# TopSky plugin for EuroScope

*- version 2.1 -*

General Information

EuroScope | power of control

# Foreword

EuroScope, a controller client developed by Gergely Csernák for the VATSIM network, was first released for public use in September 2007. One of the biggest changes in version 3.1 was the possibility for the user community to customize the program to an even higher degree than was possible before by writing their own plugins that can be used to alter the way information is presented and even create completely new functionality into the program. This allowed creating very detailed simulations of all kinds of ATC systems without making the main program overly complex. Version 3.2 expands on these possibilities, making it possible to create even better plugins.

The TopSky plugin (a.k.a. The Plugin Formerly Known As "EUROCAT 2000 E") started out as a very small project to create a couple of customized aircraft tag items, but as more information about the real system and the possibilities with the plugin development became available, it slowly grew to include an almost complete set of tag items, tag menus, graphical elements on the radar display and some additional functionality.

Although - as its name suggests - the plugin is based on the TopSky ATM system, it is in no way affiliated with or endorsed by Thales Group. Similarities between plugin features and the real system are not entirely coincidental, but anyone planning to use the plugin as a real world training aid really should know better…

This manual is based on the reader having at least a basic understanding of ATC procedures and terminology, and being familiar with the operation of the EuroScope program itself. Refer to the EuroScope documentation for the most current information on the program's features. Because of the complexity of the plugin, some offline practice is recommended before attempting to control online traffic with it.

Have fun!

# Table of Contents

# 1   Getting started

The plugin is usually included in a package that includes a set of compatible settings files for its operation. They usually contain everything that is needed to use the plugin except complete profile files since they contain information that is system and user specific. Starting to use the plugin is then just a matter of completing the necessary profile files by editing an existing file or starting from the one contained in the package and adding the user specific data in EuroScope (open the supplied profile file in EuroScope, set all settings in the Connect dialog, Voice hardware test and setup, Sounds setup and then save the profile).

The most obvious sign of successfully loading the plugin is that the Global Menu is drawn on the top edge of the radar screen.

The plugin manual is divided into three parts. This part explains the general features of the plugin. The two other parts are the localization part that includes the features of the plugin that are setup-specific, and the Developer Guide that includes information to people interested in either developing data files for the plugin or changing some of the plugin settings.

In case the plugin wasn't part of a package, there are problems with the settings files or you want to create your own setup, refer to the Developer Guide part of the manual set. It details the settings that are required in EuroScope to use the plugin the way it is supposed to.

Some features of the plugin require data from external files to enable their functionality. None of them are mandatory for basic plugin operation but if used they must be in the same folder as the plugin itself. The file names must be exactly as specified. For more information see the Developer Guide.

There are references to A and B in many parts of this document. They refer to the two main ways the plugin can be set up. The easiest way to determine which plugin type you have set up is to check what the Global Menu looks like. Some plugin features are available only in one type, and others may work differently on the two types.

# 2 Global Menu

A: | 09:56:10  Settings  AirSpace  FlightData  ControlTools  MET  Info  Messages  [0]  [0]  Status

B: | 11:14:50  Setup  AMS  FData  Tools  MET  [0]  Info  MSG  [0]  [0]  STS  RROff/Off  M000-999  S000-999

The Global Menu is located on the top edge of the radar screen. It displays the current UTC time and contains a number of submenus which are explained below.

## 2.1 Settings / Setup menu

| | | | |
|---|---|---|---|
| - | Default Setting | | Resets all settings to their default values (keeps login callsign specific ones if they are active at the time). When clicked, a confirmation window will open, asking to confirm the reset. |
| - | Local Settings | > | Opens the Local Settings submenu |
| - | Brightness Control | > | Opens the Brightness Control Window |
| - | Sign In… | | Loads specific settings for the current login callsign. When clicked, a confirmation window will open, asking to confirm the settings change. Note that if the login callsign is changed afterwards, the settings will not change unless a Sign Out followed by a new Sign In is performed. |
| - | Sign Out… | | Clears any login callsign specific settings and resets all settings to their default values. When clicked, a confirmation window will open, asking to confirm the settings change. |
| - | Raw Video Control… | | Opens the Raw Video Control Window. Only available when Raw Video is selected on. |
| - | [] Raw Video | | Toggles on/off the display of raw video radar plots from a specified radar station. The specification is done in a data file (see the Developer Guide) and the radar selection is based on the login callsign. The raw video selection may not be available for every login callsign. |
| - | [] AMID | | Not implemented |
| - | [] Flight Leg | | Toggles on/off the automatic display of the flight leg when a track becomes assumed. The flight leg will be automatically hidden after a specified time |
| - | RR Main | > | Opens the RR Main submenu |

### 2.1.1 Local Settings submenu

This submenu allows changing some of the plugin's settings. Any changes to the settings are session-specific only, so they will be lost when exiting EuroScope.

| | | |
|---|---|---|
| - | System units | Selects the units used by the plugin for altitudes, vertical speeds, speeds and distances: |
| | | • Nautical  Nautical units (feet, ft/min, knots, nautical miles) |
| | | • Metric  Metric units (meters, m/s, km/h, kilometers) |
| - | Vertical reference | Selects the pressure reference to be used at or below the transition altitude: |
| | | • QNH  Altitude above mean sea level |

- • QFE      Height above the aerodrome elevation
(set/check it in the adjacent box)

- Equipment suffix codes      Selects whether to use or disregard the equipment suffix codes found in the flight plans. As many pilots still file incorrect equipment codes, this setting should be used with caution.

- ASSR codes      Selects whether to use plugin assigned transponder codes or codes from a fixed range

- Groundspeed      Selects whether to use pilot client reported ground speed or a plugin calculated value. Normally the reported value should be used as it is more accurate and stable, but some clients report wrong values. If that causes problems, you can try selecting the plugin calculated value instead

- Transfer confirmation      Selects when to display the Transfer Confirmation Window:
  - • On      Always when CFL is not equal to XFL
  - • NotRFL      When CFL is not equal to XFL <u>unless</u> XFL = RFL
  - • Off      Never, any CFL value is OK

- CFL menu default value      Selects the default value for the CFL menu when it is opened:
  - • XFL      The XFL value, or current CFL value with no XFL
  - • CFL      The current CFL value
  - • RFL      The RFL value

- STCA alert      Selects which aircraft display the STCA alert:
  - • All      All aircraft
  - • Own+Co      Only assumed and coordinated aircraft
  - • Own      Only assumed aircraft

- STCA alert sound      Selects which STCA alerts trigger the alert sound:
  - • All      All alerts
  - • Own+Co      Only alerts with assumed and/or coordinated aircraft involved
  - • Own      Only alerts with assumed aircraft involved

- METAR source      Selects the METAR data source for the plugin windows that display METAR data

## 2.1.2 RR Main submenu

- [] Rings On/Off      Toggles the range rings on/off
- Point      Sets the rings centerpoint. Either click on the radar screen or enter the desired point in the text field. Fixes, VORs, NDBs and airports from the active sector file can be used as well as coordinates in the flight plan format (DD[N/S]DDD[E/W] or DDMM[N/S]DDDMM[E/W], e.g. 60N025E or 0811S00300W). Entering an empty text string resets the rings to be shown at the radar screen centerpoint.
- Separation      Sets the separation between adjacent rings
- Number      Sets the number of rings drawn
- [] Highlight      Toggles highlight (drawn with solid line) of specified rings
- Step      Sets interval of highlighted rings

## 2.2   AirSpace / AMS menu
- TSA…                          Opens the TSA Areas Window

## 2.3   FlightData / FData menu
- Flight Plan Selection…        Opens the Flight Plan Selection Window
- Flight Plan Window…           Opens the Flight Plan Window

## 2.4   ControlTools / Tools menu
- Flight Plan Lists >           Opens the Flight Plan Lists submenu
- CARD…                         Opens the Conflict And Risk Display
- SAP…                          Opens the Segregated Area Probe Window
- Vertical Aid Window…          Opens the Vertical Aid Window
- Message In…                   Opens the Message In Window
- Message Out…                  Opens the Message Out Window
- LAT/LONG…                     Opens the Cursor Lat/Long Window

### 2.4.1   Flight Plan Lists submenu
- Lost List…                    Opens the Lost List

## 2.5   MET menu
- Messages…                     Opens the Weather Messages Window
- QNH/TL…                       Opens the QNH/TL Window

## 2.6   [x] (number in square brackets)
Only available in B . Not implemented (always shows a zero value).

## 2.7   Info menu
- General Information…          Opens the General Information Window
- NOTAM…                        Opens the NOTAM List Window
- Aerodrome…                    Opens the Aerodrome Window
- [] Airport labels             Toggles airport labels selection
- [] Fix labels                 Toggles fix labels selection
- [] NDB labels                 Toggles NDB labels selection
- [] VOR labels                 Toggles VOR labels selection

By selecting one or more of the labels on, it is possible to find information on points displayed on the radar screen when the mouse cursor is placed over them. The "Label" buttons open submenus to select what information is shown on the corresponding labels. By default the airports show the ICAO code, the airport name and the runway identifiers (other selectable items are the frequency and coordinates). Fixes show the name (also coordinates can be shown) and NDBs and VORs show the identifier and the frequency (also coordinates can be shown). All information is gathered from the active sector file. The "Info" menu item has its background shown in "Global Menu Highlight" color whenever at least one of the label options is selected on.

## 2.8   Messages / MSG menu

- Notepad…                          Opens a new Notepad Window for text entry
- Personal Queue…                   Opens the Personal Queue Window
- ATC Messages…                     Opens the ATC Messages Window
- Text notes >                      Opens the Text notes submenu

### 2.8.1   Text notes submenu

- Create…                           Creates a new text note
- Delete…                           Deletes a single text note
- Delete all                        Deletes all text notes

It is possible to insert text notes on the radar screen to act as reminders. They will stay fixed at the geographical coordinates they are inserted to, the coordinates defining the center point of the note.

When creating a note, a text entry field opens to enter the note text. When the **[Enter]** key is pressed, the note will be created at the current mouse cursor position.

The notes can be deleted one by one or all of them at the same time. When deleting one by one, the notes are boxed to display their click areas. Clicking on one will delete the note. Pressing the **[Esc]** key or selecting the "Delete…" menu item again will abort the operation.

## 2.9   [x] (number in square brackets)

Shows the number of high priority messages in the personal message queue. These are critical failures in the plugin code. Open the Personal Queue Window to view the messages. The number is limited to 99, and is shown on "Global Menu Highlight" background when the window is not open.

## 2.10 [x] (number in square brackets)

Shows the number of low priority messages in the personal message queue. These are warnings about invalid data in the plugin data files. Open the Personal Queue Window to view the messages or see the Plugin Status submenu for more detailed information on the problem(s). The number is limited to 99, and is shown on "Global Menu Highlight" background when the window is not open.

## 2.11 Status / STS menu

- Plugin Status >                   Opens the Plugin Status submenu
- Safety Nets Status…               Opens the Safety Nets Status Window
- Divergence Detection Status…      Opens the Divergence Detection Status Window
- MTCD Status…                      Opens the MTCD Status Window
- Runway In Use                     Opens the Aerodrome menu
                                    (which opens the Runway In Use Window)
- Supervisory >                     Opens the Supervisory submenu
- RWY line display…                 Opens the Aerodrome menu
                                    (which opens the Runway Approach Line Window)

### 2.11.1 Plugin Status submenu

Shows the version of the plugin as well as some information on the loaded data files. Each data file reports its state with one of the following indicators:

- OK                    File contains usable information and no faults
- NO DATA               File not found or contains no usable information
- BAD DATA              File contains invalid data (in "Warning" color)

For development purposes, left-clicking on the "Reload" button reloads the corresponding data file, and left-clicking on the "View" button displays all the areas in the corresponding data file. In case of "BAD DATA", the first faulty line in the file is shown on the right side of the buttons with the line number (not available for all data files) and a brief explanation of the problem.

### 2.11.2 Supervisory submenu

- Operations Rate…      Opens a new Operations Rate Window
- Predicted Traffic…    Opens a new Predicted Traffic Window

## 2.12 RRxxx/Off

Only available in B . Opens the Range Rings menu (see RR Main submenu). If the rings are selected on, "xxx" displays the distance between consecutive rings, otherwise "Off".

## 2.13 Mxxx-yyy

Only available in B . Opens the Altitude Filtering Window. If altitude filters are enabled, the color of the text is "Global Menu Highlight". "xxx" displays the Lower filter value and "yyy" the Upper filter value, in 100's of feet.

## 2.14 S000-999

Only available in B . Not implemented (shows static values).

# 3   Track label menus

These menus are opened from track label fields or flight lists. Except for the confirmation windows, they are closed automatically when a menu option is chosen or the mouse cursor leaves the menu area. Menu items shown with (X) represent an item that has an activated and a deactivated state. With the item activated, the item name is shown prefixed with the letter "X". The mouse wheel can be used to scroll the selection lists in the menus.

Many of the menus have a default item or value, displayed with inverse video. The menu usually opens so that the default value is located under the mouse cursor for easy selection. Some menus contain items that open folders within the menu. They show a filled triangle before the item name (upright if the folder is closed, inverted if the folder is open). The "**More**" folder is opened automatically when the mouse cursor is placed over it or if the default item is in the "**More**" folder, other folders must be left-clicked to open.

## 3.1   Callsign menu

A :

| | ASE063 |
| | Callsign |
| | Assume |
| | **Transfer** |
| | Trf & Release |
| | Freq |
| | ROF |
| | Free |
| ▼ | More |
| | HOP |
| | Highlight |
| | Mark |
| | Missed App |
| | FPL... |
| | XCorrelate |
| | Hold |
| | Manual Transfer |
| | PRL |
| | Inbound Est |
| | Irregular |

- Assume          Assumes track
- Refuse          Refuses the incoming transfer
- Transfer        Initiates a transfer to the next sector
- Trf & Release   Opens the Transfer & Release menu
- (X)Freq         Toggles the Freq indicator
- ROF             Sends a Request On Frequency message
- Free            Releases track
- Δ More          Shows additional less frequently used options (see below)


- HOP               Initiates a Handover Proposal
- (X)Highlight      Toggles the Callsign field highlight
- (X)Mark           Toggles the Mark indicator
- (X)Missed App     Toggles the "Missed App" manual alert
- FPL…              Opens the Flight Plan Window
- (X)Correlate      Uncorrelates/correlates the flight plan
- (X)Hold           "Hold" opens the Hold menu,
                    "XHold" cancels a given holding clearance
- Manual Transfer   Opens the Manual Transfer menu
- PRL               Opens the Prediction Line menu
- (X)Inbound Est    Toggles the "Inbound Est" manual alert
- (X)Irregular      Toggles the "Irregular" manual alert

B :

| | | |
|---|---|---|
| - | Assume | Assumes track |
| - | Refuse | Refuses the incoming transfer |
| - | Transfer | Initiates a transfer to the next sector |
| - | Trf & Release | Opens the Transfer & Release menu |
| - | ROF | Sends a Request On Frequency message |
| - | (X)Freq | Toggles the Freq indicator |
| - | (X)Highlight | Toggles the Callsign highlight |
| - | (X)S-Highlight | Toggles the Callsign+AFL fields highlight |
| - | PRL | Opens the Prediction Line menu |
| - | (X)Hold | "Hold" opens the Hold menu, |
| | | "XHold" cancels a given holding clearance |
| - | Δ More | Shows additional less frequently used options (see below) |
| - | Manual Transfer | Opens the Manual Transfer menu |
| - | (X)Inbound Est | Toggles the "Inbound Est" manual alert |
| - | HOP | Initiates a Handover Proposal |
| - | (X)Mark | Toggles the Mark indicator |
| - | (X)Couple | Uncorrelates/correlates the flight plan |
| - | FPL… | Opens the Flight Plan Window |
| - | (X)Irregular | Toggles the "Irregular" manual alert |
| - | Free | Releases track |
| - | (X)Missed App | Toggles the "Missed App" manual alert |

Besides the manual alerts, none of the selectable toggle options in this menu will be transmitted to other controllers, but the "**Mark**" and "**Freq**" selections will be seen in your other EuroScope instances. A holding clearance is transmitted to the next controller when transferring the track. To correlate a flight plan, first click on the "**Correlate**" item, and then click on the radar position symbol of the desired radar track.

### 3.1.1   Transfer Confirmation Window
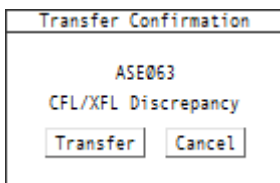
If an aircraft has a defined XFL value and hasn't been cleared to it (i.e. CFL is not equal to XFL), attempting to transfer the aircraft will open a Transfer Confirmation Window in the middle of the radar screen. While the window is open it will block all other attempts to click on items elsewhere on the radar screen. Either click on "**Transfer**" to transfer the aircraft regardless of the situation, or "**Cancel**" to cancel the transfer.

### 3.1.2 Transfer & Release menu

```
   ASE063
Trf & release
    Climb
   Descent
    Turn
    Full
```
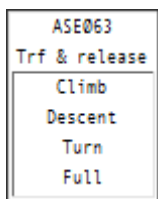
The Transfer & Release menu allows specifying a release condition for a track to be transferred. The transfer is initiated after selecting the desired condition (climb, descent, turn or full). The release will be shown on line 0 of the track label (**C** for climb, **D** for descent, **T** for turn and **F** for full). The transferring controller will see the label item until the track becomes unconcerned. The receiving controller will see the item for 3 minutes after the track is assumed.

**Warning:** The "Trf & Release" option will show the release condition on the downstream side only if the next controller is using this plugin, in other cases the transfer will be shown as a normal transfer.
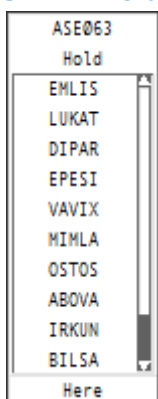
### 3.1.3 Request On Frequency message

The ROF message can be used to send a request to the controller currently tracking an aircraft to transfer it to your frequency. For the message to succeed, you must be seen as the next controller for the tracking controller. When sent, the text "ROF" is displayed in the track label on the tracking controller's screen.

**Warning:** The "ROF" message is a feature specific to this plugin. It is an experimental feature and is not guaranteed to work all the time. When you send the message, check that it's sent properly.

- A successfully sent message will be displayed in the Message Out Window
- If there is an error or the message fails to go through, a message will be put into the Personal Queue Window.

### 3.1.4 Hold menu

```
  ASE063
   Hold
  EMLIS
  LUKAT
  DIPAR
  EPESI
  VAVIX
  MIMLA
  OSTOS
  ABOVA
  IRKUN
  BILSA
   Here
```

The Hold menu allows you to enter a holding clearance (add the aircraft to the holding list). It displays for selection the points in the aircraft's route that are ahead of its current position. Left-clicking "**Here**" enters the present position coordinates as the holding point, right-clicking opens a text entry box to enter any holding point name. The holding point is automatically sent to your other EuroScope instances with a small delay and can be sent to other controllers by pushing the flight strip as the information is stored there.

### 3.1.5    Manual Transfer menu
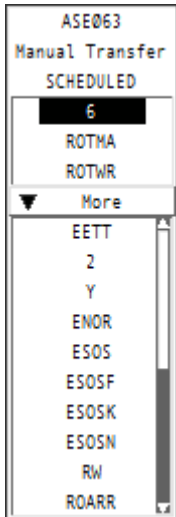


The Manual Transfer menu allows transferring the aircraft to any controller. In the SCHEDULED list are the controllers that are in the current sector sequence sorted in the order the aircraft is planned to enter the controllers' sectors, with the next controller being the default item. When opened, the "More" list displays all the other controllers for selection. Click on a controller ID to start the transfer.

### 3.1.6    Prediction Line menu
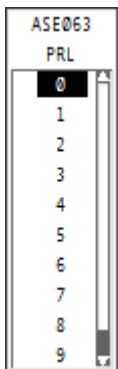


The Prediction Line menu allows displaying a PRL with a specific length for each aircraft even if the PRL selection is off in the Radar Menu. The default value is the set PRL value if available, otherwise the PRL length value from the Track Control Window. Changing the PRL length value in the Track Control Window or changing the PRL setting in the Radar Menu will delete all manually set PRL lengths.

## 3.2 Sequence number menu



This menu is used to set an arrival sequence number. Values from 1 to 50 are available. The sequence number will not be transmitted to other controllers except the next controller (during transfer) unless the flight strip is manually sent.

## 3.3 Waypoint menu

 - Δ Routing      Opens the "COPN point" or "COPX point" submenu (EuroScope default item)

- Δ Arrival      Opens the "Assign STAR" submenu (EuroScope default item)

- Δ Departure   Opens the "Assign SID" submenu (EuroScope default item)

- Δ TSA Hold     Opens the TSA Hold submenu (not available if a holding clearance is active)

- Δ Hold         Opens the Hold submenu (not available if a TSA holding clearance is active)

This menu gives access to functions related to the route of the aircraft. It is used to assign direct-to clearances, departure and arrival routes, holding clearances, and to coordinate the sector exit point.

### 3.3.1 TSA Hold submenu

The TSA Hold submenu allows you to enter a clearance to enter an active military area. It displays the active and preactive TSA type areas. If a clearance already exists, the menu will only give the option to remove it with the "**XHold**" item. The clearance is automatically sent to your other EuroScope instances with a small delay and can be sent to other controllers by pushing the flight strip as the information is stored there. A clearance given here will exclude the aircraft from all APW and SAP processing.

### 3.3.2 Hold submenu

If a holding clearance already exists, the menu will only give the option to remove it with the "**XHold**" item. See "Hold menu" for other details.

## 3.4 AFL menu
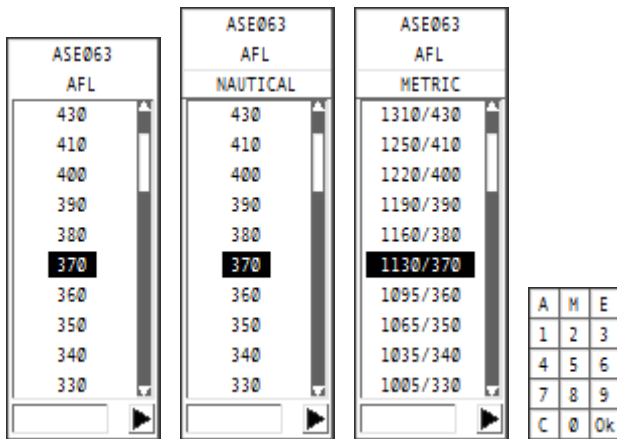


This menu can be used to set the AFL value for aircraft that don't have an altitude reporting transponder. The default value is the previously set manual AFL value if set, otherwise the CFL value.

By default the menu (as well as the AFL label item) is always showing nautical units, regardless of the system units or the selected units for the aircraft. If this behavior is selected off, the list units can be toggled with the "**NAUTICAL**" / "**METRIC**" item. There are three ways to set the AFL using this menu:

- Clicking a level value in the list
- Clicking the text entry box below the level list and entering the value there
- Clicking the right-pointing triangle to open a keyboard that can be used to type in the value using the mouse. "**C**" clears the entry and "**Ok**" sets the value.

Entering a metric value will also set the aircraft's units to metric; a nautical value will set nautical units.

**Note:** All altitude related menus in this document show the menu for A . The only difference in B is that the metric level values are shown with 5 digits ( A displays metric levels in meters/10, B in meters). The same difference exists everywhere where metric levels are displayed. Likewise, entering metric levels in A must be done in meters/10 (4 digits) and in B in meters (5 digits).

## 3.5 CFL menu

| ASE063 | ASE063 | | | |
|---|---|---|---|---|
| CFL | CFL | | | |
| NAUTICAL | METRIC | | | |
| 430 | 1310/430 | | | |
| 410 | 1250/410 | | | |
| 400 | 1220/400 | | | |
| 390 | 1190/390 | | | |
| 380 | 1160/380 | | | |
| **370** | **1130/370** | A | M | E |
| 360 | 1095/360 | 1 | 2 | 3 |
| 350 | 1065/350 | 4 | 5 | 6 |
| 340 | 1035/340 | 7 | 8 | 9 |
| 330 | 1005/330 | C | 0 | Ok |
| ▶ | ▶ | | | |
| Visual App | Visual App | | | |
| Clear for App | Clear for App | | | |

In the track label the CFL menu is combined with the COPN altitude coordination menu and the CFL menu opens only when the aircraft is assumed. The default value is by default the XFL, but it can be changed to the current CFL or the RFL in the Local Settings menu. Altitudes up to the transition altitude are prefixed with "A" in the nautical units list and with "M" in the metric units list. QFE heights are prefixed with "E" in both lists. Selectable values are from 500ft to FL510 with 500ft intervals up to the transition altitude, then 1000ft intervals up to FL410 and 2000ft intervals above it.

"**Visual App**" / "**VA**" and "**Clear for App**" / "**CA**" set the corresponding approach clearances.

The list units can be toggled with the "**NAUTICAL**" / "**METRIC**" item. There are three ways to set the CFL using this menu:

- Clicking a level value in the list or one of the two approach clearance items
- Clicking the text entry box between the level list and the approach clearance items and entering the value there
- Clicking the right-pointing triangle to open a keyboard that can be used to type in the value using the mouse. "**C**" clears the entry and "**Ok**" sets the value.
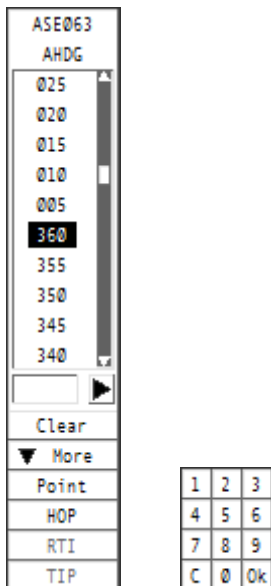
Entering a metric value will set the aircraft's units to metric; a nautical value will set nautical units.

## 3.6 RFL menu
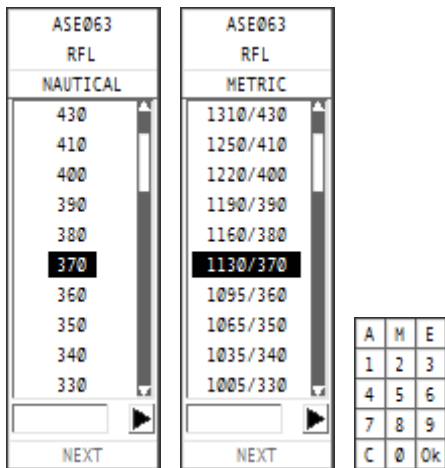


The RFL menu allows setting the requested flight level. The operation is similar to the AFL and CFL menus.

## 3.7 AHDG menu



This menu includes items to set or clear an assigned heading or a direct route and to send a HOP. The initially highlighted heading value will be the closest one to the assigned heading if the aircraft has one, otherwise the closest one to the aircraft ground track. Clicking on a heading value will set it as the assigned heading. The assigned heading can also be set by typing it into the entry box, using the pop-up keyboard or by using the AHDG vector.

"**Clear**" removes an assigned heading or a direct route.

"**Point**" lets you pick a direct-to point from the radar screen. Left-click on any point to set it as the direct-to point (available points are VORs, NDBs and waypoints, in that priority order). Pressing the **[Esc]** key or clicking on any clickable data field will abort the operation.

"**HOP**", "**RTI**" and "**TIP**" are coordination functions (see below for more information). To use them, first click on the function's button and then select the desired value from the list (for HOP also "Point" is available).

### 3.7.1 Handover Proposal (HOP)

A Handover Proposal can be used to propose non-standard transfer parameters (AHDG/Direct-to and ASP) to the next sector. For the receiving controller a HOP is identified by coloring the callsign data field with "Proposition" color in the label. For the sending controller the Callsign field remains "Assumed" color and the Sector Indicator field is shown in "Proposition" color. Additionally, if there are proposed parameters they are also colored "Proposition" in both controllers' labels.

There are three ways to answer a HOP and all of them involve accepting all proposed parameters. If one or more parameters are not acceptable, coordination must be done to find acceptable parameters or to revert to standard ones. The available ways to accept the proposed parameters are:

- Callsign menu -> "Assume"                    Assumes the track
- Callsign menu -> "ROF"                        Sends a Request On Frequency message
- Combined Transfer menu -> "Accept"           Sends an Accept message

If the parameters are unacceptable to the receiving controller, the sending controller has the possibility to modify or clear them using the appropriate menus, or to cancel the whole HOP by assuming the track.

**Warning:** A HOP will only be shown correctly for controllers using this plugin. To other controllers it will be shown as a normal transfer without any special coloring of any data fields. This combined with the three possible ways to answer the HOP require the sending controller to pay special attention to the track to see what the result is.

**Warning:** If a HOP is sent to a manually selected controller, the next controller selection will be reset to the automatically calculated controller when an "ROF" or "Accept" answer is received. The correct controller must then be manually selected again for the transfer.

### 3.7.2 Request Tactical Instructions (RTI) / Tactical Instructions Proposal (TIP)

Certain tactical data (AHDG, ASP and ARC) can be coordinated using the RTI and TIP functions. Their only difference is that RTI is used for requesting the parameters when the aircraft is inbound to your sector and your sector is the next in the sector sequence, and TIP for propose the parameters to the next sector when the aircraft is assumed. Contrary to the HOP function, these coordinations can be refused using the system, and they do not offer the aircraft for transfer.

When sent, the RTI/TIP is displayed on both controllers' screens by displaying the requested parameter on line 0 of the track label in "Proposition" color.

To answer the RTI/TIP, left-click on the requested parameter shown above the track label or the corresponding message in the Message In Window. This will open the Tactical Transfer Menu.

**Warning:** The "RTI" and "TIP" messages are features specific to this plugin. They are experimental features not guaranteed to work all the time. When you send these messages, check that they are sent properly.

- A successfully sent message will be displayed in the Message Out Window and the requested parameter being shown above the track label
- If there is an error or the message fails to go through, a message will be put into the Personal Queue Window.

### 3.7.3 AHDG vector

The AHDG vector is another way of setting an assigned heading for an aircraft. To use the vector, left-click on the radar position symbol of the aircraft. This will start drawing the vector. When you're satisfied with the heading value, left-click again to set it. Right-clicking will abort drawing the vector. When the cursor is over a known point (VOR, NDB or waypoint), the name of that point is displayed instead of the heading value, and left-clicking will set a direct-to clearance to that point. To temporarily disable the known points functionality, keep the <ALT> key pressed while using the vector.

## 3.8   ARC menu



The ARC menu allows assigning a rate of climb or descent to the flight plan. Selectable rates are 500-5000 ft/min (displayed in 100's of ft/min), or 5-25 m/s. The menu units are always the same as the units used for the aircraft in general. Left-clicking on a value assigns it. An assigned rate can be cleared by selecting the "**Resume**" item. By default the "**+**" option is selected, meaning that the clearance is a minimum rate of climb or descent. Deselecting the "**+**" makes the clearance an exact rate, and selecting the "**-**" option makes the clearance a maximum rate.

For "**RTI**" and "**TIP**" see the AHDG menu.

Warning: The exact and maximum rate clearances are a feature specific to this plugin (the additional information is stored in the flight strip). To controllers not using the plugin, all assigned rate clearances will only show the rate value. Assigned rate clearances given by controllers not using the plugin will be displayed as minimum rate clearances.

## 3.9 ASP menu
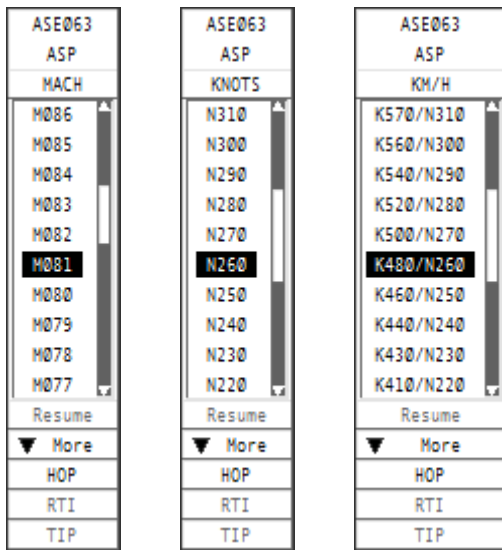


The ASP menu allows setting an assigned speed or Mach number. The default value will be the closest value to the assigned one if set, otherwise the plugin will suggest the closest value to the aircraft's present speed based on the ground speed (zero wind will be assumed). The menu will initially open in IAS mode if the aircraft's CFL is below the IAS/Mach altitude value defined in the Local Settings (FL275 by default), and in Mach mode if above it. The selectable values range from 100 to 400 knots and from Ma0.50 to Ma1.00. The "**Resume**" item clears an assigned value.

In B the "Resume" button is replaced by a "**HS**" button. Clicking it will set a clearance for "high speed", displayed as "HS" in the ASP label field. In this plugin version a speed assignment is cleared by a mouse click on the label (usually right-click on the ASP field, see track label definition in the plugin's local setup documentation for details). In other setups a "high speed" clearance will show a value of 999 knots.

Entering a metric value will set the aircraft's units to metric; a nautical value will set nautical units.

For "**HOP**", "**RTI**" and "**TIP**" see the AHDG menu.

## 3.10 ASSR menu
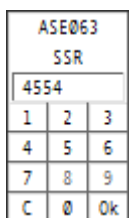


The ASSR menu allows assigning a SSR code to the flight plan. To enter a new code, type it by left-clicking the numbers. "**C**" clears the entered value and "**Ok**" assigns the code if it's a valid one. To get an automatically assigned code, clear the value and then left-click on "**Ok**" with the entry box left empty.

**Note:** Auto-assigning an SSR code using this menu overrides any code ranges defined in the ESE file and uses plugin defined codes instead.

## 3.11 Combined Transfer menu



The Combined Transfer menu displays the proposed transfer parameters for a HOP. It is opened by clicking on the AHDG, ASP or COPN/COPX items in the track label or flight list, or the list row displaying the HOP message in the Message In Window. From top to bottom, the displayed values are the direct-to point, speed/mach value, and the assigned heading value. If one or more of them are not proposed, the value will be replaced by the string "none" (the image above shows the menu for a HOP without any proposed parameters). Clicking on "**Accept**" will send a message to the upstream controller that the proposed parameters, if any, are all acceptable.

## 3.12 Tactical Transfer menu



The Tactical Transfer menu is used to accept, reject or apply tactical data (AHDG, ASP and/or ARC). It is opened by left-clicking on a proposed or accepted parameter in the track label. The menu displays all proposed ("Proposition" color) and accepted (sector state color) values.

Clicking on "**Accept**" will accept all proposed values and "**Reject**" will reject them. Clicking on "**Apply**" will apply all values (both accepted and proposed). The menu is closed after clicking any of the buttons.

Note that the menu displays both sent and received coordinations, but you can naturally only accept/reject the received ones and apply values for aircraft that are assumed.

Once a value is accepted, the respective label field (e.g. AHDG) will be colored "Information" until the value is set to the accepted one (either by opening this menu and clicking "Apply" or setting the value in some other way).

All tactical data coordinations (also any rejected ones) can be viewed in the Tactical Info Window, but they cannot be answered or applied there.

## 3.13 Aerodrome menu

The Aerodrome menu is used to select the aerodrome(s) for aerodrome related windows and functions. The list contains all aerodromes with runways defined in the active sector file. To select an aerodrome, left-click on it or type its identifier into the text entry box below the list.

Selection of more than one aerodrome is possible when the menu was opened from the Weather Messages Window. In this case the "**All**" button is available and clicking on it will select all the aerodromes in the list.

Clicking on "**Ok**" will confirm the selection(s) and close the menu.

# 4 Windows

The plugin includes a number of windows that are discussed in this chapter. All windows have the following common features:

- Dragging the title bar using the left mouse button will move the window
- Dragging the box in the bottom right corner with the left mouse button will resize the window
- Left-clicking the top right corner will close the window
- Left-clicking the title bar will position the window on the top of other windows
- Right-clicking the title bar will position the window below other windows

While resizing the windows always starts from the bottom right corner, it is also possible to resize the window to the direction of the top and/or left edges. To do this, continue dragging the bottom right corner until the cursor goes past the top or left edge. As all windows have a defined minimum size, nothing will seem to happen once you reach the minimum size until the cursor crosses the opposite edge, but then the resize operation will continue normally.

Some windows contain scrollbars to select values or change the items that are displayed:

- Dragging a scroll bar slider using the left mouse button will move the slider
- Left-clicking on the scrollbar background area outside the slider will move the slider by a predefined amount (in list windows, the view will be scrolled by the number of visible items)
- Right-clicking on the scrollbar background area outside the slider will position the slider to the clicked position
- Left-clicking on the arrow at the end of the slider will scroll the list by one line
- The mouse wheel can be used to scroll some scrollbars (most of the ones that have defined steps for scrolling, i.e. those with the arrows at the ends)

Other window-specific mouse function areas are explained below. All functions use the left mouse button unless otherwise specified. For each window, the way(s) to open it are listed below the chapter title.

## 4.1  Radar Menu

<ALT> + Right-click anywhere on the radar screen background

A :

| | |
|---|---|
| **Radar Menu** | |
| View... | |
| Range 155 | |
| Maps... | |
| QDM | |
| XQDM | |
| ☐ Range Marker | |
| Track Control... | |
| ■ PRL On/Off | |
| Altitude Filtering... | |
| CJI Filtering... | |
| SSR Code Filtering... | |
| ☐ Quick Look | |
| ☐ SEP On/Off | |

- View…                   Opens the View Window
- Range XXX           Opens the Zoom Window (XXX = distance: center -> right edge)
- Maps…                  Opens the Maps Window
- QDM                     Draws a QDM vector on the radar screen
- XQDM                   Deletes all QDM vectors
- [] Range Marker    Toggles the Range Marker on/off
- Track Control…     Opens the Track Control Window
- [] PRL On/Off        Toggles all prediction lines on/off
- Altitude Filtering…  Opens the Altitude Filtering Window
- CJI Filtering…         Opens the CJI Filtering Window
- SSR Filtering…        Opens the SSR Code Filtering Window
- [] Quick Look          Toggles function to bypass all filters and show all track labels
- [] SEP On/Off          Toggles the minimum separation lines

B :

| | |
|---|---|
| ☐ Radar Menu | |
| ■ Vector On/Off | |
| QDM | |
| XQDM | |
| ☐ Quick Look | |
| Maps... | |
| Track Control... | |
| View... | |
| Range 611 | |
| Altitude Filter OFF... | |
| SSR Filter OFF... | |
| CJI Filter OFF... | |
| LAT/LONG... | |
| SEP | |
| ☐ Scale Marker | |

- [] Radar Menu        Toggles keeping the menu permanently displayed
- [] Vector On/Off     Toggles all prediction lines on/off
- QDM                      Draws a QDM vector on the radar screen
- XQDM                    Deletes all QDM vectors
- [] Quick Look          Toggles function to bypass all filters and show all track labels
- Maps…                   Opens the Maps Window
- Track Control…       Opens the Track Control Window
- View…                    Opens the View Window
- Range XXX             Opens the Zoom Window (XXX = distance: center -> right edge)
- Altitude Filter…      Opens the Altitude Filtering Window, displays the filter status
- SSR Filter…             Opens the SSR Code Filtering Window, displays the filter status
- CJI Filter…              Opens the CJI Filtering Window, displays the filter status
- LAT/LONG…            Opens the Cursor Lat/Long Window
- SEP                         Draws minimum separation lines on the radar screen
- [] Scale Marker       Toggles the Scale Marker on/off

The Radar Menu closes when a selection is made or the mouse cursor leaves the menu area (unless the "Radar Menu" option is selected on).

For all the filters, it is only possible to filter out unconcerned tracks. Aircraft with transponder codes 7500, 7600 and 7700 and tracks with an active STCA alert are also excluded from filtering. If a filter is active, the filter title in the Radar Menu will be shown in "Selected" color.

### 4.1.1 QDM vector

To draw a new QDM vector:

- Left-click on the "QDM" menu item
- Left-click on the desired start point (radar track position symbol or fixed position)
- Left-click on the desired end point (radar track position symbol or fixed position)

The vector's data label is located at the end of the line.

The line end positions will attach to defined points more easily than for a random position (there is a small click area centered on the defined points). The defined points are the following, and are searched in this order:

- Radar track position symbols
- VORs in the active sector file
- NDBs in the active sector file
- Fixes in the active sector file
- Airports in the active sector file

The search order cannot be changed, but if necessary, all types except the position symbols can be excluded from the search (their click areas are then deactivated) in the Local Settings.

Right-clicking will abort drawing the vector.


To remove a QDM vector:

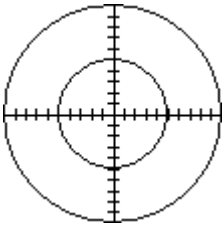- Right-click on either end point of the line


To adjust a QDM vector:

- Left-click on either end point. The selected end of the line will then attach to the mouse cursor.
- Left-click on the new desired end point (radar track position symbol or fixed position)

### 4.1.2 Range Marker

(Only available in A )

Radar Menu -> [] Range Marker

The Range Marker displays 5 and 10 nm radius circles around a selected point. In addition there are horizontal and vertical lines centered on the point and intermediate lines at 1nm intervals along the lines.

The marker will be initially drawn at the center of the radar screen.

To move the Range Marker:

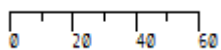- Drag the marker's center point with the left mouse button

To remove the Range Marker:

- Left-click on the "Range Marker" item in the Radar Menu
  **or**
- Right-click on the marker's center point

### 4.1.3 Scale Marker

(Only available in B )

Radar Menu -> [] Scale Marker

Displays a range scale in the bottom right corner of the radar screen.

### 4.1.4 Minimum separation lines

The minimum separation lines display the predicted minimum lateral separation between two radar tracks within the next 30 minutes, assuming both of them maintain their present ground tracks and speeds. Lines are drawn from the tracks' present positions to the positions where the tracks are predicted to be at the time of the minimum separation.

A :

To draw minimum separation lines between two radar tracks:

- Left-click on the "SEP On/Off" menu item
- Left-click on the first radar track position symbol
- Left-click on the second radar track position symbol

If the tracks are not converging, the lines will not be drawn and an error message will be displayed. Right-clicking will abort drawing the lines.

The minimum separation distance and the remaining time in minutes to the point of minimum separation are by default displayed near the end of one of those lines.

Only one pair of tracks can display the lines at a time, so to draw them on another pair, the existing one must first be removed.

To remove the minimum separation lines:

- Left-click on the "SEP On/Off" menu item
  **or**
- Right-click on either line's end point

The lines will be automatically removed if one of the tracks is no longer available or the tracks are no longer converging.

B :

To draw minimum separation lines between two radar tracks:

- Left-click on the "SEP" menu item
- Left-click on the first radar track position symbol
- Left-click on the second radar track position symbol

If the tracks are not converging, the lines will not be drawn and an error message will be displayed. Right-clicking will abort drawing the lines.

The minimum separation distance is by default displayed near the end of one of those lines.

Three sets of lines can be simultaneously drawn (plus one from the CARD). When at least one set is drawn, a SEP List Window is opened:
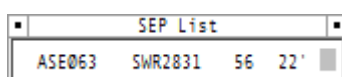
The window lists the tracks, the minimum predicted separation, the time to the minimum separation and the line color for each set of lines.

To remove the minimum separation lines:

- Left-click  on the colored box for that set of lines in the SEP List Window

    **or**

- Right-click on a line's end point

    **or**

- Close the SEP List Window (this removes all minimum separation lines)

The lines will be automatically removed if one of the tracks is no longer available or the tracks are no longer converging.

## 4.2   View Window

Radar Menu -> View…
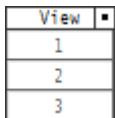
| View | ▪ |
|------|---|
| 1 | |
| 2 | |
| 3 | |

The View Window lists the available views. To select a view, left-click on it. The radar screen will be refreshed to show the required area. The first three views, labeled "1", "2" and "3" are views that can be defined on the fly. To define a view for one of them, set the screen area as desired and then right-click on the number. The number will then change to "Foreground" color to indicate that it has a view defined for it. An already defined view ("1", "2" or "3") can be redefined to show a different screen area just by defining it again with a right-click.

## 4.3   Zoom Window

Radar Menu -> Range XXX
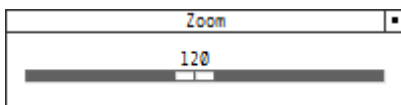
| Zoom | ▪ |
|------|---|
| 120 | |

The Zoom Window displays and enables to change the radar screen range. The display is limited to setting range values from 10 to 250 nautical miles.

## 4.4 Maps Window

Radar Menu -> Maps…

| Maps |
|---|
| TSA |
| ARTCC HIGH |
| ARTCC |
| ARTCC LOW |
| GEO |
| SID |
| STAR |
| FREE TEXT |

The Maps Window closes when the mouse cursor leaves the window area. If this is not desired, there is a hidden click spot in the top right corner of the menu (where the "close" button would be). Left-clicking in that area will disable the automatic closure of the menu and display the close button, which is then used to close the menu.

The Maps Window enables to display predefined maps on the radar screen. The maps are arranged to folders. Clicking on a folder name shows the maps in that folder below all the folders. Left-clicking on a map name will display the map; right-clicking will remove it from display. A map that is displayed on the radar screen will have a black background in the window. Left-double-clicking on any map name will display (right-double-clicking will remove from display) all maps in the current folder.

The "AD_Hotspots" map in the "Aerodromes" folder is an automatically created map that contains aerodrome symbols that are used to open the Runway In Use Window and Runway Approach Line Window.

The "AIRPORTS", "FIXES", "NDBS" and "VORS" maps (and their "+ L" counterparts) in the "MISC" folder are automatically generated maps that contain the corresponding items with and without text labels from the active sector file. In A all the items are "Map 2" color, in B the airports and NDBs are "Map 1", VORs and Fixes "Map 3", and all labels "Map 1". Depending on the sector file setup, there can also be one or more maps named "FIXES GRP" (where "GRP" is a group name given in the sector file). These are actually NDBs or VORs in the sector file. To create such a group, put a fake navaid with the name "!GRP!" in the sector file, where "GRP" is the desired group name. All following navaids of that type will be put in the "FIXES GRP" map. The same group name can only be used once in a sector file. The items in these maps will look like the items in the "NDBS" or "VORS" maps, depending on which section the items are placed in the sector file.

In addition to plugin defined maps, the window can be used to toggle the visibility of some elements from the active sector file. These are ARTCC HIGH, ARTCC, ARTCC LOW, AIRWAYS H, AIRWAYS L and GEO. The elements from the sector file will unfortunately not show the black background when active. The names of these elements will be shown in grey letters to serve as reminders that their display status isn't known by the plugin.

The "AIRWAYS L" and "AIRWAYS H" folders present the airways organized into groups. The default group is "PERM". An airway can be assigned to a custom named group by having the group name in parentheses in the airway name. Airways with "[1]", "[2]" or "[3]" found in their names will be assigned to groups "CDR 1", "CDR 2" and "CDR 3" respectively. Custom group names and the CDR numbers can be combined, for example airway segments named "A1(GRP)[1]" and "A2(GRP)[1]" in the sector file would be labeled "GRP

CDR 1" in the maps list. Additionally, one map with the group's name is created that contains all airways in the group regardless of the PERM or CDR status.

The plugin data files may include additional data to the abovementioned sector file. If present, the data is activated and deactivated together with the sector file item when done via the Maps Window.

## 4.5 Track Control Window

Radar Menu -> Track Control…

The Track Control Window is used to set track and track label related options. Note that the PRL/Vector selection must be on in the Radar Menu to see the prediction lines, and selecting a value above 3 for the Text size will make the label lines overlap as the line spacing isn't adjusted with the font size. The Track Control Window closes when the mouse cursor leaves the window area.
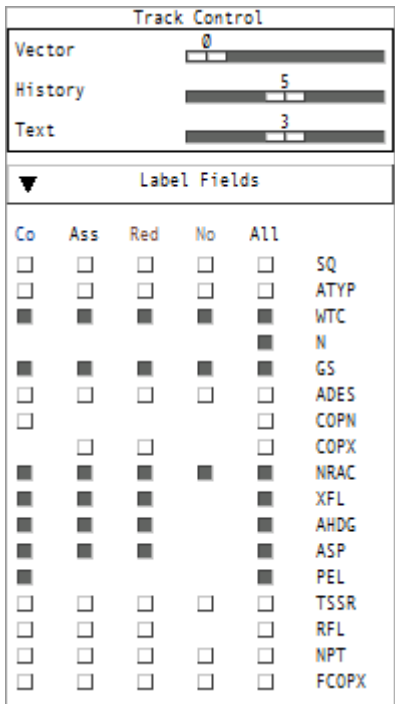
A :
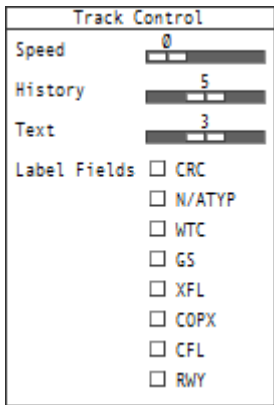


- Speed          Sets the length of the prediction line in minutes
- History        Sets the number of history dots
- Text           Changes the track label text size

The visibility in the unselected label of certain track label fields can be set here. The CFL and XFL items prevent hiding the values when they normally would be (for example CFL would be hidden if equal to AFL). Regardless of the settings here, the necessary label fields will be displayed in certain cases (for example in case of a COPX coordination request, the COPX field will be displayed). By default all label fields are unselected.

B :



- Vector         Sets the length of the prediction line in minutes
- History        Sets the number of history dots
- Text           Changes the track label text size
- Label Fields   Opens/closes the Label Fields section

The Label Fields section allows controlling the visibility of certain track label fields in the unselected label. The visibility can be set depending on the state of the fight plan (Coordinated, Assumed, Redundant or Notified/Unconcerned). The "All" buttons toggle all the state buttons for that field on/off. Regardless of the settings here, the necessary label fields will be displayed in certain cases (for example in case of a COPX coordination request, the COPX field will be displayed). The default label field selections are as displayed in the image.

## 4.6 Altitude Filtering Window

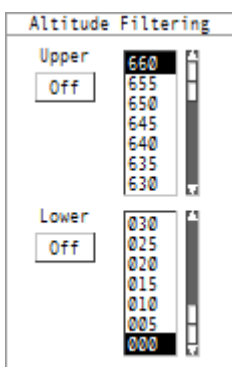Radar Menu -> Altitude Filtering…/Altitude Filter [ON/OFF]…

The Altitude Filtering Window is used to filter the displayed track labels based on the aircrafts' altitudes.  It closes when the mouse cursor leaves the window area.

A :
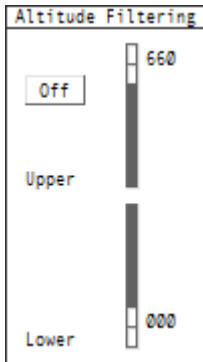


To set the filtering limits, values from 0ft to FL660 are available with 100ft steps up to 5000ft, then with 500ft steps up to FL290 and with 1000ft steps up to FL660. Select the levels and click on the filter on/off button to activate the limits. Values at or below the transition altitude are considered to be altitudes (for example with a transition altitude of 5000ft, "050" means 5000ft and "055" means FL55).

B :



To set the filtering limits, values from 0ft to FL660 are available with 500ft steps. Select the level and click on the filter on/off button to activate the limit. There are separate on/off buttons for the upper and lower limits, and it is possible to activate either one or both of them. Values at or below the transition altitude are considered to be altitudes (for example with a transition altitude of 5000ft, "050" means 5000ft and "055" means FL55).
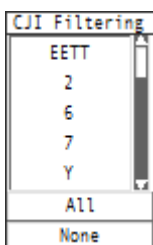
## 4.7 CJI Filtering Window

Radar Menu -> CJI Filtering…/CJI Filter [ON/OFF]…



The CJI Filtering Window closes when the mouse cursor leaves the window area.

The CJI Filtering Window is used to filter the displayed track labels based on controller ID's.  The window shows the currently online controllers. To filter a controller's tracks, click on the controller ID in the list. A filtered ID will be shown in inverse video. Clicking "All" will filter all controllers, and clicking "None" will clear all controller ID filters.

## 4.8  SSR Code Filtering Window

Radar Menu -> SSR Code Filtering…/SSR Filter [ON/OFF]…
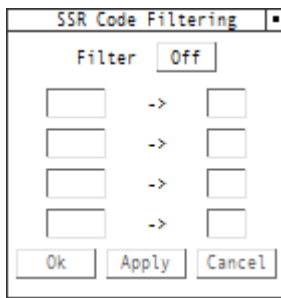


The SSR Code Filtering Window is used to filter the displayed track labels based on the aircrafts' SSR codes. Four different codes or code ranges can be set. The boxes on the left side of the window are the code range start boxes. The input syntax is a valid SSR code to be filtered. If filtering a range of codes is needed, enter the last two digits of the last code in the range to the box on the right. Entering an empty string will clear the box. For example to filter codes 1400-1427, enter "1400" into one of the four boxes on the left and then "27" into the box next to it. Set the filter on by clicking on the filter on/off button.

All changes to the window must be applied using the buttons in the bottom of the window to take effect.

- Ok                 Applies the changes, closes the window
- Apply            Applies the changes
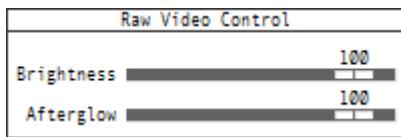- Cancel          Cancels the changes

## 4.9  Brightness Control Window

Global Menu -> Settings/Setup -> Brightness Control…
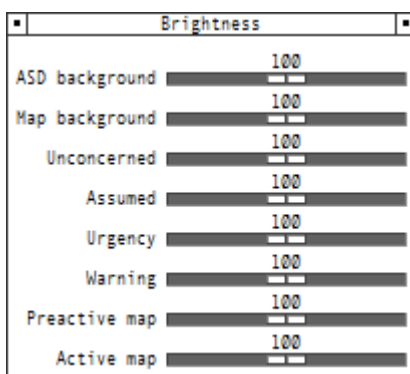


The Brightness Control Window allows setting the brightness for some screen colors. The Map background slider only controls the plugin created maps.

## 4.10 Raw Video Control Window

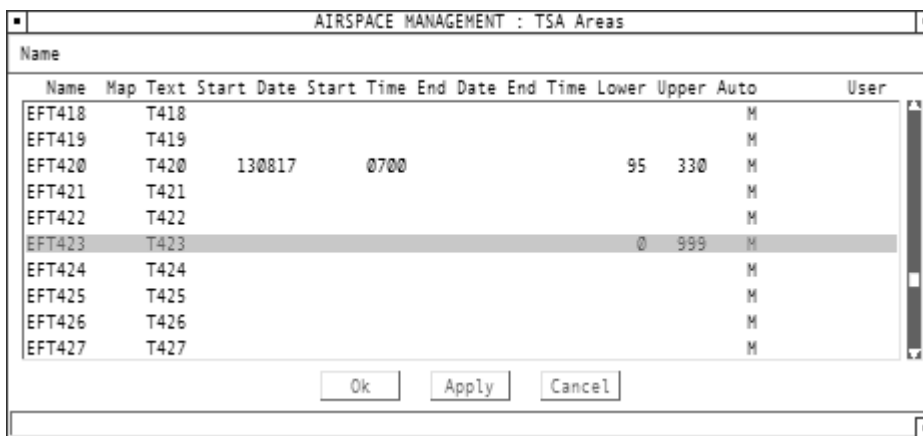Global Menu -> Settings/Setup -> Raw Video Control…



The Raw Video Control Window closes when the mouse cursor leaves the window area.

The Raw Video Control Window controls the brightness (in general) and afterglow (how fast the radar returns fade) of the raw video radar data.

## 4.11 TSA Areas Window

Global Menu -> AirSpace/AMS -> TSA…



This window is used for the activation and deactivation of the areas for the APW and SAP functionality. Each area can have a start time and/or an end time defined for its activation, or it can be activated without any time limits, making it active until deactivated manually. Additionally, lower and upper altitude limits are given. An area can have activation schedules defined in the area data file. Such areas will be automatically activated as long as their "Auto" option is selected (showing "A" in the "Auto" column). The "Auto" option cannot be selected for areas that don't have an activation schedule defined in the area data file.

Dates will be shown in the format "yymmdd" and times in "hhmm" and they must be entered in the same format. Entering an empty string for a date will clear it and the related time value and vice versa. When entering a time or date value to an empty field, the other value is automatically set to the current time/date value. Entering an empty string to the Map Text, Lower or Upper fields will reset the value to the default one from the data file.

Altitudes are shown in hundreds of feet (or in meters+"m" if metric units chosen) if at or below the transition altitude, otherwise in flight levels (or meters standard+"m"). They must be entered in the same format ("m" character optional with meters).

An area's activation status can be inactive, pre-active or active. A pre-active area is an area that will become active within a specified time (10min by default) and is shown with a "TSA Preactive" color

background. An active area is shown with "Selected Period" text on a "TSA Active" background. The APW system will not alert for a pre-active area, but for the SAP system a pre-active area is considered as being active.

The mouse click areas of the TSA Areas Window:

- Sorting option text (e.g. "Name")  Opens a pop-up menu to select a sorting option for the list
- Area text row                      Right-click to open a pop-up menu for the area
- "Ok" button                        Applies the changes, closes the window
- "Apply" button                     Applies the changes
- "Cancel" button                    Cancels the changes

The sorting pop-up menu contains the following items:

- Start Date    Sorts based on the Start Date/Time, earliest first
- Name          Sorts alphabetically based on the Name field
- Map Text      Sorts alphabetically based on the Map Text field

With the area pop-up menu opened, the area text row background changes to "Flight Highlight" color. The menu contains the following items:

- Activate      Clears any activation times and activates the area
- Deactivate    Clears any activation times and deactivates the area
- Auto          If an activation schedule is found in the area data file, sets the area to be activated automatically
- Validate      Not implemented
- Edit          Allows to change the area parameters
- Copy          Not implemented
- Delete        Clears any activation times, returns label and altitude limits to their default values and deactivates the area
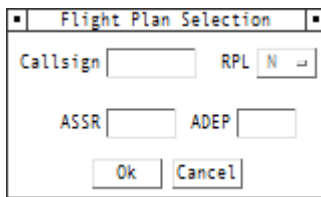
After any selection from the pop-up menu, "**Ok**", "**Apply**" or "**Cancel**" must be selected to apply or cancel the selection. With the "Edit" function activated, the following mouse click areas are available for the edited area:

- Map Text      Set/change/delete the area label text
- Start Date    Set/change/delete the start date
- Start Time    Set/change/delete the start time
- End Date      Set/change/delete the end date
- End Time      Set/change/delete the end time
- Lower         Set/change/delete the lower altitude limit
- Upper         Set/change/delete the upper altitude limit
- User          Set/change/delete a user defined text to display here

After making the changes, click on "**Ok**", "**Apply**" or "**Cancel**".

## 4.12 Flight Plan Selection Window

Global Menu -> FlightData/FData -> Flight Plan Selection…



The Flight Plan Selection window is used to search for flight plans based on any combination of callsign, assigned transponder code and departure airport. All flight plans that are a match with all given information will be listed in the Flight Plan Window and can be viewed using its "Prev" and "Next" buttons. Clicking "**Ok**" will do the search and open the Flight Plan Window if it was closed, "**Cancel**" will clear the fields as well as any previously created flight plan list for the Flight Plan Window.
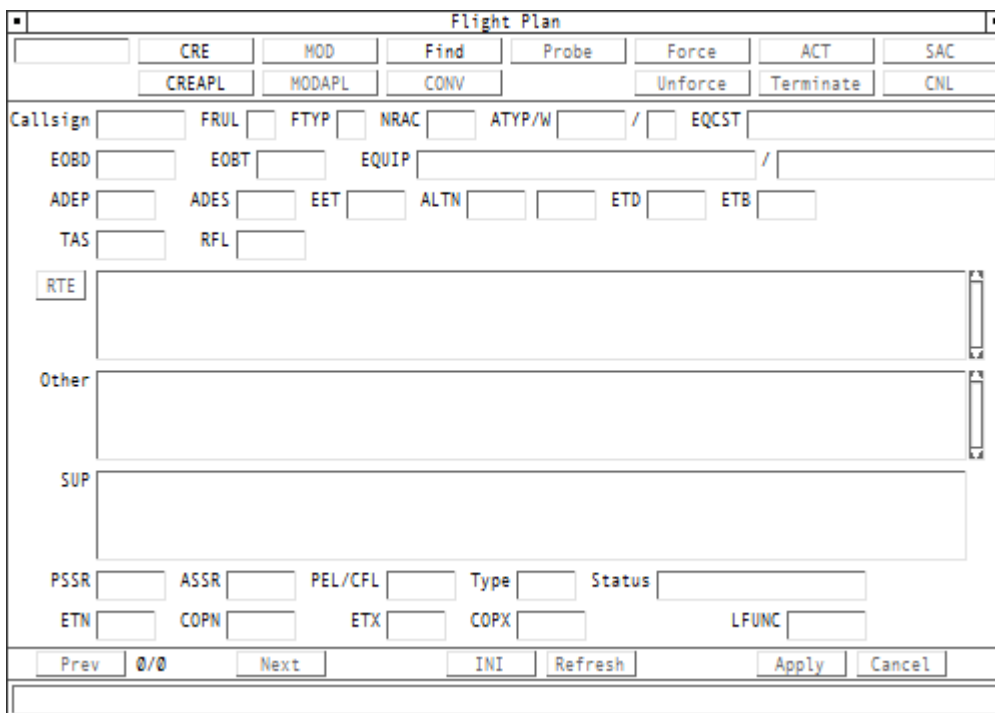
## 4.13 Flight Plan Window

Global Menu -> FlightData/FData -> Flight Plan Window…
Flight Plan Selection Window -> Create a list of one or more flight plans
Callsign menu -> More -> FPL…
Aircraft track label->"ADES" item



The Flight Plan Window displays flight plan data as well as some system data related to the flight plan. It also allows creating new flight plans and modifying existing ones. The data in the window is not refreshed automatically; the time when the data was fetched is displayed in the top left corner.

The data fields show the following information:

- Callsign          Callsign of the aircraft
- FRUL              Flight rules (I, V, Y or Z)
- FTYP              not available
- NRAC              Number of aircraft
- ATYP/W            Aircraft type and wake turbulence category
- EQCST             Displays aircraft equipment status for certain equipment (W, Y, U, R and P)
  - "EQ" equipped, "NO" not equipped, "UN" unknown.
- EOBD              Estimated Off-Block Date
- EOBT              Estimated Off-Block Time
- EQUIP             Equipment list (rough translation from the FAA equipment suffix only)
  - During creation and modifying, the field will show the FAA suffix
- ADEP              Departure aerodrome
- ADES              Destination aerodrome
- EET               Estimated Elapsed Time
- ALTN              Alternate aerodrome(s)
- ETD               Estimated Time of Departure
- ETB               Estimated time to enter your sector
- TAS               True Air Speed
- RFL               Requested Flight Level
- RTE               Route
- Other             Flight plan remarks field
- SUP               Supplementary information (endurance, PIC name)

The following system information regarding the flight plan is shown unless the initial plan is displayed:

- PSSR              Previous SSR code
- ASSR              Assigned SSR code
- PEL/CFL           Planned Entry Level or Cleared Flight Level, depending on the flight's state
- Type              Type of flight plan (APL or FPL)
- Status            Status of the flight plan
- ETN               Estimated time to COPN
- COPN              Entry coordination point
- ETX               Estimated time to COPX
- COPX              Exit coordination point
- LFUNC             Controller who is currently tracking the aircraft
- 0/0               Number of the displayed FPL in the list / total number of flight plans in the list

The following buttons are available:
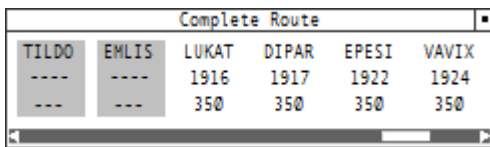
- CRE               Create a new full flight plan (FPL)
  - editable fields will be highlighted
  - if a flight plan is being displayed, all data fields keep their values so a new flight plan can be created using an existing one as a base. If not, default values will be set to FRUL, NRAC, EQUIP and Other fields
  - the "EQUIP" entry must be a single character (FAA equipment suffix)

- - MOD      "**Apply**" creates the FPL, "**Cancel**" aborts the operation

- MOD      Modify the currently displayed FPL
  - available fields will be highlighted
  - the "EQUIP" entry must be a single character (FAA equipment suffix)
  - "**Apply**" modifies the FPL, "**Cancel**" aborts the operation
- Find      Find a flight plan
  - enter Callsign to find the flight plan, "**Cancel**" aborts the operation
- Probe      Not implemented
- Force      Force this aircraft to be included in the MTCD and SAP processing regardless of its sector state or any inhibition settings in the MTCD Status Window
- ACT      Not implemented
- SAC      Enter a slot time
  - enter the time to the ETD field, "**Cancel**" aborts the operation
- CREAPL      Create a new abbreviated flight plan (APL)
  - editable fields will be highlighted
  - "**Apply**" creates the APL, "**Cancel**" aborts the operation
- MODAPL      Modify the currently displayed APL
  - editable fields will be highlighted
  - "**Apply**" creates the FPL, "**Cancel**" aborts the operation
- CONV      Convert an APL to an FPL
  - editable fields will be highlighted
  - default values will be set to FRUL, NRAC, EQUIP and Other fields
  - the "EQUIP" entry must be a single character (FAA equipment suffix)
  - "**Apply**" converts the APL, "**Cancel**" aborts the operation
- Unforce      Cancel the forced inclusion of this aircraft in the MTCD and SAP processing
- Terminate      Not implemented
- CNL      Not implemented
- RTE      Opens the Complete Route Window
- Prev      Selects the previous flight plan in the list (see Flight Plan Selection Window)
- Next      Selects the next flight plan in the list (see Flight Plan Selection Window)
- INI      View the initial flight plan
  - Complete Route Window is closed if it was opened
  - flight plan refresh time and system information will not be shown
  - "**CRE**" starts to create a new flight plan based on the displayed initial flight plan, "**Refresh**" or "**Cancel**" shows the current flight plan again
- Refresh      Refreshes the displayed information
- Apply      Apply changes that were made
  - any errors will be displayed in the bottom row of the window
- Cancel      Cancel any changes and quit the current operation

In the plugin the only difference between an APL and an FPL is that an APL can only contain the following information: Callsign, ASSR, FRUL, ATYP, ADEP and ADES. If it contains any other information it will be considered to be an FPL.

## 4.14 Complete Route Window

Flight Plan Window -> "RTE" button
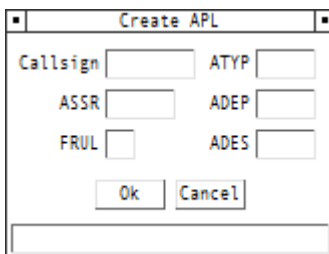


Displays the expanded route of the FPL currently shown in the Flight Plan Window. Already passed points are shown with "Overflown" color background. Points still ahead show the estimated time over the point and the calculated flight level (as calculated by EuroScope) below the point name.

## 4.15 Create APL Window

(currently unavailable)



The bottom area of the window will show status and error messages.

Enter all the available information (the only required field is the callsign) and click "**Ok**" to create the APL. The available choices for FRUL are "I" and "V". If neither is specified, "V" (VFR) is assumed. "**Cancel**" will clear all the fields.

## 4.16 Stack Manager Window

Holding List… -> "HPT" item



To help with controlling holding aircraft, Stack Manager Windows can be opened. They give a quick look into the vertical positions of aircraft that have been given a holding clearance to the holding fix associated with the window in question.

The window is split into two columns, the one on the left showing aircraft approaching the holding area (more than 3 minutes flying time away from the holding fix) and the one on the right showing aircraft in the holding area.

The window displays the aircraft at their cleared flight levels. For each aircraft the callsign, the vertical speed arrow if not in level flight ("#" for aircraft without altitude information), the RVSM capability indicator if applicable, and the CFL is displayed. If there are more than one aircraft with the same CFL, only one callsign will be shown. A "SMW Overlap Box" colored box containing a "+" symbol after the CFL value will indicate that there are more flights to be displayed. Clicking on the box will display a window with all the callsigns with that CFL.

For each aircraft an altitude box will be drawn that extends from AFL to CFL. Normally the color of the box is "SMW Level Band", but in the Hold column if it is closer than 300ft or overlaps any other aircraft's box, the color will be "SMW Overlap". For an aircraft with a CLAM alert, the box will be in "SMW Overshoot" color. A flight level reserved for an overflight is shown in "SMW Overflight" color.

Any number of Stack Manager Windows can be opened to monitor multiple holdings at the same time. Note that there is no conversion to altitude; all vertical positions are always shown as flight levels.

The mouse click areas of the Stack Manager Window:

- Slider                     Drag to adjust the lowest shown FL
- Aircraft callsigns         Open Callsign menu
- CFLs                       Open CFL menu (*
- "+" symbol                 Open window to view all callsigns with that CFL
- FL numbers                 Toggle overflight status for that level

*) When opened from a Stack Manager Window, the default value in the CFL menu is the current CFL regardless of the setting in the Local Settings menu.

## 4.17 CARD (Conflict And Risk Display)

Global Menu -> ControlTools/Tools -> CARD…
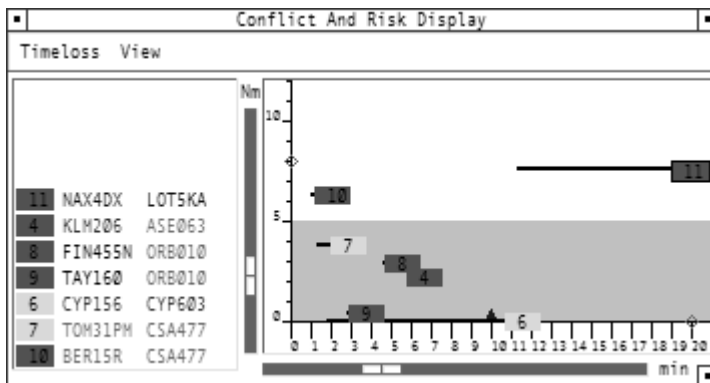


The CARD window presents the MTCD conflicts and conflict risks. It also allows setting some of the related parameters. It is divided into two parts:

On the left is the list area which includes all the detected conflicts and shows the concerned aircrafts' callsigns. A conflict has an "Urgency" colored label and a risk has a "Warning" one. Potential conflicts are displayed with "Information" colored labels. The conflict numbers are shown in "CARD Conflict Number" color. An "Urgency" colored background on a callsign means that the aircraft also has a Short Term Conflict Alert. A highlighted callsign will be highlighted in this list as well. An acknowledged conflict (shown in "Unconcerned" color) will not display the MTCD warning in the track label. An acknowledged problem will be automatically de-acknowledged if the predicted minimum separation decreases by a predefined amount.

Hovering the mouse cursor over a conflict label will display the conflict on the radar screen.

On the right is the graphical display area that gives an overview to the severity and timeframe for each conflict. On the vertical (distance) axis the conflicts are placed to the predicted minimum separation and on the horizontal (time) axis the label is placed so that the left edge of the conflict number is at the time of closest point of approach. A line in "CARD Time Vector" color, extending to the left from the label, marks the time when the separation will decrease below the prediction distance. For fast closure rates the time from prediction distance to CPA may be too short to display the line. The conflict labels have the same mouse functions as the ones in the list area. If the label position would be outside the maximum time displayed in the window, the label is positioned at the maximum displayed time with a "Foreground" colored edge.

The area below 5nm distance is drawn in "Field Highlight" color.

The mouse click areas of the CARD window:

- "Timeloss" / "Distance"          Opens a pop-up menu to select the sorting option
                                    (Time to start of conflict / Predicted minimum separation)
- "View" menu label                Toggle the View menu.
- Vertical slider                  Drag to adjust the distance scale
- Horizontal slider                Drag to adjust the time scale
- Diamond on vertical axis         Drag to adjust prediction distance

| | | |
|---|---|---|
| - | Diamond on horizontal axis | Drag to adjust prediction time |
| - | Triangle on horizontal axis | Drag to adjust warning time |
| - | A : Conflict number labels | Left-click to toggle acknowledgement status |
| | | Middle-click to toggle SEP (minimum separation lines) |
| | | Right-click to toggle highlight of both callsigns |
| - | B : Conflict number labels | Left-click to open Mark/ACK menu |
| | | Right-click to toggle SEP (minimum separation lines) |

From the "View" menu it is possible to toggle various MTCD related options:

| | | |
|---|---|---|
| - | List | Toggles display of the list area |
| - | Graphic | Toggles display of the graphical area |
| - | Grid | Toggles a nm/min grid on the graphical area |
| - | Risk | Toggles display of MTCD risks (warnings are always displayed) |
| - | Potential | Toggles display of potential conflicts (lateral but not vertical conflict) |
| - | PLC | Toggles display of planner controller conflicts |
| | | (conflict starts later than the triangle displayed on the time axis) |
| - | MTCD Ind | Toggles the display of the MTCD indicator on the track label |
| - | Notif | Toggles whether tracks in the notified state are considered for MTCD |
| - | Unco | Toggles whether unconcerned tracks are considered for MTCD |
| - | Future | Toggles whether flight plan tracks are considered for MTCD |
| | | (flight plan tracks must be at least in the coordinated state regardless of the "Notif" and "Unco" selections) |

B : From the "Mark/ACK" menu it is possible to toggle conflict-specific options:

| | | |
|---|---|---|
| - | Mark All | Toggles marking the Callsigns and AFL's of the concerned tracks with "CARD Mark All" color |
| - | Mark Own | Toggles marking the Callsigns of the concerned tracks with "CARD Mark Own" color |
| - | ACK | Toggles acknowledgement status |
| - | Address | Not implemented |

## 4.18 SAP Window

Global Menu -> ControlTools/Tools -> SAP…

| Segregated Area Probe | | |
|---|---|---|
| ASE063 | TSAM29 | 6249N02507E 0706 |
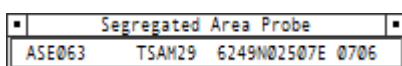
The SAP window lists the aircraft that have SAP conflicts (can be set to also show risks). The list shows the aircraft callsign, the area it will enter and the coordinates and the time when it will enter it. Only the first entered area will be shown if the aircraft is predicted to enter more than one active area. Placing the mouse cursor over an aircraft line will show the aircraft's route on the radar screen up to the first point of entering an active area or the first point where there is a risk of doing so if risks are selected to be displayed on the window. The list is sorted according to the entry time field, with the earliest time on top.

## 4.19 Vertical Aid Window

Global Menu -> ControlTools/Tools -> Vertical Aid Window…
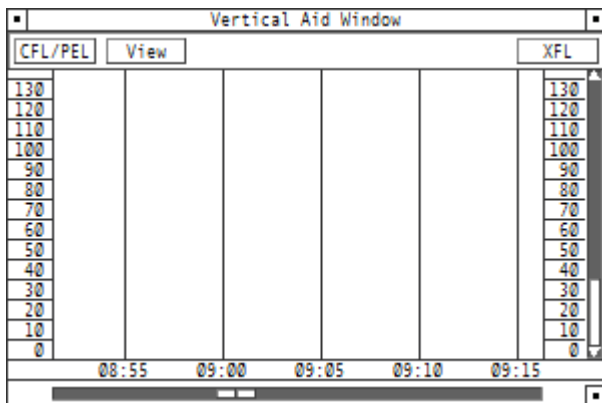


The Vertical Aid Window shows the predicted vertical trajectory of the selected aircraft (ASEL), starting from its current position (marked with a dot in "VAW Track Position" color), and the trajectories of all aircraft conflicting with it. The trajectories are displayed as calculated by EuroScope. The background color of the path area is by default the "Inactive Sector" color, but for the time the aircraft is predicted to be inside your sector the color will be the "Active Sector" color. Other sector boundary crossings are displayed with vertical lines in "VAW Sector Limits" color. The trajectory of the ASEL aircraft is drawn in "VAW Profile" color and the conflicting aircrafts' trajectories in "Urgency" (conflict), "Warning" (risk) or "Potential" (potential).

It is also possible to send PEL and XFL coordinations and set the CFL from this window using the two buttons:

- CFL/PEL          Opens the PEL or CFL menu depending on sector state
- View             Toggles the View menu
- XFL              Opens the XFL menu

From the "View" menu it is possible to toggle various MTCD related:

- Risk             Toggles display of MTCD risks (warnings are always displayed)
- Potential        Toggles display of potential conflicts (lateral but not vertical conflict)
- Notif            Toggles whether tracks in the notified state are shown
- Unco             Toggles whether unconcerned tracks are shown

The PEL and XFL values are displayed in "Coordination" color, or in "Proposition" if being coordinated. After a refused coordination, the original value is shown in "Warning" color. The CFL value is displayed as a horizontal line across the screen.

## 4.20 Message In Window

Global Menu -> ControlTools/Tools -> Message In…
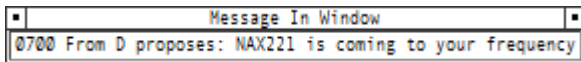


The Message In Window shows received coordination messages, sorted by time, with the newest ones at the top of the list. For the ones requiring an answer, it is possible to send it either from this window, the aircraft track label or any aircraft list where the relevant items are displayed. The messages will be automatically removed from the list when the track becomes Unconcerned, or for some messages, also based on a specific event.

The available message types are:

- "From <SI> proposes: <Callsign> is coming to your frequency"
  - o Displayed when the track is being transferred to you
  - o Removed when the transfer is complete or cancelled
- "From <SI> for <Callsign> proposes Request on downstream frequency"
  - o Displayed when the next controller has sent a message requesting the track to be transferred to his frequency
  - o Left-clicking on the line manually removed it
  - o Removed when a transfer is started
- "From <SI> for <Callsign> proposes Handover [HDG xxx] [DCT xxxxx] [SP xxx]"
  - o Displayed when there is a HOP in progress. The parameters are only displayed if they contain data
  - o Left-clicking on the line opens the Combined Transfer Menu
  - o Removed when the transfer is complete or cancelled
- "From <SI> for <Callsign> RTI [HDG xxx] [SP xxx] [ARC xx]"
  - o Displayed when an RTI message has been received
  - o Left-clicking on the line opens the Tactical Transfer Menu
- "From <SI> for <Callsign> TIP [HDG xxx] [SP xxx] [ARC xx]"
  - o Displayed when a TIP message has been received
  - o Left-clicking on the line opens the Tactical Transfer Menu
  - o Removed when the track becomes Assumed
- "From <SI> for <Callsign> proposes HOP/RTI/TIP Accepted"
  - o Displayed when an Accept message has been received as a response to HOP, RTI or TIP
  - o Left-clicking on the line manually removes it
- "From <SI> for <Callsign> proposes RTI/TIP rejected [by timeout]"
  - o Displayed when a reject message has been received as a response to RTI or TIP
  - o Left-clicking on the line manually removes it
- "From <SI> for <Callsign> proposes [COPN xxxxx] [PEL xxx]"
  - o Displayed when an entry coordination has been received
  - o Left-clicking on a value opens the EuroScope default menu to answer an active coordination
  - o Removed when the track becomes Assumed

- "From <SI> for <Callsign> proposes [COPX xxxxx] [XFL xxx]"
  - o Displayed when an exit coordination has been received
  - o Left-clicking on a value opens the EuroScope default menu to answer an active coordination
- "From <SI>: <Callsign> will be squawking <ASSR>"
  - o Displayed when a previous controller assigns a new SSR code for a track
  - o Left-clicking on the line manually removes it

## 4.21 Message Out Window

Global Menu -> ControlTools/Tools -> Message Out…
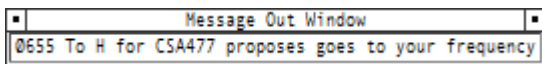


The Message Out Window shows the coordination messages you have sent, sorted by time, with the newest ones at the top of the list. The messages will be automatically removed when the track becomes Unconcerned. To manually remove a line, left-click on it.

The available message types are:

- "To <SI> for <Callsign> proposes goes to your frequency"
  - o Displayed when you transfer a track
- "To <SI> Request <Callsign> on frequency"
  - o Displayed when you have sent a ROF message
- "To <SI> for <Callsign> proposes Handover [HDG xxx] [DCT xxxxx] [SP xxx]"
  - o Displayed when you have sent a HOP. The parameters are only displayed if they contain data
- "To <SI> for <Callsign> RTI [HDG xxx] [SP xxx] [ARC xx]"
  - o Displayed when you have sent an RTI message
- "To <SI> for <Callsign> TIP [HDG xxx] [SP xxx] [ARC xx]"
  - o Displayed when you have sent a TIP message
- "To <SI> for <Callsign> proposes HOP/RTI/TIP Accepted"
  - o Displayed when you have sent an Accept message as a response to HOP, RTI or TIP
- "To <SI> for <Callsign> proposes RTI/TIP rejected [by timeout]"
  - o Displayed when you have sent a Reject message as a response to RTI or TIP. "Rejected by timeout" will be sent automatically if the coordination is not answered within a specified time.
- "To <SI> for <Callsign> proposes [COPN xxxxx] [PEL xxx]"
  - o Displayed when you have sent an entry coordination
- "To <SI> for <Callsign> proposes [COPX xxxxx] [XFL xxx]"
  - o Displayed when you have sent an exit coordination
- "To <SI> for <Callsign> proposes will squawk <ASSR>"
  - o Displayed when you have assigned a new SSR code and there is a next controller online for the track
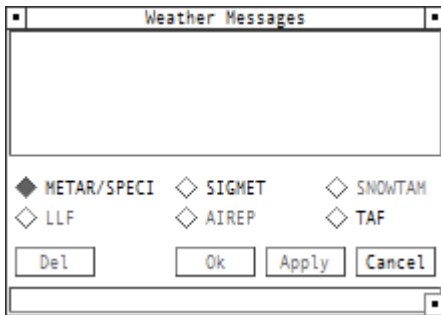
## 4.22 Cursor Lat/Long Window

Global Menu -> ControlTools/Tools -> LAT/LONG…
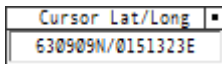


Displays the latitude and longitude values of the cursor position.

## 4.23 Weather Messages Window

Global Menu -> MET -> Messages…



The Weather Messages Window displays weather related messages. By default, METAR/SPECI messages are shown. To view other types of messages, left-click on the desired option button (the "SNOWTAM", "LLF" and "AIREP" options are not available).

By default, with the "**METAR/SPECI**" option button chosen, this window displays the METARs you have requested from the VATSIM server (i.e. [F2] <icao>) and any METARs EuroScope requests automatically. Whenever a new METAR is received from the server it is added to the list (an old METAR is removed when a newer one is received from the same station). New METARs are displayed in "Warning" color until the mouse cursor is positioned on them (for the decoded METAR, this applies only for the first row).

In addition, the window can display SIGMETs and TAFs. The SIGMETs are retrieved when the "**SIGMET**" button is selected for the first time, and are then updated at one hour intervals. Selecting the "**TAF**" option will open the Aerodrome menu where the desired stations must be selected. TAF data is never updated automatically; to get updated forecasts the TAF option (and the stations) must be selected again. If the plugin is configured to use a non-VATSIM METAR source, the METAR/SPECI list behaves the same way as the TAF list (stations must be selected from a list and the data is never updated automatically).

The messages are sorted alphabetically by the station identifier in the list.

The messages can be viewed in three modes (decoded only available for METARs):

- List       (the default mode, showing one METAR/SIGMET/TAF per line)
- Single      (showing only a single METAR/SIGMET/TAF)
- Single decoded   (showing a single METAR in a decoded format)

To view a single METAR/SIGMET/TAF:

- Left-click on a METAR/SIGMET/TAF in the list
  **or**
- Left-click on a decoded METAR

To view a single METAR in the decoded format:

- Right-click on a METAR in the list
  **or**
- Right-click on a single METAR

To return to the list view:

- Left-click on a single METAR/SIGMET/TAF
  **or**
- Right-click on a decoded METAR

To remove a METAR/SIGMET/TAF from the window:

- Display the METAR/SIGMET/TAF in the single or decoded mode
- Left-click on the "**Del**" button
- Left-click "**Yes**" in the confirmation window that opens ("**No**" cancels the operation)

## 4.24 QNH/TL Window

Global Menu -> MET -> QNH/TL…



The window displays the QNH values and corresponding transition levels for those airports that have a METAR displayed in the Weather Messages Window. The transition level tables are defined in a data file, and if a table can't be found for an airport in the list, a transition level will not be shown. The buttons in the window have no functionality.

## 4.25 General Information Window

Global menu -> Info -> General Information…

A :

```
┌─┬──────────────────────────┬─┐
│■│    General Information    │■│
├─┴──────────────────────────┴─┤
│status: normal          WP:   │
│radar: MRT                    │
├──────────────────────────────┤
│mode: Free                    │
│role: 2                       │
│sectors:                      │
├──────────────────────────────┤
│        Alert functions       │
│   stca    msaw    apw   mtcd  │
├──────────────────────────────┤
│FPASD:                        │
├──────────────────────────────┤
│ MTP   RFP   FDP   FDX  AIS  CDP-R1 │
│ MRTS  SNMAP FPCP  SSR       CDP-R2 │
└──────────────────────────────┘
```

The General Information Window displays basic information on the system state. The following functionality is implemented in the plugin:

- QNH (below the "WP:" item)  Shows the QNH value if the first four letters of the login callsign match with the station identifier of a received METAR message
- mode  "Free", "Operational", "Proxy", "Replay" or "Training" depending on the connection method
- role  Own controller ID
- Alert functions  Status of the alert functions. The function name is shown in "Warning" color if selected off or there's a fault in the data file.

B :

```
┌─┬──────────────────────────┬─┐
│■│    General Information    │■│
├─┴──────────────────────────┴─┤
│Free              Normal      │
│                              │
│ARTAS ACC    MFS   CPDLC Def: OFF    FPASD: │
│STCA MSAW APW SAP MTCD     │LINES│ │
├──────────────────────────────┤
│ARTAS    MSTS    MFS    FFS    FDX    AGCS │
│SNMAP    MTCD    SSR    AIF    CDP         │
└──────────────────────────────┘
```

The General Information Window displays basic information on the system state. The following functionality is implemented in the plugin:

- mode  "Free", "Operational", "Proxy", "Replay" or "Training" depending on the connection method
- role (between the mode and the "Normal" item)  Own controller ID
- QNH (below the "Normal" item)  Shows the QNH value if the first four letters of the login callsign match with the station identifier of a received METAR message
- Alert function labels  Status of the alert functions. The function name is shown in "Warning" color if selected off or there's a fault in the data file.
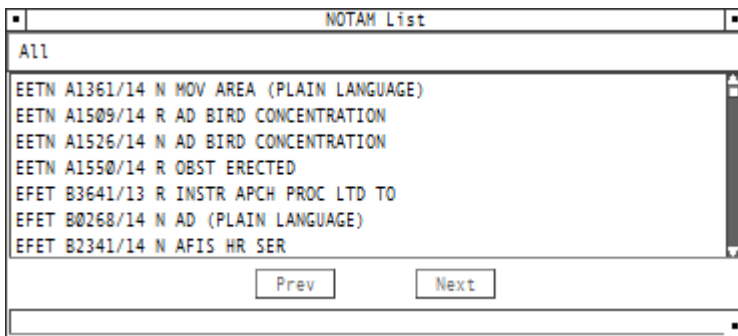
## 4.26 NOTAM List Window

Global Menu -> Info -> NOTAM...



The NOTAM List Window displays a list of received NOTAMs. The NOTAMs are retrieved when the window is first opened and the list will take a couple of seconds to populate. The NOTAMs are automatically updated every three hours. Each NOTAM shows the following information:

- Location ID (ICAO designator)
- Serial number
- Type ("N"=new, "R"=replaces earlier NOTAM, "C"=cancels earlier NOTAM)
- Abbreviated form of the NOTAM message contents (basic data from the NOTAM header)

To see the actual NOTAM contents, left-click on a NOTAM line. To return back to the NOTAM list, left-click on the single NOTAM.

By default the window displays all received NOTAMs. Left-clicking on the "**All**" label opens a menu where the displayed NOTAMs can be filtered by their validity periods. The other available options are "**Today**" and "**Tomorrow**".

## 4.27 Aerodrome Window

Global Menu -> Info -> Aerodrome...



The Aerodrome Window displays information about the selected airport.

Left-clicking on the airport ICAO code opens the Aerodrome menu to select another airport, and left-clicking on the "NOTAM" button opens the NOTAM List Window, showing only the NOTAMs for the selected airport.

Below the header, the latest METAR and TAF for the airport are displayed. The QNH and TRL in the header are based on the METAR data.

The bottom part of the window displays the arrival and departure runway allocation at the selected airport. The runway selections are read-only in this window.

## 4.28 Notepad Window

Global Menu -> Messages/MSG -> Notepad...



The Notepad Windows can be used to display any user entered text. Multiple Notepad Windows can be opened simultaneously. To enter new text or edit the existing one, click on the window area. The text will be automatically wrapped, it is not possible to force line breaks. If the window is not large enough to fit all the entered text, it will display "…" in the end to indicate that there is more information.

## 4.29 Personal Queue Window

Global Menu -> Messages/MSG -> Personal Queue…
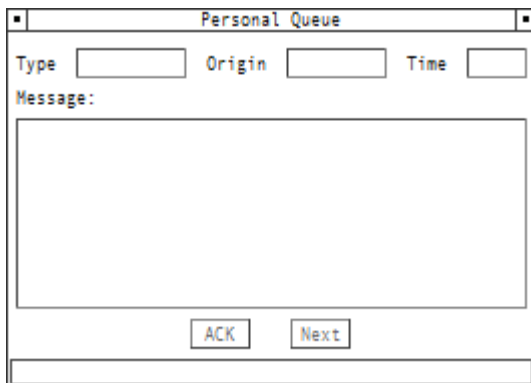


The Personal Queue Window displays warning messages related to the plugin's operation: high priority messages informing about potential critical failures in the plugin code, and low priority messages informing about faults in the plugin's external data files or timeout alerts for coordination messages.

The window currently only displays "ALERT" type messages, and the origin for them is always empty. The time field displays the UTC time when the currently viewed message was created.

The high priority messages are always displayed first. Only when there are no more high priority messages in the list, are the low priority ones s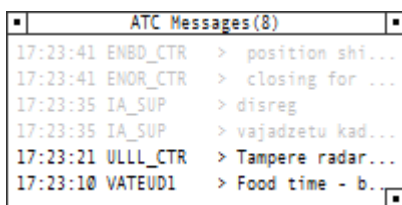hown. To acknowledge a message, click on the "**ACK**" button. This removes the message from the list and displays the next one. The "**Next**" button moves the currently viewed message to the back of the list and displays the next message of the same priority.

## 4.30 ATC Messages Window

Global Menu -> Messages/MSG -> ATC Messages…



The ATC Messages Window displays up to 99 last messages transmitted on the ATC text channel. Each message line displays a time stamp, the sender callsign (blank if you) and the message itself.

New messages are displayed in "Warning" color until left-clicked to mark them as read. Left-double-clicking on any message will mark all messages in the window read. The window doesn't resize automatically to show all the messages in it, but the number in the title bar shows the total number of messages in the window. If the window is not wide enough to fit a complete message, it will display "…" in the end to indicate that there is more information.

## 4.31 Safety Nets Status Window

Global Menu -> Status/STS -> Safety Nets Status…



Allows setting the status for the AIW, STCA, MSAW and APW systems. The "On/Off" buttons control the corresponding system's status.

Below them, there are four entry boxes for callsigns to exclude specific callsigns from all the safety nets. The "*" wildcard can be used to match multiple callsigns. It causes all the callsigns that match up to the "*" to be a match (i.e. "ABC*" will match all callsigns that start with "ABC", but "*ABC" will match all callsigns as any characters after the "*" will be ignored).

Below the callsign fields, there are four SSR code boxes that can be used to exclude specific SSR codes from all the safety nets. The entered values must be 1-4 octal digits, and the system will match the number of digits entered (i.e. "2000" will match only code 2000, whereas "20" will match all codes in the range 2000-2077).

If there are STCA inhibition areas defined in the area data file, they will be listed in the area in the bottom part of the window. The area vertical limits (displayed in 100's of feet or meters+"m" depending on system units) can be edited by clicking on the values, and the area activation can be toggled by clicking on the area status. Note that unlike the callsigns and the SSR codes discussed above, these areas only inhibit STCA alerting, not the other safety nets.

All changes to the window must be applied using the buttons in the bottom of the window to take effect.

- Ok          Applies the changes, closes the window
- Apply       Applies the changes
- Cancel      Cancels the changes

## 4.32 Divergence Detection Status Window

Global Menu -> Status/STS -> Divergence Detection Status…
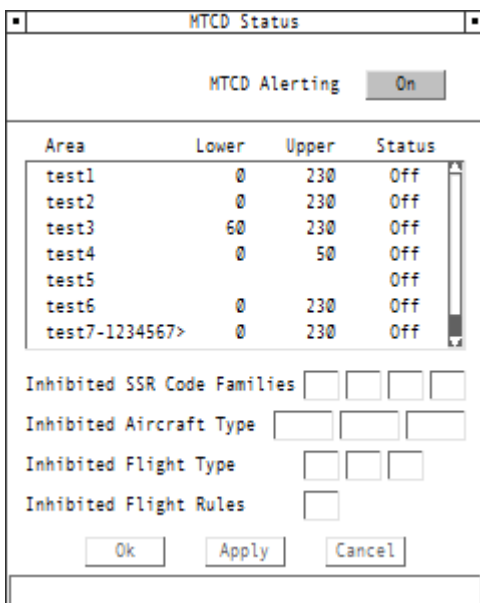


Allows setting the status for the RAM and CLAM alerting. The "On/Off" buttons control the corresponding system's status. All changes must be applied using the buttons below to take effect.

- Ok                Applies the changes, closes the window
- Apply             Applies the changes
- Cancel            Cancels the changes

## 4.33 MTCD Status Window

Global Menu -> Status/STS -> MTCD Status…



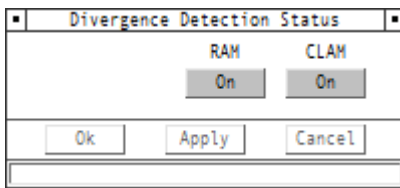Allows setting the status for the MTCD system. The "On/Off" button controls the system's status.

If there are MTCD inhibition areas defined in the area data file, they will be listed in the area below the "On/Off" button. The area vertical limits (displayed in 100's of feet or meters+"m" depending on system units) can be edited by clicking on the values, and the area activation can be toggled by clicking on the area status.

The rest of the inhibition settings affect both MTCD and SAP systems:

Below the inhibit areas, there are four SSR code boxes that can be used to exclude specific SSR codes from MTCD/SAP processing. The entered values must be 1-2 octal digits, and the system will match the number of digits entered (i.e. "2" will match codes 2000-2777, whereas "20" will match codes 2000-2077).

Below the SSR codes, there are four ATYP boxes to exclude specific aircraft types. The entered text strings must be exact ICAO aircraft type designators (no partial matches or wildcards).

The flight type inhibit is not available due to network restrictions.

The last box is used to exclude all flight plans with specific flight rules. Allowable entries are "I", "V", "Y" or "Z". Only one character can be entered.
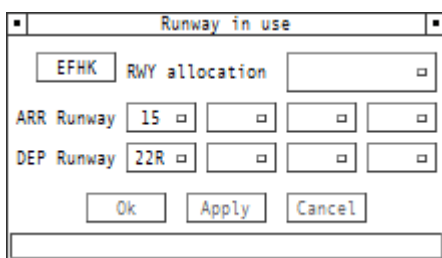
All changes to the window must be applied using the buttons in the bottom of the window to take effect.

- Ok              Applies the changes, closes the window
- Apply           Applies the changes
- Cancel          Cancels the changes


## 4.34 Runway In Use Window

Global Menu -> Status/STS -> Runway In Use…
Radar screen -> middle-click on Airport symbol…



The Runway In Use Window displays the arrival and departure runway allocation at the selected airport. Left-clicking on the airport ICAO code opens the Aerodrome menu to select another airport. The runway selections are read-only in this window.

## 4.35 Operations Rate Window

Global Menu -> Status/STS -> Supervisory -> Operations Rate…
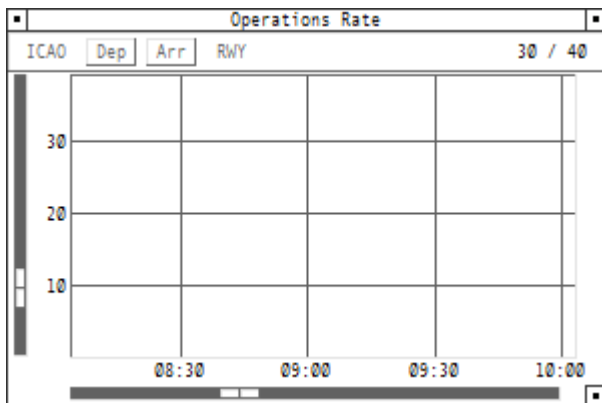


The Operations Rate Window displays the predicted hourly operations rate at a specified airport. The data is displayed in 5 minute steps and shown up to 5 hours into the future. The arrival prediction is based on aircraft tracks as calculated by EuroScope. The departures are predicted to depart in the next 5 minutes if their ground status is set to "DEPA", in 5-10 minutes if "TAXI" and in 10-15 minutes if "PUSH". A number of these windows can be opened to simultaneously view multiple combinations of airport, departure/arrival state and runway(s).

In the area below the title bar, on the left is the ICAO identifier of the airport whose traffic is being monitored (a gray label "ICAO" is shown if no airport is selected yet). The "Dep" and "Arr" buttons control whether departures and/or arrivals should be shown on the display (button background is shown in "Selected" color if selected on). The "RWY" label allows entering one or more runway identifiers to filter traffic based on the assigned runway. The numbers on the right side are the caution and warning limits. The rate numbers are color coded so that a number at or below the caution limit will be shown in "Information" color, a number above that but at or below the warning limit in "Warning" and a number above that in "Urgency".

- ICAO              Enter airport identifier
- Dep               Toggle departures on/off
- Arr               Toggle arrivals on/off
- RWY               Enter runways
- XX / XX           Enter caution and warning limits
- Sliders           Change the rate number and time scales

## 4.36 Predicted Traffic Window

Global Menu -> Status/STS -> Supervisory -> Predicted Traffic…
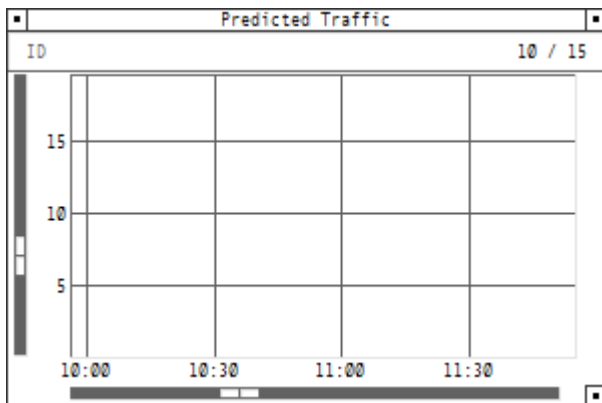


The Predicted Traffic Window shows the number of aircraft that are predicted to be inside a specified controller's airspace. The data is displayed in 5 minute steps and shown up to 5 hours into the future. The prediction is based on the sector ownership and the aircraft tracks are as calculated by EuroScope. A number of these windows can be opened to simultaneously view multiple controllers' situation. In the area below the title bar, the left side shows the controller ID whose traffic is being monitored (a gray label "ID" is shown if no controller ID is selected yet). Left-click on the text to enter a new ID. The numbers on the right side are the caution and warning limits. To change them, left-click on them and re-enter in the same format (warning can't be lower than caution; numbers must be separated by a forward slash). The traffic numbers are color coded so that a number at or below the caution limit will be shown in "Information" color, a number above that but at or below the warning limit in "Warning" and a number above that in "Urgency". The two sliders change the traffic number and time scales.

## 4.37 Runway Approach Line Window

Global Menu -> Status/STS -> RWY line display… (opens the Aerodrome menu for airport selection)

Radar screen -> right-click on Airport symbol…

```
┌─■──────── EFTU ────────■─┐
│       RWL DISPLAY        │
│  08 │OFF ▫│    26 │OFF ▫│ │
│                          │
│     ARR RWL DISPLAY      │
│        │OFF ▫│           │
│                          │
│     Runways in use       │
│     ARR: 26              │
│     DEP:                 │
└──────────────────────────┘
```

To open the window from the radar screen, right-click on an airport symbol (+) on the radar screen (for the click spots to be active, the "AD_Hotspots" map in the "Aerodromes" folder of the Maps Window must be active). Only those airports with runways specified have active click spots. The window will open below the mouse cursor, or will be repositioned there if already open.

The window contains selection buttons to toggle the display of the approach lines for the airport's runways, and a listing of the currently active runways for the airport. The "ARR RWL DISPLAY" option toggles the automatic display of all approach lines for runways that are selected active for arrival. The setting is global for all airports.

The runway approach line is by default 16nm (A) or 20nm (B) long and has 5 distance markers at 2nm intervals. The color of the line is different depending on whether the runway is active for arrivals or not.

## 4.38 Tactical Info Window

Track label -> right-click on COORD item

```
┌─■── TACTICAL ──■─┐
│     ASE063       │
│  AHDG    360     │
│  ASP     250     │
│  ARC     none    │
└──────────────────┘
```

The Tactical Info Window displays coordinated tactical data (AHDG, ASP and/or ARC). Proposed data is in "Proposition", rejected data in "Warning" and accepted data in sector state color. This window only displays the information; to answer or apply the data use the Tactical Transfer menu.

# 5 Aircraft lists

## 5.1 Holding List

The list includes the aircraft that have been given a holding clearance. It is automatically displayed whenever there is at least one aircraft in the list.

```
┌──────────────────────────────────┐
│ ▪│    Holding List(5) 0/0        │
├──────────────────────────────────┤
│ View  Options  ETO on Holding point │
├──────────────────────────────────┤
│ Label Callsign AFL   CFL  HPT    ETO │
│   ▪    FIN455N  380   380  VAVIX     │
│   ▪    TAY160   320   320  VAVIX  1655 │
│   ▪    NAX4DX   301 ↗ 350  VAVIX  1657 │
│   ▪    LOT5KA   351 ↗ 350  VAVIX  1701 │
│   ▪    GZP2112  400   400  VAVIX  1704 │
└──────────────────────────────────┘
```

"View" opens the View menu which contains only one item, "Header". It toggles the visibility of the list header line. The "Options" menu is inaccessible as there are no selectable options in the holding list. The list sorting option is displayed next to the "Options" menu. Clicking on it opens a menu to select between "ETO on Holding point" (sorting criteria in priority order: ETO at the holding point, holding point name, callsign) and "Holding point" (sorting criteria in priority order: holding point name, CFL, callsign).

| Field | Left click | Right click |
|---|---|---|
| - Label | Hide/display track label | - |
| - Callsign | Open Callsign menu | - |
| - AFL | Open AFL menu | Toggle route draw |
| - (attitude indicator) | - | - |
| - CFL | Open CFL menu | Toggle route draw |
| - HPT | Open Stack Manager Window | - |
| - ETO | - | - |

## 5.2 Lost List

Global Menu -> ControlTools/Tools -> Flight Plan Lists -> Lost List...

The list includes assumed flights that have previously been correlated to a radar track but radar contact has been lost.

```
┌─┬───────────────────────────┬─┐
│▪│     Lost List(1) 0/0      │▪│
├─┴───────────────────────────┴─┤
│ View  Options                 │
├───────────────────────────────┤
│Callsign  N/ATYP  AFL CFL ASSR  Lost│
├───────────────────────────────┤
│NAX5627   1/B738  330  330 A0204 1127│
└───────────────────────────────┘
```

The lost list contains the following fields:

| Field | Type | Left click | Right click |
|---|---|---|---|
| - Callsign | mandatory | Open Callsign menu | - |
| - N/ATYP | optional | - | - |
| - AFL (last received) | optional | - | Toggle route draw |
| - CFL | optional | Open CFL menu | Toggle route draw |
| - ASSR | mandatory | Open ASSR menu | - |
| - Lost (time) | optional | - | - |

"View" opens the View menu:

- Header          Toggle visibility of the list header line
- Standard        Set the list in Standard mode (only mandatory fields shown)
- Extended        Set the list in Extended mode

"Options" opens the Options menu to select which optional fields are shown in Extended mode. The "All" selection shows all fields without affecting the individual selections.

The rows are sorted based on "Lost" time in descending order.

# 6   Keyboard shortcuts

Some plugin functions can be accessed using a keyboard shortcut. By default each shortcut is a combination of two keys, with the first key needing to be down while the second is pressed to activate the function. The available shortcuts and their default keys are:

- Open FPL Window for the selected flight                                                    <ALT> + <F>
- Open FPL Selection Window                                                                  <ALT> + <E>
- Start new QDM line                                                                         <ALT> + <Q>
- Remove all QDM lines                                                                       <ALT> + <X>
- Inhibit active filters for 10 seconds (Quick Look)                                         <ALT> + <U>
- Display the Flight Leg for the selected flight for 10 seconds                              <ALT> + <L>
- A Toggle minimum separation lines (remove existing one or start new one)    <ALT> + <S>
- B Start a new minimum separation line                                                      <ALT> + <S>
- Reposition cursor at the center of the radar screen                                        <ALT> + <C>

Selected flight in the above means that the mouse cursor is over that flight's track label. The keys need to be held down until the function starts (it takes up to a second until the key presses are registered). For the timed functions, activating the shortcut while the timer is running restarts the timer from zero.

It is possible to disable some or all of the shortcuts or adjust the key assignments for each function (to define both keys or just a single key) by changing the plugin settings.

**Warning:** When changing the shortcut keys, care should be taken to avoid problems, as the selected key combinations (or single keys) will also be forwarded to EuroScope. If for example <SHIFT>+<A> is defined for a shortcut, using it will also enter the capital letter "A" in EuroScope chat.

# 7 Safety Nets

## 7.1 AIW (Airspace Infringement Warning)

### 7.1.1 General

The AIW system warns if an uncontrolled aircraft is already inside or going to enter controlled airspace within a defined time. The system will only scan correlated radar tracks.

### 7.1.2 Alert display

An alert is shown by displaying the text "AIW" in the Alert message field on line 0 of the track label. Note that MSAW and APW alerts will have priority over an AIW alert. Additionally, a one minute long prediction line is displayed in "AIW Intrusion" color regardless of the prediction line settings.

## 7.2 APW (Area Proximity Warning)

### 7.2.1 General

The APW system warns if an aircraft is inside or about to enter an active area it shouldn't be entering (for example active danger, restricted and TSA areas). The position of the aircraft is only predicted in 30 second intervals for performance reasons so very short future intrusions may not be noticed by the system. The areas are defined in an external text file and activated in the TSA Areas window.

### 7.2.2 Alert display

An alert is shown by displaying the text "APW" in the Alert message field on line 0 of the track label. Note that an MSAW alert will have priority over an APW alert.

## 7.3 MSAW (Minimum Safe Altitude Warning)

### 7.3.1 General

The MSAW system alerts when an aircraft is flying at an altitude below the minimum safe altitude. The minimum safe altitude data is read from an external file that has to be present for the system to give any warnings. There is an adjustable buffer value in the system that allows some altitude variation below the safe altitude to inhibit nuisance alerts for aircraft flying at the minimum safe altitude and not staying exactly at that altitude.

### 7.3.2 Alert display

An alert is shown by displaying the text "MSAW" in the Alert message field on line 0 of the track label.

## 7.4  STCA (Short Term Conflict Alert)

### 7.4.1  General

The STCA system is designed to alert the controller of a possible or actual loss of separation between aircraft. The alert is given a specified time (for example 90 seconds) before a loss of separation is predicted to happen, but it is dependent on the relative positions and movement of the aircraft. The alert will not be shown if both aircraft have STCA alerting inhibited (see the Safety Nets Status Window), are inside exclusion areas for parallel approaches, or when either aircraft is inside an active STCA inhibit area.

In the vertical plane there is an option to always assume that an aircraft will level off at its cleared level. This will reduce the number of nuisance alerts caused by climbing and descending aircraft in busy airspace, but will delay the alert in case an aircraft continues through its cleared level. The alert will then be given only after the failure to level off is seen by the system.

### 7.4.2  Alert display

A    An alert is shown by coloring the CALLSIGN item background (plugin drawn windows) or the text itself (elsewhere where the plugin can't control the background color) in "Urgency" color.

B    An alert is shown by coloring the CALLSIGN item background (plugin drawn windows) or the text itself (elsewhere where the plugin can't control the background color) in "Urgency" color. In addition, the radar position symbol and history dots are displayed in "Urgency" color, and a one minute long prediction line is displayed in "Urgency" color regardless of the prediction line settings.

An aural alert can also be generated if the corresponding plugin setting is enabled.

# 8  Flight Plan Conflict Probe

## 8.1  MTCD (Medium Term Conflict Detection)

### 8.1.1  General

The MTCD system is a tool that enables the controller to predict possible future conflicts between aircraft. For performance reasons the maximum selectable look-ahead time (prediction time) is limited to 40 minutes and the separation distance that triggers the alert (prediction distance) to 20 nm. They can be set to any lower value, the defaults being 20 minutes and 8 nm.

In the lateral plane the system works by checking the aircraft's predicted route up to the defined prediction time and calculating if the separation with other aircraft will be less than the defined prediction distance during that time period.

The system does not have a vertical path prediction capability. It detects conflicts in the vertical plane by assuming the aircraft to occupy all levels between AFL and CFL. A conflict risk would be shown for a problem between AFL and XFL that is not a conflict.

In short:

**Conflict**   - Current clearance may lead to loss of separation

**Risk**   - Current clearance will not lead to loss of separation
- Clearing the aircraft to its XFL may lead to loss of separation
- Clearing the aircraft to a level between current CFL and XFL may lead to loss of separation

For the predictions to be accurate, it's very important to keep the CFL and the aircraft's route updated at all times. MTCD can be disabled for aircraft that have an assigned heading or a RAM warning, as in those cases the system can't predict the aircraft's future positions. If it is enabled for them, the system assumes that the aircraft continues on its present track and ground speed for a specified time and stops the prediction there. The system is always disabled for flight plan tracks with an assigned heading or a RAM warning.

### 8.1.2  Conflict and risk display

A    The track label displays the text **MTCD** in "Warning" color on line 0 if there is a conflict for the aircraft within the set warning parameters (can be set to warn for risks as well). The default values are 10 minutes to loss of separation with an 8 nm separation minimum.

B    The track label displays a dot in "Urgency" color on line 1 before the CALLSIGN item if there is a conflict for the aircraft within the set warning parameters (can be set to warn for risks as well). The default values are 10 minutes to loss of separation with an 8 nm separation minimum.

The MTCD conflicts are also displayed in the Conflict and Risk Display.

## 8.2 SAP (Segregated Area Probe)

### 8.2.1 General

Much like the MTCD system predicts future conflicts between aircraft, the SAP system predicts future intrusions into active areas. The system uses the same look-ahead time as the MTCD system. The future position predictions are done at one minute intervals which means a very short intrusion into an active area may not be noticed by the system. The classification into risks and conflicts is the same as in MTCD: a conflict means that the current clearance may lead to the aircraft entering an active area, whereas a risk means that the current clearance will not lead to that but clearing the aircraft to its XFL or some other level beyond the current CFL may do so.

As with MTCD, keeping the CFL and the aircraft's route updated is important for the system's operation. Like MTCD, SAP can be disabled for any aircraft that has an assigned heading or a RAM warning. If enabled, the prediction logic is the same as in the MTCD case. SAP is disabled for non-altitude reporting traffic that doesn't have a manually set AFL.

### 8.2.2 Conflict and Risk display on the track label

A SAP conflict is shown by displaying the Military coordination indicator ("**M**") on line 0 of the track label. The indicator can be set to warn for risks as well. Note that once the indicator is clicked and changes to inactive state, the system will not give further warnings for that aircraft as long as the indicator is in the inactive state. Click on the inactive indicator to re-arm the system once the aircraft has passed all the areas for which crossing clearance was given.

SAP conflicts (optionally also risks) are also shown in the SAP Window.

## 8.3 FPCP results display in the Flight Leg

The Flight Leg displays the aircraft's planned track in one minute steps. Each one minute long part of the path is colored according to the results of the MTCD and SAP processing. The following colors are possible:

- "Urgency FL"          MTCD and/or SAP conflict
- "Warning FL"          MTCD and/or SAP risk
- "Potential FL"        MTCD potential conflict
- "Information FL"      MTCD and/or SAP processing available, no conflicts or risks detected
- "Flight Leg"          No MTCD or SAP processing available for this part of the Flight Leg

If the aircraft has an assigned heading or is not following its route, the predictions only go up to 10 minutes and assume the aircraft continues on its present ground track. In this case the predicted track is shown as a dashed line when the flight leg is displayed.

# 9 Data stored in the flight strip annotation boxes

The plugin stores some data in the flight strip annotation boxes (the group of nine boxes in three columns on the right side of the strip). This enables you to send this data to the next controller, or any other controller by manually pushing the strip. EuroScope can be set to automatically push the strip to the next controller on handoff. In addition the plugin automatically pushes the strip when a handoff proposal (HOP) is sent.

The plugin needs to be able to use three of the nine boxes for its functions. They are the boxes in the bottom row, marked with A, B and C in the picture below. Don't manually edit those boxes or use them to store any other data. The other boxes, marked by minus signs, are not used by the plugin in any way.



**Box A** stores the holding point if a holding clearance has been given and plugin-to-plugin communications related items.

**Box B** stores the arrival sequence number, the previous assigned transponder code, the Freq and Mark indicators, information that the inbound clearance has been given, the manually entered AFL value, military coordination status, the release indicator, plugin-to-plugin communications related items and handoff proposal indicators.

**Box C** stores the contents of OP-TEXT. This means that the data is not shown to any other controller unless you push the strip to him. Any changes will require the strip to be pushed again. It's best to use OP-TEXT mainly for things related only to your sector because of this.

# 10 Known issues

## *Plugin data communication with multiple EuroScope instances*

Some data such as callsign highlights is stored internally within the plugin for each EuroScope instance. This can cause minor problems when using multiple instances and not having all the data synchronized.

## *Airport symbols blocking screen panning*

If you happen to double-click on one of the airport symbols when trying to move the screen, the screen will not move (instead the Runway Approach Line Window will open).

## *ROF/RTI/TIP message availability limited*

As there is no real plugin-to-plugin communication available, the availability and success of sending the ROF, RTI and TIP messages is somewhat limited.