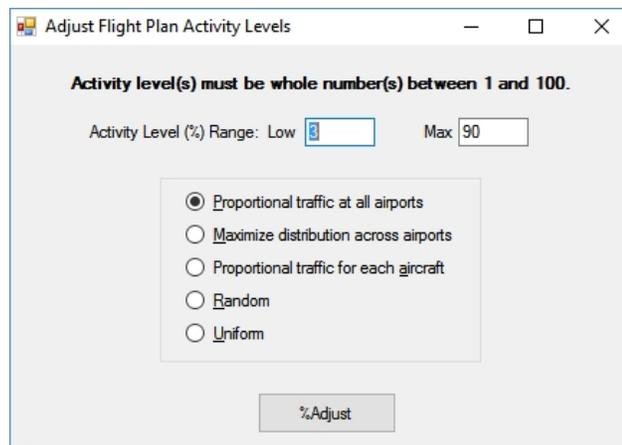
- 6.2 Adjusting Flight Plans for Summer/Standard Time – Flight plan arrival and departure times are always saved using the UTC equivalents – even if originally specified or edited using local times. Consequently, at airports where daylight savings time is observed, the AI at those airports may operate one hour early or late in some seasons if the times in the flight plan times are not specified for that season.

Flight plan/traffic file times are considered to be for summer time if the file is saved/compiled, respectively, when Local Time - Summer is selected or if the file was specified as being for summer time when it was loaded. When you load a flight plan or traffic file, the local time controls will be adjusted, if necessary, to reflect the "summer time" status of the file. If that status causes the settings of those controls to change, you will be alerted.

Rather than requiring re-specification of all arrival and departure times to allow for correct operation during the summer season, AI Flight Planner's menu item *Flight Plans / Advance to Summer Time* advances all the times by one hour. This simple operation followed by a re-compile of the file results in proper summertime operations. If local time operation is selected when *Advance to Summer Time* is activated, the Local Time-Summer radio button will be checked automatically.

But, of course, such flight plans will then operate one hour late during the winter. *Flight Plans / Retard to Standard Time* to the rescue! It reverses the effect of the *Advance to Summer Time* feature.

- 6.3 Adjusting Activity Levels – The activity level setting in a flight plan determines the traffic level setting in the simulator at or above which the flight plan will operate. The editor allows this level to be set for an individual flight plan. However, large flight plan/traffic files, for example, those covering the complete schedule of a major airline, may overload your system or result in the parking available at certain airports, especially principle hubs, to be exhausted if all flight plans have the same activity level. Sub-setting of the file will, of course, provide a solution. But, sub-setting (which will eliminate legs or entire flight plans) may not be necessary. The *Flight Plans / Adjust Activity Levels* feature adjusts the activity level of each flight plans to achieve a desired traffic distribution.



Adjust Activity Levels

AI Flight Planner provides three types of traffic-based activity level adjustment. Enter the minimum and maximum values for activity level you wish to be assigned, select as the basis for proportional distribution one of:

- each airport,
- each airport but with the most frequently used airports being de-emphasized so traffic is more evenly distributed across the other airports, or
- each aircraft.

and click the Adjust button.

AI Flight Planner will then calculate and apply an appropriate activity level setting for each flight plan in the Flight Plan List, thus allowing you to address the overload situation to a certain extent using the traffic level setting in the simulator. This feature will be most useful with large, complex flight plan/traffic files. When used with small files or those where the majority of the flight plans are for simple return flights between two airports, you'll likely find the majority of the adjusted activity levels "clumped" near either the low or high end.

The dialog also allows the activity levels to be set uniformly, i.e., a single level for all flight plans or to be randomized.

- 6.4 Adjust ETAs to Reflect Cruise Speeds - Should you make a change that affects the cruise speed of the aircraft, (e.g., restoring all cruise speeds or adjusting aircraft data), you'll likely want to adjust the ETAs of flight plans that make use of that/those aircraft.

When the cruise speed of the aircraft in the Aircraft List is changed, if the flight plan then in the editor uses that aircraft, ETA field of the leg editor will be updated to reflect the new cruise speed. However, no flight plan data is updated. You may, of course, edit each affected flight plan leg individually to update their ETAs. But, the *Flight Plans / Adjust ETAs to Reflect A/C Cruise Speeds* function allows you to select one or more (or all) flight plans in the Flight Plan List and will update all their ETAs to reflect the cruise speeds then specified in the Aircraft List for the relevant aircraft.

Prior to any changes being made, you will be asked to confirm your intent. You may also specify that any existing ETAs that are later than the newly-calculated value be preserved. This may be helpful, for example, if you are simulating an actual airline schedule.

- 6.5 Adjust Departure Times for Standard "Sit-Time" - Many flight plan packages available from popular download sites schedule departures very close to the previous arrival. *The Flight Plans / Adjust Departure Times for Standard Sit-Time* feature will adjust the departure times of the flight plans selected in the Flight Plan List to follow the previous arrival by not less than the standard sit-time you specify (using the bottom function of Flight Plans menu). If the currently scheduled departure time for a leg is later that it would be based on the standard sit-time, neither the departure time or ETA is affected.

As in the previous function, prior to any changes being made, you will be asked to confirm your intent. You may also specify that any existing ETAs that are later than the newly-calculated value be preserved.

Please recognize that every such adjustment potentially extends the time required for the operation of the flight plan. Consequently, some flight plans may not lend themselves to successful adjusted with this feature.

After all selected flight plans have been processed, a message will be issued that either confirms successful adjustment or identifies the flight plans that could not be adjusted (e.g., their duration would extend beyond their repeat period) and leaves them highlighted.

In the latter situation, there are several options available to you:

- if you elected initially to preserve over-ridden ETAs, try again and let the system calculate all ETAs;
- reduce the standard sit time;
- examine the flight plan(s) looking for excessively-long sit-times that, if shortened, may allow departure time adjustment using standard parameters to be successful.

Then re-run the departure time adjustment function for those flight plans.

6.6 Re-Sequencing Flight Plans - Upon loading, flight plans are displayed in the same order as they exist in the source file - which may not be ideal. Using the Flight Plans / Re-Sequence Flight Plans menu item, the Flight Plan List may be re-sequenced in either ascending or descending order by any of:

- aircraft reference number
- aircraft registration
- flight plan repeat period
- activity level, or
- IFR/VFR

In any re-sequencing operation, the previous sequence is preserved to the extent possible. So, complex sequencing may be obtained by re-sequencing several times on different parameters - starting with the least important. For example if you wanted a/c reference number as the primary sequence, with sequencing with a given reference number to be by repeat period, you would first re-sequence by repeat period and then by a/c reference number.

6.7 Setting the Day From Which Legs are Sequenced - Generally, the sequencing of legs in flight plans in the Flight Plan List reflect the sequence in the text or traffic file which was last loaded. For certain operations, it may be preferable to have the leg sequence in all flight plans start on a certain day. The Flight Plans / Sequence Legs Starting On menu item allows you to do this.

When you select a start day from this function, the legs in all flight plans will be re-sequenced to start on that day in whatever time zone is then selected in the Time Zone combo-box. If you later change that time zone selection, the legs will be re-sequenced based on the last setting of that menu item.

The leg sequence from the Flight Plan List is retained in saved text files (but with all times converted to UTC) and compiler traffic files.

Selection of local time has no effect on this feature. Also, this feature has no effect on the sequence of legs in the editor; the Leg List always starts with the earliest departure of the week.

To disable this feature, uncheck the day selection in the Sequence Legs Starting On menu item. However, the flight plans in the Flight Plan List will not be affected. To revert to the original leg sequence, you must reload the file (assuming it has not been overwritten).

6.8 Departure Time Functions - Two menu items affect how departure times are established/managed, namely:

- Flight Plans / Minimum Time Arr->Dep (min.) - sets the minimum time in minutes between arrivals and departures for warning purposes; and
- Flight Plans / ETD Preset Interval (min.) - sets the interval following the ETA of the previous leg used to preset the ETD of a new leg.

Both items are of the checked type. When unchecked, the function is disabled. In the case of the first item, no warnings about departure times close to or earlier than the previous arrival will be issued.

6.9 Converting FS9 Flight Plans for Use with FSX – Conversion of FS9 flight plan and traffic files for use with FSX addresses two main attributes:

- Airports – The ICAO code designator of many FS9 airports changed between FS9 and FSX. AI Flight Planner updates the designators for those airports to their FSX equivalents. If an airport does not exist in FSX and there is no equivalent, an error message is issued.
- Day-Encoding in traffic files – updated to the FSX scheme.

AI Flight Planner uses FS9 day-encoding internally. If text-based flight plan data with FSX day-encoding is loaded, the first thing AI Flight Planner does is convert it to FS9 format. If the day-encoding scheme is not specified in the text file, you are asked whether or not it is for FS9.

The compiler automatically applies FSX day-encoding to traffic files when FSX is designated as the target Flightsim version. But, the text files remain in FS9 format and retain FS9 airport ICAO designators for airports that have a different designator in FSX. If you wish to save text-based flight plan data using FSX replacement ICAO designators, you may update the airport ICAOs prior to saving using the *Flight Plans / Convert Airports for FSX*.

6.10 Rerouting Traffic to Another Airport – AI Flight Planner allows you to flexibly reroute traffic in a flight plan or traffic file from one airport to another. Click the Flight Plans / Reroute Traffic menu item and the following dialog appears.

For your convenience, the first time you open this dialog, if you have any flight plans or aircraft selected, the respective checkboxes on the dialog will be checked. If not, they will be disabled (as shown).

Any airport may be specified for both From and To. If the airport ICAO (or IATA, if selected on the Main Panel) designator is not in AirportList.dat, you will be asked to

confirm the designator. Of course, if the From airport is not used by the flight plans, no traffic will be rerouted. You may specify the portion of the traffic to be rerouted as a percentage and restrict the rerouting to a specified range of times. If no times are entered, the default is 0000-2359. You may optionally enter a day number with the time (e.g. 2/14:00 for Tuesday). If you do, a day number must be entered with both times. If you don't enter a day number, the entered time range, if any, will be applied to each day of the week. Times may be entered in either local time or GMT, based on the Main Panel setting

You may also restrict rerouting to specific aircraft or aircraft having specific characteristics. If aircraft are selected on the Main Panel and the Use selected Aircraft box is checked, on traffic for that/those aircraft will be rerouted. If the Use selected aircraft box is not checked, you may restrict rerouting to aircraft of a specific airline, having a specified parking type or parking code, or whose wingspan falls within a specified range. If you wish to reroute aircraft having more than one set of characteristics, repeat the process as necessary.

Reroute Traffic Dialog

Once the desired conditions have been specified, click Continue. AI Flight Planner will report the number of legs rerouted. Note that re-routing cannot be undone – other than by reloading the original file, of course.

- 6.11 Add Single Livery - The Add Single Livery functionality allows you to select a different “livery” to be used for one or more flight plans than as specified for those flight plans. The function may be initiated in either of two ways:

- clicking the *Flight Plans/Single Livery* menu item and entering a series of registration numbers to specify the flight plans of interest, or
- selecting the flightplans of interest in the Flight Plan list and click Single Livery in the context menu.

In the first case, you'll be asked to enter the registration number(s) to be affected. You may enter one or more - separated by commas (,) - registration numbers to be replaced by a (to be) selected repaint/title. You may enter multiple such blocks, separated by semi-colons (;) to have a different set of registration numbers affected by a different (to be) selected title/repaint.

The select aircraft dialog is opened with a list of candidate installed aircraft (based on airline and callsign) displayed. Select one of those, if any, or click one of the FS Version radio buttons to have the full list of available aircraft displayed. In either case, if you select an aircraft, that aircraft will be added to the Aircraft List and will be used in place of the aircraft originally specified in each flight plan that specifies any of the registration numbers in the block. If multiple blocks are entered, the process is repeated for each block.

If you do not select one of the listed aircraft, on the assumption the desired aircraft is not installed, you will be invited to:

- install a repaint to serve the function,
- simply reserve a title to be installed later, or
- cancel

If you elect to install a repaint, you will be asked to select the repaint archive and, if there is more than one repaint in that archive, to select which of them to install. Then, a small dialog allowing you to select from the compatible textures is displayed. Select the texture and click Install.

The remainder of the process is documented in Section 7.1 below.

7. MISSING AIRCRAFT AND INSTALLATION OF REPAIRS

Aircraft that are required for the performance of a set of flight plans and that are not currently installed on the users system are optionally highlighted in the Aircraft List using a red font. Whether or not a given aircraft is already installed is determined solely by matching the aircraft titles from the supplied aircraft_....txt file with the titles ("Title=" entries in the "[Fltsim.x]" sections of *aircraft.cfg* files) of the installed aircraft. So, an aircraft may be shown as missing when, in fact, the only problem is that the author of the flight plan data uses a title different from that of the installed aircraft. In that case, you don't need to re-install the aircraft. Rather, simply substitute the installed aircraft - or edit the title of the installed aircraft noting however, this latter action may affect other flight plans that use the title.

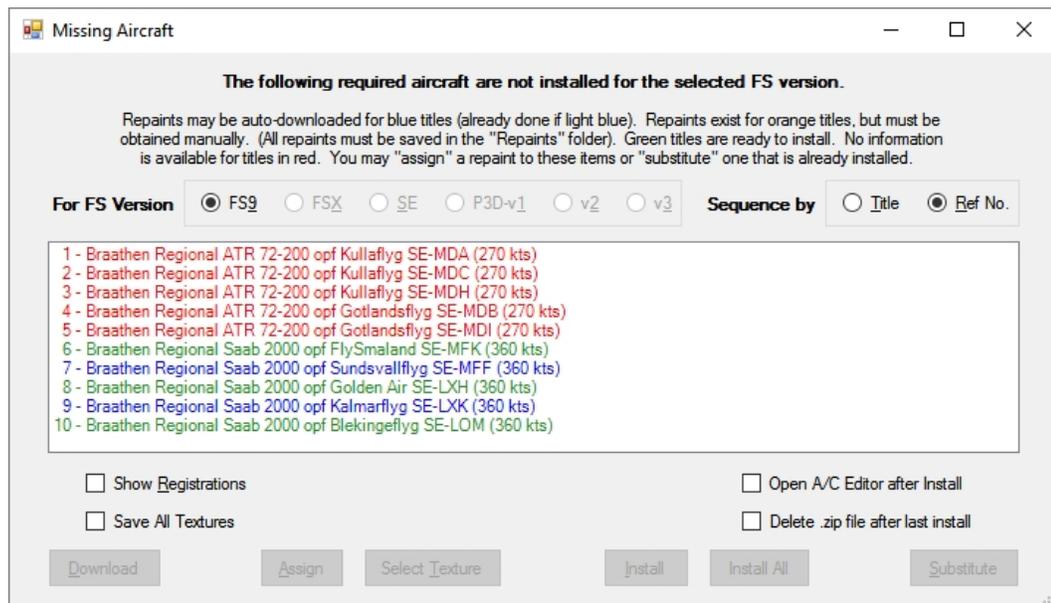
PLEASE NOTE

Many websites have recently imposed cookie-validation as a condition of access. At the moment, AIFP has no way to accomplish this. Consequently, repaints from such sites must be downloaded manually to your AIFP\Repaints folder (or such other folder you may have designated for this purpose.) I am hopeful I can resolve this issue in a future release.

- 7.1 **Installing Missing Aircraft**– AI Flight Planner’s “universal” repaint installer was developed in close cooperation with Alpha/India Group (AIG) and, to some extent, has been tailored for use with AIG’s flight plan archives. However, any reasonably-configured repaint should be installable with this facility, albeit with, perhaps, some manual intervention.

To initiate the installation of a repaint, double click on an “missing” aircraft in the Main Panel Aircraft List (shown in a red font). Alternately, click the Main Panel/Aircraft/Install Missing Aircraft menu item. The Missing Aircraft dialog will be displayed.

The For FS Version radio buttons indicate the Main Panel Target Version selection and cannot be changed from this dialog. The Sequence by radio buttons allow you to control the order in which the aircraft are listed.



Missing Aircraft Dialog

Missing aircraft are color coded as follows:

- dark blue - a repaint archive and associated URL is specified for the aircraft in *aifp.cfg* but it has not yet been downloaded,
- light blue - the repaint archive specified in *aifp.cfg* has been downloaded, but:
 - the title in the Aircraft List is not included in the repaint archive (usually a result of the flight planner using a different title for a given repaint than that assigned by the repaint author); or
 - the textures could not be located - usually due to the [Fltsim.x] data not being found).

Both situations are addressed using the Assign function,

- orange - a repaint archive name is specified in *aifp.cfg* but not the URL; the repaint must be downloaded manually (right click the listbox item for archive details),
- red - no repaint information is specified in *aifp.cfg*, the file is invalid or there is no *aifp.cfg* in the archive; (you must manually download all the required repaints into the *AIFP\Repaints* folder or whatever other folder you may have specified as the default repaints folder), and

- green - the required repaint archive has been downloaded, the title and textures have been located (or assigned) and the repaint is otherwise ready to be installed.

When the display of tooltips is enabled in the Main panel Options menu, an appropriate prompt will be displayed in a tooltip when the mouse cursor is over any item in the missing aircraft list.

The registration numbers assigned to each aircraft by the current set of flight plans may be seen by checking Show Registrations.

Installation of a repaint involves AI Flight Planner adding appropriate "[fltsim.x]" data to *aircraft.cfg* in an existing aircraft folder and creating and filling a texture folder (named Texture.xxxxx where "xxxxx" matches the "texture=" entry in the "[fltsim.x]" data) to that same aircraft folder. The aircraft to which a repaint applies must already be installed - **and you should confirm that it operates satisfactorily as an AI aircraft. Not all aircraft will!** During installation, AI Flight Planner will confirm that the *.air* file and model designated in the "[fltsim.x]" data for the repaint already exist in the target aircraft folder. If they do not, you may specify that (one of) the existing *.air* files or models be used instead.

Typically, a repaint archive includes a text file that contains the necessary AI parameters for inclusion in the target *aircraft.cfg* file. Often, this file is named "[Fltsim.x].txt" or something similar. However, sometimes the information is contained in the "readme" for the archive or another file. If the text file named in *aifp.cfg* is not found in the repaint archive, AI Flight Planner will search for one named *[Fltsim.x]* and, failing that, one of several "standard" alternates. If none of these are found, you will be asked to locate the file that contains the information. If no such file exists, you may still install the repaint; AI Flight Planner will use default parameters that you may later replace if necessary. Thus, it is possible to install a repaint archive that contains only the texture files - either in *.zip* file format or unzipped directly to the AI Flight Planner Unzip folder in a sub-folder named for the aircraft title to which it is to apply.

To accommodate the evolving myriad of repaint packaging schemes, the installer basically ignores the texture packaging in the repaint archive and, instead, examines every texture file and classifies it as one of: compressed, compressed with mipmaps, 32 bit, 32 bit with mipmaps or other. AI Flight Planner then displays on the Missing Aircraft dialog the available texture types for the selected aircraft compatible with the selected Target Version. For FS9, these will be one or more of DXT3, DXT3-Mipped, 32 bit, 32 bit-Mipped and Other. For FSX and P3D, the choices will be similar, with the addition of DXT5. As well, a similar set of DDS textures is offered when available.

AI Flight Planner automatically selects the simplest of the available texture sets. You may override that selection. (For FSX or P3D, if DXT5 or DDS textures are not available, AI Flight Planner will use the DXT3 equivalents, if available.)

Please recognize that repainters often configure their repaint archives in a manner that does not lend itself to machine interpretation. Mipmapped textures have been found in texture folders not labeled as mipmaps – in one case, even when a folder labeled Mipmaps existed in the repaint archive. Non-mipmapped textures are often included in folders labeled as mipmapped and base textures (e.g., DXT3, DXT5) are often found in

folders labeled as 32 bit. While the repainter's motive for doing this sometimes is to ease the task of manual installation, AI Flight Planner is not privy to the repainter's intent. Nor does it know which files constitute a complete set for any type.

AI Flight Planner classifies each texture according to its file format. Consequently, for example, all un-mipmapped DXT3 textures are placed in AI Flight Planner's temporary DXT3 folder and all mipmapped DXT-3 textures are placed in AI Flight Planner's temporary DXT3-Mipped folder – regardless of the folder designations in the repaint archive. On the other hand, repainters often, for example, omit the `_L` texture(s) - and perhaps others - from their 32-bit texture sets. (A 32-bit night texture adds little except overhead). Fortunately, there's a simple solution. If, for example, you select DXT3 mipped textures, AI Flight Planner will first copy the un-mipped DXT3 files to your aircraft folder followed by the mipmapped files. If you select un-mipped DXT3, AI Flight Planner first copies the mipped files and overwrites them with their mipped counterparts where they exist. When you select 32-bit files, the base (DXT3/DXT5/DDS) textures are copied first and overwritten with the 32 bit files. Hence, a complete file set of the desired type (to the extent the repainter provided it) will always be copied to your aircraft folder.

One other noteworthy situation exists. When the textures in a repaint archive are not labeled exactly as the texture statement in the `[fltsim.x]` data, AI Flight Planner has no way of knowing which texture applies to which aircraft. Fortunately, most repaint archives apply only to a single aircraft, so this is not a major issue. Where both a "labeled" and an "unlabelled" texture exist in the same repaint archive, AI Flight Planner will give preference to the labeled texture. When you select a texture type, AI Flight Planner displays the name of the folder in the repaint archive from which that texture type was derived. If it's not the one you want, override AI Flight Planner's selection with the Select Texture function.

Finally, on occasion, the same originating texture folder name will be shown for two or more texture types. This is due to the repainter including textures of each type in the same folder. When that occurs, you should select the most complex texture type of the group displaying the same folder name, i.e., the one furthest right in the texture type groupbox.

If the Copy All Textures checkbox is checked, AI Flight Planner makes active the selected texture set and copies the available alternate texture sets into appropriately-named subfolders in the target aircraft's texture folder. The alternate texture set folders are named similarly to the texture-set select buttons - not as in the repaint archive. You can then "mix and match" as you wish.

If the designated texture folder is not in the repaint archive, you may assign one of the textures already available for the model. (This would usually be a temporary solution that allows you to install the other parts of the repaint and use the title while you locate the proper textures.)

The buttons across the bottom of the dialog perform the following functions:

- **Download** - permits you to download repaint archives as described earlier. If you save the repaints to other than the `\Repaints` folder, you will be given the opportunity to designate that folder as the default for future downloads. More than one aircraft may be selected, in which case the downloads will be sequential. Please note,

- however, this button will only be enabled if the *aifp.cfg* file is present and contains the download information.
- Assign - permits you to assign any previously-downloaded (but not yet installed) repaint to the selected aircraft. (This function will be used most often to identify the intended repaint when the flight planner and the repaint author use different titles and *aifp.cfg* does not relate them, i.e., Field 1 in the *aifp.cfg* [Repaints] block is blank - or if *aifp.cfg* is not included in the archive.)
 - Select Texture – permits you to override AI Flight Planner’s choice of texture folder in the repaint archive for the currently selected texture type.
 - Install - installs the repaints applicable to (or that have been assigned to) the selected aircraft. More than one aircraft may be selected.
 - Install All - installs all repaints that are ready (i.e. "green" aircraft) without them needing to be selected.
 - Substitute - generates a list of substitution candidates based initially on criteria in *aifg.cfg* (if provided) and replaces the selected aircraft in the Aircraft List with another that you select. The Substitute function is described further below.

When you select an aircraft in the Missing Aircraft list, only the buttons corresponding to the functions then-available for that aircraft are enabled. For some functions (as noted below), you may select more than one aircraft, in which case that function is performed for each aircraft in sequence. Double-clicking on any aircraft initiates the most likely function for that aircraft given its current state. (For example, if the repaint for an aircraft is available - colored green - the Install function will be initiated by a double click on that item.) You may view the repaint-related information in *aifp.cfg* by right-clicking on any listed aircraft. A full explanation of the contents of the *aifg.cfg* file is included in Appendix “A”.

Following each installation, the relevant title is removed from the Missing AC list. When the final item is processed, the Missing Aircraft Dialog closes automatically.

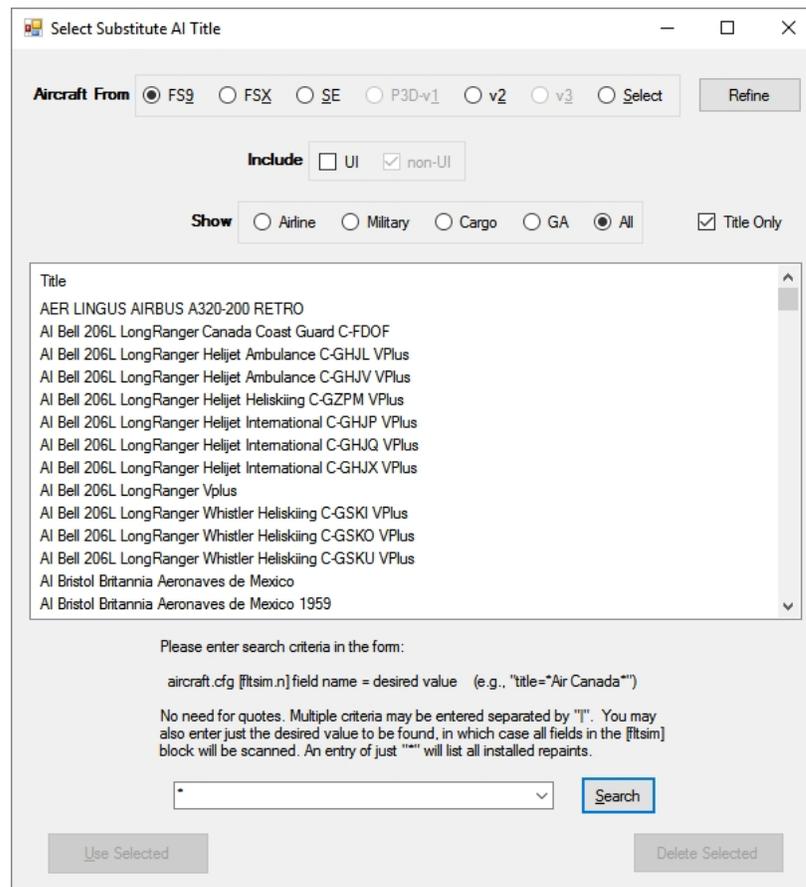
If the Delete .zip File after Last Install box is checked, the archive files are deleted when the last "missing" aircraft that uses that archive is installed. However, you may not install all repaints in a repaint archive. Consequently, the Repaints folder may eventually contain a number .zip files that are no longer required. This does not cause any difficulty for AI Flight Planner; but you may wish to delete these obsolete files periodically.

There are a variety of shareware/payware .zip handling utilities available. To avoid users having to purchase such a utility, AI Flight Planner incorporates a freeware third-party zip handler (DotNETZip). While DotNETZip is compatible with most of the other utilities, **it has recently (October 2015) been discovered that a couple popular repainters are now “zipping” their offerings in a manner DotNETZip is unable to decode.** When AI Flight Planner encounters these offerings, it will advise you to unzip the archive manually into a folder names as the .zip file (without the “.zip”) in the same folder as the .zip. AI Flight Planner then treats that folder as it would the .zip file.

- 7.2 Substituting for Missing Aircraft - When you click Substitute on the Missing Aircraft dialog or in the context menus of the aircraft list on either the Missing Aircraft dialog or the Main Panel, a list of installed aircraft (meeting the "Seek" criteria set out in the *aifp.cfg* file, if available) is shown. When called from the Missing Aircraft dialog, if no specific seek criteria is specified, the Callsign is used.

If the desired substitute (installed) aircraft is in the list, select it and click Use Selected.

The missing aircraft to which the substitution applies will disappear from the Missing Aircraft list (if open) and, on the Main Panel, the substituted aircraft will appear in the Aircraft List in its place, colored black.



Substitute Aircraft Dialog

The contents of the initially-displayed list of substitution candidates depends on a variety of circumstances. There may be other aircraft installed on your system that would be acceptable (or even preferable) substitutes but that are not shown in that first list. Indeed, there may be no aircraft installed on your system that meets that author's criteria. So, by clicking the Refine button, AI Flight Planner allows you to enter alternate criteria for substitution candidates which, for the purposes of this section are called "seek strings", or "*" for all installed aircraft.

Seek "strings" may test any *aircraft.cfg* [fltsim] parameter. They take the following format:

aircraft.cfg [fltsim] parameter = value.

value may be any string. For exact match, specify *value* as the string alone; for "string contained in", start and end the entered string with "*" (think DOS wildcard). You may

also specify "starts with" or "ends with" by placing the "*" at the end or beginning respectively. So:

- "atc_airline=Thomson" would find only "Thomson"
- "atc_airline=*Thomson*" would match any atc_airline entry that contains the string "Thomson"
- "atc_airline=*Thomson" would find "Thompson" or any entry that ends with "Thompson"
- "atc_airline=Thomson*" would find any entry that starts with "Thompson"

Multiple seek arguments are separated by "|". You could be more specific using:

```
atc_airline=Thomson* | title=&*First Choice Livery*
```

which would require a "starts-with" match on atc_airline and also the title to include "First Choice Livery". Note the "&" sign immediately following "title=". This requires a match on both parameters (i.e., an "and" function). If the "&'s are omitted, a match on either parameter suffices ("or" function). Multiple field entries are evaluated from left to right (i.e., no parenthesis). So, the sequence of the items is important if there's a "&" somewhere in the string.

Fields which must be empty are specified as "atc_id=", with or without the "&", which in this example means registration number not specified.

In addition, there are three "pseudo" field names that may be use if you are satisfied with a "string contains" approach. They are:

- "Airline = value", equivalent to "ui_variation = *value*"
- "Callsign = value", equivalent to "atc_airline = *value*"
- "Airline_ICAO = value", equivalent to "atc_parking_codes = *value*"

Finally, you may enter just the criteria for field contents, i.e., no field identifier or "=", in which case if any field contents satisfy the criteria, that aircraft will be considered a match. These searches are always performed case insensitive. Quote marks should not be used unless the *aircraft.cfg* file item of interest requires them - in which case they will be considered as part of the "seek string".

Following multiple substitutions, you may find you have several aircraft in the Aircraft List with the same title but different reference numbers. These may all be consolidated under the lowest reference number using the Aircraft / Check Duplicate Titles in Aircraft List function

7.3 Install Repaint from Archive – Repaints may be installed on an adhoc basis using this feature.

Prior to clicking this menu item, select as the Target Version the Flightsim version into which the repaint is to be installed. You will be asked to select the repaint archive and, if there is more than one repaint in that archive, to select which of them to install. Then, a small dialog allowing you to select from the compatible textures is displayed. Select the texture and click install.

The remained of the process is documented in Section 7.1 above.

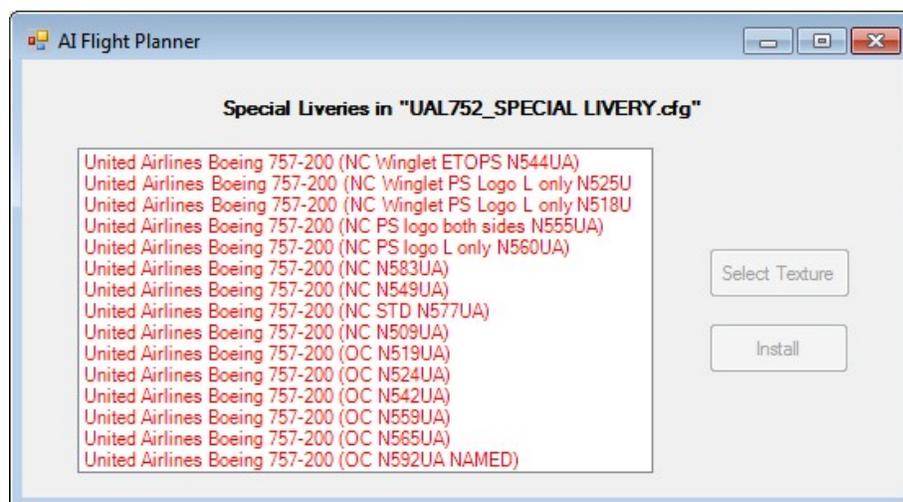
- 7.4 Special Liveries - Special Liveries, initiated from the *Files / Special Liveries* menu item is a feature that substitutes repaints on the basis of registration numbers. Special liveries, generally, are distributed separately from the flight plans to which they apply.

Unfortunately, the content/configuration of the archive files in which they are distributed varies from author to author, making automation of the installation process very difficult. So, except for the actual installation of a special livery, AI Flight Planner relies on you to tell it what to do. (Should some semblance of standardization in this regard be instituted, perhaps AI Flight Planner can be upgraded to make this task easier.)

To begin, install the flight plans and associated aircraft to which the special livery applies. Then, after unzipping the special livery archive to a folder of your choice and with the flight plans loaded in AI Flight Planner, click the Special Liveries button on the Main Panel. AI Flight Planner will ask you to select the special livery file. This will be the file, perhaps named *Special Livery.cfg*, in the special livery archive that defines how each special livery item is to be handled. (The file name doesn't matter; it's the contents of that file that's important.) Once that file is identified and verified to contain special livery information, a dialog similar to the above will be displayed, containing a list of all the special liveries in the file

Select a title in the list. The Select Texture button will be enabled. Click it, and identify the folder containing the textures you wish to use with this title. Once the texture has been selected, the list item will be colored black and the Install button will be enabled.

You need not install the special livery at this time. AI Flight Planner will remember the texture selection and will automatically enable the install button when you later return to this item.



Special Liveries Dialog

When you (eventually) click the Install button for an item, or double-click on a list item for which the texture has been assigned, AI Flight Planner will generate a list of all installed aircraft with the call-sign specified in *Special Livery.cfg* for the selected aircraft and ask you to Select Base Aircraft for Special Livery (i.e., the aircraft/repaint which is to be

replaced by the special livery) If the base aircraft you want is not in the list, specify alternate "seek criteria" (as for Substitute).

Select the base aircraft in the list and click on the Make Special Livery button, or double-click on the base aircraft. AI Flight Planner does the rest. It:

- copies the specified texture folder to the aircraft folder holding the aircraft,
- creates a new [fltsim.x] entry in the relevant aircraft.cfg file,
- adds the new special livery aircraft to the Aircraft List, and
- replaces each reference to the base aircraft in the flight plans that uses one of the registration numbers assigned to the special livery with a reference to the special livery aircraft.

8. BULK TRAFFIC FILE FUNCTIONS

The traffic file operations described in the previous chapter dealt with individual traffic files as a source of or destination for flight plan information. While the functions described in this section may be exercised on individual traffic files, they are generally intended to operate on all the traffic files in one or more folders. They are all initiated from the Main Panel's Bulk Traffic menu.

- 8.1 Selection of Folders Containing Traffic Files - Whenever any of the functions described in this section are used, you will be asked to select the individual traffic files or folders containing the traffic files of interest. Initially, you will be presented with a directory tree. As usual, the tree is expanded/contracted using the "+" and "-" nodes. Since a treeview display does not support multiple selections, if more than one folder can be selected, they must be checked (even if they are also selected/highlighted).

The directory tree is tailored to the nature of the files/folders of interest." If, as in these cases, you want traffic files, folders known not to contain traffic files are shown in grey (while they can still be checked/selected, doing so serves no purpose) and other types of files are not displayed at all.

Upon clicking the Use Selected button (the terms "selected" and "checked" are used synonymously), the designated traffic files and/or the traffic files in the designated folders will be subjected to the specified operation.

You can select entire logical disks, but the search time may be very long.

Often the traffic files of interest will pertain to the currently-active scenery. So, clicking on the Scenery Library format radio button changes the display to the list of the titles in the Scenery Library of the current Target FS Version. Any folders that were checked in the directory tree will automatically be selected in the Scenery Library display. (Other selections from the directory tree will be lost.) The names of active scenery items plus *Scenery\World\scenery* (which is added at the top and always active) are preceded by an asterisk. You may select and operate on any combination of individual scenery titles (which selects the associated \scenery folder(s)) or all active folders. Or you may operate on the entire Scenery Library.

While not likely to be useful often, you may also display a list of just the selected folders and further refine the selections in that list by adding to or deleting from it.

At the bottom of the folder selection dialog is a checkbox labelled *Save as Default Search*. Checking this box will cause the same set of files and folders to be displayed the next time the select folders dialog is opened. A separate list is maintained for each Flightsim version.

- 8.2 Validating Traffic Files – You may validate one or more traffic files without loading them into AI Flight Planner by clicking the *Files / Validate Traffic Files* menu item. If you check the *Eliminate unused airports and aircraft* checkbox at the bottom of the dialog where you select the traffic files/folders, the traffic file will be re-compiled to its minimum size – which may also speed-up Flightsim startup.
- 8.3 Converting FS9 Traffic Files for Use with FSX – The FS9 traffic file conversion function, which is sometimes referred to as “bulk-conversion”, allows you to select any combination of folders and files for conversion using a “tree-view” directory-tree. It is initiated from the *Files / Convert FS9 Traffic Files to FSX* menu item. Selected folders may contain a mix of FSX and FS9 traffic files; only the FS9 files are affected. The names of the converted files are optionally suffixed with “_FSX” and backed-up if they exist already.

Converted traffic files may be saved to either FSX’s *Scenery\World\Scenery* folder or to any other scenery folder you specify - which must be enabled in the Scenery Library for the traffic to be active. Using the latter method allows the traffic to be turned on and off from the Scenery Library. Whichever folder you designate, the folder browse dialog will be initialized to that location the next time you use the convert function

Once the FS9 traffic files in the selected folder(s) have been identified, you are asked if you wish to convert them all. If you do, click “Yes”. Otherwise, select those that you wish converted in the list presented and click “No”. Following conversion, any missing airports or other problems encountered are noted in a conversion report.

As discussed in Section 12.6, some suppliers of prepared flight plan information, e.g., WoAI, MAIW and, until recently, AIG, in an attempt to avoid the “37 minute” problem, reduced the cruise speed of the aircraft as specified in the flight plan/traffic files to something in the order of 200 kts. As noted earlier, AI Flight Planner saves cruise speeds in traffic files as one-half the usual value, So, when such files are converted by AI Flight Planner, the cruise speed of the aircraft involved is further reduced to about 100 kts.

While it is not known for certain that this situation creates difficulty for the AI engine, there is some evidence that it does. So, should no aircraft cruise speed exceed 250 kts, this situation will be highlighted in the conversion report. If the relevant traffic file involves jet aircraft, it is recommended that you load the converted traffic file back into AI Flight Planner, restore the cruise speeds to their normal values (*Aircraft/Restore Cruise Speed* menu item) and re-compile. Alternately, if you know that all the aircraft in the files being converted have had their cruise speeds reduced, you may direct the system to compile in the “raw” mode (*Options / Compile in “Raw” Mode*) - which will avoid the further reduction in cruise speed (but will not restore the cruise speeds to their normal values).

Please note, however, that converting compiled-for-FS9 AI for use with FSX involves more than simply converting the traffic file. In addition:

- you must ensure that the required aircraft are installed in the *FSX\SimObjects\Airplanes* (or other designated aircraft folder) folder, and
- if propeller aircraft are involved, you may wish to update the propeller textures.

A detailed procedure for converting MAIW FS9 packages for use with FSX can be found at [The Owls Nest](http://www.interkultur.de/gossmann/fsx/maiw.php) (<http://www.interkultur.de/gossmann/fsx/maiw.php>).

- 8.4 Finding FS9 Traffic Files on a FSX System – When FSX “sees” both compiled-for-FS9 traffic files and compiled-for-FSX traffic files, the FS9 traffic will be displayed normally; however, the FSX traffic is usually suppressed. This situation will exist until the very last FS9 traffic file has been located and either disabled or converted for FSX operation (see next section).

To locate FS9 traffic files, click on the *Bulk Traffic / Find FS9 Traffic Files* menu item. As in the previous section, this opens a directory-tree from which you may select any combination of folders and files to be searched. You will then be presented with the list of FS9 traffic files found together with an option to convert and/or delete one or more of those files. If all you wanted was a list, click the No button. Otherwise, select the files you wish to convert or delete and click the Yes button.

If you elect to delete files, AIFP will seek confirmation prior to deleting them.

If you want the file(s) converted, you’ll first be asked if you want it/them deleted following conversion. The conversion process itself is identical to that in the previous section. However:

- the converted file(s) will be placed in the same folder as its/their FS9 counterpart,
- the FSX file name(s) will be suffixed with “_FSX”, and
- if you chose not to delete the FS9 file(s) following conversion, its/their file name will be suffixed with “_FS9” (if it isn’t already).

- 8.5 Re-Compiling Traffic Files - An error introduced into AI Flight Planner in one of the early updates resulted in FSX airports not being substituted in FS9 traffic files compiled for FSX. Initially, this function was a response to that error. With the implementation of P3Dv5 which contains a large number of changes to FSX Airports, the function gained new life.

Re-Compile Traffic Files does what its name suggests - it simply recompiles traffic files for the currently-selected Target Version, optionally annotating the name of the new file with “_FSX” or “_PV5”.

- 8.6 Check if an Airport is Used in Traffic Files – Clicking the Check if Airport Used in Traffic Files menu item allows you to determine if a given airport is used by any of a set of traffic files and, if so, in which ones.

- 8.7 Determining Which Aircraft Are Used/Not Used in Traffic Files - In order to properly manage your "stable" of AI aircraft, you'll want to know which ones are used or, alternately, not used by your traffic files. Four items in the Files menus serve this purpose, namely:

- *Check if Aircraft Used in Traffic Files*

- *List Traffic Files in which Aircraft Used*
- *List Traffic Files in which Reg. No. Used*
- *Identify Aircraft Not Used in Traffic Files*
- *Identify Missing Aircraft Used in Traffic Files.*

In all cases, upon clicking the menu item you will be presented with the Aircraft Select dialog. Select the aircraft of interest and then click one of the "go" buttons. Then the Folder Select dialog will be displayed, from which you select the traffic files of interest. Click Use Selected/Checked once you have made your selection. AI Flight Planner will scan the selected traffic files looking for the selected aircraft. Finally, a list showing:

- the traffic files that use one or more of the aircraft,
- the (subset of the) aircraft used by each traffic file,
- the aircraft not used in any of the traffic file, or
- uninstalled aircraft required in each traffic file

respectively, will be displayed.

If you *Identify Aircraft Not Used in Traffic Files* and any are found, you may then select one or more of them to be permanently deleted from your "stable" of installed aircraft

8.8 Finding Airport Parking Parameters - Each aircraft in a traffic file potentially includes an *atc_airline* entry (often referred to as the "callsign") and/or one or more *atc_parking_codes* which are used by FlightSim to assign parking at an airport (preferably in a parking spot designated for that/one of those codes). To determine the callsigns and/or parking codes included in traffic files, in the *Files* menu select either:

8.9 Updating FS9 Traffic Files with Add-on Airport Elevation - A large mismatch between the airport elevation specified in you traffic file and the elevation of the same airport as used by your system could affect the approach to your airport. (Small differences, <100' are unlikely to have any noticeable effect.) This feature scans the Scenery Library of the Target Version and records the elevation of all the airports in it. It then searches the designated folders for FS9 traffic files and, if any of those airports occur in those traffic files, their elevation is updated to match the add-on airports.

8.10 Updating Activity Levels – Activity levels in traffic files may be adjusted in a variety of ways. Select the Bulk Traffic / Update Activity Levels in Traffic Files, select the traffic files of interest and enter the update boundaries as "n1-n2". Activity levels will be adjusted to random numbers within the specified range. If the two values are equal, then, of course, all activity levels will be adjusted to the entered value.

You may limit the activity levels that are adjusted by prefacing the entry with "<" or ">", which will leave those existing levels less than n1 or greater than n2, respectively, to remain unchanged.

9 MANAGING AIRCRAFT DATA

When a flight plan file-set or a compiled traffic file is loaded into AI Flight Planner, the "companion" aircraft data (if it exists) is also loaded. You may modify, replace or supplement this data with data from other sources.

When all required aircraft are installed on the system, a green "√" is displayed beside the title. If not, a red "X" is displayed.

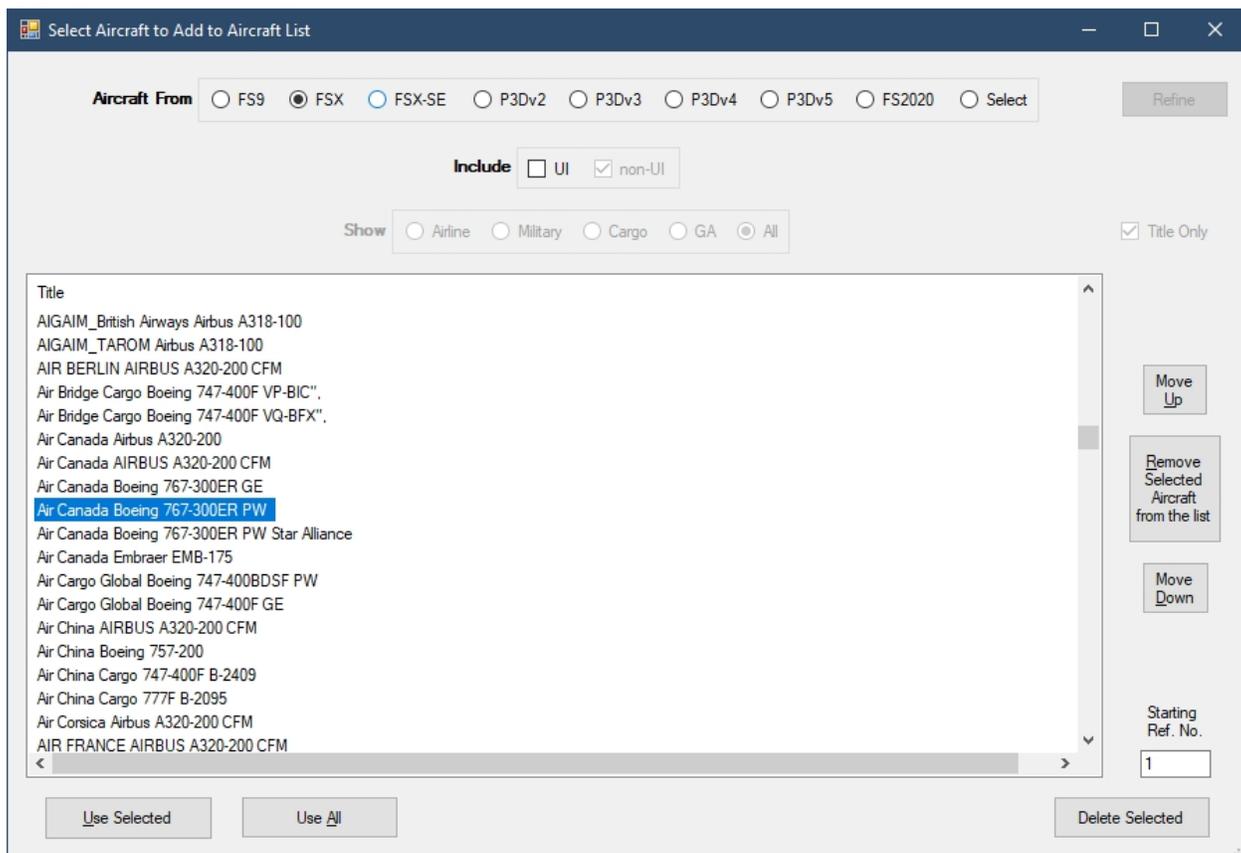
9.1 Loading and Saving Aircraft Data – Loading and saving of aircraft files individually is handled in an identical manner to flight plans. The corresponding items in the Aircraft main menu are:

- Load New Aircraft List (.txt or .bgl)
- Merge with Aircraft List "
- Save Aircraft List
- Save Aircraft List As ...

Of course, when you Save/Save As a flight plan file, the associated aircraft data is saved as well to its own file.

9.2 Creating a New Aircraft List from Aircraft Folders – The contents of the Aircraft List may be replaced at any time with a list of aircraft based on the aircraft installed on your system. To initiate this action, click on *Aircraft / Clear Aircraft List* (if there are any items in the list to be cleared) and then on *Aircraft / Bulk-Add Aircraft to List*. The Select Aircraft dialog will be displayed. The list may be based on one of:

- the aircraft available in any installed version of FlightSim, or
- the aircraft contained in a set of other aircraft folders you select.



Select Aircraft Dialog

Please note that with FS2020, aircraft titles may be preceded by the manufacturer's name.

The Select From box also contains a radio-button entitled Select. If you choose the latter, you will be presented with a directory tree so you can select the aircraft folders of interest. Once that choice is made, the Scan button will be enabled. Clicking it causes the applicable set of folders to be scanned for aircraft.

All the aircraft found will be displayed in the large listview control. The list is in alphabetical order by title. You then have the opportunity to "massage" that list by deleting items from it and moving items up or down, selecting subsets based on aircraft type or to sort the list in a variety of ways.

There are two checkboxes on the panel under the heading "Include". By default, UI is unchecked, which causes only AI aircraft to be displayed. If you want flyable aircraft to be displayed as well, check UI. ("UI" is a FlightSim term standing for "user-interface".)

You may display additional data by unchecking Title Only and sort on any column by clicking on the column header.

You may save the entire list or only the selected items. Click on the applicable "save" button to replace the items in the Aircraft List. Reference numbers will be assigned sequentially, beginning with the number you may have entered in the First Ref. No. field (or 1 if you didn't enter a starting number).

Since no aircraft data is overwritten until you click one of the "save" buttons, you may also use this feature to explore the aircraft available on your system.

9.3 Aircraft Editor – Flightsim aircraft have a very specific folder arrangement. The various data for each aircraft is spread among several files and folders collected into a single folder which, for this purpose, is referred to as an "aircraft folder". Each "aircraft folder" contains only one aircraft but there may be several variants of that aircraft defined in the *aircraft.cfg* file.

AI Flight Planner includes a comprehensive editor that allows you to adjust any parameter in the *aircraft.cfg* file (not just those related to AI operation) and, in the case of FS9 aircraft, also the model radius (which determines the size of the parking spots required for it).

The Aircraft Editor is opened by clicking on *Aircraft / Open Aircraft Editor* or the *Open Aircraft Editor* item in an Aircraft List context menu.

The Aircraft Editor dialog is divided into three main sections:

- selection of the aircraft folder,
- selection of the particular AI variant of the aircraft and Aircraft List maintenance, and
- display/editing of aircraft parameters.

The first step in using the Aircraft Editor is to select the aircraft of interest. This can be done in several ways:

- in the Data From groupbox, check the (installed) Flightsim version whose Aircraft/SimObjects folder contains the aircraft of interest and:
 - click "by Path", which displays a folder tree of the selected Aircraft/SimObjects folder from which you select the aircraft folder of interest;
 - click "by Title", which allows you to choose from a list of all the titles available in the selected Aircraft/SimObjects folder, or
- enter the path to the aircraft folder directly into the Aircraft Folder textbox.

Once the aircraft folder is selected, the titles of all the variants in that folder are listed in the Aircraft Title combobox. If there is more than one variant, you must select the one of interest. Of course, if you selected by Title, there will be only one. Upon selecting the title of interest (or automatically if there is only one), if that variant is in the Main Panel Aircraft List, its reference number and cruise speed (as set out in the Aircraft List) will be displayed in the Aircraft List Data section of the dialog box. Also, if there is an image of the aircraft in the applicable *\Texture* folder named "Image.jpg" or "Thumbnail.jpg", it can be displayed – with preference being given to the former.

Aircraft Editor

The data from the aircraft.cfg file and other data can be viewed in the 4 tabbed panels under the heading Aircraft.cfg and other data. The tabbed names should not be interpreted literally; data other than that labelled may also appear in one of these panels. Individual items are usually named to indicate functionality rather than the specific item name from the *aircraft.cfg* file. Every *aircraft.cfg* item can be changed from one of these

four panels. Indeed, on the Other panel you can change parameters that also appear on the other three panels.

When editing the Parking Types field, a list-box containing the allowable types is displayed. Click on a type and it will be added to the field or enter it directly. Delete from the field directly any unneeded type(s)

Edited data may be saved back to the aircraft folder by clicking on the Update "aircraft.cfg"/"sim.cfg" File button. If you add or edit the Airline name, the new name will also be added to *airlines.cfg* for the currently selected Target Version. No error checking is performed (nor is there much that could be), so be careful.

You may delete the currently selected AI variant and its associated texture folder from the Aircraft Editor. (Deleted folders are saved in the Recycle Bin.) For adding new AI variants to your AI aircraft "stable", please refer to Section 7, MISSING AIRCRAFT AND INSTALLATION OF REPAINTS.

The Airport Editor remains open until you close it.

Please note, whenever you make a modification that affects the cruise speed of the currently-selected aircraft, the ETA data in the leg editor is updated. However, other flight plans/legs that use the selected aircraft are not affected. If you wish to have other flight plans/legs reflect the new cruise speed, you must either edit them in the normal way or use *Flight Plans / Adjust ETAs to Reflect A/C Cruise Speeds*.

9.4 Adding/Deleting/Substituting/Replacing Aircraft in Aircraft List – Two "add" functions are available from the Aircraft menu. The "delete" functions may be initiated from either the Aircraft menu or from the Aircraft List context menu.. The remaining functions are initiated from the Aircraft List context menu only.

- Add - Click on either *Add Single Aircraft to List* or *Bulk-Add to Aircraft List* item in the Aircraft menu. Then, select and edit as necessary the desired AI aircraft using the Aircraft Editor (as described in the previous section). Finally, click on the Add To/Update Aircraft List button. (The data must represent a valid AI aircraft). If there is more than one AI variant in the selected aircraft folder and you want to add them all, use the Add All to Aircraft List button instead.
- Delete – select one or more aircraft in the Aircraft List and then click on the "delete" function in either the Aircraft menu or the Aircraft List context menu
- Substitute – Select one or more aircraft in the Aircraft list, right click and select the Substitute function from the context menu. You may substitute an installed aircraft for any title in the Aircraft List - installed or not. The Substitute function works as described in Section 7, MISSING AIRCRAFT AND INSTALLATION OF REPAINTS.

Following multiple substitutions, you may find you have several aircraft in the Aircraft List with the same title but different reference numbers. These may all be consolidated under the lowest reference number using the *Aircraft / Check Duplicate Titles in Aircraft List* function.

- Replace Aircraft in Flight Plans – Select from the context menu. You will then be invited to enter the reference number of the aircraft to replace the ones selected. Then, you will be asked whether or not the replaced aircraft should be removed from

the Aircraft List. AIFP will then scan all loaded flight plans and replace the aircraft reference number in those FPs that use any of the selected aircraft with the entered reference number.

- 9.5 Editing an Aircraft Already in the Aircraft List – To edit the data of an aircraft in the Aircraft List, select the aircraft and click on *Aircraft / Modify Selected Aircraft*. This action opens the Aircraft Editor and displays the aircraft data for the current Target Version. If that's not the version of interest, you may access another using the FlightSim radio buttons – assuming it exists on your system

Edit the Aircraft Title, A/C Ref No. and/or Cruise Speed fields as necessary, bearing in mind that if either the title or reference number is changed, the new value must be unique in the *Aircraft List*. If the cruise speed from the Aircraft List does not agree with that in the aircraft data, you may use the latter by clicking on Use Cruise Speed from Aircraft Data.

When ready, click on the Add To/Update Aircraft List button. If you have changed the A/C Ref No., AI Flight Planner offers to update all references to the old number.

You may also edit and save the aircraft data. Indeed, if you edit the aircraft title, you will probably want to save the new title back into the aircraft data.

- 9.6 Checking for Used, Unused or Missing Aircraft and Texture Folders – Since AI Flight Planner may be used to prepare flight plans/traffic files to be run on other systems, it does not automatically check for missing aircraft. However, you may check for used, unused or missing aircraft and texture folders at any time in several ways:

- *Aircraft / Check for Missing Aircraft and Texture Folders* - missing aircraft or textures required for the currently loaded flight plans;
- *Aircraft / Identify/Delete Unused Aircraft* - identify unused aircraft and, with user confirmation, delete them;
- *Files / Identify Missing Aircraft in Traffic Files* - missing aircraft required for a set of traffic files you select;
- *Files / Check In which Traffic Files Aircraft Used* - the aircraft (from the set you select) used in each of a set of traffic files; and
- *Files / Check If Aircraft Used In Traffic Files* - the traffic files (in the set you select) that use one or more of the selected aircraft;
- *Files / Identify Aircraft Not Used in Traffic Files* - the aircraft (in the set you select) that are not used in any of the selected traffic files;

AI Flight Planner also checks for unused aircraft when a text file-set is saved.

Unless the list is very short, the report may be printed. For some of these functions the aircraft in the Aircraft List are pre-selected for you. You may, of course, make any selections you wish.

- 9.7 Restoring Cruise Speeds – As noted in Section 12.5, if an AI aircraft is scheduled to arrive more than about 37 minutes later than it would based on distance/cruising speed (that specified in the aircraft...txt file) , it will not materialize for landing. To address this problem, some suppliers of complete AI add-on packages, specify a cruise speed of about 200 kts for all aircraft.

This artificial cruise speed is problematic when used in conjunction with AI Flight Planner.

- For jet passenger aircraft, the calculated duration of each flight plan leg will be much longer than (2-3 times) the real-world value and, consequently, the calculated ETA will be very late. Hence, you must always specify arrival time.
- As discussed in Section 4, AI Flight Planner has its own solution to the 37-minute problem (i.e., halving the specified cruise speed). This results in a cruise speed in the traffic file being further reduced to only 100kts. Fortunately, with one exception, this does not materially affect AI arrival times – provided you override system-calculated arrival time.

So, when using such prepared flight plan information, you should restore the aircraft cruise speed to the value in the relevant *aircraft.cfg/sim.cfg* file by clicking on *Aircraft / Restore Cruise Speeds for Aircraft In List*.

You may also restore cruise speeds in one or more traffic files without bringing the flight plans into the editor using the *Files / Restore A/C Cruise Speeds in Traffic Files* menu item.

- 9.8 Deleting Aircraft from the Aircraft List – To delete one or more aircraft from the *Aircraft List*, click on *Aircraft / Delete Multiple Aircraft*, select the aircraft to be deleted and click on the Delete Selected Aircraft button. As an alternative, if only a single aircraft is to be deleted, select the aircraft in the Aircraft List and click on the *Aircraft / Delete Single (Selected) Aircraft*. All aircraft not used by the flight plans in the Flight Plan List may be deleted by clicking on *Aircraft / Delete Unused Aircraft*. In either case, once you confirm deletion, you will be given the option of also deleting associated flight plans.

Some of these actions may also be initiated by right-clicking on the Aircraft List and selecting the applicable context menu item.

- 9.9 Finding Duplicate Aircraft – From time to time as you add more AI, you may find that a given flight plan has been duplicated in another traffic file. To find which one, select the aircraft of interest in the Aircraft List and click on *Aircraft / Find Selected Aircraft in Traffic Files*. You'll be presented with a directory tree on which you may select the drives/folders to be searched. Then click on the Find Aircraft button. At the completion of the search, a list of the traffic files that use the selected aircraft will be displayed.

- 9.10 Other Aircraft-Related Functions - The following other functions are available:

- Validate/Consolidate - Consolidates a number of individual Aircraft List "housekeeping" functions, some of which are individually available in the Aircraft menu, into a single dialog. You may select any combination of functions and, at your command, AI Flight Planner will remember your selections and initialize the dialog with them the next time it is run
- Re-Number Aircraft – After several flight plan or traffic files have been merged, it is often convenient to re-number the aircraft in the Aircraft List. The *Aircraft / Re-Number Aircraft* feature accomplishes this. You may renumber all aircraft in the list or only the selected aircraft and those below it. New numbers are assigned in the sequence of the aircraft in the list. Hence, if Sequence by: Title is checked, the aircraft will be renumbered in the alphabetical sequence of their titles. To leave gaps

in the numbering, renumber several times starting progressively lower in the list each time.

- Send Aircraft List to Text Editor - the entire Aircraft List is transferred to a Notepad window where it may be edited manually and then reloaded

9.11 Managing AI Titles and Texture Folders - AI Flight Planner2 introduced the flight plan and repaint installation functions. The ease with which these functions are accomplished is likely to lead to very cluttered aircraft folders. The AI Titles and Texture Folders Management function is the antidote. It deletes AI variants (i.e., [FltSim.x] entries) from *aircraft.cfg* files and, optionally:

- the associated texture folder (provided it is not assigned to any other AI variant in the aircraft folder),
- if the AI variant being deleted is the only one remaining in the *aircraft.cfg* file, the entire aircraft folder, and
- any “stale” (i.e., otherwise unused) textures.

To initiate this function, click on the Aircraft / Managing AI Titles and Textures menu item from either the Main Panel or the FP Editor dialog. A second small dialog will appear on which you control the optional features. When you click the Proceed button, an aircraft selection dialog will appear. This dialog is identical to the one displayed for aircraft substitution. Please refer to the earlier Creating a New Aircraft List from Aircraft Folders section of this manual for details about entering the search criteria.

Click OK on that dialog and a list containing every AI title meeting the criteria you entered will appear. (If the list does not meet your expectations, you may revise the criteria directly from the list dialog.) Select one or more titles in that list (using the Ctrl and Shift keys in the usual manner) and click on Delete. You will be asked to confirm the deletion following which the deletion(s) specified on the option control dialog. (Deleted folders are saved in the Recycle Bin.) The list will be updated to reflect the deleted items, and you may specify further deletions.

When you close the list dialog, you are returned to the option control dialog which you may either close or repeat the process.

You may also dump the whole or selected list of installed aircraft in CVS format by clicking the Aircraft / Dump As CSV. The same aircraft selection dialog as above is presented. Once you have made your selections, click one of the "Use ..." buttons. You will then be given an opportunity to specify the CSV file name.

In addition to the feature just described, you may also:

- eliminate “holes” in the [fltsim.n] block numbering using Aircraft / Resequence [fltsim.n] Entries to Eliminate “Holes”, and
- sort the [fltsim.n] blocks by AI titles using Aircraft / Sort [fltsim.n] Entries in Aircraft.cfg

9.12 Installed Aircraft Lists - AI Flight Planner often needs to check whether a certain aircraft is installed on your system. In older versions of AI Flight Planner, a list of installed aircraft was generated each time it was required. But, as users collected more and more aircraft, the processing delay while generating that list became noticeable and, for some “power-users”, annoying.

So the Maintain Installed AC List(s) option was introduced. When this option is checked, a list of installed aircraft is generated at system startup and preserved. Whenever AI Flight Planner needs to determine whether a certain aircraft is installed, it simply refers to this list, avoiding the delay of regenerating it. But, use of this option has one drawback. Additions/changes that affect the list are not reflected. (Regenerating the list automatically after each addition or change that *might* affect it would have been more annoying than before and, in many cases, unnecessary since the user would not subsequently access the revised data.) So, a new menu item, Aircraft / Regenerate Installed AC List, was added to allow the user to call for regeneration of the installed aircraft list.

Pick whichever mode works for you.

- 9.13 Rationalizing Aircraft.cfg Parameters – AI aircraft developers often have their own unique ways of specifying various parameters in aircraft.cfg files, especially in the [FitSim.n] blocks. For example, one may use “Boeing 777-300” as the ui-variation parameter while another might use “B777” and yet another may use “B-777 (300)”. Or, cruise speed may vary from one developer to another. Or, you may want all your 777s to park in a specific type of parking spot whereas the individual developers may have specified a different type. This feature allows you to quickly determine the values of any aircraft.cfg parameter across multiple aircraft and to set that parameter in all selected aircraft to a common value.

Clicking on the Aircraft / Rationalize Aircraft.cfg Parameters opens a new dialog divided into three main sections. To the left is a listbox which will show the titles of the aircraft to be update. In the middle are a series of radio buttons from which you select the parameter of interest. On the right is the parameter-values-in-use combo box that shows all the variations in the selected parameter across the listed aircraft.

Clicking on the Select Aircraft button brings up the usual Aircraft Select dialog where you choose the aircraft of interest. Alternately, click the Use AC List button to fill the listbox with all the aircraft currently in the Aircraft List. Upon closing the Select Aircraft dialog, the selected aircraft are listed on the Rationalize dialog and the values-in-use combo box is updated. Select a parameter and, if there are any entries in the aircraft list, once again, the values in use combo box is updated.

Radio buttons are provided for the most common parameters requiring update. For any other parameter, enter the name of the Aircraft.cfg “block” (without the “[]”) and the name of the parameter of interest and click “Custom”.

To update that parameter across multiple aircraft, select one or more aircraft to be updated, click on the parameter value to be used – or enter a new value into the combo box - and click Update Aircraft. You’ll be asked to confirm your intentions after which the specified parameter will be set to the designated value in all selected aircraft.

10 AIRPORTS AND RELATED DATA

Generally, AI Flight Planner derives the airport information required for traffic files from a file named *AirportList.dat* which is generated at startup and updated as required thereafter.

AI Flight Planner “ships” with files named *StockAirportList_xxx.dat* for each of FS9, FSX and PV5. As the name suggests, these files include every stock airport in FS9, FSX and P3Dv5. (Stock airport data for FSX-SE and P3D prior to PV5 is identical to FSXs and is generally referred to as FSX stock data.) Also included are ICAO cross-reference files named *ICAO_Changes_ver1-ver2.txt* that record airport redesignations between the respective versions. These files are all saved in AIFP’s Base Data folder. The latter files were automatically generated and are thought to be error free. Should you discover an error, or wish to add a new cross-reference, you are free to delete, edit or add entries.

As discussed below, users may update airport data and may also nominate add-on airports to replace stock data. Airport updates are saved to *AirportList-Updates.dat* while add-on airport data is collected in *AirportList_Addons.dat*. Updates from Alpha-India Group (AIG), if used, are saved in *AirportList_Updates_AIG.dat*. As well, whenever AIFP encounters an airport in a flight plan file set or traffic file not already in *AirportList.dat*, it records the basic data for that airport in *Airport_Temp.dat*.

The airport data changes introduced with PV5 necessitated a significant revision to AIFP’s airport data scheme. Users who wish to do more than simply generate traffic files from stock data should understand that *AirportList.dat* is created in the following sequence:

- load the *StockAirportList_xxx.dat* applicable to the target Flightsim version,
- record whether or not the same ICAO code exists in other Flightsim versions,
- save IATA and alternate ICAO codes as applicable,
- apply AIG updates if used (not for PV5),
- replace stock data for selected add-on airports for the target Flightsim version,
- apply any airport updates made by the user,
- finally, add basic data for any other airports encountered.

The Airports menu offers several options that allow you to have AIFP omit one or more of the above steps (other than the first two, of course.) If you are creating traffic files for use by others, you should consider deselecting all these options if they would introduce significant changes to stock data since your users may not have similar addons or have made similar updates.

AirportList.dat includes about 25,000 airports. So, its generation requires a significant amount of computing power. If you have a state-of-the-art computer system, this should not be an issue. However, if you use an older system, you may experience delays. This is unavoidable, but a progress bar will keep you apprised of what’s going on.

Airport data in traffic files specifies airport elevation. **FS9 uses this data to determine descent rates for AI aircraft on approach. So, if stock airport elevation data differs significantly from the elevation of an addon airport on your system, AI may have trouble landing at that airport.** To address this, select that add-on airport for inclusion in *AirportList.dat* (Collect Airports) or update airport elevation using the Airport Editor. Airport elevation data in traffic files does not appear to be used by FSX or P3D.

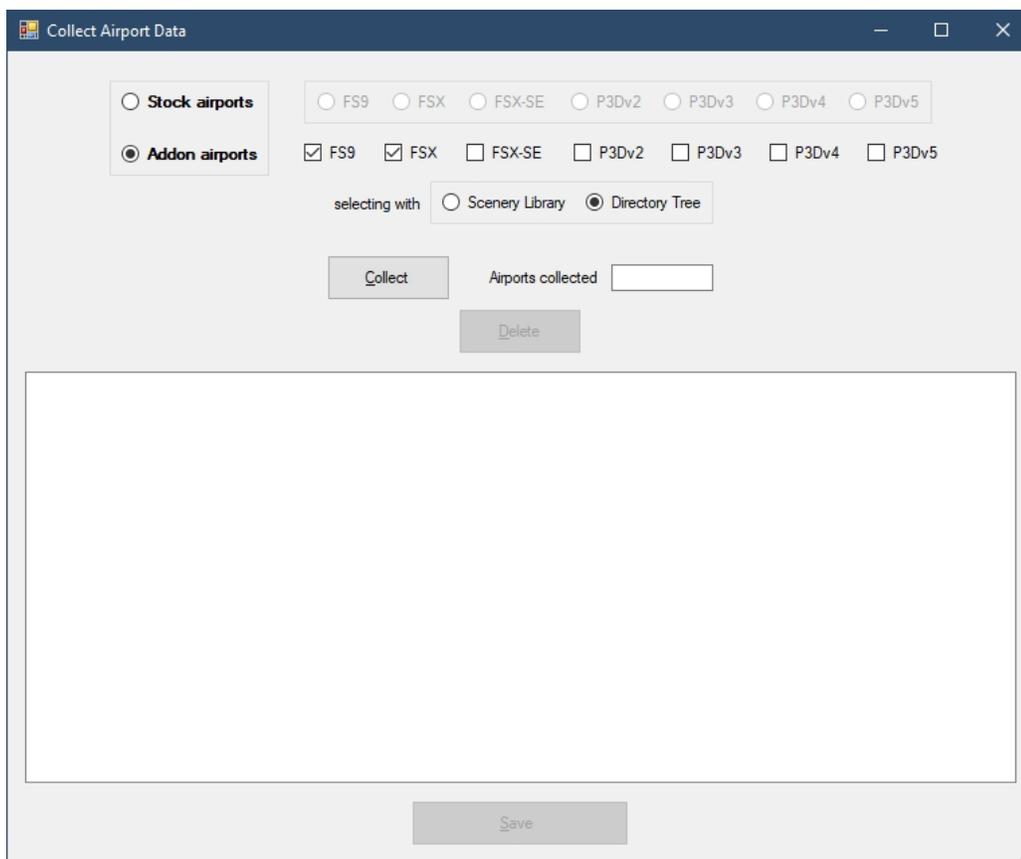
- 10.1 Displaying Airport Information – Information on any airport known to the system is but a few mouse-clicks away. Clicking on *Airports / Get Airport Information* displays in tree-view form a list of countries for which airport data exists. “Expanding” a country results in the constituent state/provinces/regions (if any) or a list of cities to appear. Expanding a city shows all its airports, including IACO code, IATA code if it has one, position and UTC offsets.

Double-clicking on an airport in the Airport List will have a similar result, except that the displayed tree will be opened to the airport of interest.

The Airport Editor (see Section 10.4) may be opened for a specific airport by double-clicking on that airport in the “airport tree”.

Clicking on Find Scenery for Selected Airport causes AIFP to scan the active items in your Scenery Library and identify any add-on scenery for the selected airport. This feature also reports whether or not a stock airport exists and, if so, tells you in which Flightsim\Scenery file to find it.

- 10.2 Collecting Airport Data - AI Flight Planner’s Collect Airports function is used primarily to select add-on airports for inclusion in AirportsList.dat. However, if you have modified any stock airport files, you should collect the stock data for the applicable Flightsim version; AIFP will use that stock data in place of its own. Clicking on *Airports / Collect Airports* opens a dialog as shown below.



Collect Airport Data Dialog

To collect stock airport data, simply click the Stock Airports radio-button (which will enable the group-box containing additional radio-buttons for the available Flightsim versions). Once you select the Flightsim version, the Collect Airports button will be enabled. Click on it and you will see the Airports collected count start to increase as AIFP analyses the stock airport files. Once done, data for the available airports will be

displayed in the big list-box. Click on Save to replace AIFP's stock data for that flightsim version and any others in its category (data for FSX through PV4 is identical).

Collection of add-on airport data is similar, except that **add-on airports are collected for each Flightsim version individually but saved in a single file**. However, only those add-ons applicable to the Target Version of Flightsim will be recognized for flight planning purposes.) When you click on the checkbox for any Flightsim version, you may select the folders to be scanned from either a "directory tree" or Scenery Library listing, depending on your selection in the "selecting with". You should eventually check the box for each Flightsim version installed on your system or otherwise of interest.

To remove add-on airports for any Flightsim version, simply uncheck its box.

If you select the directory tree mode, the tree will be initialized to the Flightsim's Addon Scenery folder, identifying the folders containing add-ons having at least one runway or helipad. (If you attempt to control AI routing by using "waypoints" in your flight plans, make sure your waypoint definitions include a helipad.) Select those of interest. However, if any such folder or its subfolders contains more than one airport .bgl, you should expand that folder and check the one of interest. Otherwise, all airport .bgls in the folder and its subfolders will be collected but *AirportList.dat* will include only the last one collected. AIFP will warn you of any duplicates. So long as the data of the duplicated ICAOs describes the same position, the duplicates do no harm. If different you may wish to eliminate the duplication. Otherwise, the data in *AirportList.dat* may not agree with the data used by Flightsim. Following selection of the add-on folders of interest, AIFP will display the number of add-ons found.

When all addons of interest have been selected, click Collect. During collection of the data, the Airports collected textbox will be updated. Following collection, basic data for each collected airport is displayed in the big listbox. If you are satisfied with the data, click Save. The data is saved to the file *AirportList_Addons.dat* and *AirportList.dat* will be regenerated.

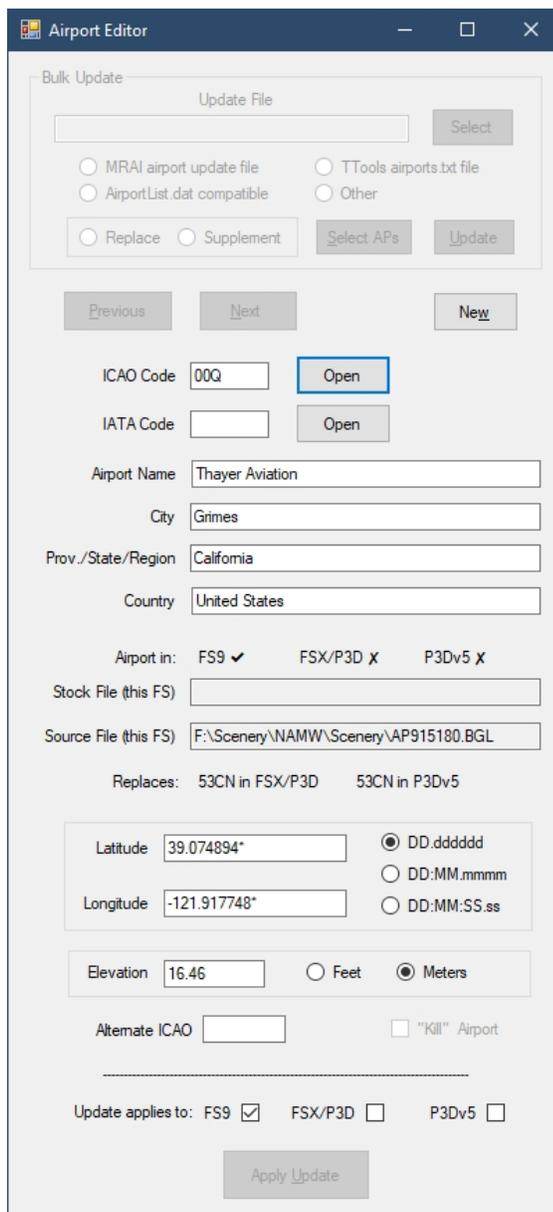
Because of the extent of control you have over the airport collection process, you may find other uses for this feature. For example, if you wish to know which airports are installed in a given add-on folder, the airport collector will answer that question. No files are overwritten until you click on the Save button, so you may safely experiment.

- 10.3 Airport Editor – Once the airport data has been collected (which should be an infrequent necessity), the Airport Editor is the tool for maintaining that data. But, "Why", you wonder, "does it need maintenance?"

Errors have been noted in Flightsim stock airport data. As well, the data for a stock airport may not be directly applicable to add-on airport installed on your system. In addition, despite the large number of stock airports included with FlightSim, some small local airports, grass strips, water airports and military fields are missing. And, new airports appear, existing ones disappear and certain data pertaining to those that remain may change.

Use of the Airport Editor is straightforward. The data displayed is that for the stock or add-on airport applicable to the Target FS Version, i.e. the "source file." Whether or not

the ICAO code exists in other Flightsim versions is indicated by the “Airport in:” checkboxes. The Replaces FS9 ICAO field indicates when an ICAO code in FS9 is replaced by a different ICAO code in a subsequent version. (There are many instances where the FS9 data specifies the wrong ICAO code and this error is corrected in the FSX data. There are a few instances where, between the release of FS9 and of FSX, an old airport was “retired” and a new one opened to serve a particular city.)



Airport Editor

Scroll forward or backwards through the airports in *AirportList.dat* using the Previous and Next buttons.

As noted earlier, when an airport is first loaded into the Airport Editor, the “Airport in:” fields reflect the Flightsim versions in which the airport exists and the Update Applies to

checkboxes are initialized in a similar manner. If your intent is that the update apply to all such versions, then these checkboxes need no adjustment. But, if your intent is that the update not apply to all/just these versions, then you need to uncheck the boxes for the version(s) to which the update is not to apply. Creating an update that applies to a Flightsim version in which that airport does not exist will “fool” AIFP into “thinking” it does. But, doing so doesn’t “fool” that version of Flightsim and AI destined for that airport are unlikely to perform as you intend since Flightsim will have no “knowledge” of that airport.

Whenever an airport is entered or updated using the Airport Editor, the updated airport data is saved to *AirportList_Updates.dat* when the Apply Update button is clicked. Please note, when *AirportList.dat* is generated, add-on data overwrites updates, so a edit of an add-on airport will not be effective.

The Airport Editor dialog also contains several controls applicable to the bulk-updating of airport data. These controls are only enabled when in the Bulk Update mode.

10.4 Editing and Adding New Airports – To edit an airport:

- right-click on the airport in the Airport List and select Open Airport Editor from the context menu presented,
- double-click on the airport when displayed in an “airport tree” or
- select the *Airports / Edit/Add Airport* menu item.

In the first two cases, the editor will be opened with the data for the selected airport displayed. To add a new airport, select the *Airports / Edit/Add Airport* menu item. The Airport Editor is also opened if you respond affirmatively to a system enquiry as to whether you wish to enter/update the data for a missing airport.

Proceed as follows:

- if the airport of interest is not already displayed, enter the airport ICAO or IATA code and click the corresponding Open button or click the New button and then enter the ICAO code for a new airport
- enter/update the remaining data as necessary, and
- click the Apply Update button.

Repeat as necessary for additional airports.

10.5 Use of Add-on Airport Data – The Collect Airports function allows you to collect data on add-on airports installed on your system. If and how that data is used is under the control of three items in the Airports menu, namely:

- Use Any Collected Add-on Airport Data –If an add-on airport does not exist for the Target Version, data from another collected add-on for that ICAO code, if any, is used.
- Use Collected Add-on Airport Data from Target Version – Only data from add-on airports collected from the Target Version will be used.
- Use Active Add-on Airport Data from Target Version – Only data from add-on airports active in the Target version Scenery Library is used.

If none of the above are selected, stock data only will be used. The third item should be the default. The others are for special purposes. (While selecting one of the others may allow AIFP to compile a flight plan to an add-on airport not available to the Target Version, Flightsim would not be able to land, taxi or park the AI since the airport wouldn't exist in the Target Version.

The first item above is intended primarily to facilitate use of AI waypoint, avoiding the need for the complete complement of waypoints to be programmed in all installed Flightsim versions. Since AI doesn't take-off from or arrive at AI waypoints, that Flightsim has no knowledge of the add-on airport (waypoint) is of no consequence.

- 10.6 Airport Data Bulk Update – AI Flight Planner cannot compile a flight plan file containing an airport for which it does not have positional information. If you are editing a TTools text-format flight plan file set or a traffic file, AI Flight Planner will glean the necessary information from the input data for airports not in *AirportList.dat*. However, if you are creating flight plans "from scratch", data for all airports referenced by the flight plans must be in *AirportsList.dat*.

You could enter the missing data for each airport individually as set out in the preceding section. But, AI Flight Planner will also update your *AirportsList_Updates.dat* from a CSV list or other suitably-formatted text file by clicking on *Airports / Bulk Update*. The only requirement is that the file be in plain text format (regardless of its filename extension), one airport per line with a consistent field separator character(s) and contain as a minimum: ICAO designator, latitude, longitude and elevation. Empty fields must be delineated. Comments are permitted, so long as each comment line starts with ";" or "//".

While you are free to add to *AirportList.dat* airports for which no name information is provided, e.g., from *Airports_Temp.dat*, you should be aware that there is a **downside** in doing so. **Any AI Flight Planner function that relies on name information (e.g., airport look-up) will, of course, be inoperative. As well you will not be able to use local time functions with flight plans referencing those airports.** So, you are urged to manually add name information for any airports from which it is missing.

Bulk airport update uses the Airport Editor dialog. Enter the path to the update file and select the file type. AI Flight Planner already "knows" the format of TTools airports.txt files, AIG airport update files and, of course, those compatible with *AirportList.dat*. (*AirportList_Update.dat* could be used as a data source for any other AI Flight Planner user.) If the update file is not in one of those three formats, click the Other radio-button and a second dialog will pop-up. This new dialog allows you to enter:

- the field indices for data of interest (i.e., the positions in the overall field sequence of the latitude, longitude and elevation data and the airport, city, region and country names if present),
- the units for the elevation field (feet or metres), and
- the field separator character(s)

The first airport in the update file (in ICAO order) with its data supplemented or replaced, as selected, is displayed in the editor.

If you wish the update data for a given airport to replace that already in *AirportList.dat*, check the Replace radio-button. Otherwise, only those fields for which data does not exist in airport in *AirportList.dat* will be updated.

You may not wish to add/update all the airports in the update file. If not, click the Select APs button. A list box containing all the ICAO designators in the update file pops-up. Select the airport(s) you wish to update and click the select APs button again. The updated data for the first ICAO selected will appear in the editor. This Select APs button is also useful for simply checking which airports are in the update list. If you don't select any airports, they will all be.

Make whatever further changes to the displayed data as desired and then click on the Apply Update button. Scroll forwards or backwards through the selected (or all) airports in the update file using the Previous and Next buttons. If you wish all airports to be processed without any manual intervention, simply click on the Update button near the top of the dialog. Airports in the selected update data that do not exist in *AirportList.dat* will be added. Unless specified otherwise in the update data, all new airports will be enabled for both FS9 and FSX using the same ICAO identifier.

You may repeat the Select APs and update operations as many times as you wish. However, once an airport has been updated, leaving it checked in the select list **will not** undo the changes.

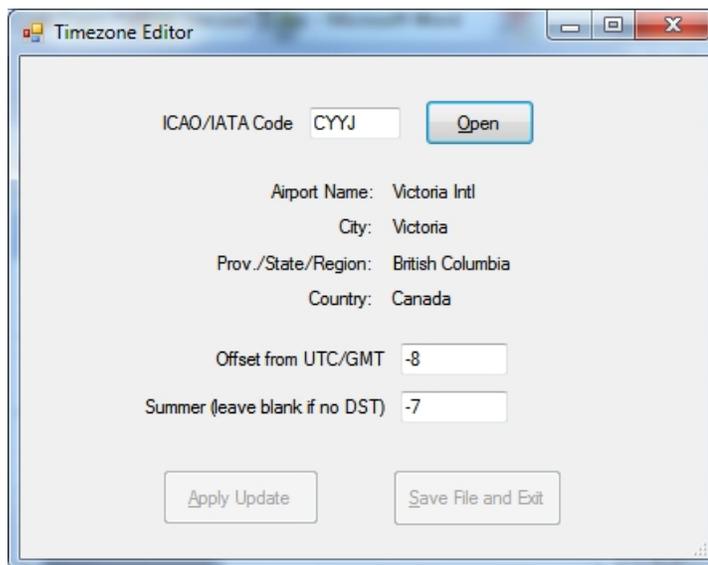
- 10.7 Making Temporary Airport Data Permanent – Whenever AI Flight Planner loads a flight plan file that refers to an airport not in *AirportList.dat*, it saves the positional data for that airport in *AirportList_Temp.dat*. To add that data to *AirportList.dat* and make it permanent, click on *Airports / Save Temporary Airports* and proceed as described above for bulk updates. The file specification selections will be made automatically.
- 10.8 Entering/Editing Time Zone Data – The file *Timezone_Base.dat* in AI Flight Planner's distribution archive file includes time zone information (UTC offsets) for every country and region where a stock airport exists. But reliable time zone data for some of the more remote airports is difficult to obtain. And, even though certain countries notionally lie entirely within a single time zone, there are instances where a certain city in or a small region of such countries use a different time zone. If you develop AI flight plans for such areas using local times, you may find it necessary to update AI Flight Planner's time zone data.

To do so, click on *Airports / Change Local Time Offsets*. This opens the Time Zone Editor dialog.

Enter the ICAO or IATA code of the airport of interest into the designated text box and click the Open button. If sufficient information is known about that airport, its location information is displayed.

Enter the standard and daylight savings time offsets from UTC and click Apply Update. This action establishes the UTC offsets not only for the designated airport but also for any other airport existing in the same country/region/city combination for which a specific time offset has not previously been specified. Where the city, or city and region, is left blank, the entered time offsets will apply to the whole region or country respectively. Changes are not made permanent until you click the Save File and Exit button.

When interpreting time zone data, if AI Flight Planner encounters two or more entries which may apply to a given airport, it uses the most precise. For example, while most of British Columbia, Canada observes Pacific Time, a few towns along its eastern boundary observe Mountain Time. So, the time zone database contains one entry for the whole of British Columbia and several others - one for each of those towns. Where a flight plan refers to one of those towns, the applicable specific entry will be used.



Timezone Editor

- 10.9 Updates to Base Time Zone Data – From time to time, errors may be discovered in the base time zone data.. While such errors will be corrected in the following release of AI Flight Planner, having the corrected data implemented in your system will require some effort on your part.

If you have not made any time zone data changes, simply delete the file *Timezone.dat* from your system prior to installing the release that contains the updated information. AI Flight Planner will regenerate that file the next time you run the newly installed version.

However, if you have changed the time zone data, you must update your *Timezone.dat* file manually – either by re-entering your changes or determining which entries have changed in the new *Base Data\Timezone_Base.dat* and pasting those changes into *Timezone.dat*. Notwithstanding the “.dat” file extension, both are text files.

In neither case is the timing of your action critical. It can occur either before or any time after installation of the updated version of AI Flight Planner. Of course, the revised data will not take effect until you do one or the other of the above-noted procedures.

- 10.10 Alternate ICAOs and Kill Airports – While Microsoft Flight Simulator is not being updated, real world "continues to turn". Old airports close, new airports opens and, for whatever reason, from time to time, ICOA designators change. Flightsim gives us no capability to cope with such changes. AI Flight Planner's Alternate ICAO and Kill Airport features to the rescue!

The Alternate ICAO function directs AI Flight Planner to reroute traffic destined for one airport to the alternate. The Kill Airport function suppresses the display of an entire airport, including all scenery objects within 2nm of the airport reference point (ARP). The Airport Editor is used to designate the alternate ICAO (which must previously be defined in *AirportList.dat*) and, once designated, optionally to suppress display of the original airport.

If you have designated an alternate airport, whenever you load a flight plan file that refers to the original airport, an alert message will be issued. (You may suppress this alert message from the Options menu.) If you wish to have AI Flight Planner reroute traffic to one or more alternate airports, click the Airports / Use Alternate ICAO's menu item. You will be presented with a dialog showing in a listview control all alternate airports relevant to the current flight plan file. To reroute traffic, simply check the lines containing the airports for which you want traffic rerouted and then click Reroute Traffic. When an alternate ICAO has been assigned, the Airport List item for that airport on both the FP Editor and the Flight Plans / Timetable function will indicate the re-routing. The Use Alternate ICAOs menu item is also a convenient way to check for Alternate Airports at any time.

To suppress display of a no-longer-existing airport, open the airport with the Airport Editor and check the Kill Airport checkbox (after first having specified an alternate to receive the traffic). Once all airports have been handled, click the Airports / Kill Airports menu item. AI Flight Planner will create a .bgl file that will suppress display of those airports and surrounding scenery using dummy "[Airport]" records named *KillAirports_FSn.bgl*. You will be asked to specify the destination for the file, which must be a standard \scenery subfolder enabled in the Scenery Library. If the desired folder does not exist, you may create it from the browse dialog, but be sure to enable it in the Scenery Library afterwards.

The Scenery Library priority should be such that *KillAirports_FSn.bgl* is higher than any airport\scenery that is to be suppressed by it. If only stock airports are to be suppressed, the file may be placed just above Propeller Objects. If, however, you are suppressing display of an airport in an add-on scenery folder, *KillAirports_FSn.bgl* must be of higher priority than the file containing that airport.

An example will best serve to illustrate these features. Shortly, the new Brandenburg Airport in Berlin will be opening. The existing three smaller airports, namely: Schonfeld (EDDB), Tempelhof (EDDT) and Tegel (EDDT) will be closing and Brandenburg will inherit the Schonfeld ICAO. Users who acquire a Brandenburg add-on will want all Berlin traffic routed there and to suppress the display of the old airports. To do so, using the Airport Editor, specify EDDB as the alternate ICAO for both Tempelhof and Tegel and check the Kill Airport checkbox for both. Update Schonfeld (whose ICAO will be used by Brandenburg) to reflect the new airport. Finally, run the Airports / Kill Airports function and install the *Kill_Airports_FSn.bgl* file appropriately.

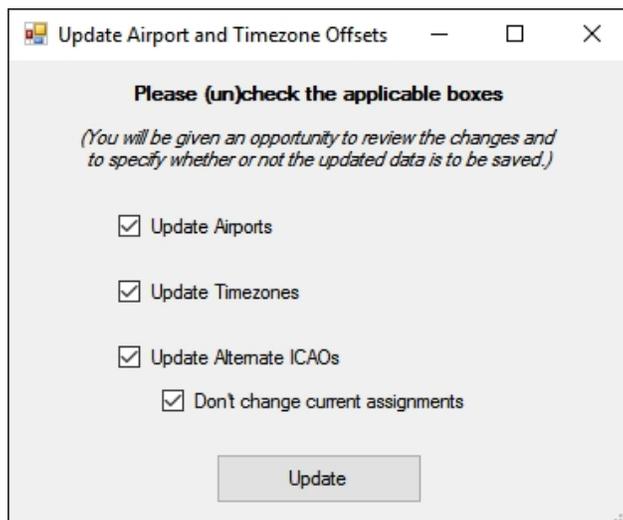
- 10.11 Determine which Airports are Visited by an Aircraft - You may quickly determine which airports are visited by a particular aircraft in the currently loaded set of flight plans by selecting the aircraft of interest in the Aircraft List and then clicking on Airports / Visited by Selected Aircraft.

- 10.12 AIG Updates for Airport and Timezone Offset Data – Alpha India Group (AIG) maintains update files for *AirportList.dat* and *Timezones.dat*, AIFP’s main records of airport and timezone offset data. Unfortunately, applying these files directly will eliminate any custom updates you may have made – unless similar updates happen to be in the AIG files. AI Flight Planner includes a “smart” updater which will extract an previously unapplied updates from those AIG files and insert them into *AirportList.dat* and *Timezones.dat*.

To open the updater, click on Update and Timezone Offsets (from AIG) in the Airports menu. A small dialog as shown below will appear.

AIG’s airport data includes Alternate ICAOs to address situations where a real-life airport has been closed and replaced with another nearby but having a different ICAO designator. If you are attempting to create a historical situation, you may wish to uncheck Update Alternate ICAOs should it be checked or check Don’t change current assignments, whichever best serves your purposes.

Click Update. AI Flight Planner will download the update files from AIG’s website and apply them in accordance with your specifications. Upon completion of the analysis, but prior to the updated files being written, a list of all updates is shown and you are asked to confirm that the updated files should be saved. A backup copy of each file prior to updating will be left in your AIFP folder. Once you are satisfied with the updated files, you may delete the respective backup(s)



Airport and Timezone Offset Updater

AI Flight Planner will warn you if you have already applied either or both updates. Nonetheless, you may re-apply them.

The URL for the AIG updates is saved in the file *Link_AIG_Updates.txt* in AIFP’s *Base Data* folder. Should AIG change that link, prior to the next AIFP update it will be necessary for you to specify the new link in this file in order to use this feature.

- 10.13 Comparing Stock Data – AIFP's Base Data folder contains a sub-folder labelled Compare Stock Data. In it you will find the executable *Compare Stock Data.exe* and documentation therefore.

P3Dv5 introduced a massive number of changes to stock airport data. Almost 650 airports had their ICAO codes re-assigned, over 1500 others disappeared and a similar number added. With over a total of 25000 airports, manual analysis was not a reasonable approach. So, I developed *Compare Stock Data.exe* to do the job.

While it's unlikely you will need it to do its primary job, those interested in the nature of the changes in stock airport data between any two Flightsim versions may find its results interesting. *Compare Stock Data.exe* must be executed from its current folder.

11 TRAFFIC AND PARKING ANALYSIS

The AI Flight Planner Traffic and Parking Analysis functions attempts to emulate how FS9 or FSX would assign parking under "perfect conditions". It implements the algorithm described in the fsDeveloper.com Wiki article entitled "Parking Assignment". Note, however, there are several factors that affect the order in which aircraft request parking in the simulator that cannot be readily emulated. Nonetheless, this function should still identify shortages of parking that will occur in the simulator - even if the times and numbers are slightly different. (Should any user have specific knowledge that the actual parking algorithm used in FS9 and/or FSX and it is different from that described in the fsDeveloper Wiki article, I would very much like to know about it.)

The Traffic and Parking Analysis functions are initiated from the Bulk Traffic menu on the Main Panel - which opens the Traffic and Parking Analyser dialog. If a traffic or flight plan file is already open, the analyser will use the data from that file. If not, or if you wish to analyse data from another file/set of files, you may select that/those files using the Files menu on the Traffic and Parking Analyser dialog.

While most Traffic and Parking Analyser functions are useable with UTX flight plans, due to the absence of any aircraft information, some will not or may give unpredictable results.

When the Traffic and Parking Analyser dialog is first opened it adopts the currently-selected FS Target Version. You may modify this selection using the "Analyse for" radio-buttons.

Whether or not a flight plan is processed by FlightSim depends on the position of the activity level slider(s) and the activity level specified in the flight plan. Unfortunately, AI Flight Planner has no way of determining the slider setting(s). So, prior to any analysis, you should set the desired activity slider level(s) in the Analyse For Level textbox(es).

By default, the Traffic and Parking Analyser keeps all data in RAM. However, if you attempt to analyse a very large number of files (or a few very large files such as the default traffic file), Windows may not allocate sufficient resources for the analysis, or even for the initial extraction of traffic file data. Should this situation arise, AIFP will inform you that system resources have been exhausted and give you the opportunity to continue with disk-based databases – which will be slower but may avoid you having to partition your traffic files for analysis.

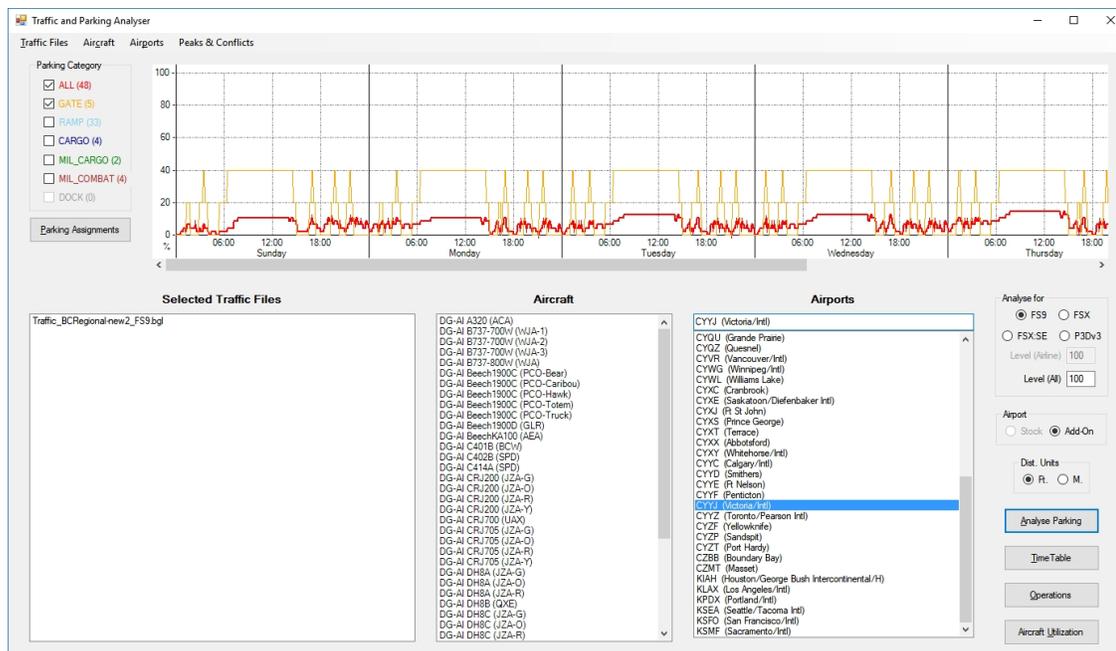
- 11.1 Traffic Data, Aircraft and Airport Display/Selection - Once a file/set of files for analysis has been opened - either automatically or manually from the Files menu, it/they will be

listed in the Files listbox. You may select a subset of those files using the mouse and the <Shift> and/or <Ctrl> keys in the normal manner. If no selections are made, then the data from all files will be processed. The airports and aircraft referenced in the selected (or all) files are shown in the Airports combobox and Aircraft listbox respectively. As well, the Files menu allows you to load traffic data involving only a specific airport.

For those functions requiring an aircraft designation, select one or more aircraft (as appropriate) in the Aircraft listbox. If more than one aircraft is to be selected, use the <Shift> and/or <Ctrl> keys in the normal manner. If tooltips are enabled (FP Editor *Options / Show Tooltips*), a tooltip containing the indicated information is displayed when the mouse hovers over an item in:

- the Traffic Files list - the full path for the file, and
- the Aircraft List - parking requirements for the aircraft.

Right-clicking on an aircraft title will bring up a context menu from which you may open the Aircraft Editor and perform other functions in the Aircraft menu related to the selected aircraft. Unfortunately, similar capabilities cannot be provided for the Airports List because selection of stock/add-on and an examination of that airport's "afcad" must be undertaken before the required data is available.



Traffic and Parking Analyzer

While either is possible, if you have add-on airports, it is likely you'll want to analyse them rather than their stock equivalents. The Collect Airports function now generates a list of the paths to installed addon airports. (On the Collect Airports dialog, check the Addons Airport Data radio button and the checkbox(es) for each installed version of Flightsim, click the Collect button and then Save.) At start-up, the Traffic and Parking Analyser uses this data to determine the path to as many addon airports as possible.

Prior to the existence of *AirportList_Addon_Paths.dat*, the Traffic and Parking Analyser (depending on option selection) either:

- scanned your Scenery Library when a traffic file set was selected to find the paths to those airports for which an add-on existed – a time-consuming process if your Scenery Library was large,
- scanned your Scenery Library the first time an airport was accessed to see if an add-on existed – also a potentially time-consuming process if your Scenery Library; or
- required your you to locate the add-on airport.

Now, the Traffic and Parking Analyser simply scans *AirportList_Addon_Paths.dat*.

But, there is one drawback to this method. That is, if multiple copies of an add-on airport for an individual Flightsim version are encountered, the Traffic and Parking Analyser has no way of knowing which should be used. As well, users may not perform the Collect Airports functions, so *AirportList_Addon_Paths.dat* may not exist. Consequently, the original three Airport menu items that control whether and how the paths to add-on airports are determined have been retained. They are:

- Look for Add-on Airports in Scenery Library,
- Search Scenery Library at Startup, and
- Simplified Scenery Library Analysis.

As noted above, scanning large Scenery Libraries can be time consuming. The first item, if not checked, ignores add-on airports unless you manually locate their .bgl files. If you don't plan to analyse traffic at add-on airports or only occasionally, you can leave this item unchecked and locate the add-on airports manually. If this item is not checked, the other two serve no purpose and are disabled.

Check the second item above, i.e., Search Scenery Library at Startup, to have the Traffic and Parking Analyser to do its own search for add-on airport paths. While this may incur a significant processing delay, it does have the advantage that, if you have multiple versions of any add-on airport, the active version will be selected whereas, if you've used the Collect Airports method, you'll have to specify which version if that/those airport(s) is/are later selected for analysis. If this item is not checked and *AirportList_Addon_Paths.dat* does not exist, you'll be asked to locate the add-on each airport as it is selected.

AI Flight Planner provides two Scenery Library search modes: full and simplified. In a simplified search, AI Flight Planner only looks for an add-on airport in files whose name includes the airport's ICAO designator. (It is generally standard practice to include the ICAO designator in single-airport .bgl files.) If the desired airport is not found, you can always locate it manually. As noted above, a full scan involves every .bgl file in the Scenery Library

Experiment to find the best combination for you. AI Flight Planner "remembers" your settings and reinstates them at the beginning of each AI Flight Planner "session".

If no add-on airport is found (or if the search is not conducted), the Airport Stock radio-button will be checked and any analysis will apply to the stock airport. If an add-on airport is found, the Airport Add-On radio-button will be checked and any analysis will refer to it. However, AI Flight Planner will continue looking for other add-on airports and will warn you if it finds any more. Should you wish to use one of those others instead, you can select it with the Airports / Select Add-On Airport File menu item.

AI Flight Planner looks for add-on airports in the Scenery Library. However, you may force it to use add-on airports located elsewhere by specifying the file containing such airports with the Airports / Select Add-On Airport File menu item or by right-clicking on the Airport/Add-On radio-button. If you hover the mouse cursor over the Airport/Add-On radio-button, a tooltip showing the currently active add-on airport will be displayed.

- 11.2 Parking Utilization Analysis - To initiate a parking utilization analysis at any airport, select the airport in the Airports combobox, check Stock or Add-On airport (if applicable) and click on the Analyse button. Following a brief period for the analysis, AI Flight Planner will plot the anticipated percentage utilization over a full week for each type of parking available at the airport.

To the left of the utilization plot is a checkbox for each base type of parking together with a label indicating the quantity of such spots available at the selected airport. The percentage plotted refers to those quantities. You may select any combination of parking types for which the utilization is to be displayed. Those checkboxes representing base types not available at the airport are disabled.

A report of parking overflow (if any) will also be issued, identifying those arrivals:

- for which no parking was available,
- not having a parking code but which were placed in coded parking spots, and
- having a parking code but which could not be accommodated in "company" parking.

This feature is very processing intensive. Three passes over an entire week at one minute intervals is required. That's over 30000 tests of each visit by an aircraft to the designated airport for each parking spot at that airport. So, for large airports files, please be patient.

Once an analysis has been performed, you may review the assignments by clicking on the Parking Assignment button or initiating the several additional functions available in the Airports menu..

- 11.3 Timetables - The AI Flight Planner Traffic Analysis function will generate a timetable for any combination of selected airport (or none), selected aircraft (or none) and other relevant panel selections. When no aircraft are selected, the timetable includes them all. When no airport is selected, the timetable will include all airports visited by the selected aircraft, or all airports if no aircraft are selected. You may select more than one aircraft for the timetable, but you may select only one airport. To clear an aircraft selection, hold down the <Ctrl> key and select the aircraft again. To clear the selected airport, clear the text data from the combo-box.

Once the desired parameters have been selected, click on the Timetable button. Thereafter, the timetable will be automatically updated whenever you modify the airport or aircraft selection.

When local time is selected, data relating to airports for which the UTC offsets are not known are displayed in GMT time suffixed with "z".

A timetable may be printed using the Dump to Notepad function.

- 11.4 Operations – You may display the hourly number of operations at an airport by clicking the Operations button (after selecting the airport). Checkboxes to the left allow you to control whether arrivals, departures or both are displayed.
- 11.5 Miscellaneous Functions - The following miscellaneous analysis functions are initiated from the indicated menu item:
- *Aircraft / List Required Aircraft Not Installed* - lists those aircraft required by the selected (or all) traffic files but not available on the user's system.
 - *Aircraft/ List aircraft with No Parking Code* - lists those aircraft which are not assigned a parking code
 - *Aircraft/ List aircraft with No Parking Type* - lists those aircraft which do not specify a parking type
 - *Aircraft / List Traffic Files in Which Selected Aircraft Used* - lists the traffic files (contained in the Files listbox) containing flight plans that refer to the selected aircraft. More than one aircraft may be selected.
 - *Aircraft / List Airports Visited by Selected Aircraft* - lists the airports visited by the (single) selected aircraft based on the flight plans in the selected (or all) traffic files.
 - *Aircraft / Open Aircraft Editor* - opens the Aircraft Editor. Any changes made with the editor will be acted upon in future analyses. The Aircraft Editor may also be opened for a particular aircraft by right-clicking on the aircraft title in the Aircraft List and then clicking on Open Aircraft Editor.
 - *Airports / List Parking at Selected Airport* - lists all the parking spots available at the selected airport. Once a parking analysis at that airport has been performed, you may select one or more parking spots from the list to have the specific times of use listed.
 - *Airports / List Aircraft Visiting Selected Airport* - lists each aircraft (and associated parking requirements) visiting the selected airport based on the flight plans in the selected (or all) traffic files
 - *Peaks & Conflicts / Peak Parking Requirements at Selected Airport* – Select an airport to enable main menu item. A small dialog allows you to enter one or more (separated by commas), or all, parking codes, select all or a specific parking type, and specify the parking radius range of interest (or none). If you select a specific parking type, a list indicating the maximum number of parking spots of the selected type required for each airline parking code is generated. Otherwise (i.e., selected parking type is “All”), the generated list will show the maximum number of parking spots of each required type needed to accommodate the specified parking codes collectively. In either case, up to three time periods during which the peak requirement applies will be shown.
 - *Peaks & Conflicts / Conflicts – Arrivals* (or Departures) – Following entry of a time period and the number of arrivals or departures to occur within such a period, AI Flight Planner will identify any legs falling within that criteria. (You may then edit the applicable flight plans to avoid such situations where they are problematic.)

Some of these functions have an associated print capability. Please note, however, that due to slight differences between the font on your computer and the corresponding font in your printer, some items of columnized data may be misaligned. This is unavoidable.

12. OTHER AI CONSIDERATIONS

There are several common misconceptions and other issues surrounding Flightsim AI that it may be helpful to clarify.

12.1 Traffic File Compilers –Four different AI flight plan compilers are in widespread use:

- TTools, a compiler/decompiler for FS9 and earlier versions of Flightsim,
- AIFPC, a TTools-compatible compiler/decompiler for FS9 and FSX, and
- Traffic Data Base Builder (TDBB), Microsoft's AI traffic generation utility for FS9 and FSX, and
- of course, AI Flight Planner.

There is a common misconception that flight plans for FS9 must be in TTools format and those for FSX must be developed using TDBB. And, often, you hear "FS9 flight plans can't be used with FSX". But, the reality is, TTools flight plans are compatible with FSX. And TDBB, to the surprise of many, was available in FS9. (The source data formats and concepts used by TDBB are very different from those used AI Flight Planner and are not discussed further.)

12.2 Compiled-for-FS9 Traffic Files in FSX – FSX accepts and displays AI from traffic files compiled for FS9. However, if you attempt to mix compiled-for-FS9 traffic files with those compiled for FSX, the compiled-for-FSX traffic is suppressed. This has nothing to do with the different day-of-week encoding schemes (discussed below). Rather, data formats of the two types of traffic files are different and, apparently, incompatible in the "AI engine". Surprisingly, FSX gives priority to the compiled-for-FS9 traffic files.

So, each compiled-for-FS9 traffic file on your system that will be "seen" by FSX should be re-compiled for use with FSX – particularly if you wish to see the FSX default AI traffic - or deleted/disabled.

To help you find those files needing to be recompiled, AI Flight Planner provides a capability to locate FS9 traffic files anywhere on your system.

To help you recognize which files have been compiled for FS9 and which for FSX, AI Flight Planner - if you wish - adds a "_FS9" or "_FSX" suffix to the compiled traffic file name.

12.3 Day-of-Week Encoding – In FS9, the day-of-week encoding scheme for weekly flight plans uses 0 for Sunday, 1 for Monday and so on to 6 for Saturday. In FSX, Microsoft changed the day-encoding to 0 for Monday and 6 for Sunday.

To avoid confusion, AI Flight Planner uses the FS9 scheme irrespective of the target Flightsim version, letting the compiler handle any required conversions. In any case, except in the Flight Plan List, day-encoding is transparent; AI Flight Planner's editor provides checkboxes for entry of day-of-week by name.

Should the day-encoding of a TTools flight plan file have previously been adjusted for FSX, the only consequence should that file be compiled for FS9 is that the AI will operate a day early. To avoid having to correct each flight plan in a file individually, AI

Flight Planner provides the *Flight Plans / Adjust Day Encoding* menu item, which advances or retards the day-encoding of all flight plans in the currently-loaded flight plan file by one day.

- 12.4 Some Insight into How the “AI Engine” Works – While the Flightsim “AI engine” can handle thousands of flight plans by way of compiled traffic files, only those AI aircraft in the proximity of the user aircraft are actually being processed at any point in time.

For AI purposes, the earth is divided into 256 bands north-south and 384 bands east-west, for a total of nearly 100,000 sectors about 30 nm high and an average (depending on latitude) of about 40 nm wide. Other than for flight plan legs that originate and terminate in the same or adjacent sectors, the compiler determines the entry and exit times of the AI aircraft for every sector lying along the great-circle route between the departure and destination airports and records those times in the sector transition table in the traffic file. The AI engine makes active only those AI aircraft that are scheduled to be in the sector holding the user aircraft and the eight sectors surrounding it at the simulated time. For legs which involve only a single or adjacent sector, the AI is always active.

It is important to note that, with the exception noted below, the aircraft and airport data in the traffic file is used only to determine the time at which each AI aircraft arrives at its entry point into each sector along its route. (Aircraft and airport data is saved in the traffic file primarily to allow de-compilers to reconstruct the flight plans.) The performance of an active AI aircraft is always controlled by the data in the relevant Flightsim aircraft file. The location and other characteristics of airports are always determined from the information in the relevant stock airport or add-on scenery files. It should follow, then, that irrespective of any arrival time specified in the flight plan, the actual arrival time of an AI at a given airport is dependant upon specified aircraft performance, weather and other traffic (including the “user” aircraft).

- 12.5 The @ Symbol (User-Specified Arrival Times) – TTools allowed estimated times of arrival to be specified by prefixing such times with a “@” symbol. Alternately, the arrival time could be left blank, in which case it would be computed by the compiler based on the distance to be travelled and the specified cruise speed of the aircraft used.

AI Flight Planner does not use these concepts. The ETA is always calculated by AI Flight Planner but, nonetheless, may be overridden by the user.

- 12.6 The “37-Minute Problem” when Using @ – The FlightSim AI/ATC engine doesn’t “like” tardy AI. If an AI aircraft is delayed on departure due to, for example, runway congestion or a long queue at the hold-short point such that the aircraft has not taken-off within about twenty minutes of the scheduled departure time, it simply disappears from the taxiway. Likewise, if an AI is forced to perform several missed approaches making it very late for landing, it disappears.

There is a similar condition applied to enroute AI. In particular, if an AI is scheduled to be activated (i.e., enter the sector occupied by the user aircraft or one of the surrounding eight sectors) more than about twenty minutes later than as calculated by the AI/ATC engine using the distance travelled from departure to destination at the cruise speed specified for the aircraft in the traffic file, that AI will not materialize for landing. Instead,

it will spawn in a parking spot at the destination airport some time later in preparation for the next leg.

When the sector entry time is based on the cruise speed specified in the traffic file, AI activation will always occur “on-time” (i.e., at the time calculated by the AI/ATC engine) and all is well. But, if the arrival time was specified using “@”, the cruise speed used by the compiler to calculate the sector entry time may have been significantly different from that specified for the aircraft in the traffic file. When “@” is used to specify a later arrival time (as it usually is), the AI will be activated “late” relative to the time calculated by the AI/ATC engine. If it is more than about 20 minutes late, it is discarded. From extensive testing (by others), it has been determined that the critical time difference is 22 minutes. Given the standard 15 minute allowance for approach, landing and taxiing, the 22 minute interval equates to 37 minutes later than a user-specified arrival time. Hence, the name “37-minute problem”.

The 37-minute problem is most likely to occur when simulating scheduled airline long-haul operations where the user-specified arrival time is often substantially later than the simply-calculated (distance/speed) next-to-final-sector arrival time plus the fifteen minute approach and landing allowance.

Apparently, the AI engine doesn’t “care” about AI activating arriving early. So, to overcome the 37-minute problem, some suppliers of freeware AI flight plan data, such as WoAI, MAIW and, until recently, AIG Alpha-India Group, specify a cruise speed in aircraft text files in the order of 200 kts for all jet aircraft. This ensures that AI activation time for any AI having a reasonable user-specified arrival will not be “late” - since the cruise speed then specified in the traffic file will be less than the cruise speed calculated by the compiler to accommodate the user-specified arrival time.

AI Flight Planner uses a similar (but subtly-different) approach. It halves aircraft cruise speeds before saving them in the traffic file. But, when it decompiles a traffic file that it has previously compiled, it restores the cruise speed seen in the Aircraft List by doubling the cruise speeds saved in the traffic file. Thus, this “evasive action” is invisible to the user – unless he/she happens to notice that a cruise speed originally being an odd number is returned after de-compilation one knot lower. Other than this possible slight change, there are no known side-effects of this scheme.

Should you decompile an AI Flight Planner-generated traffic file other than with AI Flight Planner, you will find an unusually-named airport as the first entry in the airports.txt file. This airport is a “flag” used by AI Flight Planner to indicate that special measures to address the “37-minute problem” have been taken and that cruise speeds derived from the traffic file should be doubled.

There may be situations where you wish the compiled traffic file to reflect exactly the specified aircraft cruise speeds. In such cases, AI Flight Planner’s “raw” compile mode should be used – but the “37-minute problem” may be experienced if the system-calculated arrival time is overridden.

If you are using any of the many “prepared flight plan” packages available from various download sites, you should confirm that the cruise speeds for the aircraft are realistic (i.e., they have not been reduced to about 200 kts.) If speeds have been adjusted, you

should allow AI Flight Planner to restore them to the value set out in the aircraft.cfg file as described in Section 9.7 of this manual before compiling/re-compiling.

13. TROUBLE-SHOOTING AI DIFFICULTIES

Whether you use Microsoft's Traffic Toolbox, which ships as part of both FS9 and FSX, or a TTools compatible utility (e.g., TTools itself, AI Flight PlannerC or AI Flight Planner), successful AI flight planning requires some knowledge of the "innards" of FS9 and/or FSX, as applicable, and well as an understanding of flight plan data.

For TTools-compatible flight planning, there is no better explanation of flight plan data than the "Source Files and Formats" section of the TTools user manual. However, there is no comprehensive source of information on the inner-workings of FS9 and FSX. While most problems you'll encounter have been discussed, probably numerous times, in various forums, finding that information can be a trying experience.

The purpose of this section, then, is to provide a checklist of things related to FS9 and/or FSX to look for when your flight plans don't work.

13.1 Traffic Analyzers - In diagnosing AI difficulties, a tool such as Traffic Toolbox Explorer (part of Traffic Toolbox but useful for all flight plans) or one of the freeware AI traffic utilities (such as Peter van der Veen's Traffic Analyser) can save you a great deal of time by telling you whether or not an AI flight plan is being processed by Flightsim. (If Flightsim isn't processing the flight plan or leg of interest, there's no point wasting time "sitting" at an airport waiting for the flight to arrive!) Instructions for the installation of Traffic Toolbox Explorer are contained in the relevant SDK. (For FSX, you must own the deluxe version to have access to the SDK.)

13.2 Don't Mix FS9 and FSX Traffic Files - The most frequent cause of AI difficulties with FSX is the mixing of compiled-for-FS9 and compiled-for-FSX traffic files following conversion. You can load FS9 traffic files directly into FSX and they will (or should) work. But, if you place a compiled-for-FS9 traffic file in the "purview" of FSX, any compiled-for-FSX traffic will disappear. All traffic files in FSX must be compiled for the same target Flightsim version. They must be either all FSX traffic files or all FS9 traffic files (in which case, if you want default traffic you must use the FS9 default traffic file or convert the FSX default traffic file for FS9). AI Flight Planner will help you locate compiled-for-FS9 traffic files. But, only you can ensure there's no mixing.

Many prepared flight plan packages, in particular, those from MAIW and WoAI, include a traffic file that while labelled as FSX has simply been compiled for FS9 with FSX day encoding. The vast majority of no-FSX-traffic reports are due to this.

Whenever you install a traffic file in FSX that you are not sure has been compiled for FSX, you should check whether it has been compiled for FS9 and, if so, allow AI Flight Planner to convert it for use with FSX.

13.3 Prerequisites for an AI Flight Plan – There are only three ingredients needed for proper AI operation:

- a valid flight plan whose legs are scheduled so as to be achievable with the specified aircraft;
- adequate parking at the destination airports properly connected to the runways – adequate for the number and types of AI aircraft that may exist at the airport at any point in time plus the user aircraft, and
- a compatible aircraft with an *aircraft.cfg/sim.cfg* file that designates the aircraft (title) as an AI aircraft (i.e., the file contains a corresponding “[fltsim.nn]” section).

AI Flight Planner will warn you if, based on the cruise speed of the designated aircraft and assuming normal circumstances, a flight plan leg cannot be completed prior to departure time of the next leg in sequence, and of a host of other flight plan errors. However, weather and traffic delays cannot be foreseen by AI Flight Planner. AI Flight Planner cannot ensure that adequate parking will be available. (Note that FS9 assigns parking based on model radius; for FSX, the wingspan specified in the *aircraft.cfg/sim.cfg* file is used.) Nor will it warn you automatically if a required aircraft does not exist on your system. But, you may check at any time using the *Aircraft / Check for Missing Aircraft and Textures* menu item.

- 13.4 Troubleshooting a Traffic File - With the exception of Windows regional settings issues, if a file compiles or re-compiles without error using AI Flight Planner, it is highly unlikely that the traffic file is invalid. It may not work on your system, but the problem almost certainly lies elsewhere. So, if you have a traffic file that "misbehaves" and your Windows regional settings are other than English, the first thing you should do is rebuild the file with English regional settings and recheck.

When things don't work as planned, "keep it simple" is a good guideline. Recognize that the ETA of a flight plan, unless overridden by the user, is based on a simple computation of distance/cruise speed plus a fixed 15 minutes for approach and taxiing. Once the AI enters the sector of the destination airport or a bounding sector, AI performance is based on the stored flight dynamics for the aircraft and is affected by weather and other traffic. Consequently, depending on circumstances, the 15 minute allowance may be grossly-inadequate. So, make certain there is adequate time for each leg of the flight plan to complete before the next leg is scheduled to depart.

Once you've determined that the included flight plans are reasonable, the first step in troubleshooting a traffic file is to isolate that file. All other traffic files within the purview of the target Flightsim version should be disabled to eliminate any unplanned interactions. As well, it may be helpful to disable all add-on scenery except those required to generate the airport(s) of interest. For the default traffic file and any others in the *\Scenery\World\Scenery* folder, this means either changing their file extensions to something other than ".bgl", such as by appending ".xxx" to the file name/extension, or temporarily moving them to another folder outside the purview of the target version of Flightsim. If isolating the traffic file solves the problem, you can determine the real source of the problem by re-enabling the other files one-by-one until the problem recurs.

If isolating the traffic file doesn't help, then check the following. (If you're using FSX or P3D, it is assumed you've already removed any FS9 files.)

<u>Symptom</u>	<u>Possible Causes</u>
AI do not materialize for departure	<ul style="list-style-type: none"> • No/inadequate parking • No/invalid aircraft

AI do not materialize for landing	<ul style="list-style-type: none"> • Insufficient time for AI to complete prior leg • No/invalid aircraft • 37- minute problem (“raw” compile mode only) – see Section 4.5
AI executes missed approaches	<ul style="list-style-type: none"> • User aircraft on runway • No parking available for aircraft
AI lands but disappears after exiting runway	No taxi path to assigned parking spot
AI does not proceed to runway for takeoff	No taxi path to active runway

Unfortunately, Flightsim does not warn you about missing or invalid aircraft. It simply ignores any flight plans for that aircraft. But, you may identify missing aircraft by loading the traffic file or flight plan text file set into AI Flight Planner and run the *Aircraft/Check for Missing Aircraft and Textures* function.

If a missing or invalid aircraft is indicated, ensure that the aircraft title is declared as an AI aircraft in the relevant aircraft folder. If it isn't, update the *aircraft.cfg* file and try again. If it is, replace the missing/invalid aircraft with a default or another aircraft you are certain will work. (Many older AI aircraft available for download were developed for use with FS2000 or FS9. Consequently not all of them will perform in FSX or P3D.) If prepared flight plan data has been used for the faulty traffic file, you should also check whether or not the cruise speed has been altered – even if it's a default aircraft. If it has, try restoring its normal cruise speed.

If inadequate parking or missing/broken taxi paths are suspected, you should analyse the “afcad” for the destination airport using AFCAD 2.21 (FS9 only), ADE or AFX (payware) or another airport editor. They all have fault-finders to help you identify and resolve such problems.

- 13.5 Summary – It's tempting to download the system-wide flight plans for your favourite airline or a package that will populate your local military airfield. But, it's frustrating when you attempt to convert those packages for FSX and they don't work. Hopefully, the foregoing will help you avoid some of those problems or, if you experience them, help you to correct them. Be methodical. Most important, don't get discouraged. Once you find the cause, you'll find the AI generated very satisfying. And you'll probably learn something along the way.

If all else fails, take a tip from *bobbyjack*, a frequent contributor to the AI Flight Planner forum. Set your system-wide flight plan aside and create a simple two leg flight plan to test the aspects of your system that seem not to be working.

14 SUPPORT

AI Flight Planner's support forum is located in the “Tools support” area at <http://www.fsdeveloper.com>. Please direct your problem reports, suggestions for improvement and other comments there. When you report problems, please include relevant details. In particular, the AI Flight Planner version number, the exact error message and a summary of what you were doing at the time are likely to be particularly helpful. If the problem involves a

particular traffic or flight plan file, please attach a copy of that file (and the companion airport and aircraft files in the case of flight plan files)

I also have a support website at <http://stuff4fs.com> for all my airports and development utilities. (Navigate to the User Applications / AI Flight Planner page.) Among other things, the site lists all known problems with the latest release. The most recent release of AI Flight Planner is available from that site as are occasional development releases of new features.

While I can't promise to resolve every issue you report or include every feature addition you propose, I will undertake to support and enhance AI Flight Planner in a manner consistent with it becoming and remaining the AI Flight Planning tool of choice for Microsoft Flight Simulator.

15 ACKNOWLEDGEMENTS

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- Winfried Orthmann for bglAnalyze (which was used in the early versions of AIFP in the generation of the airport lists) and for his documentation of file formats,
- Peter van der Veen for AIFPC and for permission to include its traffic file compiler/decompiler in the early versions of AI Flight Planner,
- Karl Swartz for his Great Circle Mapper website (<http://gc.kls2.com>) which seems to be the most comprehensive source of airport time zone data available at no cost ,
- Arno Gerretson for hosting the AI Flight Planner support forum on FS Developer.com,
- last but not least, my various beta team members, who expended a lot of effort in testing AI Flight Planner and/or advising me.

16 END USER LICENSE AGREEMENT

As used in this end user license agreement, the terms "AI Flight Planner" and "AIFP" (whether or not suffixed by a numeral) shall be construed as encompassing the full contents of the downloadable archive (.zip) file originally created and posted for distribution on "download sites" by the author, including without limitation: the executable *AIFP3.exe*, the associated user manuals, the data files *AirportList_Stock.dat*, *ICAO_IATA.dat* and *Timezone_Base.dat*, any derivatives thereof and certain files proprietary to third parties including but not limited to the files *bglcomp.exe*, *bglcomp.xsd* and *Ionic.Zip.Reduced.dll*.

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Appendix "A" - AIFP.CFG FORMAT

The *AIFP.cfg* file:

- specifies how each aircraft in the Aircraft_...txt file is to be handled, and
- permits specification of the values for various parameters in the relevant [fltsim.x] block in the *aircraft.cfg* file applicable to that aircraft.

This file is included in the archive that contains the flight plan, aircraft and airport files in TTools format.

Archive files that do not include a *AIFP.cfg* file may still be installed with AI Flight Planner. However, the user must direct the installation by entering certain information when requested.

The *AIFP.cfg* file contains five sections, or blocks:

- [main] - descriptive information or general information that pertains to all aircraft,
- [repaints] - specification of repaints files for each aircraft,
- [seek] - replacement criteria for selecting potential substitutes for a repaint
- [all] - [fltsim.x] data which pertains to all aircraft being installed,
- [fltsim] - [fltsim.x] data for individual aircraft.

Sections that are not required may be omitted. Comments (lines commencing with "//") may be placed anywhere in the *AIFP.cfg* file. Data, including block names, may be entered in upper case, lower case or a mix. Data, but not block names, may be padded with spaces; however, lines containing data may not start with a space.

[main] Block

The [main] block contains general descriptive information and usually (but not necessarily) includes:

- | | |
|----------------|--|
| Airline = | <i>name of airline</i> , which is saved in the "ui_variation" parameter; where several operators provide service under the "banner" of a major airline, this field will specify the major airline |
| OldAirline = | <i>where</i> applicable, one or more airline names separated by " " that are now contained in this package or whose traffic has been absorbed by the specified Airline |
| Callsign = | <i>call-sign of the operator</i> , which is saved in the "atc_airline" parameter |
| Airline_ICAO = | <i>ICAO code of the operator</i> , which is saved in the "atc_parking_codes" parameter |
| Season = | <i>any text string describing the time-applicability of the flight plans</i> (e.g., "Fall 2010") |
| Seek = | <i>search criteria</i> defining the characteristics of installed aircraft that may offer an alternative to the specified repaint when that repaint is not already installed. The format of this field is similar to entries in the [seek] block (see below). |
| Provider = | an acronym identifying the flight plan provider. At the moment, this field is used only to name the provider in the alternate traffic file naming scheme. |
| FS_Version = | "FS9" or "FSX" (without the quotes). This field identifies the version of Flight Simulator for which the flight plans are written. (The day-encoding scheme differs between FS9 and FSX), |

[repaints] Block

The [repaints] block specifies the suggested repaint to be used for each aircraft and information on where that repaint may be obtained. Multiple [repaints] blocks can be used to, for example, to specify alternate sources for the aircraft. In such cases, the block is named [repaints *suffix*], where *suffix* can be any character string - but must be unique within the file

Each entry in this block starts with the title of the aircraft to which it applies. This title must match, exactly, the title in the Aircrafttxt file other than the upper/lower case mix.

The general format of each entry is: *title = field1 | field2 | field3 | field4 | field5*

In each of these fields, you may assign specific contents to one or more of FS9, FSX and P3Dv2 or v3 . To do so, enclose the field contents in "pointy brackets" (i.e., "<" and ">") preceded by the FlightSim version, e.g., FSX<*archive name*>. For P3Dv2 or v3, the prefix may be any of: "P3D", "P3Dv2", "PV2", "P3Dv3" or "PV3" These assignments need only be specified when actually required. For example, you could specify a different URL for FS9 and FSX but, if the repaint title were the same in both, only a single (base) title need be specified.

If both a base item and an assigned item(s) exist, any FlightSim versions not covered by an assignment will use the base item. So, for example, you could assign a specific item for FS9 and include a base item that would be used for both FSX and all versions of P3D. Alternately, you could omit the base item and assign items only to specific versions of FlightSim. In this latter case, if FSX is unassigned, it will use the FS9 assignment and, if P3D is unassigned, it would use the FSX variant (which may, in fact, be the FS9 assignment).

Fields must be separated using the vertical bar ("|") character and must be ordered as follows:

- Field 1 - The title of the repaint in the repaint archive to be used for this aircraft. This field may be left blank but, if the repaint archive contains more than one repaint or the title of the single repaint does not match the title of the aircraft, the user must specify this information prior to installation of the repaint.
- Field 2 - The filename of the repaint archive (e.g., "repaint.zip"). If this field is left blank, the user must independently download and specify (using the Assign function) the repaint archive.
- Field 3 - The filename of the file in the repaint archive that holds the base [fltsim.x] information if the file is named other than "Fltsim.x.txt". If this field is left blank and the file name is other than the default, the user will be asked to identify the file in the repaint archive.
- Field 4 - Any text string identifying the download server from which the repaint may be obtained (e.g., Avsim, FlightSim), This field is displayed but not otherwise used by AI Flight Planner
- Field 5 - A URL with which AI Flight Planner may initiate download of the repaint archive. At time of writing, the usual URL formats were:

for Avsim:

"http://library.avsim.net/sendfile.php?Location=AVSIM&Proto=ftp&DLID=*nnnnnn*"

for FlightSim:

"http://dfs*n*.flightsim.com/kdlr.php?fn=*filename*, where "*n*" is usually 1 or 2.

However, other formats may be in use. You will need to check the properties of the "download" button/link on the [download page](#) to ensure you have the correct link.

As noted, any of these fields may be left blank. Trailing fields may be omitted entirely, but the trailing field separator, at least, must be present for all fields except the last. Indeed, the entire entry for any given title may be omitted, but the user must provide some of the information in order to install the repaint.

[seek] Block / [main] Seek Entry

The repaint specifications in the [repaint] block are simply suggestions. The user is free to "substitute" any installed aircraft. To assist the user in doing so, *AIFP.cfg* includes seek criteria which is used to generate a list of possible substitutes from the aircraft installed on the user's system.

The general format of seek criteria is: *[fltsim.x] field name = acceptable substitute value*, e.g., "atc_airline = Thomson" (without the quotes).

To permit maximum flexibility, *the acceptable substitute value* may be preceded or suffixed with the wildcard character ("*"). This method allows specification of:

- field starts with (*value**)
- field ends with (**value*)
- field contains (**value**)
- entire field matches (*value*)

Multiple seek criteria may be entered if separated by the vertical bar ("|") character. (The whole is referred to as the "seek string".) If multiple criteria is entered, a logical "or" function is assumed, i.e., the satisfaction of any of the entered criteria constitutes a "match". If "and" functionality is desired (i.e., a certain criteria must exist) *the acceptable substitute value* should be preceded by the and character("&"). Note however, the seek string is evaluated from left to right and evaluation stops as soon as a match is found. So, to be sure your "and" criteria is effective, it should be placed in the left-hand portion of the string.

In addition to [fltsim.x] field names, seek criteria may also refer to:

- Airline - which is translated to "ui_variation",
- Callsign - which is translated to "atc_airline", or
- Airline_ICAO - which is translated to "atc_parking_codes".

In the interest of simplicity of use, for these three entries only, the value entered is always treated as "field contains", i.e., a wildcard character is added at each end..

A seek string for use in the [main] block is preceded by "Seek = ". This string applies to all aircraft except those for which a seek string is specified in the [seek] block. A seek string that applies only to a specific aircraft is preceded by the title of that aircraft. (This title must match, exactly, the title in the Aircraft_....txt file other than the upper/lower case mix.)

[all] Block

The [all] block allows specification of any parameter in the relevant [fltsim.x] block of the applicable aircraft.cfg file, allowing the flight plan provider to override the data specified by the repaint author or to insert additional fields.

The general format of each entry is:

[fltsim.x] parameter = replacement value

for example:

description = *any text string*, or
ui_manufacturer = Airbus

Each parameter is placed on a separate line. No error checking is performed. Included quotation marks will be saved.

To allow either/or situations to be addressed, multiple specifications may be made for "model" and/or "sim". If on the same line, each specification must be separated by "|" and each must include the parameter name, e.g., "sim=xxx | sim = yyy". If any aircraft folder satisfies more than one of those criteria, you will be asked to choose which is to be applied.

[fltsim] Block

A [fltsim] block entry has the same basic format and serves the same purpose as the [all] block entry, except that:

- it applies only to a single aircraft;
- it is preceded by the title of the aircraft to which it pertains (*title = parameter = new value*); this title must match, exactly, the title in the Aircraft_....txt file other than the upper/lower case mix; and
- if more than one parameter is to be specified, the various specifications are separated with the vertical bar ("|") character: (*title = parameter1 = value1 | parameter2 = value2 | etc*)
- As for the [all] block, multiple entries for a given parameter may be made, e.g., "*title = model = xxx | model =*yyy*", but each entry must contain both the parameter name and value. All criteria for a given repaint must be contained on a single line.
- if one of the specified parameters is "model", i.e. model folder name, then you may also specify the model file name by enclosing it in "pointy" brackets, e.g., *model=modelfolder<modelfilename>* with or without a space before the "<" or *model=<modelfilename>* for aircraft where only the default model folder exists.
- for "model" and "sim" parameters only, if the value is simply "*", then the corresponding value specified by the repainter is ignored. and any file in the target aircraft folder serving that purpose will be accepted.
- The wildcard character "*" may be used in all file/folder names

[fltsim] block entries take precedence over the [all] block entries.

Like [repaint], the aifp.cfg file may contain multiple [fltsim] blocks. The naming convention is the same as for [repaint], provided the name of [repaint] and [fltsim] blocks referring to the same aircraft must be suffixed identically.

Appendix "B" – UT Live .XML-Formatted Flight Plan Considerations

AIFP has been enhanced to read and write UTLive .xml ("UTX") flight plans so that they be analysed using AIFP as if they were TTools-based. These flight plans are loaded and saved in exactly the same way as .txt file sets - but with the .xml file extension, of course. There are, however, a few issues that must be considered:

- UTX flight plans are point-to-point. TTools flight plans are "circular"; that is, the destination airport of the final leg becomes the originating airport for the initial leg. Therefore, AIFP "closes" UTX flight plans (when necessary) by adding an additional leg based on then available data with the flight number set to -1. This additional leg is necessary for any editing/analysis of UTX flight plans, but is ignored when written back into .xml format.

However, if UTX flight plans are intended to be compiled or saved as TTools filesets, you may need to edit that closing leg to set more appropriate departure and arrival times.

- UTX flight plans do not use:
 - aircraft reference numbers
 - repeat period (week is assumed, with Sunday being "day 0")
 - A/C registration (set to "n/a")
 - activity level (set to "n/a")
 - leg altitude (set to "n/a")
 - ATC callsign (assumed to be flight number)
 - IFR/VFR control

The corresponding fields in the FP Editor are preset and disabled.

- UTX flight plans do not refer to aircraft using a numerical reference. Instead, the flight plans contains an aircraft type mnemonic and IATA airline and operator codes. Which relate to an internal UTLive database *repaints.xml*. AIFP does not access this database.

Individual aircraft are of no concern whne creating/editing UTLive flightplans.

- UTX flight plans include both UTC and local times and a country code for each airport. While AIFP could save these values, they may be of little use if flight plans are edited. Consequently, AIFP discards this data when UTX flight plans are loaded. When saved back to .xml format, local times are computed in the usual manner and country codes are derived from a new database entitled "country.txt" which identifies the standard 3-letter code for each country. There is an entry in that database for every country included in FSX/P3D stock airport data.

AIFP reports both missing country codes and UTC offsets. If a UTX flight plans includes other countries or an airport for which AIFP does not have sufficient data to compute the UTC offset, you can address the time zone issue using AIFP's Time Zone Editor. The missing country and country code can be added to *Country.txt* using a text editor such as Notepad; the file format is obvious.

- Finally, UTX flight plans include a "group number" as the final field. This number appears to be arbitrary and not used in the operation of the flight plans other than for associating related plans. AIFP also ignores that entry when loading UTX flight plans, and collects

associated UTX flight plans as legs of an AIFP flight plans. When later saved back to .xml format, all UTX flight plans that are created from legs of a given AIFP flight plan are assigned a common group number. By default, it is the number assigned to the flight plan in AIFP's Flight Plan List. However, users are given the opportunity to enter an offset which is incremented for each AIFP flight plans.