# TOPLIS

USER MANUAL

TopSky plugin for Portugal vACC

Version 3.3

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*Chapter 1*

# Introduction

## 1.1 Disclaimer

Although - as its name suggests - the TopSky plugin is based on TOPLIS and the TopSky ATM system, it is in no way affiliated with or endorsed by Thales Group or NAV Portugal. Similarities between plugin features and the real system are not entirely coincidental, but the plugin can not be used as a real world training aid.

## 1.2 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 base TopSky plugin is developed by Juha Holopainen. 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.[4]

The A-CDM plugin is developed by Roger Puig. CDM is an Euroscope plugin based on the real life CDM tool that allows us to improve the departure flows at airports.[5]

*Chapter 2*

# Systems

## 2.1 A-CDM

Airport CDM (A-CDM) aims to improve the efficiency and resilience of airport operations by optimising the use of resources and improving the predictability of air traffic.
It also allows the exchange of more accurate departure information, particularly target take-off times, with the European ATFCM network, leading to improved en-route and sectoral planning.[1]

### 2.1.1 Operation

The A-CDM plugin operates in a Master-Slave topology, in which the "CDM Master" will calculate the required data and distribute it to the slaved CDM positions. Due to this, it is mandatory that the "Master" ATC is the one at the lowest position, such as Delivery.

| | |
|---|---|
| Warning | IF THERE IS NO ACTIVE "CDM MASTER" A-CDM WILL NOT BE OPERATIONAL |

| | |
|---|---|
| Warning | IF MORE THAN ONE POSITION ASSIGNS ITSELF AS "CDM MASTER" A-CDM WILL NOT BE OPERATIONAL |

At the end of a session or controller swap, the "CDM MASTER" ATC should return himself to "CDM SLAVE" before the next controller takes over.

#### 2.1.1.1 A-CDM Timeline

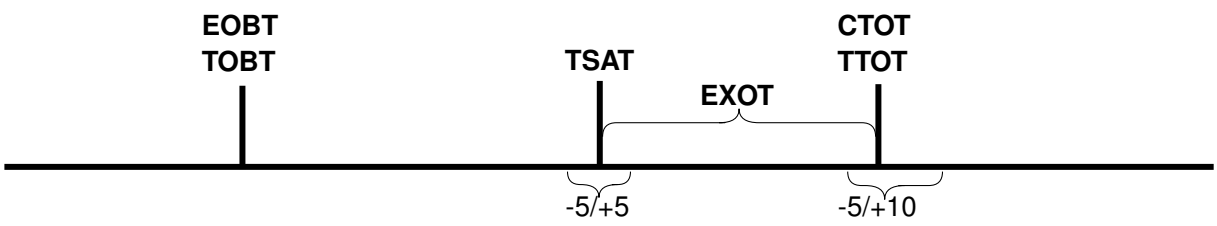



Figure 2.1: A-CDM timeline with delaying TSAT example

Each departure follows a timeline of events from the moment a Flight Plan is submitted until the flight is airborne. These events are called "Milestones".

The A-CDM calculation begins at Target Off Block Time (TOBT). TOBT is the time the aircraft is ready for startup, or push and start. This is typically the time at which the pilots reports "fully ready", or requests pushback or startup. In an optimal scenario this would match with the flight plan Estimated Off Block Time (EOBT, sometimes called ETD in other sources).

A-CDM will calculate a Target Take Off Time (TTOT) based on the TOBT, current departure rate, known traffic and Flow Restrictions. Each TTOT is separated from other TTOTs by the amount of time required to achieve the maximum defined departure rate. During moments of high traffic that, without a regulation, would exceed the airport departure rate capacity, the system will delay the TTOT in order to meet the required departure rate.

Different Stands have different Estimated Taxi Out Time (EXOT). A stand closer to the runway will have a shorter EXOT than another further away. The system adds EXOT to TOBT, to obtain TTOT.

Target Start-up Time (TSAT) is the time at which a flight may push back and start up.
If there is no delay, TSAT will be the same as TOBT.
If there is a delay, TSAT will the difference from TTOT - EXOT.
A TSAT has a validity window of -5 to +5 minutes, within which start-up approval may be issued.
A TSAT within the validity window will be colored in color1, or if outside the validity window color2.
Additionally, it will be colored in color5 the minute it expires, as an attention getter.
If a flight misses its TSAT, a new one must be assigned by right clicking the TSAT value in order to set TOBT to present time and restart the CDM calculation for the concerned flight.

During times of extraordinary demand, a Calculated Take-Off Time (CTOT) may be issued for a certain flight. The A-CDM operation remains the same, with the exception that it will try to match TTOT to CTOT. A CTOT has a validity window of -5 to +10 minutes of CTOT, during which Take Off clearance must be issued.

During some events, a manually created list of callsign and CTOT pairs may be created. These are Event CTOT, or ECTOT. ECTOT on their own do not contribute to A-CDM calculations, unless manually added as a CTOT to the flight.

Once A-CDM is made aware of the assignment of a CTOT to a flight, it will keep the same CTOT locked until a Ready Message (REA) is sent, even if the external source of the CTOT is updated with an improvement.

#### 2.1.1.2 Examples

The system first attempts to calculate a departure with no delay, by adding EXOT to TOBT it obtains TTOT. For example, TAP123 reports "fully ready" at 12:00 (TOBT 12:00), sitting on a stand with 15 minutes of taxi time (EXOT 15 minute), the system predicts TAP123 will be able to take off at 12:15 (TTOT 12:15). Because there is no conflict, TSAT is equal to TOBT (TSAT 12:00)

A second flight, RYR456, reports "fully ready" at the very next minute (TOBT 12:01), but is on a stand very close to the runway with a shorter taxi time (EXOT 5 minutes, for example), the system predicts RYR456 will be able to take off at 12:06 (TTOT 12:06). Because there is no conflict, TSAT is equal to TOBT (TSAT 12:01).
Notice how RYR456 was ready for push and start after TAP123, yet, because of the very short taxi time, it will take off much sooner that TAP123.

A third flight, IBE789, also reports "fully ready" at 12:01 (TOBT 12:01), sitting on a stand with 15 minutes of taxi time (EXOT 15 minute), the system predicts IBE789 will be able to take off at 12:16 (TTOT 12:16).
However, this TTOT is too close to TAP123 (TTOT 12:15) and must be delayed for separation.
The system calculates that according to the current departure rate, IBE789 must take off at 12:18 (TTOT 12:18). By subtracting the 15 minutes Estimated Taxi Out Time from the Target Take Off Time, the system obtains IBE789's Target Startup Time of 12:03 (TTOT - EXOT = TSAT, 12:18 - 15 = 12:03). This is a very small delay, in fact so small that it falls within the TSAT window. IBE789 TSAT is 12:03, and because the TSAT window is +/- 5 minutes (11:58 - 12:08). IBE789 may be pushed back at anytime within this window.

A fourth flight, EJU321, is departing to the same destination as IBE789. This destination has limited capacity and can only accept arrivals in 15 minute intervals. The system will take care of this limitation, no intervention should be required.

EJU321 reports "fully ready" at 12:01 (TOBT 12:01), sitting on a stand with 15 minutes of taxi time (EXOT 15 minute), the system predicts EJU321 will be able to take off at 12:16 (TTOT 12:16). Because of the restriction at destination, the earliest time that EJU321 can take off, while remaining separated of IBE789, is 12:33 (IBE789's TTOT, 12:18, + 15 minutes required separation at destination).
The system assigns a Calculated Take Off Time of 12:33 to EJU321 (CTOT 12:33). By subtracting the taxi time from this (EXOT 15 minutes), the system obtains TSAT 12:18 (CTOT - EXOT = TSAT, 12:33 - 15 = 12:18).
EJU321 must wait on the stand until the TSAT window (12:13 - 12:23) before being able to pushb and start.

#### 2.1.1.3 Commands

Interaction with core A-CDM systems is done with classic command line inputs:

| | |
|---|---|
| `.cdm reload` | Reloads all CDM configs |
| `.cdm refresh` | Forces a data refresh phase |
| `.cdm ctot` | Refreshes CTOT data |
| `.cdm save` | Saves data to `savedData.txt` |
| `.cdm load` | Loads `savedData.txt` |
| `.cdm master "airport"` | Become the master of the selected airport. |
| `.cdm slave "airport"` | Turn back to slave of the selected airport. |
| `.cdm refreshtime "seconds"` | Change refresh rate time in seconds (Default 30, MAX 99). |
| `.cdm customdelay "airport"/"runway" "time_start"` | Shifts all TSATs for selected airport and runway to start at the `time_start`. Wait some seconds to update after applied. (Ex. `.cdm customdelay LPPT/02 1100` All TSATs from LPPT runway 02 will start at 1100). To remove use `.cdm customdelay LPPT/02 9999`. |
| `.cdm lvo` | Toggle LVO on or off |
| `.cdm realmode` | Toggle realmode on or off |
| `.cdm remarks` | Toggle set TSAT to Euroscope scratchpad on or off |
| `.cdm rates` | Updates rates values from `rate.txt` |
| `.cdm recover` | In case of of CTD, it tries to recover the latest time status backed up in the server. Example: `.cdm recover LPPT` |
| `.cdm flow` | Forces an update on ECFMP flow restrictions data, otherwise updated every 5 minutes. |

| | |
|---|---|
| `.cdm help` | Show all available commands |
| `.cdm atfcm` | Open/close ATFCM window |

Table 2.1: A-CDM commands

### 2.1.2 A-CDM field descriptions

| Data field | Description | Comments | Color |
|---|---|---|---|
| A | Alert | Flashes A if the aircraft is waiting for an action | color5 |
| ASAT | Actual Start-Up Approval Time | Automatically records time of Start-Up Approval when inputting a Start-Up, Push-back, Taxi or DEPA Ground Status | color12 |
| ASRT | Actual Start-Up Request Time | Used to record time of Ready or Start-Up Request | color10 |
| CTOT | Calculated Take Off Time | Flow restrictions create CTOTs to planes affected with published MDIs from ECFMP | color11<br><br>If REA message has been sent:<br>color2<br><br>If Manual or Event CTOT:<br>color4<br><br>If Manual or Event CTOT, and Flow/CAD CTOT:<br>color7 |
| Delta CTOT | Countdown to CTOT | | color11<br><br>If REA message has been sent:<br>color2<br><br>If Manual or Event CTOT:<br>color4<br><br>If Manual or Event CTOT, and Flow/CAD CTOT:<br>color7 |

| Data field | Description | Comments | Color |
|---|---|---|---|
| ECTOT | Event Calculated Take Off Time | Similar to *CTOT*, but originating from a manually compiled list of callsign and CTOT pairs. Needs to be manually added to *CTOT* to have an effect on A-CDM calculations. | color11 |
| E | State | Depending on aircraft timing:<br>P: EOBT more than 35 minutes in the future<br>C: EOBT is less than 35min and TSAT not expired<br>I: TSAT expired | color1 |
| EOBT | Estimated Off Block Time | Same time as Flight Plan ETD or EOBT | color8<br><br>If a new EOBT is submitted by the pilot, and EOBT is different than TOBT:<br>color4 |
| Flow Message | ECFMP Flow Message | Description of the restriction impacting the flight | color8 |

| Data field | Description | Comments | Color |
|---|---|---|---|
| FSTS | Flight Plan Status | FLS-NRA: Flight Suspended due to Not Reported As Airborne.<br><br>FLS-CDM: Flight Suspended Triggered by CDM.<br><br>FLS-MR: Flight Suspended due to Mandatory Route.<br><br>FLS-GS: Flight Suspended due to Ground Stop.<br><br>DES: Flight is De-Suspended<br><br>SAM: Slot Allocation Message.<br><br>SRM: Slot Revision Message.<br><br>SLC: Slot Cancellation.<br><br>ATC ACTIV: Flight is already in movement. Automatically set when AOBT is set. | DES, SAM, SRM, SLC and ACT:<br>color5<br><br>FLS:<br>color7 |
| Ready | Ready State Flag | Used to signal Ready state. Setting Ready also records time of Ready or Start-Up Request | Ready:<br>color1<br><br>Not Ready:<br>color7 |
| TOBT | Target Off Block Time | On receipt of a new Flight Plan, TOBT is set to the same time as EOBT.<br><br>If the Flight Plan is updated with a new EOBT, TOBT will not change automatically.<br>If required, TOBT may be manually updated using the Edit TOBT function | From TOBT-35 to TOBT-5<br>color2<br><br>From TOBT-5 to TOBT+5:<br>color1 |

| Data field | Description | Comments | Color |
|---|---|---|---|
| TSAC | Target Start-Up Approval Communicated Time | Used to note down TSAT communicated to the flight | If TSAC within 5 minutes of TSAT:<br>color1<br>If TSAT changed by more than 5 minutes:<br>color4 |
| TSAT | Target Startup Time / Delay | TTOT - EXOT. Ammount of delay may be displayed right of the slash, as the difference between TOBT and TSAT. | From EOBT-35 to TSAT-5:<br>color2<br><br>From TSAT-5 to TSAT+5:<br>color1<br><br>From TSAT+5 to TSAT+6:<br>color5<br><br>After TSAT+6:<br>color2 |
| TTOT | Target Take Off Time | | color9<br><br>If TTOT is locked due to a CDT restriction:<br>color2 |
| Delta TTOT | Countdown to TTOT | | color9<br><br>If TTOT is locked due to a CDT restriction:<br>color2 |

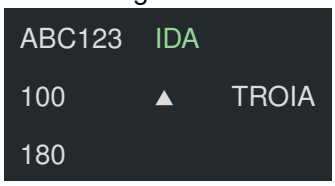
Table 2.2: A-CDM field descriptions

## 2.2 Coordination

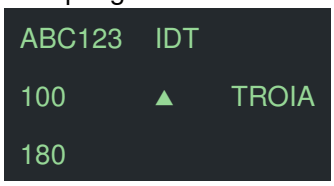
TopSky provides various ways to coordinate information between controllers.

The example track labels do not represent any specific setup and are only meant to highlight the items specific to each function. In the examples, aircraft ABC123 is assumed by “transferring controller” and the next sector is referred to as “accepting controller”. For reference, the example labels would look like these before any coordination (coordination point TROIA, entry/exit level FL180):

Transferring controller:




Accepting controller:



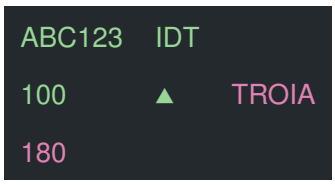

Some of the coordination functions (ROF, RTI and TIP) require very specific conditions to exist to be able to send the necessary messages between the controllers. TopSky attempts to check for this and either disables the function (grey text in the menu button) or creates a warning message if the conditions are lost during a coordination, but in some cases the coordination messages can get lost. In this case try the coordination again or manually coordinate.

### 2.2.1 PEL/COPN

A coordination is displayed by coloring the proposed values Proposition In or Proposition Out, depending on whether the coordination was sent or received, in the track label and the flight lists. Additionally, a message is displayed in the *Message In Window* for received coordinations and in the *Message Out Window* for coordinations sent by you.

To send a PEL (Planned Entry Level) coordination, left-click on the PEL value in the track label or a flight list. This opens a menu to select a value. To send a COPN (Entry Point) coordination, left-click on the COPN value in the track label or a flight list. This opens the *Waypoint Menu*. Select “Probe”. This opens a menu to select the desired point. The response of the coordination can be a counter-proposal as well, in which case the color of the values remain Proposition In.

An example track label, showing both the PEL and COPN being coordinated:




To answer an incoming coordination, left-click on a proposed value or the corresponding message in the *Message In Window*. This opens a menu where you can select the response (Accept, Refuse or Change). After the response, the track label and lists display depend on the answer:

Accept: Accepted values, sector state color

Refuse: Original values, sector state color (EuroScope bug, should be Warning)

Change: New proposed values in Proposition Out

### 2.2.2 XFL/COPX

A coordination is displayed by coloring the proposed values Proposition In or Proposition Out, depending on whether the coordination was sent or received, in the track label and the flight lists. Additionally, a message is displayed in the *Message In Window* for received coordinations and in the *Message Out Window* for coordinations sent by you.

To send an XFL (Exit Flight Level) coordination, left-click on the XFL value in the track label or a flight list. This opens a menu to select a value. To send a COPX (Exit Point) coordination, left-click on the COPX value in the track label or a flight list. This opens the *Waypoint Menu*. Select “Probe”. This opens a menu to select the desired point. The response of the coordination can be a counter-proposal as well, in which case the color of the values remain Proposition In.

An example track label, showing both the XFL and COPX being coordinated:

| | | |
|---|---|---|
| ABC123 | IDA | |
| 100 | ▲ | TROIA |
| 180 | 200 | |

To answer an incoming coordination, left-click on a proposed value or the corresponding message in the *Message In Window*. This opens a menu where you can select the response (Accept, Refuse or Change). After the response, the track label and lists display depend on the answer:

Accept: Accepted values, sector state color

Refuse: Original values, sector state color (EuroScope bug, should be Warning)

Change: New proposed values in Proposition Out

### 2.2.3 HOP

The purpose of the HOP (Hand-Over Proposal) message is for the transferring controller to propose the flight for hand-over to the accepting controller, and/or to propose non-standard transfer conditions which require the approval of the accepting controller.

To send a HOP without any transfer conditions, select the *Handover Proposal (HOP)* option in the *Callsign Menu*.

To send a HOP with a transfer condition (assigned heading, direct-to point or assigned speed):

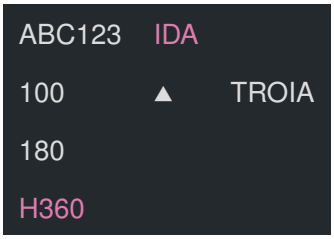
1. open the AHDG or ASP menu and select the "HOP" option (found in the “More” folder)
    - See *Handover Proposal (HOP)* for indications

2. select the desired value (to select a direct-to point, select the “Point” option in the AHDG menu and then left-click on the point on the radar screen

The example labels below show a HOP with an assigned heading proposal:

Transferring controller:

- SI item and any proposed values in Proposition Out color
- Message in Message Out Window




Accepting controller:

- Callsign item and any proposed values in Proposition In color
- Message in Message In Window

The transferring controller should monitor both the track label and the *Message In Window* as there are three ways for the accepting controller to answer a HOP. In order of preference, they are:

- From the *Callsign Menu*, select “ROF”. This sends a ROF message to the transferring controller.
  - See *Request On Frequency message* for indications
- Left-click on the AHDG, ASP or COPN item. This opens the *Combined Transfer Menu*. In it, select “Accept”. This sends an Accept message to the transferring controller.
  - The labels on both controllers’ screens return to normal sector state coloring
  - A message is put into the Message In Window for the transferring controller
  - A message is put into the Message Out Window for the accepting controller
- From the *Callsign Menu*, select “Assume”. This assumes the aircraft (with the other two answers the aircraft remains assumed by the transferring controller)
  - The labels on both controllers’ screens return to normal sector state coloring

| Note | If a HOP is sent to a controller not using the TopSky plugin, it will only be displayed on your label. To the accepting controller it will look like a normal transfer. Any proposed values will be shown also on the accepting controller’s label but they will not be colored as proposals.<br>If a HOP is sent to a manually selected controller and is answered by either “Accept” or “ROF”, the next controller is reset to the automatically calculated one. The correct controller needs to be manually selected again before transferring the aircraft. |
|---|---|

### 2.2.4 ROF

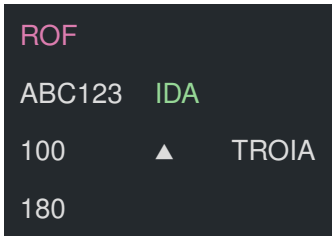
The ROF (Request on Frequency) message is sent by the accepting controller to the transferring controller when a flight establises radio contact but the label has not yet been transfered to the downstream sector. The upstream sector should then transfer the label. The message may also be used as a reply to HOP to signify the acceptance of the flight under the proposed conditions.

| | |
|---|---|
| Warning | ROF should not be used to request an early handover of a flight. ROF is a coordination tool that is context dependent, using it outside the prescribed scenarios or ir other unintended ways will cause unnecessary confusion. |

To send a ROF message, select the “ROF” option in the *Callsign Menu* of the aircraft in question. The example labels below show the indications when the message is sent:

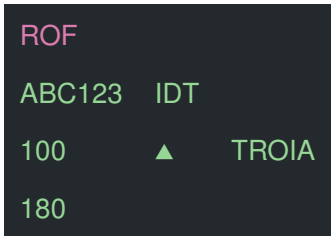
Transferring controller:

- ROF text in Proposition In color
- Message in Message In Window




Accepting controller:

- ROF text in Proposition Out color
- Message in Message Out Window




The indications are removed when a “Transfer” or “HOP” is performed.

| | |
|---|---|
| Note | If a ROF is sent to a controller not using the TopSky plugin or the message fails to go through, an error message will be put into the Personal Queue Window. The message counter in the Global Menu will be highlighted in Global Menu Highlight color if the window is not open. |

### 2.2.5 RTI/TIP

These messages are used to request/propose the transfer of a flight on an assigned heading, speed or rate of climb/descent. RTI (Request Tactical Instructions) is a request initiated by the accepting controller and TIP (Tactical Instructions Proposal) a proposal initiated by the transferring controller.

In the examples below the RTI message is used. For the TIP message, the indications and actions are the same, only the roles are reversed – the transferring controller sends and the accepting controller answers the message, so the message will appear in the other Message Window.
To send the RTI message:

1. open the AHDG, ASP or ARC menu and select the “RTI” option (found in the “More” folder)

2. select the desired value in the list (“Point” option in the AHDG menu is not available)

When the message is sent, the following indications are shown:

Transferring controller:

- Proposed value in Negotiation In color
- Message in Message In Window

ABC123 IDA
100 ▲ TROIA
180
H360

Accepting controller:

- Proposed value in Negotiation Out color
- Message in Message Out Window

ABC123 IDT
100 ▲ TROIA
180
H360

To answer the message, left-click on the proposed value. This opens the *AHDG Menu*, *ASP Menu* or *ARC Menu* in a mode where you can either accept or reject the proposal. When clicking on “Ack”, the menu closes and the following indications are displayed:

Transferring controller:

- Relevant label field value in Reminder color (until the accepted value is set)
- Message in Message Out Window

ABC123 IDA
100 ▲ TROIA
180
H360

Accepting controller:

- Relevant label field value in Reminder color (until the accepted value is set)
- Message in Message In Window

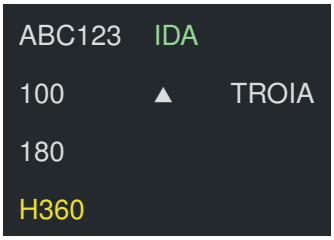
ABC123 IDT
100 ▲ TROIA
180
H360

When the accepted value has been set, the label field returns to the sector state color. When replying to an RTI message, the menu also includes an “Accept” option which, in addition to accepting the coordination, also immediately sets the value. While the coordinated value is being shown in the label field, it is possible to display the currently set value temporarily by hovering the mouse cursor over the label and keeping the <ALT> key pressed.

On the other hand, if “Reject” is chosen, the menu closes the indications are as follows:

Transferring controller:

- Rejected value in Warning color
- Message in Message Out Window




Accepting controller:

- Rejected value in Warning color
- Message in Message In Window

A rejected coordination value will be removed from the label after 60 seconds or by right-clicking the value.

| Note | If an RTI or TIP is sent to a controller not using the TopSky plugin or the message fails to go through, an error message will be put into the Personal Queue Window. The message counter in the Global Menu will be highlighted if the window is not open. |
|---|---|

### 2.2.6 Coordinating more than one value

It is possible to coordinate more than one value, either before or after the previous proposal has been answered. However, if more than one proposal is active, clicking on “Ack” or “Reject” to one will send the same answer to all of them. Therefore, it is recommended to wait for an answer until sending another proposal unless the intention of the proposal is to get “all or nothing”.

For example, if you send an RTI with AHDG 360 (as in the above example) and then send another with ASP 300 (either immediately or after the first coordination is answered), the label field on line 0 will only show the ASP proposal. When opening the Tactical Transfer menu, all the proposals and accepted values are shown. If more than one proposal is active, clicking on “Accept” or “Reject” will send the same answer to all of them. Therefore, it is recommended to wait for an answer until sending another proposal unless the intention of the proposal is to get “all or nothing”.

### 2.2.7 Data stored in the flight strip annotation boxes

TopSky 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. In addition, TopSky automatically pushes the strip when a handoff proposal (HOP) is sent.

TopSky needs to be able to use three of the nine boxes for its functions. They are the boxes marked with X’s in the picture below. Do not manually edit those boxes or use them to store any other data. The other boxes, marked by minus signs, are currently not used by TopSky in any way.

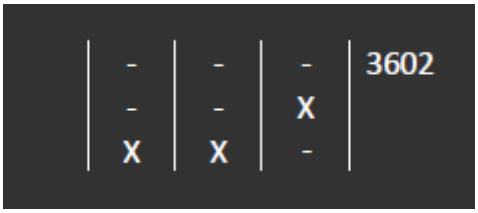



Figure 2.2: Unusable flight strip boxes

## 2.3 Datalink

TopSky uses *Hoppie's ACARS network*. A separate password (logon code) is needed, and it can be *requested from that site*.

TopSky supports Departure Clearance (DCL) and Controller-Pilot Data Link Communications (CPDLC).

To start using the data link functions, first connect to the VATSIM network. Then connect to the Hoppie network:

- Open the *CPDLC Setting Window*
- Enter/check the login callsign
- Enter/check your personal logon code
- Select whether to provide CPDLC or DCL services or both
- Left-click on the "Connect" button

The "Connect" button will change to "Online" with a green background. Wait at least 10 seconds to see if the connection is successful. Error messages regarding the connection will be shown in the *Personal Queue Window*.

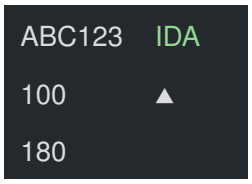
| | |
|---|---|
| Warning | Attempting to connect with a CPDLC login callsign that is already in use will not fail instantly, and may take up to 10 seconds for the error message to be added to the *Personal Queue Window* |

The Hoppie logon code expires after 120 days of inactivity. If that happens, the connection will fail and a new logon code has to be requested.

If the connection is lost, an error message dialog will be displayed in the center of the radar screen. Note that if multiple EuroScope instances are used, the proxy instances will not be able to access the CPDLC message windows or change the network connection status.

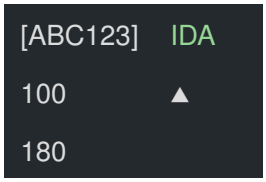
TopSky may sometimes fail to parse the message contents correctly. The longer the message, the more likely it is that the parsing will fail. When in doubt, open the message in the *CPDLC Current Message Window*.

The example track labels do not represent any specific setup and are only meant to highlight the items specific to each function. In the examples, aircraft ABC123 is assumed by you, the next controller is "IDA", the aircraft is climbing through FL100, and its cleared level is FL180. This is the label before any messages arrive:



When the aircraft requests to start a CPDLC connection, it sends a “REQUEST LOGON” message. The message is displayed in the *CPDLC Current Message Window* and the Callsign field gets blinking square brackets around it (not on proxy ES instances). TopSky automatically denies requests for aircraft not entering your sector. To approve the request, use the “Start CPDLC” button in the *Callsign Menu*. To deny the request, left-click on the message in the *CPDLC Current Message Window* and select “UNABLE”. It is also possible to accept if necessary, but the *Callsign Menu* is the primary way to do it.

When the request has been accepted, the Callsign field will get steady square brackets around it. This indicates that the aircraft is CPDLC connected and available to exchange CPDLC messages with.




To terminate the CPDLC connection of an aircraft, use the “End CPDLC” button in the *Callsign Menu*.

| Note | While it is possible to answer any message in the *CPDLC Current Message Window* using the “Manual Reply” option, the track label menus should always be used to answer correctly recognized messages, as using the manual reply method will not update the track label values. |
|---|---|

### 2.3.1 Departure Clearance (DCL)

ARINC-623 DCL is a service used in Europe and many other parts of the World. It is a direct ATC-to-pilot data link communication over the ACARS network.

The departure clearance functionality is built into the Departure List. A received clearance request is displayed in the list, and a clearance can be sent by opening the *Pre-Departure Clearance Window* via left clicking the RWY or SID fields of the Departure List.

A DCL follows a chronological sequence of events that must be completed in order to communicate a clearance.

#### 2.3.1.1 Departure Clearance Request (RCD)

The aircraft sends a clearance request message (RCD). The message is also shown in the *CPDLC Current Message Window*:

> REQUEST PREDEP CLEARANCE ABC123 A320 TO ESSA AT LPPT STAND 221 ATIS PAPA

#### 2.3.1.2 Flight System Message (FSM)

If the request is correctly formatted, TopSky may automatically reply with a Departure Clearance Message (CLD) message if all the conditions in *DCL/PDC setup* are met. If not all conditions are met, TopSky will automatically send a flight system message (FSM) as a reply. Its content depends on whether all the requirements for a DCL are met (flight plan found, departure airport offers data link clearances, etc.). If so, the following reply message is sent to the aircraft:

> DEPART MESSAGE STATUS FSM 1312 221113 LPPT ABC123 RCD RECEIVED REQUEST BEING PROCESSED STANDBY

The Clearance Flag tag item will show a “R” text in Warning color. If the request contained remarks text after the ATIS indicator, “R” alternates with “•”.

If a clearance is not sent before the timeout occurs, the data link clearance request is automatically rejected and a message is sent to the aircraft to revert to voice procedures.

> RCD REJECTED REVERT TO VOICE PROCEDURES

#### 2.3.1.3 Departure Clearance Message (CLD)

The clearance is sent using the *Departure Clearance Window*, opened by left clicking the RWY or SID fields of the Departure List.
The clearance is sent using the “Send MSG” button. “R/T” rejects the data link clearance request and sends a message to the aircraft to revert to voice procedures.

> LPPT PDC 001 CLD 1314 221113 LPPT PDC 001 ABC123 CLRD TO ESSA OFF 02 VIA IXIDA5N SQUAWK 3251 QNH 1012

Once the clearance is sent, the Clearance Flag item will change to “S”.

If there is still no answer from the aircraft when the timeout occurs, the data link clearance is automatically rejected and a message is sent to the aircraft informing it that the received clearance has been cancelled.

> ACK NOT RECEIVED CLEARANCE CANCELLED REVERT TO VOICE PROCEDURES

#### 2.3.1.4 Departure Clearance Readback (CDA)

A clearance can be answered to with either “WILCO” to accept it or “UNABLE” to reject it.

#### 2.3.1.5 Flight System Message (FSM)

Once a reply is received, the Clearance Flag item changes to a filled box (for WILCO) or to "F" (for UNABLE). A message is automatically sent to the aircraft.

> ATC REQUEST STATUS FSM 1317 221113 LPPT ABC123 CDA RECEIVED CLEARANCE CONFIRMED

If an UNABLE reply is received, clearance must then be negotiated and delivered by voice. A message is automatically sent to the aircraft.

> CONTACT ATC BY VOICE REFUSE NOT SUPPORTED BY DATALINK

#### 2.3.1.6 Abnormal operations

Most failure cases result from the message not being correctly formatted, and TopSky failing to recognize it correctly. Regardless of whether TopSky recognizes the message as belonging to a departure clearance sequence, it will be put into the *CPDLC Current Message Window*. In case the system fails, revert to voice communications.

### 2.3.2 Controller-Pilot Data Link Communications (CPDLC)

CPDLC is a means of communication between controller and pilot, using data link for ATC communications, and with the extra advantage of displaying data on the track labels and flight lists as well.

As the messages take significant amount of time to get through (receiving a reply to a clearance can take anything from seconds to a couple of minutes), using CPDLC should be limited to situations that are not time-critical. For this reason, it is mostly used in upper airspace area control sectors.

The messages are grouped to dialogues, with an opening message and subsequent replies. Some messages do not need a reply, while for others a specific reply is expected. The available replies are set automatically, so only the correct type of reply can be sent.

#### 2.3.2.1 Allowed message types

TopSky supports for the following message types:

| **Uplink** | **Downlink** |
|---|---|
| Level clearance | Level request |
| Heading clearance | Heading request |
| Direct-to clearance | Direct-to request |
| Squawk code assignment | Speed request |
| Squawk ident instruction | MAYDAY/PAN/SQ7500 |
| Voice contact instruction | Position report |
| Free text | Free text |

Table 2.9: Supported CPDLC message types

#### 2.3.2.2 Non-supported message types

TopSky does not support the following downlink message types. They will be automatically closed and a reply sent informing that the system does not support the message type:

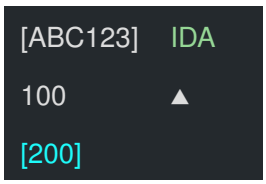
- Any requests containing “When can we expect”, “At pilots discretion” or “Own separation”
- Level requests for a cruise climb, block level, or any level request tied to a position or time
- Lateral requests for an offset, weather deviation or ground track

- Speed requests to maintain a speed range
- Voice contact requests
- Requests for a procedure name and/or type

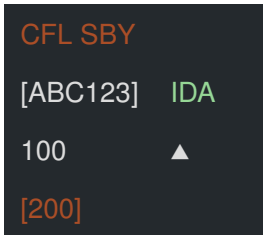
Note that a non-allowed message type can be classified as “free text” by TopSky if the message parser doesn’t recognize it as a non-allowed type. In this case the automatic reply will not be sent and it is recommended to use the "MESSAGE NOT SUPPORTED BY THIS ATS UNIT" message from the *Free Text Messages* set, and archiving the dialogue.

#### 2.3.2.3 Uplink clearance sequence

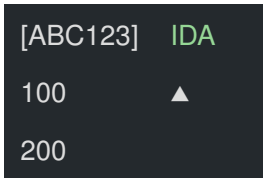
In this example a level clearance is used. The clearance is sent using the *CFL Menu*. To send the clearance using CPDLC, check that the “CPDLC” option is selected. Depending on the aircraft’s altitude, by default it may be selected or deselected. Send the clearance by selecting a level value. In this case FL200 was selected, and the CPDLC message “CLIMB TO FL200” was sent to the aircraft. The uplinked value is shown in brackets and in CPDLC UM Clearance




The aircraft has responded with “STANDBY”. The uplinked value changes to CPDLC Standby color, and a warning is inserted on line 0 of the label. The warning can be acknowledged by left-clicking on it:




The aircraft then eventually answers with “WILCO”. The CFL value is updated accordingly and the label field colors return to normal:




If the aircraft answers with “UNABLE”, a warning is inserted in line 0 of the label:

CFL UNA
[ABC123] IDA
100 ▲
[200+]

The "+" after the level indicates that there is a reason in the answer message, for example "DUE TO PERFORMANCE". The reason given is only accessible from the *CPDLC Current Message Window*.

Left-clicking on the warning acknowledges it and the original CFL value is again shown in the label:

[ABC123] IDA
100 ▲
180

#### 2.3.2.4 Downlink request sequence

This example shows a level request.

The aircraft has sent a level request for FL200. The value is shown in the RFL field in brackets and in CPDLC DM Request color:

[ABC123] IDA
100 ▲
180 [200]

The responses to a level request are sent using the *RFL Menu* or *CFL Menu*. The *RFL Menu* offers the possibilities to respond with "STANDBY" or "UNABLE", the *CFL Menu* with a level clearance (to the requested level or some other level). In this case the sequence then changes to an uplink clearance – see above for details.

If a free text CPDLC message is received from the aircraft, "CPDLC MSG" will be inserted above the label in CPDLC DM Request color:

CPDLC MSG
[ABC123] IDA
100 ▲

Left-clicking on the warning will clear it and close all related dialogues. Right-clicking will open the *CPDLC Current Message Window*.

#### 2.3.2.5 Free Text Messages

A set of premade free text messages is included for use in the *CPDLC Free Text Menu* and is acessible via the *Callsign Menu* or *CPDLC Current Message Window*:

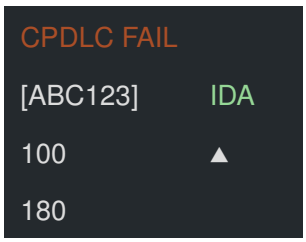
| ATC Message Element | Purpose | Pilot Response |
|---|---|---|
| MESSAGE NOT SUPPORTED BY THIS ATS UNIT | Uncaught unsupported messages | NIL |
| SERVICE TERMINATED FREQ CHG APPROVED | Release to Unicom | ROGER |
| CONTACT ME VIA VOICE | Raise a flight on the frequency | ROGER |
| REQUEST AGAIN WITH NEXT ATC UNIT | Defer requests onto the next sector | NIL |
| IDENTIFICATION TERMINATED DUE SURVEILLANCE COVERAGE | Terminate surveillance service | ROGER |
| REPORT BY VOICE TOP OF DESCENT | Planning purposes | NIL |
| REPORT BY VOICE AT WHAT TIME ABLE FOR HIGHER EVEN FLIGHT LEVEL | Planning purposes | NIL |
| REPORT BY VOICE AT WHAT TIME ABLE FOR HIGHER ODD FLIGHT LEVEL | Planning purposes | NIL |
| STOP SENDING CPDLC REQUESTS | Impose CPDLC Silence | NIL |
| RESUME NORMAL CPDLC OPERATIONS | Revoke CPDLC Silence | NIL |

Table 2.10: CPDLC Free Text Messages

#### 2.3.2.6 Abnormal operations

As with DCL messages, the most likely failure scenario is TopSky misinterpreting the contents of a received message, which can be verified on the *CPDLC Current Message Window*. Some other failure scenarios are presented below.

If TopSky has temporarily lost contact with the CPDLC server, “CPDLC FAIL” will be inserted in line 0 of the labels of all CPDLC connected aircraft in CPDLC Failed color.




In case the server connection is not re-established within a certain time, the connection will be automatically closed and a warning message box will be presented. A new connection can be attempted at any time from the *CPDLC Setting Window*.

During temporary connection issues and also when the connection is automatically closed, the “AGCS” system label in the *General Information Window* will be displayed with Warning color until a connection is re-established.

If the CPDLC connection is terminated by the pilot, a “CPDLC P ABT” warning is inserted in line 0 of the label in CPDLC Failed

```
CPDLC P ABT
[ABC123]      IDA
100           ▲
180
```

Left-clicking on the warning acknowledges it.

If an uplink clearance is not answered in time, a “<message type> P LATE” warning will be inserted in line 0 of the label in CPDLC Pilot Late

```
CFL P LATE
[ABC123]      IDA
100           ▲
180
[200]
```

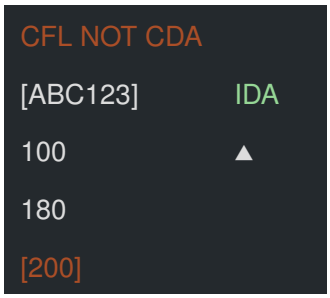
Left-clicking on it opens the *CPDLC Pilot Late Acknowledgement Menu* with options to either abort the clearance or manually mark it as aswered with “WILCO”. Manually marking should be done only after a satisfactory readback is obtained by voice.

If sending an uplink clearance failed, a “<message type> ERR” warning will be inserted in line 0 of the label in CPDLC Failed

```
CFL ERR
[ABC123]      IDA
100           ▲
180
[200]
```

Left-clicking acknowledges the warning and aborts the clearance, displaying the previous value in the label.

If an uplink clearance is sent successfully but you are not the Current Data Unit in the aircraft’s CPDLC system, a “<message type> NOT CDA” warning will be inserted in line 0 of the label in CPDLC Failed:




Left-clicking acknowledges the warning and aborts the clearance, displaying the previous value in the label.

## 2.4 Flight Plan Conflict Probe

| Warning | The use of Safety Nets does not relieve the controller from manually identifying and correcting conflicts. Safety Nets are generally configured with conservative values in respect to minimum separations. Even so, the controller must be aware that it is impossible to configure Safety Nets to catch all possible conflict situations. |
|---|---|

### 2.4.1 MTCD (Medium Term Conflict Detection)

**General**

The MTCD system is a tool that enables the controller to predict possible future conflicts between aircraft. The look-ahead time (prediction time) is set to 20 minutes and the separation distance that triggers the alert (prediction distance) to 5 NM within the 3 NM separation area, 7 NM within the 5 NM separation area, and 50 NM within the Conventional Separation Area. Additionally, 10 NM is used within LECM, GMMM and GCCC. No MTCD is available within LPPO.

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.

In the vertical plane, TopSky predicts a climb or descent and accounts for buffer zones:

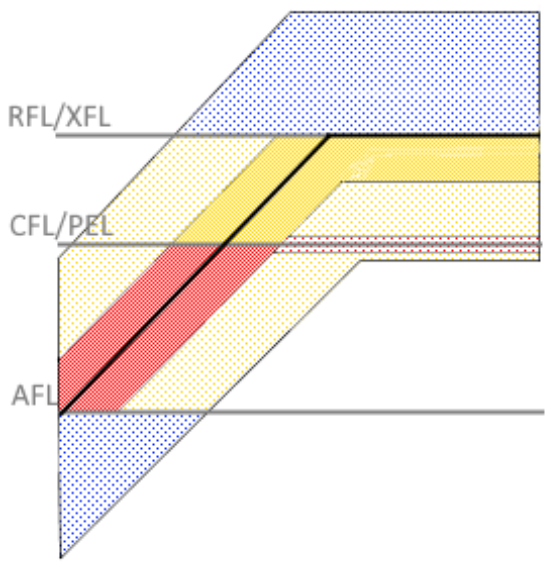



Figure 2.3: MTCD Vertical Path

- Conflicts (area with red shading)
  - detected within 4000ft around the predicted vertical path of the aircraft between AFL and CFL/PEL

  - current clearances may lead to a loss of separation

- Conflict risks (area with yellow shading)
  - detected within 4000ft around the predicted vertical path of the aircraft between AFL and RFL/XFL
  - current clearances will not lead to a loss of separation, but modifying the clearance to the predicted path (CFL=RFL/XFL) will create a conflict

- Potential predicted conflicts (area with light red shading)
  - detected between tracks with equal CFL/PEL values, maintaining the same AFL, when the predicted path contains further climb/descent
  - current clearances result in a loss of separation if further climb/descent is not given
  - at least one of the tracks must be *Assumed*

- Potential risks of conflict (area with light yellow shading)
  - detected within 10000ft but within the minimum and maximum levels of the predicted vertical path

- Potential conflicts (area with light blue shading)
  - detected within 10000ft, outside of the minimum and maximum levels of the predicted vertical path

For the predictions to be accurate, it's very important to keep the CFL and the aircraft's route updated at all times. For aircraft that have an assigned heading or a RAM warning, the system assumes that it will continue 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.

MTCD is not available for aircraft on the ground until their state is set to "DEPA", or aircraft below 8500ft.

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

If there is a conflict or potential predicted conflict for the aircraft within the set warning parameters, a "•" in Urgency color is shown 10 minutes to loss of separation with a 5nm, 7nm or 10nm separation minimum, depending on the sector.

The MTCD conflicts are also displayed in the *CARD*.

### 2.4.2 SAP (Segregated Area Probe)

#### 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 will 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. For aircraft that have an assigned heading or a RAM warning, the prediction logic is the same as in the MTCD case. SAP is disabled for non-altitude reporting traffic that do not have a manually set AFL.

### Conflict and Risk display on the track label

A conflict is shown by displaying the Military coordination indicator ("M"). 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 are also shown in the *SAP Window*.

## 2.5 Tactical Controller Tool (TCT)

### 2.5.1 General

Tactical Controller Tool works between the STCA and MTCD functions, providing alerts based on the aircraft's tactical trajectory for the next 5 minutes.

In the lateral plane, the aircraft's predicted trajectory follows either the planned route, an assigned heading clearance, or the current ground track if the aircraft is not found to follow the cleared route/heading.

In the vertical plane, the predictions use the current level for aircraft maintaining their cleared levels, a range of pre-defined vertical speeds for tracks cleared for a vertical maneuver but still in level flight, and an uncertainty buffer around the current vertical speed for aircraft climbing or descending. The predictions assume the aircraft to level off at its cleared level.

### 2.5.2 Alert display

An alert is shown by displaying the text “TC” (or “TC+” if the aircraft is involved in multiple TCT conflicts) in the TCT label item. The conflict(s) can be visualized by toggling on the TCT legs display by right clicking the "TC" flag.

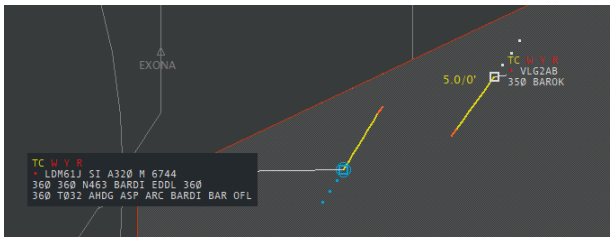



Figure 2.4: TCT example

## 2.6 Blind Spot function

### 2.6.1 General

The Blind Spot function alerts the controller for level clearances that would create conflicts, by probing specified levels around the aircraft's current level for conflicts. The function uses by default the TCT parameters, but some of the parameters can be specified to be different for Blind Spot. Conflicts starting within the next three minutes are displayed.

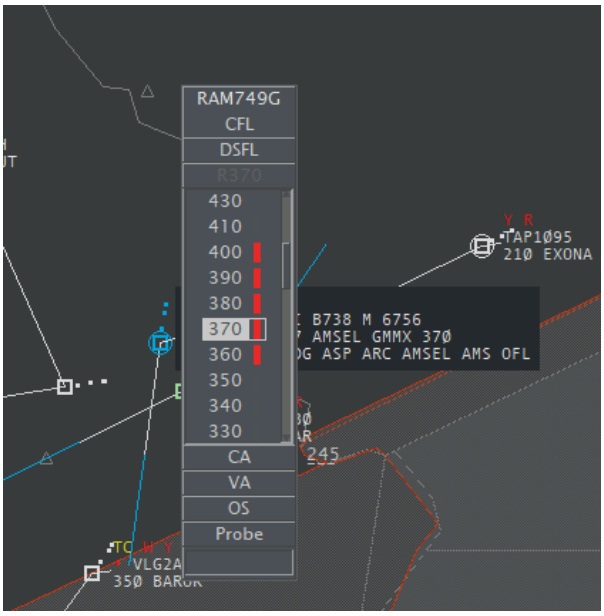



Figure 2.5: BS function example

### 2.6.2 Alert display

The Blind Spot function probes the relevant levels when the CFL Menu is opened, and displays the results with colored bars on the right side of the level values. The probe is not refreshed periodically, and as the results are valid for only the probed time, they will be flagged as expired (BS Aged color) after a specified time. For still valid results, the color coding for the probed levels will be:

| | |
|---|---|
| Conflict | BS Warning |
| No conflict, but conflict level(s) between this level and AFL | BS Crossed Level |
| No conflict, and no conflict level(s) between this level and AFL | BS No Conflict |
| No calculated data due to probe failure | BS Unknown |

## 2.7 Monitoring Aids

| | |
|---|---|
| Warning | The use of Safety Nets does not relieve the controller from manually identifying and correcting conflicts. Safety Nets are generally configured with conservative values in respect to minimum separations. Even so, the controller must be aware that it is impossible to configure Safety Nets to catch all possible conflict situations. |

### 2.7.1 CLAM (Cleared Level Adherence Monitoring)

**General**

The CLAM system warns if an aircraft is not maintaining its cleared level and its vertical rate is not towards the cleared level. The alert is inhibited when the cleared level is lower than 100ft, and for aircraft in level flight, for 30 seconds after a new cleared level is set.

**Alert Display**

An alert is shown by displaying a “diverging” type aircraft position symbol and the text “L” in the *CLAM* track label field.

### 2.7.2 RAM (Route Adherence Monitoring)

**General**

The RAM system warns if an aircraft is deviating from its route by more than 1nm. The alert is inhibited 30nm from the departure and destination, and a larger cross-track error (5nm) is allowed near waypoints where the route makes a turn over 10° course change.

For aircraft on a direct-to clearance, the alert is given if the difference between the aircraft’s track and the direct track to the cleared point exceeds 5°. After a direct-to clearance is given, the alert is inhibited for 60 seconds or until the aircraft’s track is towards the point, whichever happens first.

**Alert Display**

An alert is shown by displaying a “diverging” type aircraft position symbol.

## 2.8 Safety Nets

| Warning | The use of Safety Nets does not relieve the controller from manually identifying and correcting conflicts. Safety Nets are generally configured with conservative values in respect to minimum separations. Even so, the controller must be aware that it is impossible to configure Safety Nets to catch all possible conflict situations. |
|---|---|

### 2.8.1 AIW (Airspace Infringement Warning)

#### 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.

#### Alert display

An alert is shown by displaying the text “AIW” in the *AIW*. The AFL item is also colored AIW intrusion and a one-minute-along prediction line is displayed in AIW intrusion color regardless of the prediction line settings.

### 2.8.2 APW (Area Proximity Warning)

#### General

The APW system warns if an aircraft is inside or about to enter a Temporary Segregated Airspace without clearance. 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 *Airspace Management Window*.

#### Alert display

An alert is shown by displaying the text “APW” in the*APW*.

### 2.8.3 MSAW (Minimum Safe Altitude Warning)

#### General

| Note | MSAW is currently not implemented |
|---|---|

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. 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.

#### Alert display

An alert is shown by displaying the text “MSAW” in the *MSAW*.

### 2.8.4 STCA (Short Term Conflict Alert)

**General**

The STCA system is designed to alert the controller of a possible or actual loss of separation between aircraft. The alert is given between 60 seconds and 120 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. LPPR, LPPT, LPCS, LPFR, LPMA and LPPS CTR are defined as STCA inhibit areas

In the vertical plane the STCA function will 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.

**Alert display**

An alert is shown by coloring the *CALLSIGN* item background or the text itself in Urgency color. A one minute long prediction line is displayed in Urgency color regardless of the prediction line settings. The radar position symbol and history dots are displayed in Urgency color.

An aural alert can also be generated if the corresponding setting is enabled in the *Global Menu*.

Whenever at least one STCA alert is active, an STCA Alert List is automatically opened.

Figure 2.6: STCA Alert List

The list displays for each alert the callsign/FLTID/TSSR of each track, the minimum predicted horizontal separation between them, and a checkbox.

The alerts are sorted by minimum predicted horizontal separation. The list cannot be manually closed, it will close automatically when there are no more active alerts.

## 2.9 Sector States

Depending on a set of conditions and relationships, each Flight Plan is defined as being in a certain state relative to each airspace volume. This is the so called Sector State. As a given flight progresses along its route it will go through a series of diferent Sector States relative to a given airspace volume.

Track presentation coloring depends on the flight sector state:

| State | Color | Condition |
|---|---|---|
| Initial (Unconcerned) | Unconcerned | Track will not enter the active sector |
| Free (Unconcerned) | Unconcerned | Track is not assumed or on-contact with anyone |
| Notified | Concerned | Track will enter the active sector (> 15 min) |
| Coordinated | Coordination | Track will enter the active sector (< 15 min) |
| Assumed | Assumed | Track is assumed |
| On Contact | Assumed | Track is on-contact with you. Flight is considered as Uncontrolled |
| Transfer Initiated | Assumed | Track is being transferred to the next controller. *CALLSIGN* and *SI* are colored in Redundant color |
| Redundant | Redundant | Track has been transferred to the next controller but is still inside the active sector |
| Informed | Informed 1 | Track will not enter the active sector but is relevant to it |

Sector States are used to control label construction, placement in lists, filtering, coloring, Safety Net parameters and availability. For example, a Flight Plan in the *On Contact* state will not trigger an APW warning until already being inside a TSA and will be shown in the *Uncontrolled Lists*. The same flight but in the *Assumed* state will trigger the APW warning when less than 3nm of a TSA and will not be shown in the *Uncontrolled Lists*.

*Coordinated* tracks that have not departed yet are displayed as *Notified*.

### Examples

| Sector | LEM | NORL | CENL | SULL |
|---|---|---|---|---|
| Aircraft Position | ✈<br>>15 minutes | | | |
| Sector State | - | *Notified* | *Notified* | *Notified* |

Table 2.11: Flight Plan still faraway inside LEM crossing NORL, CENL and SULL

| Sector | LEM | NORL | CENL | SULL |
|---|---|---|---|---|
| Aircraft Position | ✈<br><15 minutes | | | |
| Sector State | - | *Coordinated* | *Notified* | *Notified* |

Table 2.12: Flight Plan entering NORL in less than 15 minutes

| Sector | NORL | CENL | SULL |
|---|---|---|---|
| Aircraft Position | ✈ | | |
| Sector State | *Assumed* | *Notified* | *Notified* |

Table 2.13: Flight Plan assumed by NORL

| Sector | NORL | CENL | SULL |
|---|---|---|---|
| Aircraft Position | ✈ | | |
| Sector State | *Assumed* | *Coordinated* | *Notified* |

Table 2.14: Flight Plan assumed by NORL and less than 15 minutes to CENL

| Sector | NORL | CENL | SULL |
|---|---|---|---|
| Aircraft Position | ✈ | | |
| Sector State | *Redundant* | *Assumed* | *Notified* |

Table 2.15: Flight Plan transferred from NORL to CENL but still inside of NORL airspace

| Sector | NORL | CENL | SULL |
|---|---|---|---|
| Aircraft Position | | ✈ | |
| Sector State | *Unconcerned* | *Assumed* | *Notified* |

Table 2.16: Flight Plan assumed by CENL and has left NORL airspace

| Sector | LEM | NORL | CENL | SULL |
|---|---|---|---|---|
| Aircraft Position | ✈<br>>15 minutes | | | |
| Sector State | - | *Unconcerned* | *Unconcerned* | *Notified* |

Table 2.17: Flight Plan in LEM and will only cross SULL

| Sector | LEM | NORL | CENL | SULL |
|---|---|---|---|---|
| Aircraft Position | | | | |
| Sector State | - | *Unconcerned* | *Unconcerned* | *Unconcerned* |

Table 2.18: Flight Plan does not enter any sector

## 2.10 Label field descriptions

| Data field | Description | Comments | Color |
|---|---|---|---|
| Frequency dot | Frequency | "•", set from *Callsign Menu* Used to highlight a flight operating in a frequency other than the Sector Primary | Assumed |
| Mark dot | Mark | "•", set from *Callsign Menu* Used to highlight a particular flight | Information |
| + | Field 18/ FMF indicator | "+" if "STS/" found in FPL remarks field or when FMF is not empty | |
| + | Time restriction indicator in OCM | "+" if time restriction information is present in OCM or has been manually entered | Non-acknowledged OCM with changed restriction: Information |
| * | Unit | "*" if label units are different from the system units | Warning |
| A | Manual alerts | "A" if Manual alert(s) active | Warning |
| a | Attitude indicator | Climbing: up arrow<br>Descending: down arrow<br>Level flight or unknown: blank | |
| A1000 | A1000 warning | "1000" when one of the conditions in the color column are met | Non-mode S track coupled on A1000: Urgency<br><br>ASSR A1000 and FPL does not indicate mode S FLTID capability: Warning |
| ACF | Approach clearance | Approach clearance type | If toggled on: ACF Via CFL |
| ADEP | Departure aerodrome | ICAO code, 4 characters | |
| ADES | Destination aerodrome | ICAO code, 4 characters | If highlighted: Warning |

| Data field | Description | Comments | Color |
|---|---|---|---|
| AFL | Actual Flight Level | FL's 3 digits Altitudes "A"+ 2 digits Heights "E"+ 2 digits, in hundreds of feet | AIW:<br>AIW intrusion<br><br>Manually set value:<br>Warning<br><br>Coasted track:<br>Warning<br><br>If highlighted:<br>Warning<br><br>Mark All:<br>CARD Mark All<br><br>S-Highlight:<br>Suite Highlight |

| Data field | Description | Comments | Color |
|---|---|---|---|
| AHDG | Assigned heading | List:<br>- Assigned heading (“H” + 3 digits)<br>- “H” (maintain present heading)<br>- “LLZ” (localizer clearance)<br>- Direct-to point name<br><br>Unselected label:<br>- Assigned heading<br>- “H”<br>- “LLZ”<br>- Direct-to point name<br><br>Selected label:<br>- Assigned heading<br>- “H”<br>- “LLZ”<br>- Direct-to point name<br><br>Direct-to point shown only if set using the AHDG menu or vector and not equal to COPX point.<br><br>If a heading clearance or request is in progress via CPDLC, displays “[heading]”, followed by “+” if the request or answer contains a reason(i.e. DUE TO something).<br><br>DEP list: Does not display the brackets for CPDLC status. | If value assigned and HOP:<br>Sent: Proposition Out<br>Received: Proposition In<br><br>Tactical coordination:<br>Sent: Negotiation In<br>Received: Negotiation Out<br>Rejected: Warning<br>Value accepted but not set: Reminder<br><br>CPDLC:<br>Uplink message sent: CPDLC UM Clearance<br>Downlink message received: CPDLC DM Request<br>Controller timeout expired: CPDLC Controller Late<br>CPDLC warning raised: Color of the warning |
| AIW | AIW alert (see also ALRT) | “AIW” | AIW intrusion |
| ALRT | Alert message | “MSAW”, “APW”, “AIW”, “L” (CLAM), “RAM” or “D” (DUPE) (in this priority order) | MSAW and APW:<br>Warning<br><br>AIW:<br>AIW intrusion |

| Data field | Description | Comments | Color |
|---|---|---|---|
| ALT1 | Alternate aerodrome 1 | ICAO code, 4 characters | |
| ALT2 | Alternate aerodrome 2 | Second alternate can be set by inserting "ALT2/XXXX" into the FPL remarks field | |
| AN | Area navigation | "P" if RNAV1 capable<br>"R" if RNAV5 capable | |
| APM | APM alert (see also ALRT) | "MSAW" | Warning |
| APW | APW alert (see also ALRT) | "APW" | Warning |
| ARC | Assigned vertical rate | "R" + 2 digits, in 100's of ft/min<br><br>(followed by "+" or "-" when applicable for a minimum or maximum rate clearance) | If value assigned and HOP:<br>Sent: Proposition Out<br>Received: Proposition In<br><br>Tactical coordination:<br>Sent: Negotiation In<br>Received: Negotiation Out<br>Rejected: Warning<br>Value accepted but not set: Reminder |
| ARWY | Arrival runway | Arrival runway identifier | If manually assigned: Rwy Locked |
| ASI | Assuming sector | | |

| Data field | Description | Comments | Color |
|---|---|---|---|
| ASP | Assigned speed | Mach “M”+ 2 digits<br><br>“HS” for high speed clearance<br><br>Speed 2 digits, in 10’s of knots<br><br>(followed by “+” or “-” when applicable for a minimum or maximum rate clearance)<br><br>If a speed clearance or request is in progress via CPDLC, displays “[speed]”, followed by “+” if the request or answer contains a reason. | If value assigned and HOP:<br>Sent: Proposition Out<br>Received: Proposition In<br><br>Tactical coordination:<br>Sent: Negotiation In<br>Received: Negotiation Out<br>Rejected: Warning<br>Value accepted but not set: Reminder<br><br>CPDLC:<br>Uplink message sent: CPDLC UM Clearance<br>Downlink message received: CPDLC DM Request<br>Controller timeout expired: CPDLC Controller Late<br>CPDLC warning raised: Color of the warning |
| ASSR | Assigned mode 3/A code | 4 digits or “A”+ 4 digits. If a<br><br>SQUAWK SSR message is in progress via CPDLC, displays the code in brackets, followed by “+” if the answer contains a reason. DEP list:<br><br>Does not display the brackets for CPDLC status. | If different than TSSR: Information<br><br>CPDLC:<br>Uplink message sent: CPDLC UM Clearance<br>CPDLC warning raised: Color of the warning |
| ATD | Actual Time of Departure | UTC time in “HHMM” format | |
| ATIS | ATIS designator | | |
| ATYP | Aircraft type | Type with max 4 characters | If highlighted: Warning |
| ATYP/W | Aircraft type / Wake Turbulence Category | Type with max 4 characters + “/” + WTC (“L”, “M”, “H”, “J” or “?”) | If highlighted: Warning |
| C | Inbound clearance | “C” if ADES needs inbound clearance | Active state: Information |

| Data field | Description | Comments | Color |
|---|---|---|---|
| CALLSIGN | Callsign | If label is minimized, prefixed by “<” .<br><br>If number of aircraft is more than one, suffixed by “+”.<br><br>If correlated to a primary track or to a secondary track with no ASSR code and a non-discrete TSSR code, suffixed by “*”.<br><br>If the flight is CPDLC connected, the callsign is displayed in brackets. | Priority order:<br>STCA alert: Urgency<br>HOP received: Proposition In<br>Transfer in: Assumed<br>HOP sent: Assumed<br>Transfer out: Redundant<br>Level band highlight AFL: Urgency<br>Level band highlight XFL: Warning |
| CFL | Cleared Flight Level | See AFL field for number format.<br><br>Unselected label: Not shown if equal to AFL<br><br>If a level clearance is in progress via CPDLC, displays “[level]”, followed by “+” if the answer contains a reason (i.e. DUE TO something).<br><br>DEP list: Does not display the brackets for CPDLC status. | DEP list:<br>For CTR, if CFL>PEL, for others if CFL>XFL: Warning<br><br>CPDLC:<br>Uplink message sent: CPDLC UM Clearance<br>CPDLC warning raised: Color of the warning |

| Data field | Description | Comments | Color |
|---|---|---|---|
| CFL/PEL | Cleared Flight Level or Planned Entry Level | PEL is shown for flights in “coordinated” and “ongoing coordination” states, CFL otherwise.<br><br>See AFL field for number format.<br><br>Unselected label:<br>PEL: Not shown if equal to AFL and no ongoing coordination.<br>CFL: Not shown if equal to AFL<br><br>If a level clearance is in progress via CPDLC, displays “[level]”, followed by “+” if the answer contains a reason (i.e. DUE TO something). | PEL:<br>Coordination sent: Proposition Out<br>Coordination received: Proposition In<br>Change just before ETN: Info Coord<br>Coordination refused: Warning<br><br>CFL:<br>CPDLC:<br>Uplink message sent: CPDLC UM Clearance<br>Downlink message received: CPDLC DM Request<br>CPDLC warning raised: Color of the warning |
| CLAM | CLAM indicator (see also ALRT) | “L” | Warning |
| CLR | Clearance received flag | If clearance not received: "□"<br>If clearance received: "■" | |
| CLR/DCL/CMT | Combined clearance received flag and DCL dialogue status | Clearance received flag set: "■"<br><br>State of the datalink clearance dialogue:<br>- “R” (request received)<br>- “S” (clearance sent)<br>- “F” (failed)<br><br>Clearance flag not set: "□"<br><br>(“R” alternates with “•” if remark text present in the RCD) | If “R” or “•”: Warning |
| CMT | CMT Text indicator | “•” if received RCD contains remark text | |

| Data field | Description | Comments | Color |
|---|---|---|---|
| CODE | FPL mode S hex code | "/" + aircraft's mode S hex code if found in the FPL remarks | |
| COM | Communication type | "r" if voice receive only "t" if text only | Warning |
| COMP_CS | ICAO RTF call-sign | The decoded ICAO RTF callsign<br>"???" if not in database | |
| COORD | Coordination message | ROF message sent/received:<br>- "ROF" | Sent: Proposition Out<br>Received: Proposition In<br>(until assumed by the down-stream position) |
| COPN | Entry point | | Coordination sent: Proposition Out<br>Coordination received: Proposition In<br>Coordination refused: Warning |
| COPX | Exit point | DEP list:<br>If logged in as CTR and flight not inside active sector, displays COPN (with holding):<br><br>A holding clearance is displayed if there is no coordination. It shows the holding point name + " H" or for lat/lon point holdings, "POS H". For a TSA Hold clearance, the area name is shown. | Coordination sent: Proposition Out<br>Coordination received: Proposition In<br>Coordination refused: Warning |

| Data field | Description | Comments | Color |
|---|---|---|---|
| COPN/COPX | Entry point or Exit point | COPN is shown for flights in “coordinated” and “on-going coordination” states, COPX in “assumed”, “transfer initiated” and “redundant” phases. (with holding):<br><br>A holding clearance is displayed if there is no coordination. It shows the holding point name + “ H” or for lat/lon point holdings, “POS H”. For a TSA Hold clearance, the area name is shown. | Coordination sent: Proposition Out<br>Coordination received: Proposition In<br>Coordination refused: Warning |
| CPDLC_E | CPDLC Emergency | CPDLC emergency messages:<br>“SQ7500”, “[MAYDAY]”, or “[PAN]” | Urgency |

| Data field | Description | Comments | Color |
|---|---|---|---|
| CPDLC_W | CPDLC Warning | CPDLC warning messages:<br>- "CPDLC FAIL" network failure<br>- “CPDLC P ABT” pilot logoff<br>- "<type> ERR” message failure<br>- "<type> NOT CDA” NOT CURRENT DATA AUTHORITY response<br>- "<type> P LATE” pilot timeout<br>- "<type> SBY” STANDBY response<br>- "<type> UNA” UNABLE response<br>- “CPDLC MSG” unidentified downlink<br><br><type> is the type of message:<br>- “AHDG” heading clearance<br>- “CFL” level clearance<br>- “COF” communication transfer<br>- “DCT” direct-to clearance<br>- “SQI” SQUAWK IDENT message<br>- “SSR” SQUAWK SSR message<br>- “VCI” communication transfer | "CPDLC FAIL”, “CPDLC P ABT”, “ERR” or “NOT CDA”: CPDLC Failed<br><br>“P LATE”: CPDLC Pilot Late<br><br>“SBY”: CPDLC Standby<br><br>“UNA”: CPDLC Unable<br><br>“CPDLC MSG”: CPDLC DM Request |
| CRC | Computed vertical rate | 2 digits, in 100’s of ft/min<br>Value preceded by “C” for climbing, “D” for descending | |
| CTO | Clearance time on OAN | “HHMM” | Major difference between estimated time at point and CTO: Urgency<br>Minor difference between estimated time at point and CTO: Warning<br>Non-acknowledged OCM with changed CTO: Information |

| Data field | Description | Comments | Color |
|---|---|---|---|
| DBPS | Downlinked barometric pressure setting | Barometric pressure setting as downlinked via mode S DAPs. Not available on VATSIM. | |
| DGS | Downlinked ground speed | Ground speed as Downlinked via mode S DAPs. Format as in GS field. | |
| DHDG | Downlinked heading | Magnetic heading as Downlinked via mode S DAPs.<br>“H” + 3 digits. | |
| DIAS | Downlinked indicated airspeed | Indicated airspeed as Downlinked via mode S DAPs. An estimated value is displayed if upper wind/temp data is available. | |
| DMACH | Downlinked Mach number | Mach number as Downlinked via mode S DAPs. An estimated value is displayed if upper wind/temp data is available. | |
| DRC | Downlinked rate of climb/descent | Rate of climb/descent as Downlinked via mode S DAPs.<br>Not available on VATSIM (computed rate displayed instead, see CRC). | |
| DRWY | Departure runway | Departure runway identifier | If manually assigned: Rwy Locked<br><br>Clearance flag not set: Proposition In<br><br>Clearance flag set: Information |
| DSFL | Downloaded selected flight level | Selected flight level as downloaded from the aircraft via mode S DAPs.<br>Not available on VATSIM. | |

| Data field | Description | Comments | Color |
|---|---|---|---|
| DSQ | Departure sequence number | | |
| DUPE | DUPE indicator (see also ALRT) | “D” | Warning |
| EAT | Expected Approach Time | Manually entered time in “HHMM” format | |
| EET | Estimated Elapsed Time | “HHMM” | |
| EMRG | Emergency | “HI” for squawk 7500<br>“CF” for squawk 7600,<br>“RCFVMC” for squawk 7601,<br>“EM” for squawk 7700 | Urgency |
| EQUIP | FPL equipment field | (COM/NAV): COM/NAV equipment<br>(SUR): “/” + surveillance equipment<br><br>If the FPL equipment is in the FAA format, a rough conversion to the ICAO format is made | |
| EST/DEP/ABT | Manual departure | Clearance flag not set: “EST”<br>Clearance flag set: “DEP”<br>Departed: “ABT” | |
| ETA | Estimated Time of Arrival | UTC time in “HHMM” format or “HOLD” if flight in holding state | |
| ETD | Estimated Time of Departure | UTC time in “HHMM” format | |
| ETD/ATD | Estimated Time of Departure or Actual Time of Departure | Not departed:<br>- ETD<br>Departed:<br>- ATD<br>“HHMM”, both times taken from the FPL data | |

| Data field | Description | Comments | Color |
|---|---|---|---|
| ETN | Estimated time over COPN or sector entry time if no COPN | UTC time in “HHMM” format (sector entry): always entry time | |
| ETOHP | Estimated time over holding point or holding start time | UTC time in “HHMM” format | |
| ETX | Estimated time over COPX or sector exit time if no COPX | UTC time in “HHMM” format (sector exit): always exit time | |
| F | No fix warning | “F” if IFR flight is not routing via one of specified fixes to its destination | Information |
| FASTRWY | FAST runway | Arrival runway identifier, if not the first runway in a DPA setup | |
| FASTwarn | FAST warning | “SQ” for sequence warning | Warning |
| FCOPN | FIR COPN point | FIR entry coordination point | Information |
| FCOPX | FIR COPX point | FIR exit coordination point For inbound and domestic flights, displays ADES. | If different from OCM entry point: Information |
| FETN | Estimated time over FCOPN | | |
| FETX | Estimated time over FCOPX | | |
| FF | Feeder fix | | If highlighted: AMAN Data Highlight |
| FIELD15 | Speed Level Route | The flight plan field 15 data (TAS, RFL and route). Max 360 characters | |
| FIELD18 | Other information | The flight plan field 18 data (remarks). Max 540 characters | |

| Data field | Description | Comments | Color |
|---|---|---|---|
| FLTADD | Mode S transponder address | Mode S transponder hex address | |
| FLTID | Aircraft identification | Callsign as received via mode S | |
| FLTID/TSSR | Aircraft identification or transponder code | FLTID if available, otherwise TSSR | If highlighted: Warning |
| FMF | Flight Message Field | User entered text, stored only locally | |
| FSQ | FAST sequence number | Sequence number or “MA” for missed approach | If sequence warning or missed approach: Warning<br><br>If arrival runway is not set as active for arrivals: FSQ SI |
| FText | Free text | | |
| GS | Ground Speed | "N"+3 digits, in knots | If highlighted: Warning |
| HOLD | Hold/XHold | Holding clearance state at point related to the traffic management list | If “XHOLD”: Warning |
| HPT | Holding point | Holding point name or for lat/lon point holdings, “POS”. For a TSA Hold clearance, the area name is shown. | |
| I | Flight information | “I” if OP_TEXT has data | |
| Label | Label hidden flag | “■” if label displayed, “□” if label hidden | |
| M | Military coordination | “M” if military coordination is required | Active state: Warning |
| MALRT | Manual alerts | Displays alerts entered via the *Callsign Menu* | Warning |
| MFX | Metering fix | AMAN metering fix name | If highlighted: AMAN Data Highlight |

| Data field | Description | Comments | Color |
|---|---|---|---|
| MFX_FF | Metering fix or feeder fix | AMAN metering fix or feeder fix name | If highlighted: AMAN Data Highlight |
| MNR | Oceanic cruising speed | Cleared cruising speed from the last received OCM | Non-acknowledged OCM with changed MNR: Information |
| MSAW | MSAW alert (see also ALRT) | "MSAW" | Warning |
| MTCD | MTCD indicator | "•" if aircraft has an MTCD problem | Urgency (Conflict Ack if all conflicts acknowledged) |
| N/ATYP | Number of aircraft / Aircraft type | Unselected label:<br>Number range 2 - 99<br><br>Selected label or List:<br>Number range 1 - 99 Number can be set by prefixing the aircraft type in the FPL by "X/" where X is the number (max 99) | If highlighted: Warning |
| NAT | North Atlantic Track name | Cleared NAT name from the last received OCM ("#" for a random route) | Non-acknowledged OCM with changed NAT: Information |
| NBT | Not Before Time | Time restriction at OAN | Non-acknowledged: Warning |
| NFREQ | Next frequency | Next frequency for a departing aircraft, to be sent in DCL | |
| NLT | Not Later than Time | Time restriction at OAN | Non-acknowledged: Warning |
| NPT | Next route point | When a DCT request or clearance via CPDLC is in progress:<br>Displays the point name followed by "+" if the request contains a reason (i.e. DUE TO something) Otherwise:<br><br>Next point on the route | CPDLC:<br>Uplink message sent: CPDLC UM Clearance<br>Downlink message received: CPDLC DM Request<br>Controller timeout expired: CPDLC Controller Late<br>CPDLC warning raised: color of the warning |

| Data field | Description | Comments | Color |
|---|---|---|---|
| NRAC | Number of aircraft | Number from 2 to 99<br><br>Extended label:<br>“n” if 1<br>Other label or (List): blank if 1<br><br>Number can be set by prefixing the aircraft type in the FPL by “X/” where X is the number (max 99). | |
| NSSR | SSR warning | Displays ASSR if different from TSSR<br>(always displayed for flight plan tracks or when SQUAWK SSR) | CPDLC:<br>Uplink message sent: CPDLC UM Clearance<br>CPDLC warning raised: color of the warning |
| O | Oceanic alert | “O” if Oceanic Clearance Message is not acknowledged | Warning |
| OAN | Cleared Oceanic Control Area entry point | Cleared entry point from the last received OCM | Non-acknowledged OCM with changed OAN: Information |
| OCM | Oceanic Clearance Message | | |
| OFL | Oceanic cruising Flight Level | Cleared oceanic flight level from the last received OCM | Non-acknowledged OCM with changed OFL: Information |
| OP_TEXT | Flight information message | User entered text | |
| OP_TEXT2 | OP_TEXT2 message | User entered text, stored in the scratchpad | |
| P | No P-RNAV/RNAV1 capability | “P” if aircraft equipment is not indicating P-RNAV/RNAV1 capability and destination has arrival procedures requiring it | Not equipped: Information<br>Unknown: Unknown |

| Data field | Description | Comments | Color |
|---|---|---|---|
| PEL | Planned Entry Level | See AFL field for number format. | Coordination sent: Proposition Out<br>Coordination received: Proposition In<br>Change just before ETN: Info Coord<br>Coordination refused: Warning |
| PFREQ | Pilot monitored frequency | Displays your primary frequency when transfer of communications was done via CPDLC using the MONITOR option | CPDLC DM Request |
| PRFL | RFL requested by pilot via CPDLC | Displays “[requested level]”, followed by “+” if the request contains a reason (i.e. DUE TO something) | CPDLC:<br>Downlink message received: CPDLC DM Request<br>Controller timeout expired: CPDLC Controller Late<br>CPDLC warning raised: Color of the warning |
| PSSR | Previous mode 3/A code | If not known, shows ASSR if available. Format as ASSR field. | |
| R | No B-RNAV/RNAV5 capability | “R” if aircraft equipment is not indicating B-RNAV/RNAV5 capability | Not equipped: Urgency<br>Exempted: Information<br>Unknown: Unknown |
| RAM | RAM indicator (see also ALRT) | “RAM” | Warning |
| RFL | Requested Flight Level | See AFL field for format<br><br>List:<br>If an RFL request is in progress via CPDLC, displays “[requested level]”, followed by “+” if the request contains a reason (i.e. DUE TO something).<br><br>DEP list does not display the brackets for CPDLC status. | (List) and (DEP list):<br>CPDLC:<br>Downlink message received: CPDLC DM Request<br>Controller timeout expired: CPDLC Controller Late<br>CPDLC warning raised: color of the warning |

| Data field | Description | Comments | Color |
|---|---|---|---|
| ROUTE | Flight plan route | DEP list<br>- part 1 shows first 15 characters, part 2 characters 16-30<br><br>If departing from defined airports:<br>- first 30/45 characters (2 or 3 parts)<br><br>If arriving at a clearance flag airport:<br>- last 30/45 characters (2 or 3 parts)<br><br>Else:<br>- first 30/45 characters (2 or 3 parts) | |
| RT | EAT given indicator | EAT not given to pilot: "□"<br>EAT given to pilot: "■"<br><br>(local flag only, not sent to other controllers) | |
| S | Mode S mismatch indicator | "S" if downloaded callsign is different than coupled flight plan callsign | Warning |

| Data field | Description | Comments | Color |
|---|---|---|---|
| SI | Sector Indicator | Assumed track:<br>Next sector identifier or frequency.<br><br>Displayed in brackets if a communications transfer is in progress via CPDLC, followed by "+" if the answer contains a reason. The frequency display is forced on during a transfer via CPDLC.<br><br>Other tracks:<br>Tracking controller identifier or frequency.<br><br>List: Frequency display is not possible<br><br>DEP list: Does not display the brackets for CPDLC status.<br><br>Current: Displays always the current tracking controller id<br><br>Previous: Displays the current tracking controller id unless it is you or the track is in redundant state<br><br>Next: Displays the next controller id when assumed, or current when in redundant state | Priority order:<br><br>HOP sent: Proposition Out<br><br>Out Transfer initiated: Redundant<br><br>Next unit coordination received: Proposition In<br><br>Manually changed next sector: Warning<br><br>Normal next sector: Coordination<br><br>CPDLC: Communications transfer message sent: CPDLC UM Clearance<br><br>If a CPDLC warning has been raised: Color of the warning |
| SID | Assigned or planned SID | SID identifier | New assignment: Sid Star Allocation |
| SQ | Arrival sequence number (manually set) | A number from 1 to 50 | |

| Data field | Description | Comments | Color |
|---|---|---|---|
| SQ_AMAN | Arrival sequence number (provided by AMAN) | A number from 1 to 99 | |
| STAB | Arrival stability | Empty, or one of the following:<br>• UNSTABLE<br>• STABLE<br>• SUPERSTABLE<br>• FROZEN | |
| STAFF | Scheduled Time of Arrival at feeder fix | AMAN calculated time to pass the feeder fix | |
| STAR | Assigned or planned STAR | STAR identifier | New assignment: Sid Star Allocation |
| STATE | Current system state | Notified: NOTI<br>Coordinated: COOR<br>On-going coordination: ONGC<br>Assumed: ASSU<br>Transfer initiated: TRAN<br>Redundant: REDU<br>Terminated: TERM<br>Free: FREE<br>On-contact: ONCT | |
| STS | Ground state | EuroScope default ground state | |
| TAS | Flight Plan TAS | TAS from flight plan, either:<br>“K” + 4 digits, km/h<br>“N” + 4 digits, knots<br>“M” + 3 digits, 1/100’s of Ma | |

| Data field | Description | Comments | Color |
|---|---|---|---|
| TCT | TCT indicator | "TC" if track is involved in one TCT conflict, "TC+" if in more than one<br><br>Unselected label:<br>Not displayed if track is subject to an STCA alert | TCT Warning |
| TEXT2 | OP-TEXT2 message | If more than 10 characters, then shows first 9 + ">" | |
| TRACK | Ground track | "T" + the aircraft's current ground track in degrees magnetic | |
| TOM | Time of Metering | AMAN calculated time to pass the metering fix | If highlighted: AMAN Data Highlight |
| TOM_STAFF | Time of Metering or Scheduled Time of Arrival at feeder fix | AMAN calculated time to pass the metering fix or feeder fix | If highlighted: AMAN Data Highlight |
| TSSR | Aircraft transponded mode 3/A code | 4 digits or "A"+ 4 digits | |
| TTL_TTG | Time To Lose/Gain at metering fix | | If highlighted: AMAN Data Highlight |
| TTLTTG_FF | Time To Lose/Gain at feeder fix | | If highlighted: AMAN Data Highlight |
| TTLTTG_MFX_FF | Time To Lose/Gain at metering fix or feeder fix | | If highlighted: AMAN Data Highlight |
| V | Flight rules | "V" if VFR<br>"Y" if first IFR and later VFR<br>"Z" if first VFR and later IFR | |

| Data field | Description | Comments | Color |
|---|---|---|---|
| W | No RVSM capability | "W" if aircraft equipment is not indicating RVSM capability | Not equipped: Urgency<br><br>Exempt: Information<br><br>Unknown: Unknown |
| WTC and /WTC | Wake turbulence category | "J" for Super<br>"H" for Heavy<br>"M" for Medium<br>"L" for Light<br>(in /WTC all prefixed with a "/")<br><br>Unselected label:<br>Only displayed if not medium unless the field is highlighted | If highlighted: Warning |
| WTG and /WTG | Wake turbulence group | ICAO or RECAT-EU wake turbulence group<br>(in /WTG prefixed with a "/") | If highlighted: Warning |
| XFL | Exit Flight Level | See AFL field for number format.<br><br>Unselected label:<br>Not shown if equal to CFL/PEL and no ongoing coordination.<br><br>DEP list:<br>If logged in as CTR and flight not inside active sector, displays PEL.<br>Otherwise displays XFL. | Coordination sent: Proposition Out<br>Coordination received: Proposition In<br>Coordination refused: Warning |
| Y | No 8.33kHz capability | "Y" if aircraft equipment is not indicating 8.33kHz capability | Not equipped: Urgency<br><br>Exempt: Information<br><br>Unknown: Unknown |

Table 2.19: Label Field descriptions

*Chapter 3*

# User Interface

## 3.1 Main Window

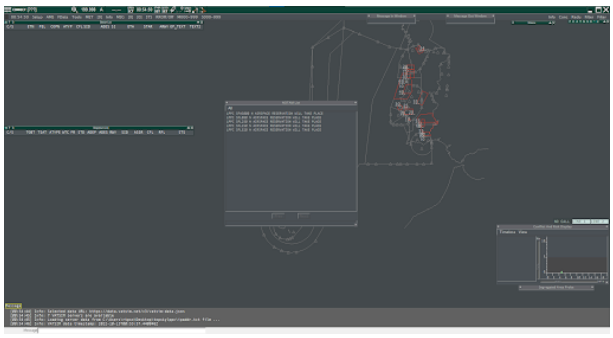


Figure 3.1: Main Window on initialization

TopSky should load with some preplaced windows similar to the above configuration

| | |
|---|---|
| Note | Screen resolutions other than 1920x1080 will yield different results. Larger resolutions will bring preplaced windows towards the left and middle, while smaller resolutions may potentially place windows outside the screen. It is recommended for users experiencing difficulties related to their screen size to experiment and create custom settings in the TopSkySettingsLocal file containing revised window placements adjusted for their own screen. Refer to `TopSky_Developer_Guide_Settings.xlsx` for available settings |

On initialization TopSky will load the *Global Menu* on top, *Sector List* and *Departure List* on the top left, *Message In Window* and *Message Out Window* on the top center right, *NOTAM List Window* on center, *CARD* and *SAP Window* on bottom right, plus legacy weather and controller lists on top right as well.

## 3.2 Global Menu

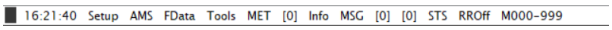



Figure 3.2: Global Menu

The Global Menu is located on the top edge of the radar screen. It displays the current UTC time (left-clicking opens the *Clock Window*) and contains a number of submenus which are explained below.

### 3.2.1 Setup Menu

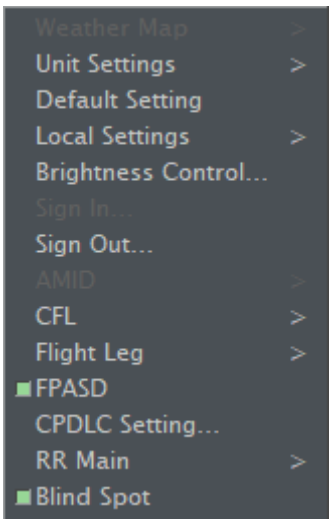



Figure 3.3: Setup Menu

Setup Menu allows for various adjustments. Each position will load its defined settings based on the active Primary Frequency.
Most used options are CPDLC Setting for CPDLC operations and Default Settings to reset options.
Personal settings can be defined in `TopSky_Developer_Guide_Settings.xlsx` (see the Developer Guide).

| | |
|---|---|
| Weather Map | Not installed. |
| Unit Settings > | Opens the *Unit Settings submenu* |
| 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 personal settings (done automatically at startup). |
| Sign Out... | Clears any personal settings and resets all settings to their default values. |
| AMID | Not implemented. |
| CFL | Opens the *CFL submenu* |
| Flight Leg | Opens the *Flight Leg submenu* |
| FPASD | Toggles on/off the display of flight plan tracks |
| CPDLC Setting... | Opens the *CPDLC Setting Window* |
| RR Main > | Opens the RR Main submenu |
| Blind Spot | Toggles on/off the Blind Spot function |

#### 3.2.1.1 Unit Settings submenu

This submenu can be used to change the units used in TopSky. Any changes to the settings are session specific only, so they will be lost when exiting EuroScope.

| | |
|---|---|
| Altitude | Selects the units used for altitudes and vertical rates<br>• Nautical (feet, feet per minute)<br>• Metric (meters, meters per second) |
| Flight level | Selects the units for flight levels – only applicable with metric altitudes<br>• Nautical (hundreds of feet)<br>• Metric (meters) |
| Distance | Selects the units used for distances<br>• Nautical (nautical miles)<br>• Metric (kilometers) |
| Speed | Selects the units used for speeds<br>• Nautical (knots)<br>• Metric (kilometers per hour) |

#### Local Settings submenu

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

| | |
|---|---|
| Vertical reference | Selects the pressure reference to be used at or below the transition altitude:<br>• QNH Altitude above mean sea level<br>• QFE Height above the aerodrome elevation<br>(set/check it in the adjacent box) |
| Used equipment codes | Selects whether to use or disregard the equipment codes found in the flight plans:<br>• All Use all codes in both ICAO and FAA formats<br>• ICAO Use all codes when specified in ICAO format<br>• FAA Use codes when specified in FAA format<br>• None Disregard all codes<br>Selects specific capabilities to be taken into account:<br>• R RNAV capability<br>• PBN PBN string from FPL remarks<br>• W RVSM capability<br>• Y 8.33 kHz capability<br>• AltRptg Transponder altitude reporting capability<br>• Mode S Transponder mode S capability<br>• EHS Mode S enhanced surveillance capability<br>• FLTID Mode S flight ID downlink capability<br>When taking into account a specific capability is deselected, all aircraft are assumed to have it. This inhibits track label alerts and also affects safety net processing. |
| ASSR codes | Selects the transponder code source:<br>• Plugin Plugin data file (reverts to ESE if no codes found) |

| | |
|---|---|
| | • ESE ESE file<br>• Range Fixed code 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 TopSky calculated value instead |
| Transfer confirmation | Selects when to display the Transfer Confirmation Window:<br>• On Always when CFL is not equal to XFL<br>• NotRFL When CFL is not equal to XFL unless XFL = RFL<br>• Off Never, any CFL value is OK |
| CFL menu default value | Selects the default value for the CFL menu when it is opened:<br>• Auto CTR: RFL if not yet reached, otherwise as below<br>Other: The XFL value, or current CFL value -1000ft with no XFL<br>• CFL The current CFL value<br>• RFL The RFL value |
| FPCP inhibit | FPCP calculations start when tracks are within this time from entering active sector |
| STCA alert | Selects which aircraft display the STCA alert:<br>• All All aircraft<br>• Own+Co Only *Assumed* and *Coordinated* aircraft<br>• Own Only *Assumed* aircraft |
| STCA alert sound | Selects which STCA alerts trigger the alert sound:<br>• All All alerts<br>• Own+Co Only alerts for *Assumed* or *Coordinated* aircraft |

| | |
|---|---|
| | • Own Only alerts with *Assumed* aircraft |
| APW alert | Selects which aircraft display the APW alert:<br>• All All aircraft<br>• Own+Co Only *Assumed* and *Coordinated* aircraft<br>• Own Only *Assumed* aircraft |
| APW alert sound | Selects which STCA alerts trigger the alert sound:<br>• All All alerts<br>• Own+Co Only alerts for *Assumed* and *Coordinated*<br>aircraft<br>• Own Only alerts for *Assumed* aircraft<br>• Off No alert sound |
| METAR source | Selects the METAR data source for TopSky windows that display METAR data |
| FPASD filter | Allows filtering of displayed FPASD tracks based on sector state<br>• Coord Display tracks at least in the *Coordinated* state<br>• Conc Display tracks at least in the *Notified* state<br>• None Display all tracks |

#### 3.2.1.2 CFL submenu

| | |
|---|---|
| Reduced | The reduced length CFL menu is used |
| Extended | The extended length CFL menu is used |

#### 3.2.1.3 Flight Leg submenu

| | |
|---|---|
| Assumed | Automatically displays Flight Leg when track is assumed |

| | |
|---|---|
| Potential Predicted | Displays potential predicted conflicts on flight leg |
| Potential Risk | Displays potential risks of conflicts on flight leg |

#### 3.2.1.4 RR Main submenu

| | |
|---|---|
| Rings On/Off | Toggles the range rings on/off |
| Point | Sets the rings 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 |

The rings centerpoint can be set either by clicking on the radar screen or entering 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.

### 3.2.2 AMS menu

| | |
|---|---|
| TSA... | Opens the *Airspace Management Window*. |
| NAT | Opens the *NAT submenu*. |

#### 3.2.2.1 NAT submenu

| | |
|---|---|
| Eastbound Map | Toggles display of eastbound tracks map. |
| Westbound Map | Toggles display of westbound tracks map. |
| NAT List... | Opens the *NAT List Window*. |

Opening the NAT submenu triggers downloading the NAT Track Message which is then updated hourly. The tracks extracted from the messages can be displayed on the radar screen. Any named waypoints in the tracks that cannot be found in the active sector file are just skipped so the displayed tracks may not be accurate.

### 3.2.3 FData menu

Opens the *Flight Plan Selection Window* and *Flight Plan Window*.

### 3.2.4 Tools menu

| | |
|---|---|
| Flight Plan Lists > | Opens the *Flight Plan Lists submenu* |
| CARD... | Opens the *CARD* |
| SAP... | Opens the *SAP Window* |
| Message In... | Opens the *Message In Window* |
| Message Out... | Opens the *Message Out Window* |
| Shortcut... | Opens the *Shortcut Window* |
| CPDLC > | Opens the CPDLC submenu |

#### 3.2.4.1 Flight Plan Lists submenu

| | |
|---|---|
| List options bar | Toggles the display of list options on the *Global Menu* |
| SIL... | |
| Sort | Selects sorting option |
| Sector List... | Opens the *Sector List* |
| Sort | Selects sorting option |
| Informed | Toggles the display of *Informed* aircraft |
| Concerned | Toggles the display of *Notified* and *Coordinated* aircraft |
| Redundant | Toggles the display of *Redundant* aircraft |
| Load Factor List... | Opens the *Load Factor List* |
| Sort | Selects sorting option |
| Departure List... | |
| Resectorisation List... | Opens the *Resectorisation List* |
| Sort | Selects sorting option |
| <lfunc> | Resectorisation List LFUNC filter |
| ETWR List... | Opens the *ETWR List* |
| Sort | Selects sorting option |
| ADEP | ETWR List departure airports filter |
| Uncont. List 1... | Opens the *Uncontrolled Lists* |

| | |
|---|---|
| Sort | Selects sorting option |
| Display | Uncontrolled 1 List state filter |
| Filter | Uncontrolled 1 List units filter |
| Uncont. List 2... | Opens the *Uncontrolled Lists* |
| Sort | Selects sorting option |
| Display | Uncontrolled 2 List state filter |
| Filter | Uncontrolled 2 List units filter |
| Lost List... | Opens the *Lost List* |
| Traffic Mgmt. List 1... | Opens the *Traffic Management Lists* |
| Sort | Selects sorting option |
| Display | Traffic Management List 1 flight plan state filter |
| ADES | Traffic Management List 1 destination airports filter |
| Via | Traffic Management List 1 route points filter |
| Traffic Mgmt. List 2... | Opens the *Traffic Management Lists* |
| Sort | Selects sorting option |
| Display | Traffic Management List 2 flight plan state filter |
| ADES | Traffic Management List 2 destination airports filter |
| Via | Traffic Management List 2 route points filter |

When enabled, the list options bar displays “Info Conc Redu Filter Filter” on the right edge of the *Global Menu*. The first three toggle the respective settings for the *Sector List* and are colored with the appropriate color when enabled, and the last two are displayed in Redundant color when the corresponding *Uncontrolled Lists* are somehow filtered. Clicking on them opens the *Flight Plan Lists submenu* to change the filtering options.

Left- or right-clicking the Sort option cycles through the options forward and backward in alphabetical order. This sorting is achieved using a special sorting tag item in the lists that is hidden from view. The sorting only works when the list is sorted according to that item. If the list is sorted according to any other item, this sorting choice will have no effect until the list is again sorted according to the special sorting item (by displaying it in the list, clicking on the column title, and then hiding it again).

Left-clicking the “LFUNC”, “ADEP”, “ADES” and “Via” boxes open text entry boxes to enter comma-separated lists for controlled ID’s, ICAO codes and point names respectively to filter the affected lists.

Left-clicking the Display option cycles through “ALL” (no filtering), “ON-CONTACT” (only tracks *On Contact* with anyone), “ON-CONTACT-PPOS” (only tracks *On Contact* with you) and “FREE” (only tracks in the *Free* state).

Left-clicking the Filter box opens a text entry box to enter a comma-separated list of aerodrome ICAO codes to filter the list. When entered, the list will display a flight only if one of the entered codes is its departure or destination, or the code is found in *OP TEXT2*.

Left-clicking the Display option toggles between “ALL” (no filtering), “SIMUL+TERM” (not started flight plans filtered), “NOTST+SIMUL” (terminated flight plans filtered) and “SIMUL” (not started and terminated flight plans filtered).

#### 3.2.4.2 CPDLC submenu

| | |
|---|---|
| - Microphone Check | Opens the *Microphone Check Menu* |
| - Current Messages... | Opens the *CPDLC Current Message Window* |
| - History Messages... | Opens the *CPDLC History Message Window* |

### 3.2.5 MET menu

| | |
|---|---|
| - Messages... | Opens the *Weather Messages Window* |
| - Upper Winds... | Opens the *Upper Winds Window* |
| - Airfield Data... | Opens the *Airfield Data Window* |

### 3.2.6 [0]

Shows the number of received SIGMET messages. The number is limited to 99, and is shown on Global Menu Highlight background when not zero and the *Weather Messages Window* is not open. Left-clicking the number will open the *Weather Messages Window* with the SIGMET option selected.

### 3.2.7 Info menu

| | |
|---|---|
| General Information... | Opens the *General Information Window* |
| MISC Information... | Opens the *Miscellaneous Information Window* |
| NOTAM... | Opens the *NOTAM List Window* |
| Small QNH/TL... | Opens the *Small QNH/TL Window* |
| LFUNC Frequency Plan... | Opens the *LFUNC Frequency Plan 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 |

When holding <ALT>, text labels will be displayed for airports, fixes, NDBs and VORs when the mouse cursor is placed over them. When one or more of the categories in the Info menu is selected, only those categories will display the labels. The “Label” buttons open submenus to select what information is shown on the corresponding labels. All the information is from the active sector file.

### 3.2.8 MSG menu

| | |
|---|---|
| Notepad... | Opens the *Notepad Window* |
| Personal Queue... | Opens the *Personal Queue Window* |
| ATC Messages... | Opens the *ATC / Primary Frequency Messages Window* |
| Prim Freq Messages... | Opens the *ATC / Primary Frequency Messages Window* |
| Text notes > | Opens the Text notes submenu |

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.

#### 3.2.8.1 Text notes submenu

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

### 3.2.9 [x] [x]

Shows x as the number of high priority messages on the left, and low priority messages on the right.

High priority messages are critical failures in TopSky code. Low priority messages are warnings about invalid data in TopSky data files

Open the *Personal Queue Window* to view the messages or see *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 not zero and the window is not open.

Left-clicking the number opens the *Personal Queue Window*.

### 3.2.10 STS menu

| | |
|---|---|
| Plugin Status > | Opens the *Plugin Status submenu* |
| Safety Nets and TCT Status... | Opens the *Safety Nets Status Window* |
| TCT Status | Opens the *TCT Status Window* |
| Divergence Detection Status... | Opens the *Divergence Detection Status Window* |
| MTCD Status... | Opens the *MTCD Status Window* |
| FPCA Status... | Opens the *FPCA Status Window* |
| CPDLC Default Status | Toggles the CPDLC Default Status On/Off |
| Runway In Use | Opens the *Aerodrome Menu* |
| Runway line display... | Opens the *Aerodrome Menu* |
| Supervisory > | Opens the *Supervisory submenu* |
| Flow Management... | Opens the *Air Traffic Flow Management Window* |
| Current Operational Load... | Opens the *Current Operational Load Window* |
| Operational Load Forecast... | Opens the *Operational Load Forecast Window* |

#### 3.2.10.1 Plugin Status submenu

Shows the version of TopSky 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) |

Depending on the file, there are one to three of the following buttons available:

| | |
|---|---|
| - Reload | Reloads the data file |
| - View | Displays the data in the file on the radar display |
| - Save (Areas) | Saves a snapshot of the current area activation data |
| - Save set (Maps & MapsL) | Saves a list of currently active radar screen specific maps |
| - Load set (Maps & MapsL) | Loads a saved list of active screen specific maps |

For the Areas data file, the displayed area types can be filtered by right-clicking the View button, which then cycles the displayed areas in the following order (and displays the filter in the button label):

| | |
|---|---|
| - TSA | All TSA area types (yellow) |
| - MTCD | MTCD areas (green) and inhibit areas (red) |
| - STCA | STCA areas (green) and inhibit areas (red) |
| - TCT | TCT areas (green) and inhibit areas (red) |
| - DD | CLAM/RAM inhibit areas (red) |

Left-clicking the Save button will save the currently set manual activation periods as well as the information if an area with automatic schedules is set to manual mode. The information is saved to the `TopSkyAreasManualAct.txt` file in the same folder as `TopSky.dll`. If the file already exists, TopSky will ask for confirmation as the save operation will overwrite any existing data.

Depending on the maps data file setup, the display state of some or all of the maps may be specific to each radar screen. The Save set and Load set functions can be used to transfer the display state of these maps from one radar screen to another.

Right-clicking the Reload button for Settings & SettingsL has a special purpose. It opens a text entry box to type in a callsign whose settings should be loaded instead of the real login callsign. When entered, the callsign will be displayed next to the “Reload” button, and whenever a VATSIM callsign change is detected, an information popup is displayed to remind that TopSky settings are still forced to the manually entered callsign. This feature can be used for example to use settings for different positions on different EuroScope instances when providing top-down services, or to use settings for a specific position when logged in with an observer/staff/supervisor callsign. Clearing the entered callsign reverts to using the settings based on the actual login callsign.

#### 3.2.10.2 Supervisory submenu

| | |
|---|---|
| - Operations Rate... | Opens the *Operations Rate Window* |
| - Predicted Traffic... | Opens the *Predicted Traffic Window* |

### 3.2.11 RRx

Opens the *RR Main submenu*. If the rings are selected on, “x” displays the distance between consecutive rings, otherwise “Off”.

### 3.2.12 Mxxx-yyy

Displays the status of the altitude filters for the Main Radar Window. If enabled and Quick Look is not toggled on, the color of the text is Global Menu Highlight. “xxx” displays the Lower filter value and “yyy” the Upper filter value, in hundreds of feet.

Left-clicking the item opens the *Altitude Filtering Window*.

## 3.3 Aircraft Position Symbol

The position symbol is drawn at the latest known position of the aircraft. The color of the symbol is the flight sector color for an unselected track and Track Highlight for a selected one.

Figure 3.4: Track Symbology

If a surveillance track does not receive position updates in over 30 seconds it becomes a Coasted track, position is no longer reliable.
If a Coasted track does not receive position updates for long enough, or it has originated outside of surveillance coverage, it becomes a FPASD track. FPASD tracks are not based on surveillance data but estimated based on Flight Plan data.

Except for the FPASD and Coasted tracks, a divergence alert will be drawn in case of a RAM or CLAM alert. This is a circle drawn around the symbol. Tracks with SPI active will not display this symbol.

### 3.3.1 History dots

The history dots show the previous positions of the track. The number of displayed dots can be changed via the *Track Control Window*. The color of the dots is the flight sector color for an unselected track and Track Highlight for a selected one. History dots are not displayed for flight plan tracks.

### 3.3.2 Prediction Line

The prediction line draws the predicted ground track of the aircraft, based on its current track and ground speed. It is a two-color line, starting with Track Default at the position symbol and then alternating with Track Highlight, with every segment representing one minute of flying time.
The default lenght of the prediction line is 2 minutes, and can be changed for all tracks via the *Track Control Window*, or for a single track via the *Prediction Line Menu*.

Figure 3.5: Selected track with 5 history dots and a 3-minute prediction line

### 3.3.3 Track filtering

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 STCA, MSAW, APW, TCT or DUPE alert, highlighted tracks, and tracks subject to Blind Spot function alerts are also excluded from filtering. If a filter is active, its name in the Radar Menu will be shown in Selected color.

All filters, with the exception of the CJI filter, remove all components of the tracks, nothing remains visible. The CJI filter leaves the track position symbol and history dots visible.
The filters can be overridden using the Quick Look (all filters), Quick Look Up/Down (altitude filter only) and Individual Quick Look (CJI filter only) functions.

For more details regarding filtering functions, see:

- *Altitude Filtering Window*
- *CJI Filtering Window*
- *SSR Code Filtering Window*

## 3.4 Track Labels

There are four types of track labels that can be displayed: Standard, Reduced, Extended and Uncoupled.
In addition, each label except the extended one has an unselected and a selected state, the selected state being shown when the mouse cursor is over the label.

The unselected Standard and Reduced labels can be minimized to display only some of their contents. When a label is minimized, the Callsign item is prefixed with a “<” to serve as a reminder.

### 3.4.1 Standard Track Label

The Standard label is shown for aircraft that are in or will enter the active sector.

#### Unselected Track

Line 0 *COM * V MSAW APM TCT APW AIW CLAM DUPE O W Y R P M Mark dot Frequency dot A + C I S EMRG COORD NSSR CPDLC E CPDLC W TEXT2 SQAMAN TTLTTGMFXFF*

Line 1 *MTCD CALLSIGN PFREQ SI N/ATYP WTC TSSR*

Line 2 *AFL a CFL/PEL ACF GS NPT ADES RFL*

Line 3 *XFL TRACK AHDG ASP ARC COPN/COPX FCOPX OFL O+*

Line 4 *DSFL DHDG DIAS DRC DMACH*

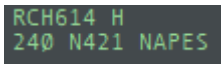



Figure 3.6: Unselected Standard Track

#### Selected Track

Line 0 *COM * V MSAW APM TCT APW AIW CLAM DUPE O W Y R P M Mark dot Frequency dot A + C I S EMRG COORD NSSR CPDLC E CPDLC W TEXT2 SQAMAN TTLTTGMFXFF*

Line 1 *MTCD CALLSIGN PFREQ SI N/ATYP WTC TSSR*

Line 2 *AFL a CFL/PEL ACF GS NPT ADES RFL*

Line 3 *XFL TRACK AHDG ASP ARC COPN/COPX FCOPX OFL O+*

Line 4 *DSFL DHDG DIAS DRC DMACH*

Line 5 *OP TEXT*

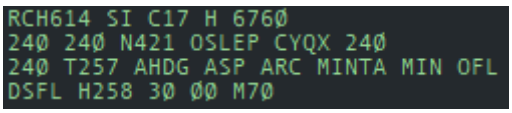



Figure 3.7: Selected Standard Track

### 3.4.2 Reduced Track Label

The Reduced label is shown for uncontrolled, unconcerned and notified tracks.

#### Unselected Track

Line 0 *V MSAW APM APW AIW CLAM DUPE O COM W Mark dot S EMRG SQAMAN TTLTTGMFXFF*

Line 1 *MTCD CALLSIGN SI N/ATYP WTC TSSR*

Line 2 *AFL a GS NPT ADES*

Line 3 *TRACK FCOPX OFL O+*

Line 4 *DSFL DHDG DIAS DRC DMACH*

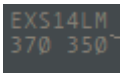



Figure 3.8: Unselected Reduced Track

#### Selected Track

Line 0 ** V MSAW APM APW AIW CLAM DUPE O COM W Mark dot Y R P M A + C I S EMRG NSSR CPDLC E TEXT2 SQAMAN TTLTTGMFXFF*

Line 1 *MTCD CALLSIGN SI N/ATYP WTC TSSR*

Line 2 *AFL a CFL GS NPT ADES RFL*

Line 3 *TRACK AHDG ASP FCOPX OFL O+*

Line 4 *DSFL DHDG DIAS DRC DMACH*

Line 5 *OP TEXT*

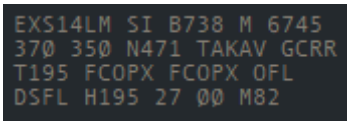



Figure 3.9: Selected Reduced Track

### 3.4.3 Extended Track Label

The Extended label can be opened from the Standard or Reduced label by right clicking on the *CALLSIGN* item, and stays open as long as the cursor is within the label area.

Line 0 *COM * V MSAW APM TCT APW AIW CLAM DUPE O W Y R P M Mark dot Frequency dot A + C I S EMRG COORD NSSR CPDLC E CPDLC W TEXT2 SQAMAN TTLTTGMFXFF*

Line 1 *MTCD CALLSIGN PFREQ SI N/ATYP WTC* *TSSR ASSR PSSR*

Line 2 *AFL a CFL/PEL ACF GS NPT ADES RFL* *FLTID FLTADD CODE*

Line 3 *XFL TRACK AHDG ASP ARC COPN/COPX FCOPX OFL O+ STATE ASI*

Line 4 *DSFL DHDG DIAS DRC DMACH*

Line 5 *COMP CS*

Line 6 *MFXFF*

Line 7 *TOMSTAFF*

Line 8 *ADEP ETD/ATD ADES EET*

Line 9 *FIELD15*

Line 10 *FILED18*

Line 11 *MALRT*

Line 12 *OP TEXT*

Line 13 *OP TEXT2*

Line 14 *FMF*

Line 15 *OCM*

Line 16 *OP TEXT2*

Figure 3.10: Extended Track

### 3.4.4 Minimized Track Label

The Minimized label is toggled by Shift+Right clicking the *Label field descriptions* label item.

Line 0 *COM * V MSAW APM APW AIW DUPE W M EMRG COORD CPDLC E*

Line 1 *MTCD < CALLSIGN*

Line 2 *AFL a*

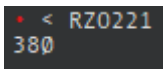



Figure 3.11: Minimized Track

### 3.4.5 Uncoupled Track Label

The Uncoupled label is shown for radar tracks that aren't correlated with a flight plan.

#### Unselected Track

Line 0 *TCT AIW DUPE EMRG*

Line 1 *FLTID* or *TSSR*

Line 2 *AFL a GS*

Line 3 *DSFL DHDG DIAS DRC DMACH*

Figure 3.12: Unselected Uncoupled Track

| Note | *FLTID* is displayed on line 1 only if a valid Mode-S Aircraft Identification is received. Otherwise, TSSR is displayed instead |
|---|---|

#### Selected Track

Line 0 *TCT AIW DUPE EMRG*

Line 1 *FLTID TSSR*

Line 2 *AFL a GS*

Line 3 *DSFL DHDG DIAS DRC DMACH*

| Note | *FLTID* is displayed on line 1 only if a valid Mode-S Aircraft Identification is received. Otherwise, only TSSR is displayed |
|---|---|

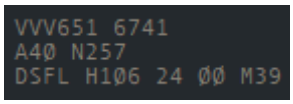



Figure 3.13: Selected Uncoupled Track

### 3.4.6 Line 0 Construction

Line 0 is constructed solely of indicators and warnings. Line 0 is only displayed when at least one of these indicators is active.

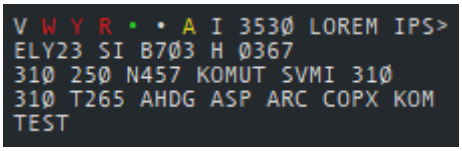



Figure 3.14: Example label with several line 0 alerts

| Example Indication | Description | Label item |
|---|---|---|
| /t | Communication Type Indicator | *COM* |
| V | Y, Y or Z Flight Rules, same color as Track Label | *V* |
| MSAW | Approach Path Monitor or Minimum Safe Altitude Warning | *MSAW* |
| TC+ | Tactical Controller Tool Warning | *TCT* |
| APW | Area Proximity Warning | *APW* |
| AIW | Area Intrusion Warning | *AIW* |
| L | Cleared Level Adherence Monitoring | *CLAM* |
| DUPE | Duplicate SSR code | *DUPE* |
| O | Oceanic Alert | *O* |
| W | RVSM Not Equipped | *W* |
| W | RVSM Exempt | *W* |
| W | RVSM Unknown | *W* |
| Y | 8.33 Not Equipped | *Y* |
| Y | 8.33 Exempt | *Y* |
| Y | 8.33 Unknown | *Y* |
| R | RNAV5 Not Equipped | *R* |
| R | RNAV5 Unknown | *R* |
| P | RNAV1 Not Equipped | *P* |
| M | Military Coordination Required flag | *M* |
| • | Mark dot | *Mark dot* |
| • | Frequency dot, same color as Track Label | *Frequency dot* |
| A | Manual alert(s) active | *A* |
| + | STS/ found in FPL remarks field, same color as Track Label | *+* |
| I | OP_TEXT has data, same color as Track Label | *I* |
| F | No Fix warning | *F* |

| | | |
|---|---|---|
| S | Mode S Callsign is different from coupled Flight Plan Callsign | *S* |
| EM | “HI” for A7500, “CF” for A7600, “EM” for A7700 | *EMRG* |
| ROF | ROF if a Request On Frequency message is received | *COORD* |
| A1000 | A1000 incompatibility | *A1000* |
| 3223 | Displays ASSR if different from TSSR, same color as Track Label | *NSSR* |
| [MAYDAY] | CPDLC Emergency Downlink | *CPDLC E* |
| CPDLC P LATE | CPDLC Warning messages | *CPDLC W* |
| TEXT2 | User entered text visible to everyone, same color as Track Label | *OP TEXT2* |
| 01 | AMAN number in sequence | *SQAMAN* |
| G01 | AMAN TTL Time To Loose TTG Time To Gain MFX_FF Feeder Fix | *TTLTTGMFXFF* |

Table 3.16: Line 0 Indications

### 3.4.7 Label Interaction

Label items may be interacted with either with a left, right or shift and right click.

#### 3.4.7.1 Line 0

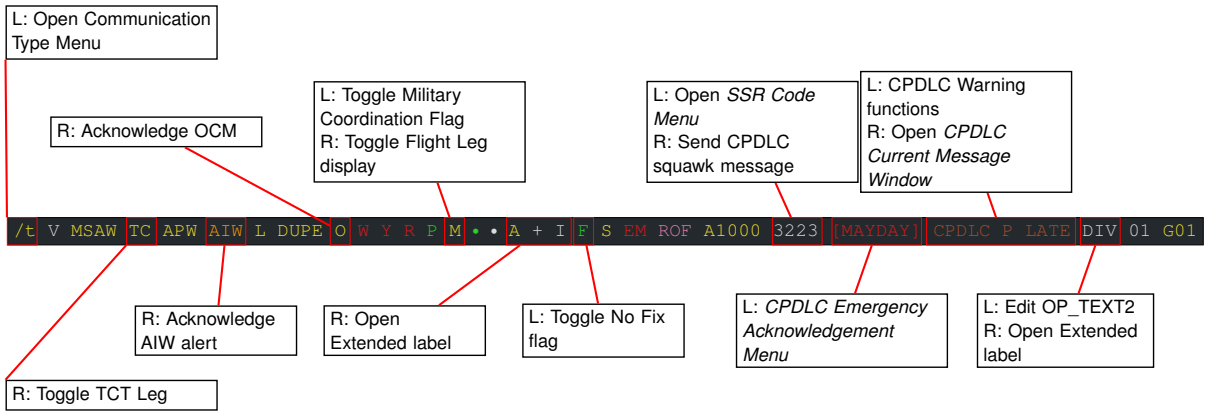



Figure 3.15: Line 0 label Interaction

#### 3.4.7.2 Line 1

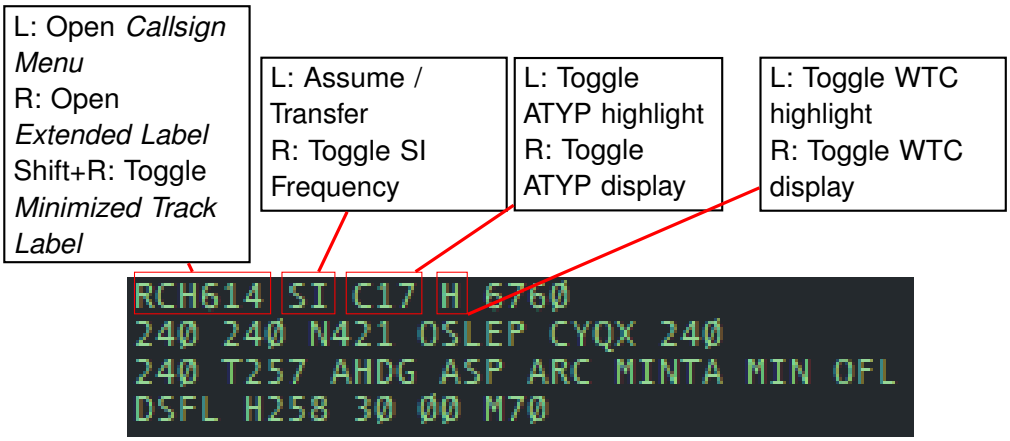



Figure 3.16: Line 1 label Interaction

| Note | Not shown in the above example:<br>When *PFREQ* is displayed R: Acknowledge PFREQ warning<br>When *MTCD* is displayed R: Toggle Flight Leg display |
|---|---|

#### 3.4.7.3 Line 2

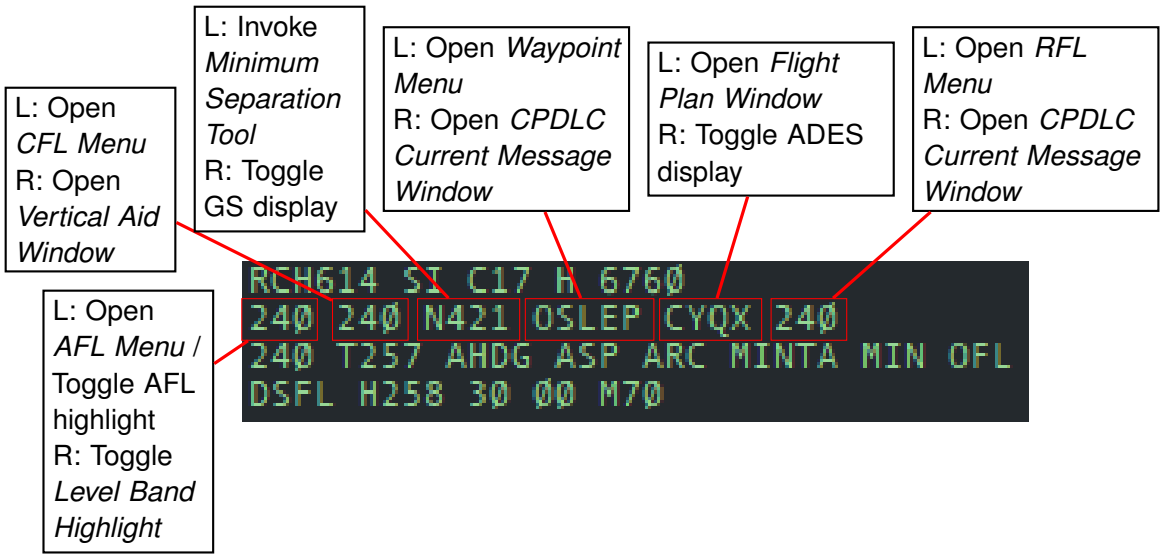



Figure 3.17: Line 2 label Interaction

| Note | Not shown in the above example:<br>When *a* is displayed R: Invoke *Minimum Separation Tool* with VSEP<br>When *ACF* is displayed L: Toggle *Label field descriptions* field color<br>R: Clear approach clearance |
|---|---|

#### 3.4.7.4 Line 3

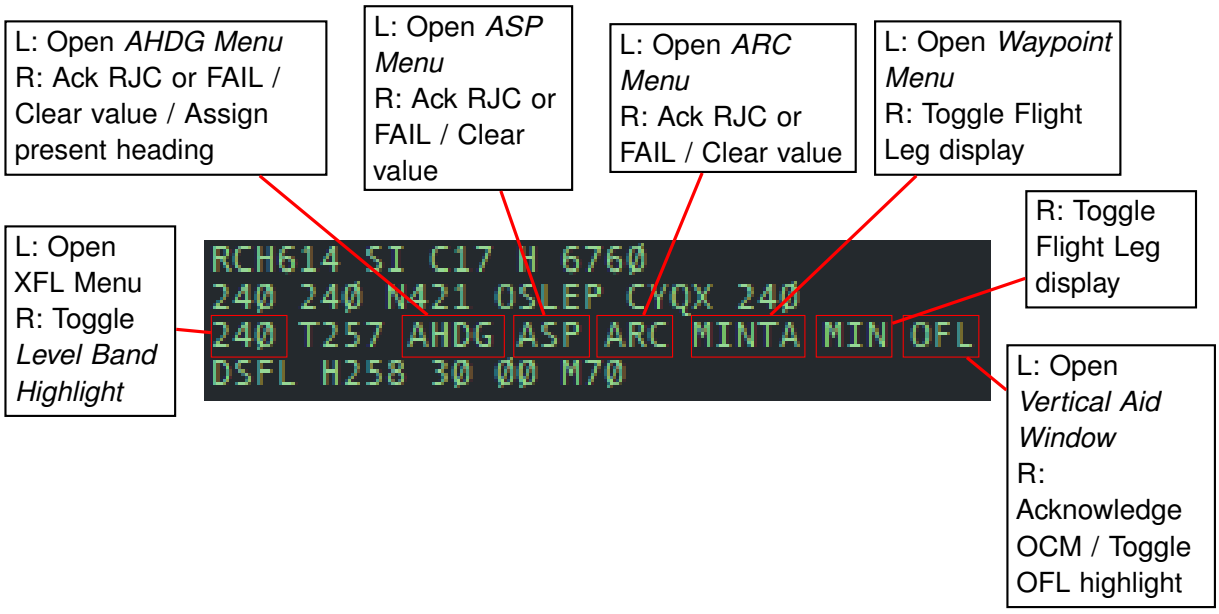



Figure 3.18: Line 3 label Interaction

| Note | Not shown in the above example:<br>When *O+* is displayed R: Open *Oceanic Time Restriction Window* |
|---|---|

#### 3.4.7.5 Line 4

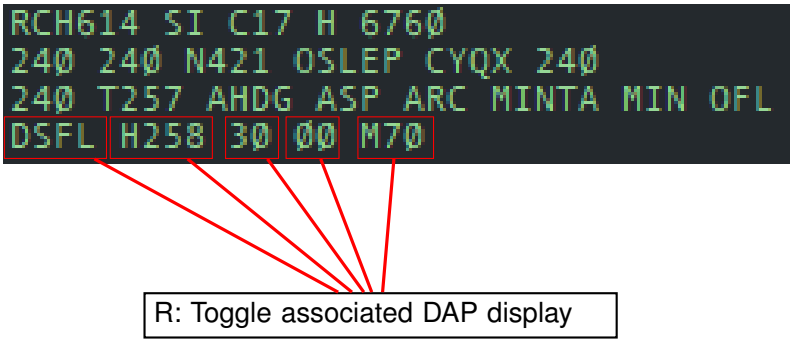



Figure 3.19: Line 4 label Interaction

#### 3.4.7.6 Extended Label

The Extended label is constructed of extra elements when compared to a Standard Selected label, some of which are interactable. These extra elements that are interactable are detailed below. The remaining elements function the same as in the Standard Selected label.

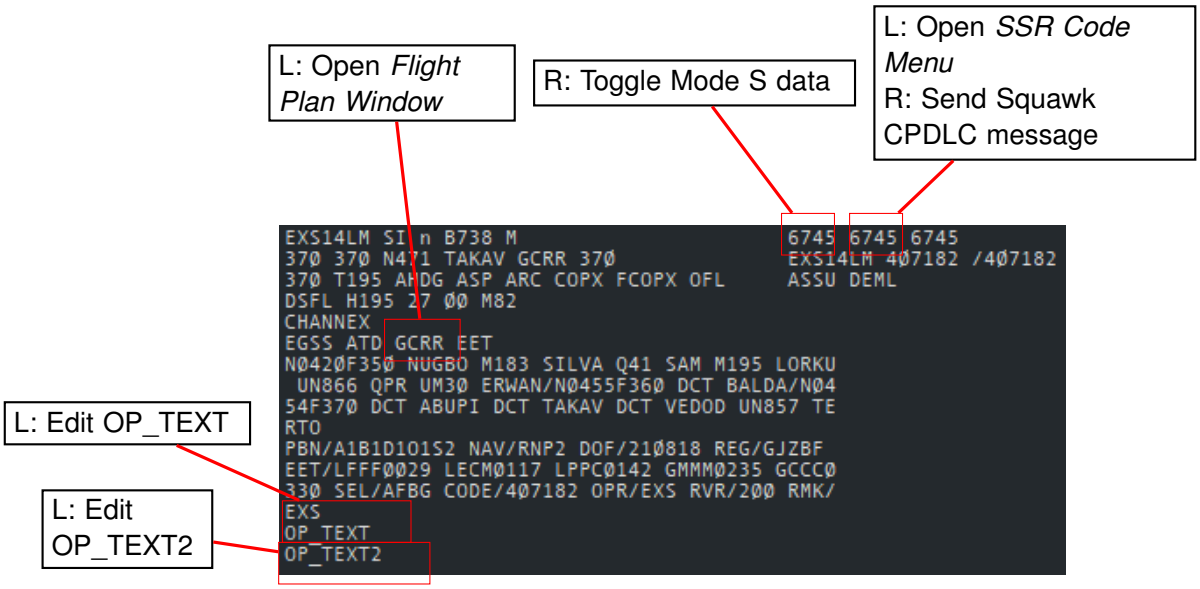



Figure 3.20: Extended Label Interaction

#### 3.4.7.7 Uncoupled Label

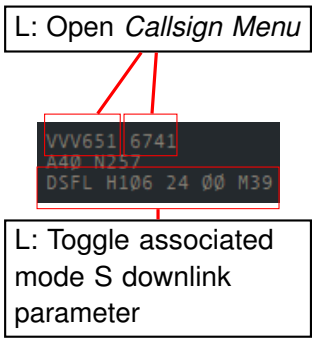



Figure 3.21: Uncoupled Label Interaction

### 3.4.8 Label Compaction

Label fields may be automatically supressed in certain conditions. This is called Label Compaction. Label Compaction only occurs in unselected labels. When a field is supressed, the remaining fields to the right will move left to the supressed field position. If all fields in a line are supressed, the next line is moved up to the supressed line position. Values being coordinated are exempted from Label Compaction.

The following Label Compaction rules are in place:

- If a field is empty it is supressed
- If AFL is the same as CFL, CFL is supressed
- If AFL is the same as CFL and XFL, CFL and XFL are supressed

- If AFL is the same as CFL, but different from XFL, only CFL is supressed
- If AFL is different from CFL, and CFL is the same as XFL, XFL is supressed
- If AFL is different from CFL, and CFL is different from XFL, no field is supressed
- If FCOPX is the same as NPT, NPT is supressed

## 3.5 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. 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.

### 3.5.1 Callsign Menu

Items in the callsign menu that are currently not available (for example “Assume” for a track that is not free or being transferred in) are hidden to make the menu as small as possible, so the example images below do not show all the possible items. In the other menus the unavailable items are displayed with Arm color.

#### Controlled Track

Figure 3.22: Callsign Menu

| | |
|---|---|
| Assume | Assumes track |
| Refuse | Refuses the incoming transfer |
| Transfer | Initiates a transfer to the next sector |

| | |
|---|---|
| ROF | Sends a *Request On Frequency message* |
| (X)Freq | Toggles the *Frequency dot* |
| (X)Highlight | Toggles the Callsign highlight |
| (X)S-Highlight | Toggles the Callsign+AFL fields highlight |
| Vector | Opens the *Prediction Line Menu* |
| QDM | Starts a *QDM Vector* from this track |
| (X)Hold | "Hold" opens the *Hold/Susp Menu*, "XHold" cancels a given holding clearance |
| ▼ More | Shows additional less frequently used options |
| Man Trf | Opens the *Manual Transfer Menu* |
| HOP | Initiates a *Handover Proposal (HOP)* |
| (X)Mark | Toggles the *Mark dot* |
| FPL | Opens the *Flight Plan Window* |
| Start/End CPDLC | Starts/Ends CPDLC connection with the aircraft |
| VCI | Opens the *VCI Menu* |
| Squawk Ident | Sends a "SQUAWK IDENT" CPDLC message to the aircraft |
| CPDLC Free Text | Opens the *CPDLC Free Text Menu* |
| Free | Releases track |
| (X)Inbound Est | Toggles the "Inbound Est" manual alert |
| (X)Irregular | Toggles the "Irregular" manual alert |
| (X)Missed App | Toggles the "Missed App" manual alert |
| (X)Weather | Toggles the "Weather" manual alert |
| On Contact | Sets track *On Contact*[1] |
| (X)Couple | Uncorrelates/correlates the flight plan |

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

[1] Clicking "On Contact" for a track with "Y" or "Z" flight rules will also automatically change the flight rules in the VATSIM flight plan to VFR in order to make it uncontrolled. The displayed flight rules are not affected.

## Uncontrolled Track

Figure 3.23: Uncontrolled Track Callsign Menu

| | |
|---|---|
| On Contact | Sets track *On Contact* |
| Assume | Assumes track[1] |
| Vector | Opens the *Prediction Line Menu* |
| QDM | Starts a *QDM Vector* from this track |
| (X)Highlight | Toggles the Callsign highlight |
| (X)S-Highlight | Toggles the Callsign+AFL fields highlight |
| ▼ More | Shows additional less frequently used options |
| (X)Hold | “Hold” opens the *Hold/Susp Menu*, “XHold” cancels a given holding clearance |
| (X)Mark | Toggles the Mark indicator |
| (X)Freq | Toggles the Freq indicator |
| Free | Releases track |
| FPL | Opens the *Flight Plan Window* |
| (X)Couple | Uncorrelates/correlates the flight plan |

[1] Clicking “Assume” for a track with “Y” or “Z” flight rules will also automatically change the flight rules in the VATSIM flight plan to IFR in order to make it controlled. The displayed flight rules are not affected.

### Uncorrelated Track

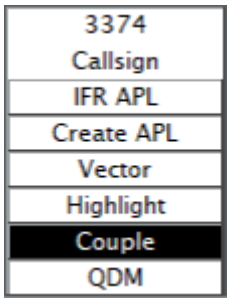



Figure 3.24: Uncorrelated Track Callsign Menu

| | |
|---|---|
| IFR APL | Opens the *Create APL Window* (with FRUL=I and S-Highlight on) |
| Create APL | Opens the *Create APL Window* |
| Vector | Opens the *Prediction Line Menu* |
| (X)Highlight | Toggles the TSSR/FLTID highlight |
| Couple | Correlates the radar track with the next clicked “Callsign” field |
| QDM | Starts a *QDM Vector* from this track |

### 3.5.2 Transfer menu

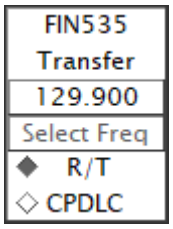



Figure 3.25: Transfer Menu

For CPDLC connected aircraft, the menu contains options related to the transfer. Left clicking on the frequency button initiates the transfer (and sends the CPDLC message if selected).

“R/T” / “CPDLC” select whether the transfer instruction is given via radio or as a CPDLC message.

### 3.5.3 Transfer Confirmation Window

Figure 3.26: Transfer Confirmation Window

If an aircraft has a defined XFL value and hasn't been cleared to it (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.

### 3.5.4 Request On Frequency message

See *ROF*. 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.<br>1. A successfully sent message will be displayed in the *Message Out Window*<br>2. If there is an error or the message fails to go through, a message will be put into the *Personal Queue Window* |

### 3.5.5 Hold/Susp Menu

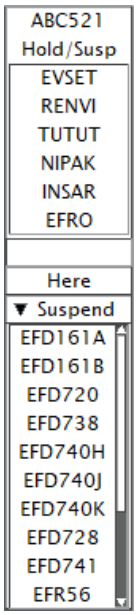



Figure 3.27: Hold Menu

The Hold/Susp menu allows you to enter a holding clearance, adding 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 the empty box below the waypoint list opens a text entry box to enter any holding point name.

Left-clicking "Here" enters the present position coordinates as the holding point.

The "Suspend" folder contains a list of all currently active TSA areas. Left-clicking on one sets the aircraft to a TSA Hold. A TSA Hold clearance will exclude the aircraft from all APW and SAP processing.

### 3.5.6 Manual Transfer Menu

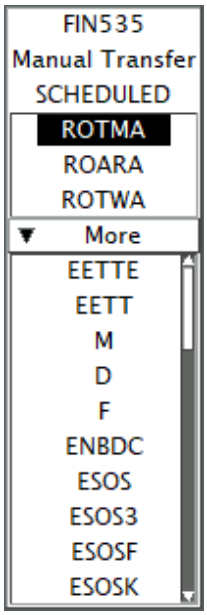



Figure 3.28: Manual Transfer Menu

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. For CPDLC connected aircraft, clicking on a controller ID opens the *Transfer menu*

### 3.5.7 VCI Menu

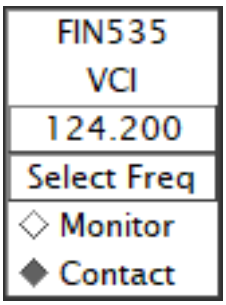



Figure 3.29: VCI Menu

Available only for CPDLC-connected aircraft and when more than one frequency has been set up by the controller, the VCI menu allows sending a CPDLC "contact" or "monitor" message without initiating a transfer.

The first button displays the primary frequency, left-clicking it will send the message with that frequency.

Left-clicking the “Select Freq” button will open a text entry box to enter any other frequency. If a valid frequency (set up as XMT TXT in EuroScope’s Voice communication setup dialog) is entered, the message will be sent with that frequency.

“Monitor” and “Contact” are used to select the type of message to be sent.

### 3.5.8 CPDLC Free Text Menu

See *Free Text Messages*. Left-clicking on a message sends it.

The menu closes when a message is sent or the cursor leaves the menu area.

### 3.5.9 Prediction Line Menu

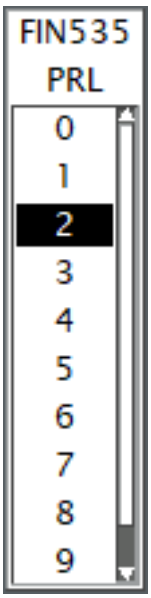



Figure 3.30: Prediction Line Menu

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.

### 3.5.10 Sequence Number Menu

Figure 3.31: Sequence Number Menu

This menu is used to set an arrival sequence number. Values from 1 to 50 are available.

| | |
|---|---|
| Warning | The sequence number will not be transmitted to other controllers except the next controller (during transfer) unless the flight strip is manually sent. |

### 3.5.11 Waypoint Menu

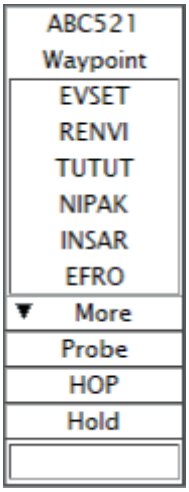



Figure 3.32: Waypoint Menu

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

Left-clicking on a point in the list sets a direct-to clearance to that point. Any point name can be manually entered in the box at the bottom of the menu.

| | |
|---|---|
| Warning | Note that no coordination is performed. If coordination is necessary, right-click any point name to open the EuroScope “COPN/COPX point” popup list or use the “Probe” button instead. |

When the aircraft is CPDLC-connected and the coordination is an exit coordination, the menu offers a choice between “R/T” and “CPDLC”. The chosen option decides how a clearance is communicated to the aircraft.

“Probe” opens the EuroScope “COPN point” or “COPX point” popup list and draws the Flight Leg for the flight. Moving the mouse cursor over the points in the popup can be used to probe the effects of possible route changes. Allow up to 5 seconds after each point change for FPCP to update. The popup is also used to start point coordinations.

For “HOP” see *AHDG Menu*.

Left-clicking “Hold” opens the *Hold/Susp Menu*. If a holding clearance already exists, the button will read “XHold” and clicking it will remove the clearance.

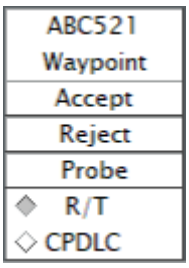



Figure 3.33: Waypoint Menu in Coordination

When an entry or exit coordination has been received, the menu options are:

| | |
|---|---|
| Accept | Accepts the coordination |
| Reject | Rejects the coordination |
| Probe | Opens EuroScope popup to counter-propose another point |

With “CPDLC” selected, when “Accept” is clicked, in addition to the coordination being accepted, a “PROCEED DIRECT TO <point>” CPDLC message is sent to the aircraft.

Figure 3.34: CPDLC Waypoint Menu

When a direct-to downlink request has been received, the menu can be used to answer it.

| | |
|---|---|
| Point name | Sends a “PROCEED DIRECT TO <point>” CPDLC message |
| SBY | Sends a “STANDBY” CPDLC message |
| UNABLE | Sends an “UNABLE” CPDLC message |

The “R/T” / “CPDLC” selection is fixed to “CPDLC”.

| | |
|---|---|
| Warning | Clicking the point name will set the direct-to clearance without coordination |

When there is no request in process and the aircraft has a direct-to point set, the menu can be used to send the clearance via CPDLC. In this case the menu opens like this except without the “SBY” and “UNABLE” buttons. Clicking the point name will send the “PROCEED DIRECT TO <point>” CPDLC message.

### 3.5.12 AFL Menu

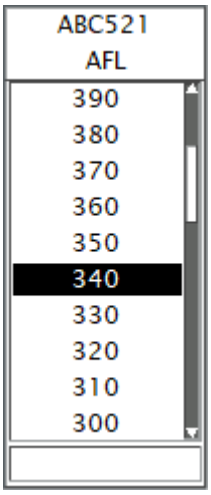



Figure 3.35: AFL Menu

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.

There are two 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

The accepted manual level entry formats for the AFL, CFL and RFL menus are as follows ("n" is a number):

| | |
|---|---|
| "Annn" or "nnn" | Altitude in hundreds of feet |
| "Ennn" | Height in hundreds of feet above aerodrome elevation |

Regardless of whether the entered value is an altitude or height, it will be converted to altitude in feet and the result is then rounded to the nearest 100 feet.

### 3.5.13 CFL Menu

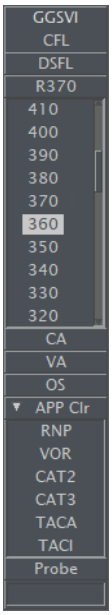



Figure 3.36: CFL Menu

The CFL menu is available 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 submenu*. Altitudes up to the transition altitude are prefixed with “A”, QFE heights are prefixed with “E”. Selectable values are from 500ft to FL650 with 500ft intervals up to the transition altitude, then 1000ft intervals up to FL410 and 2000ft intervals above it.

The aircraft’s RFL is displayed above the level list with format “R<RFL>”. Left-clicking it sets the CFL equal to RFL.

- “CA” sets “Cleared for approach”
- “VA” sets “Cleared for visual approach”
- “OS” sets “Own separation” (treated as visual approach by safety nets)

The “APP Clr” folder contains other available approach types to populate the *Label field descriptions* field:

- RNP
- VOR
- CAT2
- CAT3
- TACA
- TACI

| Warning | The clearances in the “APP Clr” folder will be displayed as “cleared for approach” to controllers not using this plugin (“OS” will be “cleared for visual approach”) |
|---|---|

“Probe” toggles a CFL probe function and displays the Flight Leg. Moving the mouse cursor over the levels in the list will show the MTCD/SAP effects of setting that value as the CFL (allow a couple of seconds for the FPCP to update the calculations).

There are four ways to set the CFL using this menu:

- Clicking the RFL value;
- Clicking a level value in the list;
- Clicking one of the approach clearance items;
- Clicking the text entry box at the bottom of the menu and entering the value there.

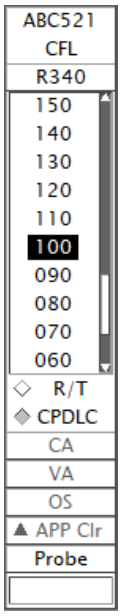



Figure 3.37: CPDLC CFL Menu

For CPDLC connected aircraft, the menu contains “R/T” and “CPDLC” options to select whether a level clearance is to be sent via radio or as a CPDLC message.

When a level request downlink has been received, the “R/T” option is deselected and cannot be selected. The request must be replied to using CPDLC. A clearance to the requested or some other level is given using this menu. The “STANDBY” and “UNABLE” responses are sent from the RFL menu.

When a level clearance uplink is waiting for reply, the “CPDLC” option is deselected and cannot be selected. If a new level clearance must be sent before there is an answer to the uplink, it must be given using R/T (doing so also closes the open uplink message).

### 3.5.14 RFL Menu

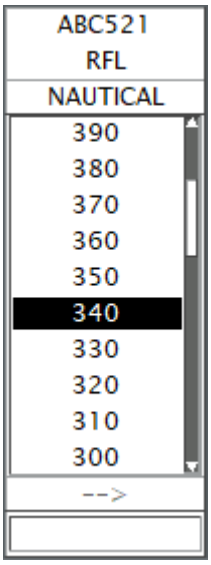



Figure 3.38: RFL Menu

The RFL menu allows setting the requested flight level. The operation is similar to the AFL and CFL menus. The function for the "–>" button is not implemented.

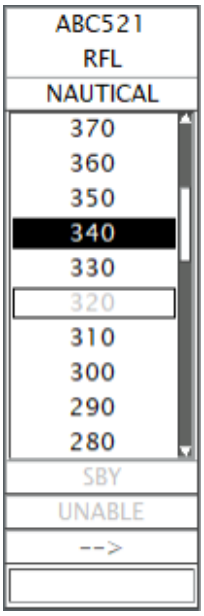



Figure 3.39: RFL Menu during ongoing downlinked request

For CPDLC connected aircraft, if a level request has been received from the aircraft, there are also “SBY” and “UNABLE” buttons to send those messages as a reply. For clearing the aircraft to the requested or some other level, the CFL menu must be used.

### 3.5.15 AHDG Menu

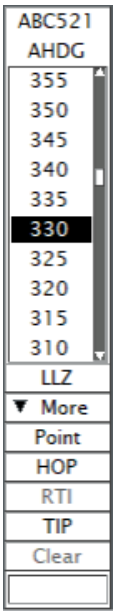



Figure 3.40: AHDG Menu

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, or the departure runway heading if the menu is opened from the *Departure List*. 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 or by using the AHDG vector.

"LLZ" enters a localizer clearance.

The “More” folder contains the following additional options:

- “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 (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 *Handover Proposal (HOP)*, *Request Tactical Instructions (RTI) / Tactical Instructions Proposal (TIP)*). 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);
- “Clear” removes an assigned heading or a direct route. For CPDLC connected aircraft, it sends the “RESUME OWN NAVIGATION” CPDLC message if the “CPDLC” option is selected.

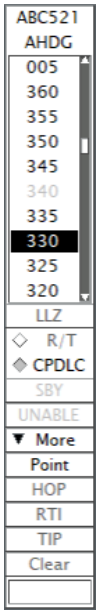



Figure 3.41: CPDLC AHDG Menu

For CPDLC connected aircraft, the menu contains additional buttons:

“R/T” and “CPDLC” select whether a heading/direct-to clearance is to be sent using R/T or as a CPDLC message.

- When a heading request downlink has been received, the “R/T” option is deselected and cannot be selected. The request must be replied to using CPDLC.
- When a heading/direct-to clearance uplink has been sent, the “CPDLC” option is deselected and cannot be selected. If a new heading/direct-to clearance must be sent before there is an answer to the uplink, it must be given via radio (doing so also closes the open uplink message).

“SBY” and “UNABLE” send the corresponding answers to a downlink heading request message.

| | |
|---|---|
| Warning | Clicking a point on the radar screen will set the direct-to clearance without coordination |

### 3.5.16 AHDG Vector

The AHDG vector is a 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.

### 3.5.17 Handover Proposal (HOP)

See *HOP*. For the receiving controller a HOP is identified by coloring the *CALLSIGN* field with Proposition In color in the label. For the sending controller the *CALLSIGN* field remains Assumed color and the *SI* field is shown in Proposition In color. Additionally, if there are proposed parameters they are also colored Proposition In 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, in order of preference, to accept the proposed parameters are:

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

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. |

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

Certain tactical data (AHDG, ASP and ARC) can be coordinated using the *RTI/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 proposing the parameters to the next sector when the aircraft is assumed. Contrary to the *Handover Proposal (HOP)* function, these coordinations can be refused using the system, and they do not offer the aircraft for transfer.

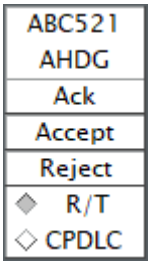



Figure 3.42: TIP Menu during ongoing AHDG coordination

To answer the RTI/TIP, open the *AHDG Menu*. For TIP, the menu contains just two options, “Ack” (accept proposal) and “Reject” (reject proposal). For RTI, an additional “Accept” option is available. Like “Ack”, it accepts the proposal, but it also sets the value. For CPDLC connected flights, the “R/T” and “CPDLC” options are used to determine whether the clearance is to be sent as a CPDLC message or using RTF.

| | |
|---|---|
| Warning | It is possible to have received more than one type (AHDG/ASP/ARC) of RTI/TIP. When answering one of them, the same answer will be sent to all the others as well. When selecting the “Accept” option, only that type’s value will be set (for example when AHDG and ASP RTI have been received and selecting “Accept” from the AHDG menu, both RTIs will be accepted but only the AHDG value will be set accordingly, and ASP value will have to be set separately) |

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

### 3.5.19 ARC Menu

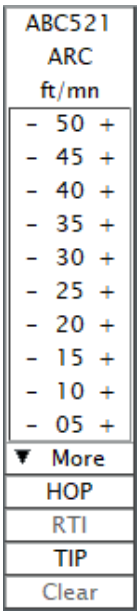



Figure 3.43: ARC Menu

The ARC menu allows assigning a rate of climb or descent to the flight plan. Values are displayed in 100's of ft/min.

Left-clicking on a value assigns it. Clicking the "-" or "+" next to a value sets the clearance as a maximum or minimum rate respectively. Clicking the value itself will set the clearance as an exact rate.

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

An assigned rate can be cleared by selecting the "Clear" item.

| | |
|---|---|
| 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 TopSky, all assigned rate clearances will only show the rate value.<br>Assigned rate clearances given by controllers not using TopSky will be displayed as minimum rate clearances. |

### 3.5.20 ASP Menu

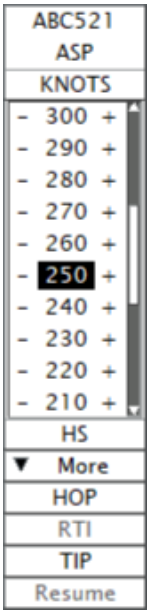



Figure 3.44: ASP Menu

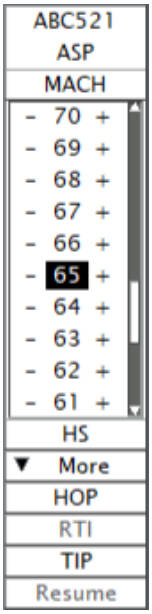



Figure 3.45: ASP Menu Mach option

The ASP menu allows setting an assigned speed or Mach number. The default value will depend on the assigned one if set (assigned+20kts for departures, assigned or slightly less for arrivals), otherwise it will be either a pre-defined value or the current DMACH if available. The menu will initially open in IAS mode if the aircraft's CFL is below FL285, and in Mach mode if above it. The selectable values range from 100 to 400 knots and from M0.50 to M1.00.

Left-click the units button to toggle between IAS and Mach.

The "HS" option will set a clearance for "high speed", displayed as "HS" in the ASP label field.

The "+" and "-" options can be used to specify the clearanceas a minimum/maximum speed.

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

The "Resume" item clears an assigned value. For CPDLC connected aircraft, it sends the "RESUME NORMAL SPEED" CPDLC message if the "CPDLC" option is selected.

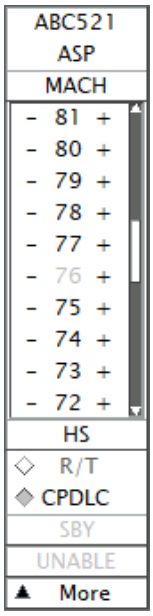



Figure 3.46: CPDLC ASP Menu

For CPDLC connected aircraft, the menu contains additional buttons:

R/T" and "CPDLC" select whether a speed clearance is to be sent via radio or as a CPDLC message.

- When a speed request downlink has been received, the "R/T" option is deselected and cannot be selected. The request must be replied to using CPDLC.
- When a speed clearance uplink has been sent, the "CPDLC" option is selected and cannot be deselected. If a new speed clearance must be sent before there is an answer to the uplink, it must be given via radio (doing so also closes the open uplink message).

SBY" and "UNABLE" send the corresponding answers to a downlink speed request.

| | |
|---|---|
| Warning | The minimum, maximum and high speed clearances are a feature specific to this plugin (the additional information is stored in the flight strip). To controllers not using TopSky, all assigned speed clearances will only show the speed value (999 for the high speed clearance). Assigned speed clearances given by controllers not using TopSky will be displayed as exact speed clearances. |

### 3.5.21 SSR Code Menu

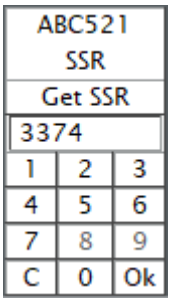



Figure 3.47: ASSR Menu

The SSR Code menu allows assigning an 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, left-click the “Get SSR” button.

When the SSR Code menu is opened to start the *Find Track* function, the top row of the menu will read “Find” and the “Get SSR” button will not be present. Enter a code and click “Ok” to start the function.

### 3.5.22 Combined Transfer Menu

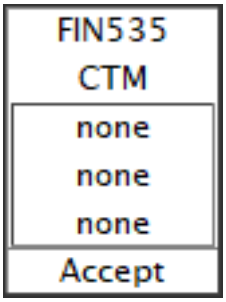



Figure 3.48: Combined Transfer Menu

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.

### 3.5.23 Aerodrome Menu

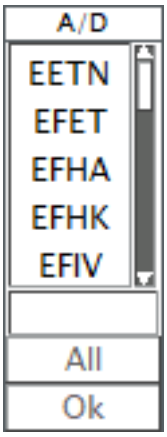



Figure 3.49: Aerodrome Menu

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.

### 3.5.24 CPDLC Emergency Acknowledgement Menu

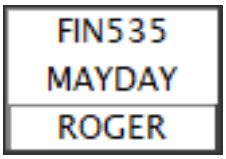



Figure 3.50: CPDLC Emergency Acknowledgement Menu

When a CPDLC emergency message has been received, this menu is used to respond to it (if applicable), and then acknowledge the situation. When a reply is required, the menu button will read “ROGER”. Left-clicking on it will send the “ROGER” CPDLC message and close the menu. When opening the menu again (or when a reply was not required), the button reads “Ack”. Left-clicking on it will acknowledge the emergency.

The menu is closed when the “ROGER”/“Ack” button is clicked or the cursor leaves the menu area.

### 3.5.25 CPDLC Pilot Late Acknowledgement Menu

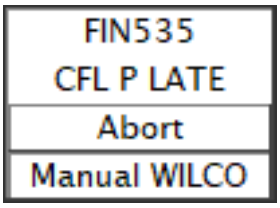



Figure 3.51: CPDLC Pilot Late Acknowledgement Menu

When there is no answer to a CPDLC uplink clearance, this menu can be used to resolve the situation. “Abort” discards the uplink and “Manual WILCO” simulates reception of a WILCO message.

### 3.5.26 Time Menu

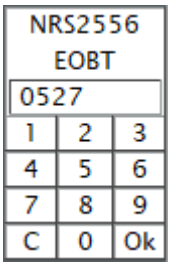



Figure 3.52: Time Menu

The Time menu is used to set/change the time value for ATD, CTOT, EAT, EOBT, ETD, NBT and NLT fields. Default values are:

| | |
|---|---|
| ATD | Current time |
| CTOT | current field value if available, current time otherwise |
| EAT | current field value if available, current time otherwise |
| EOBT | Current time |
| ETD | Current field value |
| NBT | Current field value if available, current time otherwise |
| NLT | current field value if available, current time otherwise |

“C” clears the value, “Ok” sets the time.

### 3.5.27 Departure Sequence Menu

Figure 3.53: Departure Sequence Menu

The DSQ menu is used to select a specific departure sequence number to a flight. The list includes the possible numbers, and the current number is highlighted. Left-clicking on a number sets it, “Clear” removes the flight from the departure sequence.

| Note | The departure sequence number is only stored locally, it is not sent to other controllers or even to other EuroScope instances. |
|---|---|

### 3.5.28 NFREQ menu

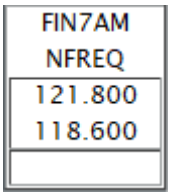



Figure 3.54: NFREQ Menu

The NFREQ menu is used to set the “next frequency” value to be sent in datalink departure clearances. Left-click on one of the pre-defined values in the list to set it, or on the empty area at the bottom to type in a value manually.

## 3.6 Aircraft Lists

### 3.6.1 Departure List

The Departure List contains all departures still on the ground of the controlled aerodromes.

| Item | Left Mouse | Right Mouse |
|---|---|---|
| *CALLSIGN* | Open *Callsign Menu* | Toggle Flight Leg display |
| *FSTS* | | Network Status Options |
| *EOBT* | Edit EOBT | EOBT Options |
| *TOBT** | Edit E/TOBT | E/TOBT Options |
| *TSAT* | Ready TOBT | |
| *TSAC* | Add TSAT to TSAC | Edit TSAC |
| *ASRT* | Toggle ASRT | |
| *ASAT* | | |
| *TTOT* | | TTOT Options |
| *Delta TTOT* | | |
| *CTOT* | | CTOT Options |
| *Delta CTOT* | | |
| *ECTOT* | Add ECTOT to CTOT | ECTOT Options |
| *Flow Message* | Get FM as text | |
| *Ready* | Toggle Ready | |
| *ATYP* | | |
| *WTC* | | |
| *V* | | |
| Departure stand | | |
| QNH | Edit OP TEXT | Edit OP TEXT |
| *ADEP* | Open *Flight Plan Window* | Toggle Flight Leg display |
| *ADES* | Open *Flight Plan Window* | Toggle Flight Leg display |
| *DRWY* | Open *Departure Clearance Window* | Open *Pre-Departure Clearance Window* |

| Item | Left Mouse | Right Mouse |
|---|---|---|
| *SID* | Open *Departure Clearance Window* | Open *Pre-Departure Clearance Window* |
| *ASSR* | Open *SSR Code Menu* | Open *SSR Code Menu* |
| *CFL* | Open *CFL Menu* | Open *CFL Menu* |
| *RFL* | Open *RFL Menu* | Open *RFL Menu* |
| *CLR* | Toggle Clearance Acknowledged flag | |
| Ground state | Open Ground State Menu | Open Ground State Menu |
| *OP TEXT2* | Edit OP TEXT2 | Edit OP TEXT2 |

Table 3.23: Departure List Construction

*EOBT is displayed instead of TOBT in non-CDM airports.

### 3.6.2 Sector List

*Global Menu* Tools -> Flight Plan Lists -> Sector List. . .
The Sector List contains all departed controlled aircraft in the following states:

- Informed[1]
- Concerned[1,2]
- Coordinated
- Transfer to me initiated
- Assumed
- Transfer from me initiated
- Redundant[1]

| Item | Left Mouse | Right Mouse |
|---|---|---|
| * | Toggle units | |
| *CALLSIGN* | Open *Callsign Menu* | Open Extended Label |

[1] If corresponding selection made in the Global menu
[2] The display of concerned aircraft is limited to those entering the sector within 60 minutes

| Item | Left Mouse | Right Mouse |
|---|---|---|
| *ETN* | | |
| *PEL* | Open PEL Menu | Open *Vertical Aid Window* |
| *COPN* | Open *Waypoint Menu* | Toggle Flight Leg display |
| *NRAC* | | |
| *ATYP* | Toggle ATYP highlight | |
| *WTC* | Toggle WTC highlight | |
| *V* | | |
| *CFL* | Open *CFL Menu* | Open *Vertical Aid Window* |
| *ACF* | Toggle ACF field color | Clear approach clearance |
| *AHDG* | Open *AHDG Menu* | Ack RJC or FAIL / Clear value / Assign present heading |
| *ASP* | Open *ASP Menu* | Ack RJC or FAIL / Clear value |
| *TAS* | | |
| *ETX* | | |
| *XFL* | Open XFL Menu | Open *Vertical Aid Window* |
| *COPX* | Open *Waypoint Menu* | Toggle Flight Leg display |
| *RFL* | Open *RFL Menu* | Open *CPDLC Current Message Window* |
| *PSSR* | | Find PSSR |
| *ASSR* | Open *SSR Code Menu* | Send CPDLC Squawk message |
| *NSSR* | Open *SSR Code Menu* | Send CPDLC Squawk message |
| *AN* | | |
| *ADEP* | | |

| Item | Left Mouse | Right Mouse |
|---|---|---|
| *SID* | Open SID list | Acknowledge SID allocation |
| *DRWY* | Open Runway list | |
| *FCOPX* | | Toggle Flight Leg display |
| *ETX* | | |
| *FText* | Edit *FText* | |
| *ADES* | Open *Flight Plan Window* | |
| *MFXFF* | | |
| *TOMSTAFF* | | |
| *TTLTTGMFXFF* | | |
| *SI* | Assume / Transfer | Toggle SI frequency |
| *ETA* | | |
| *STAR* | Open STAR list | Acknowledge STAR allocation |
| *ARWY* | Open Runway list | |
| *SQAMAN* | | |
| Gate | Open Stand menu | |
| *OP TEXT* | Edit *OP TEXT* | |
| *OP TEXT2* | Edit *OP TEXT2* | |
| *MNR* | | |
| *OFL* | Open *Vertical Aid Window* | Acknowledge OCM / Toggle OFL highlight |
| *NAT* | | |
| *OAN* | | |
| *CTO* | | |
| *O+* | | Open *Oceanic Time Restriction Window* |

| Item | Left Mouse | Right Mouse |
|---|---|---|
| *NBT* | Open *Time Menu* | Acknowledge / clear OCM NBT |
| *NLT* | Open *Time Menu* | Acknowledge / clear OCM NLT |
| *C* | Toggle Check indicator | |

Table 3.24: Sector List Construction

### 3.6.3 Load Factor List

*Global Menu* Tools -> Flight Plan Lists -> Load Factor List. . .

The Load Factor List contains all departed controlled aircraft in the concerned state and all non-departed controlled aircraft in the concerned and coordinated states expected to enter the sector within 4 hours.

| Item | Left Mouse | Right Mouse |
|---|---|---|
| *CALLSIGN* | Open *Callsign Menu* | |
| *NRAC* | | |
| *V* | | |
| *ETN* | | |
| *PEL* | Open PEL Menu | Open *Vertical Aid Window* |
| *COPN* | Open *Waypoint Menu* | Toggle Flight Leg display |
| *ADEP* | | |
| *ADES* | Open *Flight Plan Window* | |
| *RFL* | Open *RFL Menu* | Open *CPDLC Current Message Window* |
| *PSSR* | | Find PSSR |
| *ASSR* | Open *SSR Code Menu* | Send CPDLC Squawk message |
| *C* | Toggle Check indicator | |

Table 3.25: Load Factor List Construction

### 3.6.4 Resectorisation List

*Global Menu* Tools -> Flight Plan Lists -> Resectorisation List. . .

The Resectorisation List contains all flights assumed or on-contact with specified LFUNCs.

| Item | Left Mouse | Right Mouse |
|---|---|---|
| *CALLSIGN* | Open *Callsign Menu* | |
| *SI* | Assume / Transfer | Toggle SI frequency |
| *C* | Toggle Check indicator | |

Table 3.26: Resectorisation List Construction

### 3.6.5 ETWR List

*Global Menu* Tools -> Flight Plan Lists -> ETWR List...

The ETWR List contains notified and coordinated flights departing from specified airports

| Item | Left Mouse | Right Mouse |
|---|---|---|
| * | Toggle units | |
| *CALLSIGN* | Open *Callsign Menu* | |
| *FETN* | | |
| *FCOPN* | | Toggle Flight Leg display |
| *ETN* | | |
| *PEL* | Open PEL Menu | Open *Vertical Aid Window* |
| *COPN* | Open *Waypoint Menu* | Toggle Flight Leg display |
| *SID* | Open SID list | Acknowledge SID allocation |
| *DRWY* | Open runway list | |
| *FText* | Edit *FText* | |
| *NRAC* | | |
| *ATYP* | | |
| *WTC* | | |
| *V* | | |
| *XFL* | Open COPX Alt popup | Open *Vertical Aid Window* |

| Item | Left Mouse | Right Mouse |
|---|---|---|
| *COPX* | Open *Waypoint Menu* | Toggle Flight Leg display |
| *FCOPX* | | Toggle Flight Leg display |
| *RFL* | Open *RFL Menu* | Open *CPDLC Current Message Window* |
| *ASSR* | Open *SSR Code Menu* | Send CPDLC Squawk message |
| *ADEP* | | |
| *ADES* | Open *Flight Plan Window* | |
| *SI* | Assume / Transfer | Toggle SI frequency |
| *AN* | | |
| *C* | Toggle Check indicator | |

Table 3.27: ETWR List Construction

### 3.6.6 Uncontrolled Lists

*Global Menu* Tools -> Flight Plan Lists -> Uncontrolled List 1/2. . .

The Uncontrolled List contains all or a subset of Uncontrolled (VFR flights not in ASSUMED state) aircraft, depending on whether filters are set up.

Up to 2 lists can be displayed. Each list may be configured with different filtering options.

| Item | Left Mouse | Right Mouse |
|---|---|---|
| *CALLSIGN* | Open *Callsign Menu* | Open Extended Label |
| *ASSR* | Open *SSR Code Menu* | Send CPDLC Squawk message |
| *NRAC* | | |
| *ATYP* | | |
| *ADEP* | | |
| *ETD* | Open *Time Menu* | |
| *ATD* | Open *Time Menu* | Reset ATD to ETD |
| *ADES* | Open *Flight Plan Window* | |
| *FF* | | |

| Item | Left Mouse | Right Mouse |
|---|---|---|
| *STAFF* | | |
| *TTLTTGFF* | | |
| *ALT1* | Open *Flight Plan Window* | |
| *EET* | Open *Flight Plan Window* | |
| *ETA* | | |
| *FCOPN* | | Toggle Flight Leg display |
| *PEL* | Open PEL menu | Open *Vertical Aid Window* |
| *FETN* | | |
| *FCOPX* | | Toggle Flight Leg display |
| *FETX* | | |
| *SI*[1] | | |
| *OP TEXT* | Edit *OP TEXT* | |
| *OP TEXT2* | Edit *OP TEXT2* | |
| *FText* | Edit *FText* | |
| *C* | Toggle Check indicator | |

Table 3.28: Uncontrolled List Construction

### 3.6.7 Lost List

*Global Menu* Tools -> Flight Plan Lists -> Lost List. . .

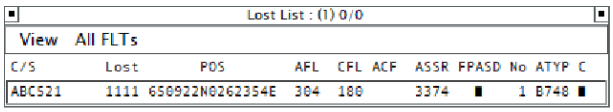



Figure 3.55: Lost List

The list includes assumed flights that have previously been correlated to a radar track but radar contact has been lost. The list opens automatically whenever a flight is added into it, and will be closed automatically when empty. If manually opened, the list cannot be manually closed until it is empty.

[1] Labeled as LFUNC

| Item | Type | Left Mouse | Right Mouse |
|---|---|---|---|
| C/S | mandatory | Open *Callsign Menu* | |
| Lost (time) | optional | | |
| POS (lost position) | optional | | |
| AFL (last received) | optional | | |
| CFL | optional | Open *CFL Menu* | Open *Vertical Aid Window* |
| ACF | optional | Toggle field text color | Cancel approach clearance |
| ASSR | optional | Open *SSR Code Menu* | |
| FPASD | optional | Toggle FPASD track (when globally off) | |
| No | optional | | |
| ATYP | optional | | |
| C | optional | | |

Table 3.29: Lost List Construction

“View” opens the View menu:

| | |
|---|---|
| Header | Toggle visibility of the list header line |
| Default | Sets field visibility to default (all optional fields off) |
| <field> | Toggles field visibility |

“Font” opens the Font menu to select the list font from three options.

Filtering the flights entered in the list can be specified in the filtering menu:

| | |
|---|---|
| All FLTs | All lost flights will be entered |
| ADES Filter | Flights lost within a specified distance from their destinations will not be entered into the list |

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

When a flight is added into the Lost List, its FPASD selection is initially set to “on” regardless of the FPASD setting in the *Global Menu*.

### 3.6.8 Traffic Management Lists

*Global Menu* Tools -> Flight Plan Lists -> Traffic Management List 1/2. . .

The Traffic Management List contains all Uncontrolled and Controlled flights at least in Coordinated State with specified destinations, and routing via specified points. The ETO over the point (or ETA if no point specified) must be within 40 minutes, and the destination must be specified to include uncontrolled flights in the list.

Up to 2 lists can be displayed. Each list may be configured with different filtering options.

| **Item** | **Left Mouse** | **Right Mouse** |
|---|---|---|
| *COPN* | Open *Waypoint Menu* | Toggle Flight Leg display |
| *PEL* | Open PEL Menu | |
| *SI* | Open SI List | Toggle SI frequency |
| *CALLSIGN* | Open *Callsign Menu* | Open Extended Label |
| *ASSR* | Open *SSR Code Menu* | Send CPDLC Squawk message |
| *AFL* | Open *AFL Menu* | |
| *a* | | |
| *CFL* | Open *CFL Menu* | |
| *ATYP* | | |
| *WTC* | | |
| *TAS* | | |
| *RFL* | Open *RFL Menu* | Open *CPDLC Current Message Window* |
| *ETOHP*[1] | | |
| *EAT* | Open *Time Menu* | |
| *STAR* | Open STAR list | |
| *ARWY* | Open Runway list | |
| *HPT* | Open *Waypoint Menu* | |

Table 3.32: Traffic Management List Construction

### 3.6.9 Holding List

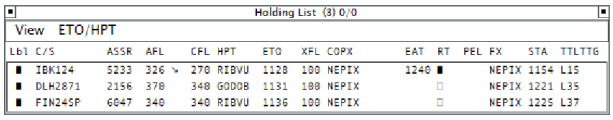



Figure 3.56: Holding List

The Holding List contains aircraft that have been given a holding clearance (by default the aircraft need to be at least in the coordinated sector state). The list is automatically displayed whenever there is at least one aircraft in the list. Left-clicking the button at the top right corner collapses the list to display only the title bar.

It is possible to set up point-specific lists using the plugin settings file, in which case the generic list includes aircraft that are in a TSA hold, present position hold or holding at a point for which there is no specific list defined. For point-specific lists, the list title text begins with the point name.

“View” opens the View menu

| | |
|---|---|
| Header | Toggle visibility of the list header line |
| Default | Sets field visibility to default (all optional fields off) |
| <field> | Toggles field visibility |

Left-clicking adjusts only the current list, right-clicking sets the same value to all holding lists.

“Font” opens the Font menu to select the list font from three options.

The list sorting option is displayed next to the "View" label. Clicking on it opens a menu to select between the following sorting options:

| | |
|---|---|
| EAT/HPT | Expected Approach Time -> Holding point name -> Callsign |
| ETO/HPT | ETO at the holding point -> Holding point name -> Callsign |
| HPT/CFL/AFL | Holding point name -> CFL -> AFL -> Callsign |
| FX/STA | Feeder fix name -> Scheduled time at feeder fix -> Callsign |

For point-specific holding lists, the sorting options are “EAT”, “ETO”, “CFL/AFL” and “FX/STA”.

[1] Labeled as ETO

The ETO column initially displays the estimated time over the holding fix. Once the aircraft enters the holding, the displayed time is fixed to the holding start time. For present position holds and holding points whose positions are unknown, the time when the holding clearance was given is displayed.

| **Item** | **Type** | **Left Mouse** | **Right Mouse** |
|---|---|---|---|
| Lbl | optional | Hide/display track label | |
| C/S | mandatory | Open *Callsign Menu* | |
| ASSR | optional | Open *SSR Code Menu* | |
| AFL | mandatory | Open *AFL Menu* | |
| (attitude indicator) | mandatory | | |
| CFL | mandatory | Open *CFL Menu* | Open *Vertical Aid Window* |
| HPT | optional | Open *Stack Manager Window* | |
| ETO | optional | | |
| XFL | optional | Open COPX Alt popup | |
| COPX | optional | Open *Waypoint Menu* | Toggle route draw |
| EAT | optional | Open *Time Menu* | |
| RT (EAT given indicator) | optional | Toggle EAT given indicator | |
| PEL | optional | Open COPX Alt popup | |
| FX | optional | | Acknowledge AMAN highlight |
| STA | optional | | Acknowledge AMAN highlight |
| TTLTTG | optional | | Acknowledge AMAN highlight |

Table 3.35: Holding List Construction

If a track label has been hidden, it will be automatically unhidden if the aircraft is cleared to leave the holding or an incoming coordination message for the flight is received.

The expected approach time, if entered, is broadcast to other controllers as well. By default, 10 minutes after it a warning message will be entered into the tracking controller's *Personal Queue Window* if the holding has not been terminated. The EAT is not used for any predictions. The EAT given indicator is not transmitted to other controllers.

### 3.6.10 Unsupported Lists

EuroScope's default Sector Inbound, Sector Exit, Arrival, Startup, Taxi Out, Take-Off, ADC Sector, Taxi In, Flight Plan, and Conflict lists are not supported and should not be used.

## 3.7 Windows

TopSky 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.

### 3.7.1 Radar Menu

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

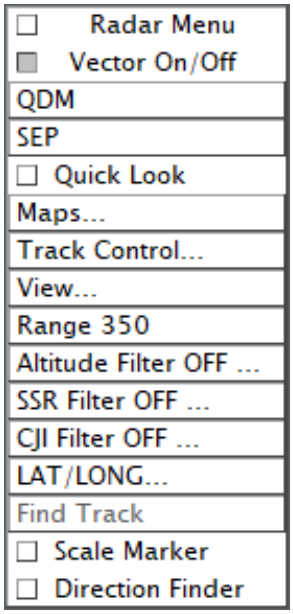



Figure 3.57: Radar Menu

| | |
|---|---|
| Radar Menu | Locks/unlocks the menu display |
| Vector On/Off | Toggles all prediction lines on/off |
| QDM | Starts a new *QDM Vector* |
| SEP | Starts a new *Minimum Separation Tool* |
| Quick Look | Toggles function to bypass all filters and show all track labels |
| Maps... | Opens the *Maps Windows* |
| 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 X... | Opens the *Altitude Filtering Window*, displays the filter status |
| SSR Filter X... | Opens the *SSR Code Filtering Window*, displays the filter status |

| | |
|---|---|
| CJI Filter X... | Opens the *CJI Filtering Window*, displays the filter status |
| LAT/LONG... | Opens the *Cursor Lat/Long Window* |
| Find Track | Opens the *SSR Code Menu* for the *Find Track* function |
| Scale Marker | Toggles the Scale Marker on/off |

When unlocked, the Radar Menu closes when a selection is made or the cursor leaves the menu area.

### 3.7.2 QDM Vector

To draw a new QDM vector:

- Left-click on the "QDM" *Radar Menu* item, or;
- Left-click on the "QDM" *Callsign Menu* item, or;
- Use the keyboard shortcut key combination for a new QDM vector.

Then, left-click on the desired start point (radar track or fixed position), and then left-click on the desired end point (radar track or fixed position).
The start point is automatically set to the radar position symbol of the track when starting the vector from the callsign menu

The vector's data label is located at the end of the line. Its position relative to the line end can be adjusted by middle-clicking the line end or the label itself. The available click spots for a radar track are the radar track position symbol and all its label items that have a TopSky plugin left-click mouse function.
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 have the following priority 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

Right-clicking will abort drawing the vector.

To remove a QDM vector:

- Right-click on either end point or the midpoint of the line or the label

To adjust a QDM vector:

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

### 3.7.3 Multi-QDM vector

When the start point of a QDM vector is a fixed point and the end point a track, the system automatically starts another QDM vector from the same start point. If it is attached to another track, the vectors are grouped together as a multi-QDM, and another vector is again automatically started from the same start point. This happens until the right mouse button is clicked to abort drawing a new vector (or the maximum number of QDM vectors is reached).

The advantage of the multi-QDM vectors is that when hovering over a track label of one of the tracks, a relative distance indication is added to the labels of all other vectors belonging to the same multi-QDM group, showing in parentheses the difference in the distance value compared to the selected track.

### 3.7.4 Scale Marker

*Radar Menu* -> Scale Marker

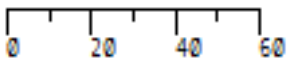



Figure 3.58: Scale Marker

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

### 3.7.5 Minimum Separation Tool

The minimum separation tool displays the predicted minimum lateral separation between two radar tracks within the next 45 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.
To draw minimum separation lines between two radar tracks:

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

Right-clicking will abort drawing the lines. The available click spots for a radar track are the radar track position symbol and all its label items that have a mouse function.

The minimum separation distance is by default displayed near the end of one of those lines. If the tracks are not converging, the lines will be drawn with an offline-defined length, and the label will display "DIV".

7 sets of lines can be simultaneously drawn. When at least one set is drawn, a SEP List Window is opened:

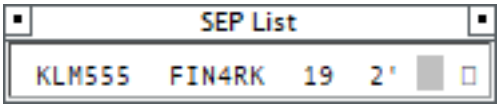



Figure 3.59: SEP List

The window lists the tracks, the minimum predicted separation, the time to the minimum separation, the line color and a locked/unlocked indicator 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
- Right-click on a line's end point
- 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 for unlocked lines, if the tracks start to diverge. If the tracks are diverging at the time the lines are created, they will be automatically locked.

To lock/unlock a set of lines:

- Left-click on the box right of the color indicator for that set of lines to toggle the locked/unlocked status. For a locked set of lines, the box will be filled.

To display vertical separation information on the lines, right-click on the colored box.
Right-clicking on the colored box for a set of lines cycles through:

| | |
|---|---|
| "V" | Vertical separation display enabled |
| "v" | Vertical separation display enabled without the vertical separation labels |
| blank | Vertical separation display disabled |

When vertical separation display is enabled, on both lines two points are displayed, the first showing the point where the tracks' vertical separation is calculated to become smaller than an offline-defined value, and the second the point after that where it is calculated to become greater. The calculation is done using the tracks' current vertical speeds.

- The vertical separation labels, when displayed, are similar to the minimum separation label but prefixed with "v".
- If one or both points are beyond the minimum separation point, their calculation is extended forward up to an offline-defined time value.

- If a point is already passed or beyond the maximum displayed time, it will not be drawn.
- If the end point is beyond the maximum displayed time, a line will be drawn using SEP Vert color from the CPA to the end point or the maximum displayed time whichever is earlier.
- If the tracks are not predicted to be vertically separated within the prediction time, “v=” is displayed near the track whose line contains the separation distance label.

### 3.7.6 View Window

*Radar Menu* -> View...

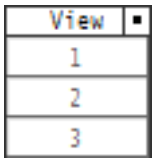



Figure 3.60: View Window

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.

### 3.7.7 Zoom Window

*Radar Menu* -> Range XXX

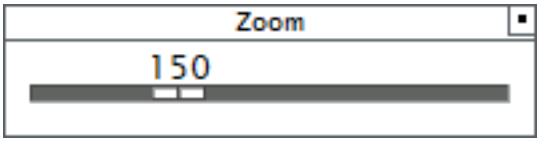



Figure 3.61: Zoom Window

The Zoom Window displays and enables to change the radar screen range.

### 3.7.8 Maps Windows

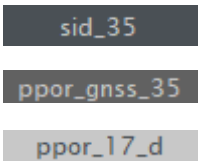
*Radar Menu* -> Maps...

Figure 3.62: Maps Windows

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 the display of predefined maps on the radar screen, some of which may be set up with automatic activation rules. The maps are arranged to folders. Clicking on a folder name shows the maps in that folder below the folder list.

The map names are displayed with the following colors (automatic options only available for maps with that capability):




Not displayed

Automatic (not displayed)

Displayed

Left-clicking on a map name will change the state of a map one step
not displayed –> automatic (if applicable) –> displayed

Right-clicking in the other direction. Left or right double-clicking on any map name will change the states of all maps in that folder.

### 3.7.9 Track Control Window

*Radar Menu* -> Track Control...

The Track Control Window is used to set track and track label related options. Note that the “Vector” selection must be on (see Radar Menu/Shortcut Window) to see the prediction lines. The Track Control Window closes when the mouse cursor leaves the window area. The selections are specific to the radar screen they are made on, but whenever the plugin settings are reloaded either automatically (sign in/out, login callsign change when signed in) or manually the selections on all radar screens will revert to the default values.

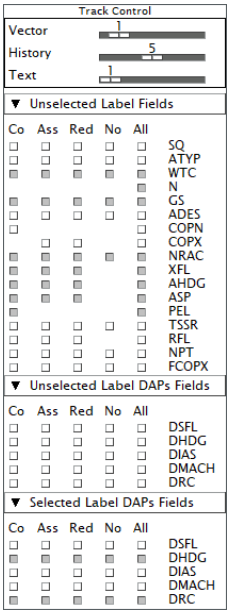



Figure 3.63: Track Control Window

| | |
|---|---|
| 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 corresponding Label Fields section |

The Label Fields sections allow controlling the visibility of certain track label fields in the unselected label, and for DAP items, also in the selected 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).

### 3.7.10 Altitude Filtering Window

*Global Menu* -> “Mxxx-yyy” item
*Radar Menu* -> 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.

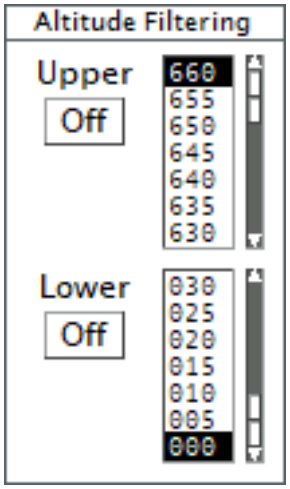



Figure 3.64: Altitude Filtering Window

To set the filtering limits, values from -1200ft to FL660 are available with 100ft steps up to 5000ft, then with 500ft steps up to FL660. 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).

### 3.7.11 CJI Filtering Window

*Radar Menu* -> CJI Filter [ON/OFF]...

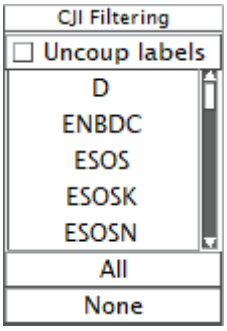



Figure 3.65: CJI Filtering Window

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.

The “Uncoup labels” button controls filtering for uncoupled labels (this function is available also in *Shortcut Window*).

Clicking “All” filters all controllers, “None” clears all controller ID filters.

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

#### 3.7.11.1 Primary Track Filtering

*Shortcut Window* -> “Prim Tracks” button
When enabled, primary track filtering filters out all primary tracks.

#### 3.7.11.2 Uncontrolled Flight Filtering

*Shortcut Window* -> “Uncont Flights” button
When enabled, uncontrolled flight filtering filters out all uncontrolled flights not “On-contact” with you.

### 3.7.12 SSR Code Filtering Window

*Radar Menu* -> SSR Filter [ON/OFF]...

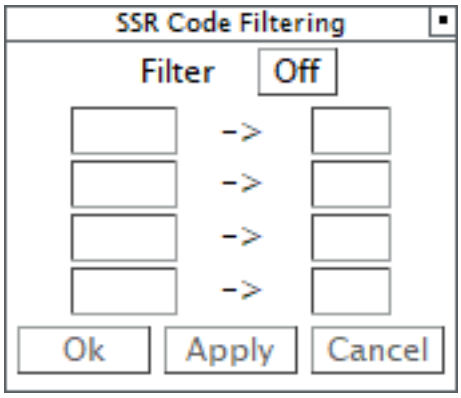



Figure 3.66: SSR Code Filtering Window

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 any changes, closes the window |

### 3.7.13 Quick Look

*Radar Menu* - > “Quick Look” button
*Shortcut Window* -> “Quick Look” button
*Keyboard Shortcuts*

The Quick Look function can be used to override all filters. It is a toggle function and will stay active until toggled off.

#### 3.7.13.1 Individual Quick Look

Middle-click aircraft position symbol

The Individual Quick Look function can be used to override the CJI filter for a specific track and to display labels for uncoupled primary tracks which are normally automatically hidden. It is a toggle function, middle-clicking again will hide the labels again.

### 3.7.14 Level Band Highlight

Right click AFL or XFL track label item

While active, this function highlights the callsigns of the referenced flight and the callsigns of all other flights within the level band of the referenced flight. The prediction line is forced on for these flights.

All other flights will be filtered out to display just their track position symbols and history dots unless they have an active STCA, APW, MSAW, AIW or TCT alert or are squawking 7500, 7600 or 7700. Tracks without a valid AFL will be filtered out.

### 3.7.15 Oceanic Level highlight

Right click OFL track label item

While active, this function highlights the callsigns of the referenced flight and the callsigns of all other flights having the same OAN and OFL. The prediction line is forced on for these flights.

All other flights will be filtered out to display just their track position symbols and history dots unless they have an active STCA, APW, MSAW, AIW or TCT alert or are squawking 7500, 7600 or 7700.

### 3.7.16 Clock Window

*Global Menu* -> Time item

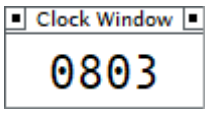



Figure 3.67: Clock Window

The Clock Window displays the current UTC time in HHMM format.

### 3.7.17 Brightness Control Window

*Global Menu* Setup -> Brightness Control...

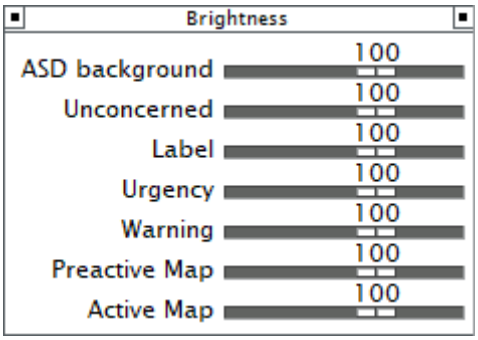



Figure 3.68: Brightness Control Window

The Brightness Control Window allows setting the brightness for some screen colors. The “Label” slider controls Concerned, Coordination, Proposition, Assumed and Redundant colors.

### 3.7.18 CPDLC Setting Window

*Global Menu* Setup -> CPDLC Setting...

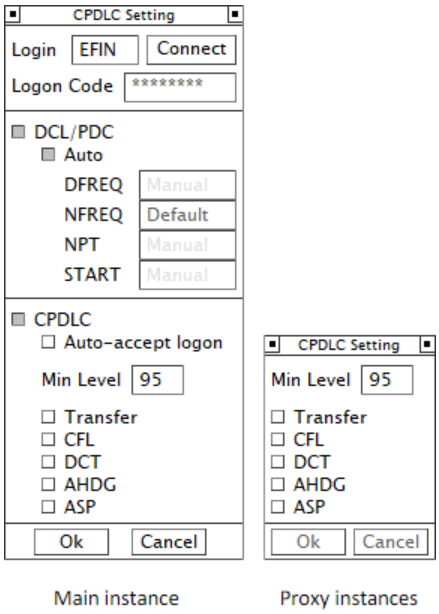



Figure 3.69: CPDLC Setting Window

The CPDLC Setting Window is used to begin/end the connection to the CPDLC network, and change some CPDLC related settings. It is split into three sections:

### Connection setup

| | |
|---|---|
| Login | Four-character callsign used for the CPDLC connection |
| “Connect”/“Online” | Left-click to Connect/disconnect the plugin to/from the CPDLC network |
| Logon | Code Your personal password to the Hoppie network |

Once a connection has been established, the “Connect” button background color changes to Information and the button text changes to “Online”.

| | |
|---|---|
| Note | It is possible to have the Logon Code pre-filled by creating a text file named `TopSkyCPDLChoppieCode.txt` in the same folder as the plugin dll (`TopSky.dll`). The file should contain only the logon code, nothing else. As the file contains your personal logon code, do not share it. |

If the VATSIM callsign is known when the window is opened, the CPDLC login callsign is pre-selected based on it. If necessary, the CPDLC login can be changed.

### DCL/PDC setup

| | |
|---|---|
| DCL/PDC | Datalink clearance service on/off |
| Auto | Automatic sending of datalink clearances on/off |

| | |
|---|---|
| Note | The DFREQ, NFREQ, NPT, ADT and START options have no effect, as they are not used in the CLD message. |

When the “Auto” option is enabled, a datalink clearance will be automatically sent when a request is received if all the following conditions are met:

- The received clearance request must not contain any remarks text;
- A suitable clearance format is available for the aircraft;
- The aircraft is not assumed by another controller;
- The aircraft has a departure runway assigned;
- The aircraft has a cleared altitude manually assigned;
- The aircraft has a transponder code assigned.

**CPDLC setup**

| | |
|---|---|
| CPDLC | CPDLC service on/off |
| Auto-accept logon | Automatically accepts valid logon requests from tracks above FL100 |

The following items are the only ones visible also in proxy EuroScope instances, and are used to determine whether sending a clearance via CPDLC is the default setting in some of the plugin menus. For this to happen:

- The aircraft must be above FL100;
- The selection button for the menu in question must be on;
- The CPDLC Default Status (in *Global Menu->STS menu*) must be “ON".

When making changes to any items other than the connection setup part and the “DCL/PDC” and “CPDLC” selections, the “Ok” and “Cancel” buttons become active. Left-click on “Ok” to apply the changes or “Cancel” to abort.

### 3.7.19 Raw Video Control Window

*Global Menu* Setup -> Raw Video Control...

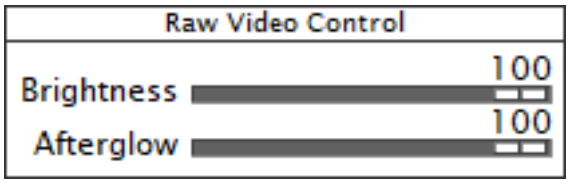



Figure 3.70: Raw Video Control Window

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.

### 3.7.20 Airspace Management Window

*Global Menu* AMS -> TSA...

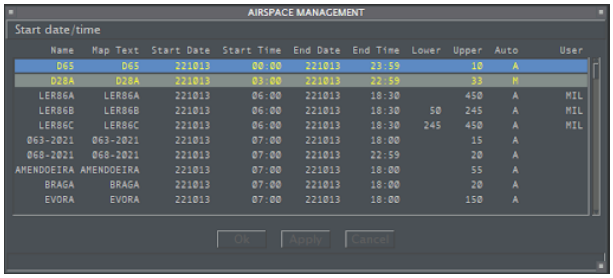



Figure 3.71: Airspace Management Window

This window is used to control the activation of the areas for the APW and SAP functionality. Each area can have start/end times and/or an end time defined for its activation, or it can be activated without any time limits, making it active until deactivated manually. The areas can also have lower and/or upper altitude limits. An area can have activation rules defined in the area data file. Such areas will be automatically activated based on schedule data, NOTAM or AUP contents as long as their “Auto” option is selected ( “A” in the “Auto” column). The “Auto” option cannot be selected for areas with no activation rules.

An area’s activation status can be inactive, pre-active or active. A pre-active area is an area in "Auto" mode that will become active within 30 minutes and is shown in Selected Period text on a TSA Preactive 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 the SAP system will.

When the cursor is over the window area, the bottom message area displays automatic map activation options depending on the setup. Each one is colored Arm if selected off, Warning if on but no data available, and Foreground if on and data available. When the remote option is active, changes to area parameters are not allowed. AUP and NOTAM activation can be selected on/off but the data may be overridden depending on how the remote data source has been set up

The mouse click areas of the Airspace Management Window:

| | |
|---|---|
| Sorting option text (e.g. “Start date/time”) | Opens a pop-up menu to select a sorting option for the list |
| Other fields | Left-click to edit field (when edit function active), right-click to open an area pop-up menu |
| “Ok” button | Applies the changes, closes the window |
| “Apply” button | Applies the changes |
| “Cancel” button | Cancels the changes |
| “AUP” label | Toggles area activation based on AUP data |
| “NOTAM” label | Toggles area activation based on NOTAM data |
| “Remote” label | Toggles area activation based on a remote source |

| | |
|---|---|
| “Master” label | Toggles saving/uploading area activation data |

The sorting pop-up menu contains the following items:

| | |
|---|---|
| Start Date/Time | 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 |

The area pop-up menu contains the following items:

| | |
|---|---|
| Activate | Sets start time to current time, clears end time and sets the area to active state |
| Deactivate | Sets the end time to current time, sets the area to inactive state |
| Auto | If an activation schedule is found in the area data file, sets the area to be activated automatically |
| Edit | Allows to change the area parameters |
| Full Edit | Not implemented |
| Copy | Not implemented |
| Delete | Clears any activation times, returns label and altitude limits to their default values and deactivates the area |

With the area pop-up menu opened, the area text row background changes to “Flight Highlight” color.

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 |

Dates are shown in the format “yymmdd” and times in “hh:mm” 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 if at or below the transition altitude, otherwise in flight levels.

After any selection from the pop-up menu other than “Edit”, “Ok”, “Apply” or “Cancel” must be selected to apply or cancel the selection.

#### 3.7.20.1 Area display

Preactive and active areas are displayed on the radar screen. A preactive area border is drawn in Preactive Map and its label in Preactive Text Map. An active area border is drawn in Active Map Type 4 border and, for areas with high operational impact, filled in a transparent Active RD Infill Map.

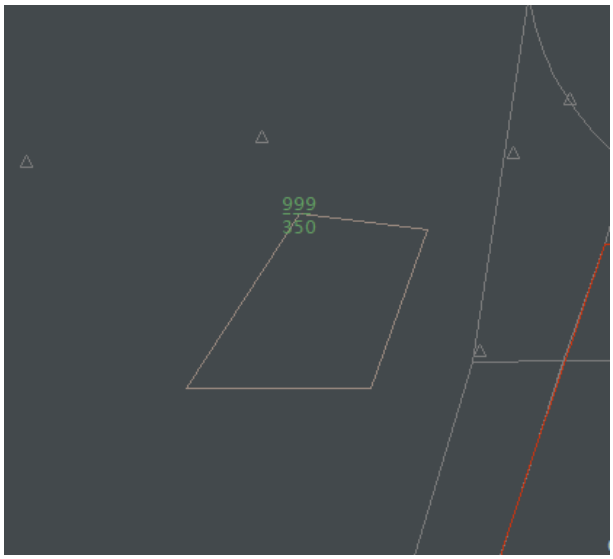



Figure 3.72: Preactive Area

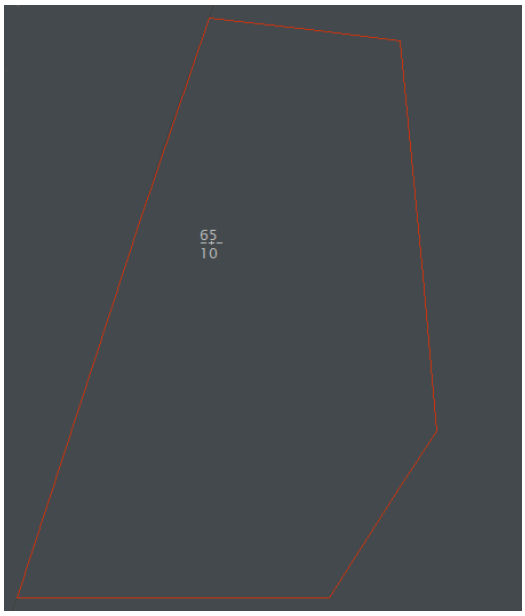



Figure 3.73: Active Area

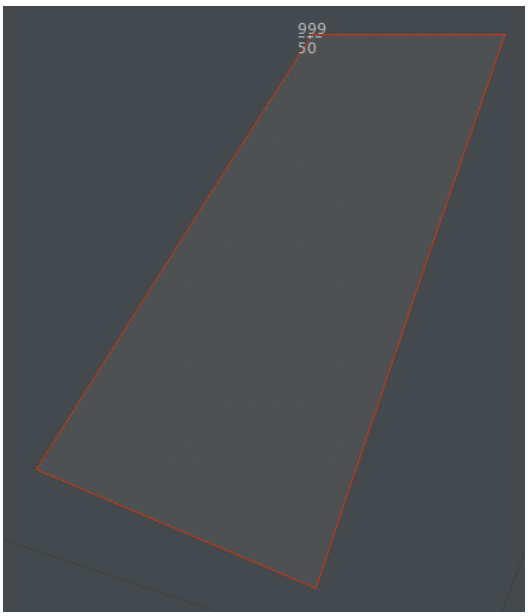



Figure 3.74: Active High Operational Impact Area

#### 3.7.20.2 Area label

An area may display a predefined reduced text label, showing information about the area. By holding the left mouse button down on MAPTEXT or UPPER/LOWER, a full area label will be displayed, showing:

NAME
MAPTEXT
UPPER USERTEXT

——— START TIME - END TIME
LOWER

The reduced label can be configured to display any combination of these fields. In the reduced label, a lower limit of “000” will not be displayed.

If an area has more than one activation period defined, is currently active, and the next activation period is pre-active, the levels, times and user text for the next activation period are shown below the current activation period in the label.

### 3.7.21 NAT List Window

*Global Menu* AMS -> NAT -> NAT List. . .

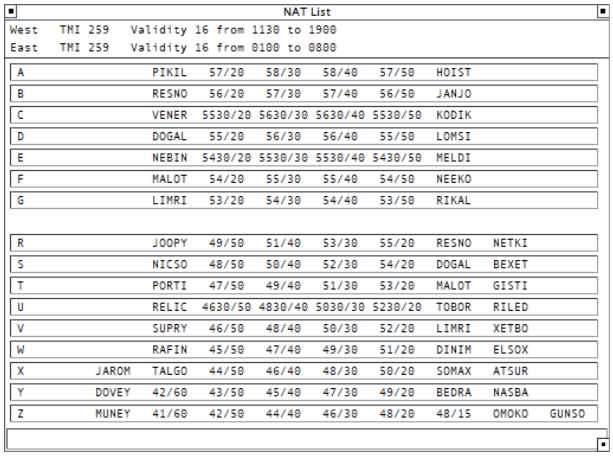



Figure 3.75: Flight Plan Selection Window

The NAT List Window displays information from the downloaded NAT track messages

### 3.7.22 Flight Plan Selection Window

*Global Menu* FlightData/FData -> Flight Plan Selection...

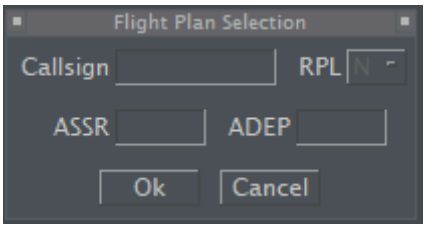



Figure 3.76: Flight Plan Selection Window

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.

### 3.7.23 Flight Plan Window

*Global Menu* FData -> Flight Plan Window. . .
*Flight Plan Selection Window* -> Create a list of one or more flight plans
*Callsign Menu* -> FPL. . .
“Open FPL Window” label function

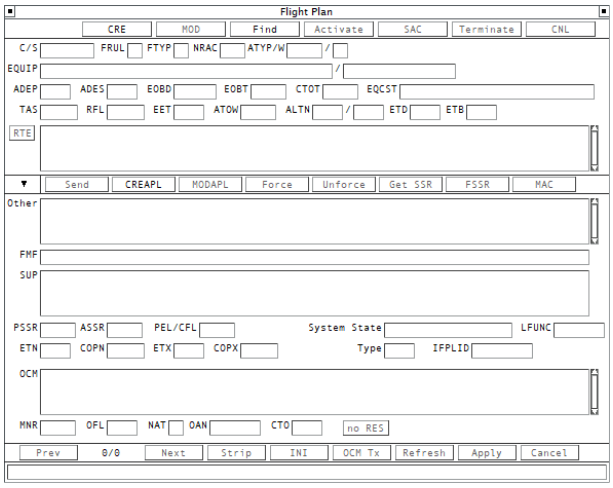



Figure 3.77: Flight Plan Window

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:

| | |
|---|---|
| C/S | Callsign of the aircraft |
| FRUL | Flight rules (I, V, Y or Z) |
| FTYP | Flight type (not available) |
| NRAC | Number of aircraft |
| ATYP/W | Aircraft type and wake turbulence category |
| EQUIP | Equipment list - For flight plans with FAA equipment codes, a rough conversion to ICAO is shown in parentheses |

| | |
|---|---|
| ADEP | Departure aerodrome |
| ADES | Destination aerodrome |
| EOBD | Estimated Off-Block Date |
| EOBT | Estimated Off-Block Time |
| CTOT | Calculated Take-Off Time |
| EQCST | EQCST Displays aircraft equipment status for certain equipment (W, Y, U, R, P and S) - “EQ” equipped, “NO” not equipped, “UN” unknown. |
| TAS | True Air Speed |
| RFL | Requested Flight Level |
| EET | Estimated Elapsed Time |
| ATOW | Actual Take-Off Weight (not available) |
| ALTN | Alternate aerodrome(s) |
| ETD | Estimated Time of Departure |
| ETB | Estimated time to Boundary (of your sector) |
| RTE | Route |

With the window in extended mode, the following additional information is shown:

| | |
|---|---|
| Other | Flight plan remarks field |
| FMF | Flight Message 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 |
| System State | System state of flight plan |
| LFUNC | Controller who is currently tracking the aircraft |
| ETN | Estimated time to COPN |
| COPN | Entry coordination point |

| | |
|---|---|
| ETX | Estimated time to COPX |
| COPX | Exit coordination point |
| Type | Type of flight plan (APL or FPL) |
| IFPLID | Eurocontrol unique FPL_ID for the flight plan (not available) |
| 0/0 | Number of the displayed FPL in the list / total number of flight plans in the list |

For oceanic setups, the following information from the latest received OCM is also available:

| | |
|---|---|
| OCM | Oceanic Clearance Message |
| MNR | Oceanic cruising speed |
| OFL | Oceanic cruising Flight Level |
| NAT | North Atlantic Track name (or “#” for random route) |
| OAN | Oceanic Control Area entry point |
| CTO | Clearance time on OAN |
| “RES”/”no RES” | Time restriction indicator in OCM |

The following buttons are available:

| | |
|---|---|
| CRE | Create a new full flight plan (FPL)<br>Editable fields will be highlighted<br>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<br>“Apply” creates the FPL, “Cancel” aborts the operation |
| MOD | Modify the currently displayed FPL<br>Available fields will be highlighted<br>“Apply” modifies the FPL, “Cancel” aborts the operation |
| Find | Find a flight plan<br>Enter Callsign to find the flight plan, “Cancel” aborts the operation |
| Activate | Not implemented |
| SAC | Enter a slot time |

| | |
|---|---|
| | Enter the time to the ETD field, “Cancel” aborts the operation |
| Terminate | Not implemented |
| CNL | Not implemented |
| RTE | Opens the *Complete Route Window* |
| Up/down triangle | Toggle FPL Window extended mode on/off |
| Send | Not implemented |
| CREAPL | Create a new abbreviated flight plan (APL) |
| | Editable fields will be highlighted |
| MODAPL | Modify the currently displayed APL |
| | Editable fields will be highlighted |
| | “Apply” modifies the APL, “Cancel” aborts the operation |
| 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* |
| | “Apply” creates the APL, “Cancel” aborts the operation |
| Unforce | Cancel the forced inclusion of this aircraft in the MTCD and SAP processing |
| Get SSR | Assigns a new SSR code for the flight |
| FSSR | Opens the *Group SSR Code Window* (for formation flights only) |
| MAC | Not implemented |
| 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) |
| Strip | Not implemented |
| 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 |
| OCM Tx | Not implemented |

| | |
|---|---|
| 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 TopSky the only difference between an APL and an FPL is that an APL can only contain the Callsign. If it contains any other information (controller-assigned values such as ASSR, CFL, etc. are not taken into account), it will be considered to be an FPL.

For the accepted CFL entry formats, see *AFL Menu*.

### 3.7.24 Complete Route Window

Flight Plan Window -> “RTE” button

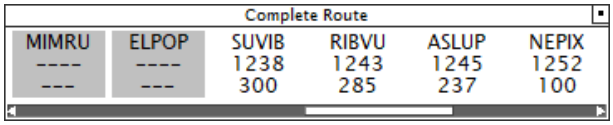



Figure 3.78: Complete Route Window

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 below the point name.

### 3.7.25 Create APL Window

*Callsign Menu* (uncorrelated track only) -> “Create APL” item

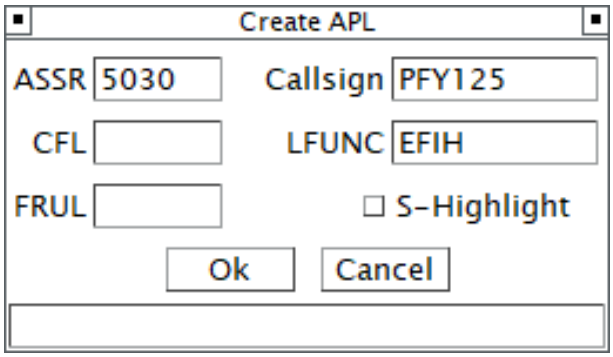



Figure 3.79: Create APL Window

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. “Cancel” will clear all the fields.

If the SSR field is left empty, a code will be automatically assigned from a dedicated APL code range. If no codes are available, an error message will be shown and a code must be manually entered.

For the accepted CFL entry formats, see *AFL Menu*.

Left-clicking on the FRUL field toggles the flight rules between “I” (IFR) and “V” (VFR). When the APL is successfully created, it is automatically assumed.

### 3.7.26 Stack Manager Window

Holding List... -> “HPT” item

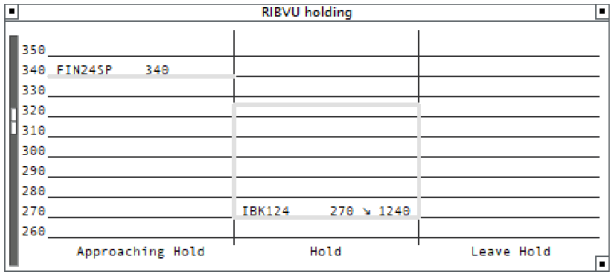



Figure 3.80: Stack Manager Window

The Stack Manager Windows gives 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 three columns:

| | |
|---|---|
| Approaching Hold: | Aircraft approaching the holding area (more than 5 minutes flying time away from the holding fix) |
| Hold: | Aircraft in the holding area |
| Leave Hold: | Aircraft cleared to leave the holding |

The window displays the aircraft at their cleared flight levels. For each aircraft the label contains:

- Callsign;
- CFL;
- Attitude indicator (“#” in Warning color for aircraft without altitude information);

- EAT.

If there are more than one aircraft with the same *CFL*, only one callsign will be shown. A "+" symbol in SMW Overlap Box color after the *CFL* value indicates that there are more flights to be displayed. Clicking on the symbol 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 and Leave Hold columns 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. The altitude box of aircraft in the Leave Hold column extends into the Hold column as well.

| | |
|---|---|
| Warning | If two Hold volumes overlap (such as PILIM and ABUSU), each Stack Manager Window will show only it's own traffic, the adjacent interfering traffic will not be displayed |

Aircraft will be automatically removed from the Leave Hold column after 10 minutes, but they can also be manually removed by right-clicking the callsign.

Any number of Stack Manager Windows can be opened to monitor multiple holdings at the same time. For *CFL* at or below the transition altitude, the aircraft label is placed on the numerical value of the *CFL*, but the altitude box is always based on flight levels.

The mouse click areas of the Stack Manager Window:

| | |
|---|---|
| Slider or view background area | Drag to adjust the lowest shown FL |
| Aircraft callsigns | Open *Callsign Menu* [1] |
| CFL | Open *CFL Menu* [2] |
| EATs | Open *Time Menu* |
| + symbol | Open window to view all callsigns with that *CFL* |
| FL numbers | Toggle overflight status for that level |

[1] Right-clicking a callsign in the Leave Hold column immediately removes the aircraft from display.

[2] 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 submenu*.

### 3.7.27 CARD

*Global Menu* Tools -> CARD..

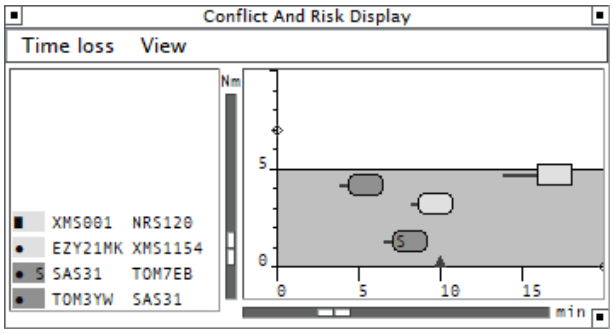



Figure 3.81: CARD

See *MTCD (Medium Term Conflict Detection)*. 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. The conflict label background is in Urgency color for a conflict or potential predicted conflict, Warning for a risk or potential risk of conflict and Conflict Ack for an acknowledged conflict. An acknowledged conflict will be automatically de-acknowledged if the predicted minimum separation decreases by 1nm.

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. The area below 5nm distance is drawn in CARD Min Sep color.

The mouse click areas of the CARD window:

| | |
|---|---|
| Sorting option | Opens a pop-up menu to select the sorting option<br>Time loss (time to start of conflict)<br>Time min dist (time to minimum separation)<br>Min dist (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 |
| Conflict labels | Left-click to open Mark/ACK menu<br>Middle-click to display SEP (minimum separation lines)<br>Right-click to remove SEP |
| Conflict callsigns | Middle-click to open Vertical Aid Window |

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 |
| Risk | Toggles display of MTCD risks of conflict |
| Downstream Predicted | Toggles display of conflicts starting in next sector |
| Potential Predicted | Toggles display of MTCD potential predicted conflicts |
| Potential Risk | Toggles display of MTCD potential risks of conflict |
| PLC | Toggles display of PLC conflicts (starts later than the triangle displayed on the time axis) |
| MTCD Ind | Toggles the display of the *MTCD* Mark 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 future conflicts (starting later than the currently visible time period) |

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

| | |
|---|---|
| Mark All | Toggles marking the *CALLSIGN* 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 |

### 3.7.28 SAP Window

*Global Menu* Tools -> SAP...

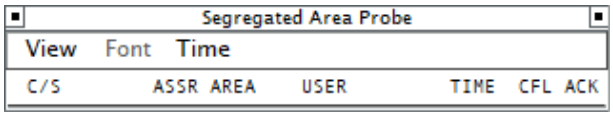



Figure 3.82: SAP Window

See *SAP (Segregated Area Probe)*. The SAP window lists the aircraft that have SAP risks or conflicts. The list shows the following information about each conflict:

| | |
|---|---|
| C/S | Aircraft callsign |
| ASSR | Assigned SSR code |
| AREA | Name of the area |
| USER | User text of the area |
| TIME | Entry time into the area (current time if already inside) |
| CFL | Cleared Flight Level |
| ACK | Conflict acknowledgement status (military coordination indicator) |

For active areas the area name is displayed in TSA Active color and for pre-active areas in TSA Preactive.

The mouse click areas of the SAP window:

| | |
|---|---|
| “View” menu label | Toggle the View menu<br>o Header Toggle display of list header row |
| “Font” menu label | Opens the Font menu to select the list font size |
| Sorting option | Opens a pop-up menu to select the sorting option:<br>o Time (entry time)<br>o Area (area name) |
| C/S | Left-click opens *Callsign Menu* |

| | |
|---|---|
| ASSR | Left-click opens *SSR Code Menu* |
| CFL | Left-click opens *CFL Menu*<br>Right-click opens *Vertical Aid Window* |
| ACK | Left-click toggles military coordination indicator |

### 3.7.29 Vertical Aid Window

*Global Menu* Tools -> Vertical Aid Window...

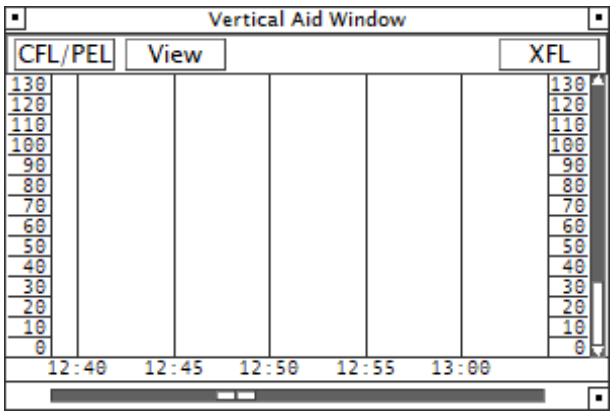



Figure 3.83: Vertical Aid Window

The Vertical Aid Window shows the predicted vertical trajectory of the selected aircraft in VAW Profile color, starting from its current position (marked with a dot in VAW Track Position color), and its MTCD and SAP conflicts. 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 with VAW Sector Limits color edges.

MTCD conflicts are displayed as boxes horizontally from the start to the end of the conflict and vertically from the lowest to the highest level of the conflicting track during that period. The callsign of the conflicting track is displayed in the top left corner of the box. The different types of conflicts are shown as follows:

| | |
|---|---|
| Conflict | Filled box in Urgency color (Conflict Ack if acknowledged) |
| Risk | Filled box in Warning color (Conflict Ack if acknowledged) |
| Other | Unfilled box in Potential color (Conflict Ack if acknowledged) |

SAP conflicts, if selected to be displayed, are displayed as unfilled boxes in Warning color, covering the area horizontally from the start to the end of the conflict and vertically from the bottom to the top of the area. The area name is shown at the top left corner of the box.

The mouse click areas of the Vertical Aid Window:

| | |
|---|---|
| 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 options:

| | |
|---|---|
| Risk | Toggles display of MTCD risks |
| Notif | Toggles whether *Notified* tracks are shown |
| Unco | Toggles whether *Unconcerned* tracks are shown |
| SAP | Toggles whether SAP conflicts are shown |

For assumed flights, the CFL value is displayed as a Warning color horizontal line across the screen if different from XFL.

### 3.7.30 Message In Window

*Global Menu* Tools -> Message In...

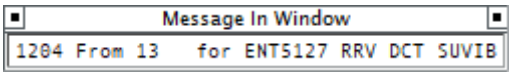



Figure 3.84: Message In Window

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> for <Callsign> COF"
  - Displayed when the track is being transferred to you
  - Removed when the transfer is complete or cancelled
- "From <SI> for <Callsign> ROF"
  - Displayed when the next controller has sent a *ROF* message

  - Left-clicking on the line manually removed
  - Removed when a transfer is started

- “From <SI> for <Callsign> HOP [HDG xxx] [DCT xxxxx] [SP xxx]”
  - Displayed when there is a *HOP* in progress
  - Left-clicking on the line opens the *Combined Transfer Menu*
  - Removed when the transfer is complete or cancelled

- “From <SI> for <Callsign> RTI [HDG xxx] [SP xxx] [ARC xx]”
  - Displayed when an *RTI/TIP* message has been received

- “From <SI> for <Callsign> TIP [HDG xxx] [SP xxx] [ARC xx]”
  - Displayed when a *RTI/TIP* message has been received
  - Removed when the track becomes *Assumed*

- “From <SI> for <Callsign> accept HOP/RTI/TIP
  - Displayed when an Accept message has been received to HOP, RTI or TIP
  - Left-clicking on the line manually removes it

- “From <SI> for <Callsign> reject RTI/TIP [by timeout/by system]”
  - Displayed when a reject message has been received to RTI or TIP
  - Left-clicking on the line manually removes it

- “From <SI> for <Callsign> RAP/RRV [level] [DCT xxx]”
  - Displayed when an entry coordination has been received
  - Left-clicking on a value opens the EuroScope default menu to answer
  - Removed when the track becomes Assumed

- “From <SI> for <Callsign> CDN [level] [DCT xxx]”
  - Displayed when an exit coordination has been received
  - Left-clicking on a value opens the EuroScope default menu to answer an active coordination

- “From <SI> for <Callsign> COD <ASSR>”
  - Displayed when a previous controller assigns a new SSR code for a track
  - Left-clicking on the line manually removes it

### 3.7.31 Message Out Window

*Global Menu* Tools -> Message Out...

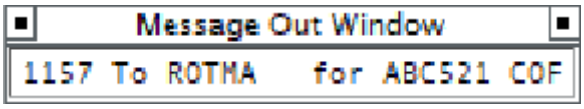



Figure 3.85: Message Out Window

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> COF”
  - Displayed when you transfer a track
- “To <SI> for <Callsign> ROF”
  - Displayed when you have sent a *ROF* message
- “To <SI> for <Callsign> HOP [HDG xxx] [DCT xxxxx] [SP xxx]”
  - Displayed when you have sent a *HOP*
- “To <SI> for <Callsign> RTI [HDG xxx] [SP xxx] [ARC xx]”
  - Displayed when you have sent an *RTI/TIP* message
- “To <SI> for <Callsign> TIP [HDG xxx] [SP xxx] [ARC xx]”
  - Displayed when you have sent a *RTI/TIP* message
- “To <SI> for <Callsign> accept HOP/RTI/TIP”
  - Displayed when you have sent an Accept message to HOP, RTI or TIP
- “To <SI> for <Callsign> reject RTI/TIP [by timeout/by system]”
  - Displayed when you have sent a Reject message to RTI or TIP. “Rejected by timeout” will be sent automatically if the coordinatio is not answered within a specified time.
- “To <SI> for <Callsign> CDN [level] [DCT xxxxx]”
  - Displayed when you have sent an entry coordination
- “To <SI> for <Callsign> RAP/RRV [level] [DCT xxxxx]”
  - Displayed when you have sent an exit coordination
- “To <SI> for <Callsign> COD <ASSR>”
  - Displayed when you have assigned a new SSR code and there is a next controller online for the track

### 3.7.32 Shortcut Window

*Global Menu* Tools -> Shortcut. . .

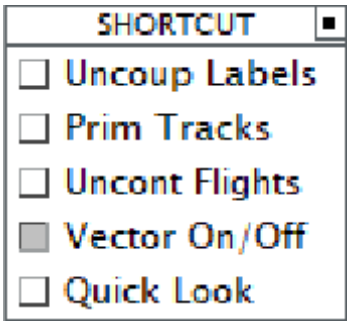



Figure 3.86: Shortcut Window

The Shortcut Window gives access to the following functions:

| | |
|---|---|
| Uncoup Labels | Toggles uncoupled labels filtering on/off |
| Prim Tracks | Toggles *Primary Track Filtering* on/off |
| Uncont Flights | Toggles *Uncontrolled Flight Filtering* on/off |
| Vector On/Off | Toggles all prediction lines on/off |
| Quick Look | Toggles function to bypass all filters and show all track labels |

For each of them, when the box is filled, the filter or function is active.

### 3.7.33 Microphone Check Menu

*Global Menu* Tools -> CPDLC -> Microphone Check

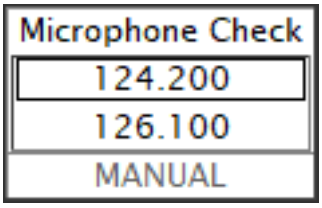



Figure 3.87: Microphone Check Menu

The Microphone Check menu is used to send a “CHECK STUCK MICROPHONE <frequency>” CPDLC message to all CPDLC connected aircraft when a stuck mic is suspected. The menu lists all frequencies selected for XMT TXT in EuroScope. Left-clicking on one sends the messages. Manual frequency entry is not available.

The menu closes when a frequency is selected or the cursor leaves the menu area.

### 3.7.34 CPDLC Current Message Window

*Global Menu* Tools -> CPDLC -> Current Messages...

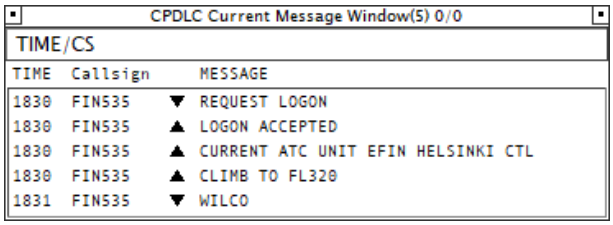



Figure 3.88: CPDLC Current Message Window

The *CPDLC Current Message Window* displays all sent and received CPDLC messages that have not been archived. Each line corresponds to one message, and contains the time the message was sent/received, the callsign of the aircraft, a filled triangle (pointing upward for uplink messages, downward for downlink messages) and the message text. If the message is too long to fit in the window, "..." is used to mark that there is more text in the message. Right-clicking on the message will open a small window that displays the entire message. The window will close automatically when the mouse cursor leaves its area.

The messages (for uplink clearances, also the responses) are color coded to display their status:

- Urgency CPDLC emergency messages that have not been replied to
- CPDLC Failed Failed uplink messages
- CPDLC Controller Late Timed out downlink requests
- CPDLC Pilot Late Timed out uplink clearances
- CPDLC DM Request Downlink requests waiting for controller reply
- CPDLC UM Clearance Uplink clearances waiting for reply
- CPDLC Unable Uplink clearances replied to with "UNABLE"
- CPDLC Standby Uplink clearances replied to with "STANDBY"
- CPDLC Discarded Discarded messages
- Foreground Other messages

Left-clicking on the current sorting option opens a popup to select the sorting order:

| | |
|---|---|
| TIME/CS | Messages sorted according to send/receive time (default option) |

| | |
|---|---|
| DIALOG/CS | Messages grouped to dialogues, dialogues sorted by time of first message |
| CS/DIALOG | Messages sorted by callsign, messages with same callsign sorted by time |

Left-clicking on a message opens a popup to select some actions for the message:

| | |
|---|---|
| Archive | Closes the message dialogue if open, archives all messages in that dialogue |
| Discard | Closes the message dialogue and discards all the messages in it |

If the message is “REQUEST LOGON”:

| | |
|---|---|
| ACCEPT | Accepts the logon request |
| UNABLE | Denies the logon request |

For other messages:

| | |
|---|---|
| Manual | Reply Opens *Manual Reply Window* |

Dialogues are archived automatically 60 seconds after they are closed. The manual “Archive” function may be used to archive them earlier if necessary, or if the automatic archiving fails for any reason.

Always reply to downlink requests using the relevant menu as it ensures correct formatting and type of message, and keeps the track label indications correct. The reply options here should only be used when a menu cannot be used, for example when the downlink was not parsed correctly and the request is therefore not shown on the track label.

### 3.7.35 Manual Reply Window

This window is used to send a manually composed reply to a CPDLC message (max 99 characters). Left-click on the area below the “Message text” label to enter the message and select one of the “Expected reply” options. Then left-click on “Send” to send the message.

The window closes automatically when the message is sent or the mouse cursor leaves the window area.

| | |
|---|---|
| Warning | When replying to a downlink request using the Manual Reply Window, the track label is not updated accordingly. If the downlink had been recognized as a request, the request information is removed from the label, and if the reply is a clearance, it is not shown on the label, and the label values are not updated. Always use the label menus to answer a recognized downlink |

### 3.7.36 CPDLC History Message Window

*Global Menu* Tools -> CPDLC -> History Messages...

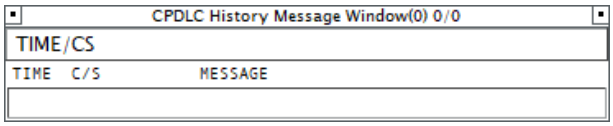



Figure 3.89: CPDLC History Message Window

The CPDLC History Message Window contains CPDLC messages that have been archived from the *CPDLC Current Message Window*.

### 3.7.37 Cursor Lat/Long Window

*Radar Menu* -> LAT/LONG. . .

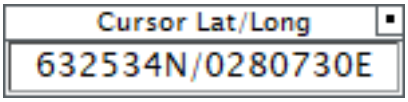



Figure 3.90: Cursor Lat/Long Window

Displays the latitude and longitude values of the cursor position.

### 3.7.38 Find Track

*Radar Menu* -> Find Track

The Find Track function highlights for a specified time all labels matching the specified TSSR, ASSR or PSSR with Temp Track Highlight color.

### 3.7.39 Weather Messages Window

*Global Menu* MET -> Messages...

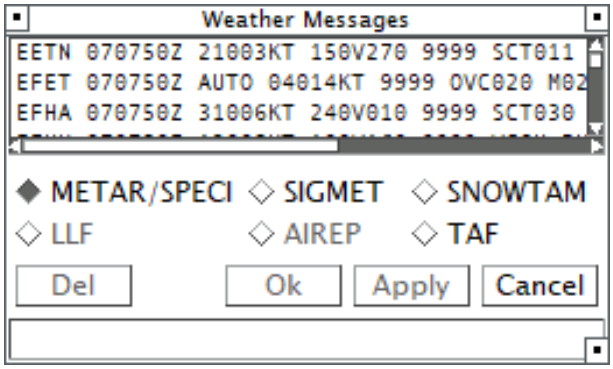



Figure 3.91: Weather Messages Window

The Weather Messages Window displays weather related messages. To view the messages, left-click on the desired option button (the “LLF” option is not available).

By default, with the “METAR/SPECI” option button chosen, this window displays the METARs you have requested to TopSky. 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 and TAFs are displayed in Warning color until the mouse cursor is positioned on them (for the decoded METAR, this applies only for the first row).

Selecting the “SNOWTAM” or “TAF” option will open the *Aerodrome Menu* where the desired stations must be selected. Messages are automatically updated at 15 minute intervals - the status bar at the bottom displays the remaining time to the next automatic update when the mouse cursor is over the window area.

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 message per line)
- Single (showing only a single message)
- Single decoded (showing a single METAR in a decoded format)

To view a single message:

- Left-click on a message in the list
- Left-click on a decoded METAR

To view a single METAR in the decoded format:

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

To return to the list view:

- Left-click on a single message
- 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)

### 3.7.40 Upper Winds Window

*Global Menu* MET -> Upper Winds. . .

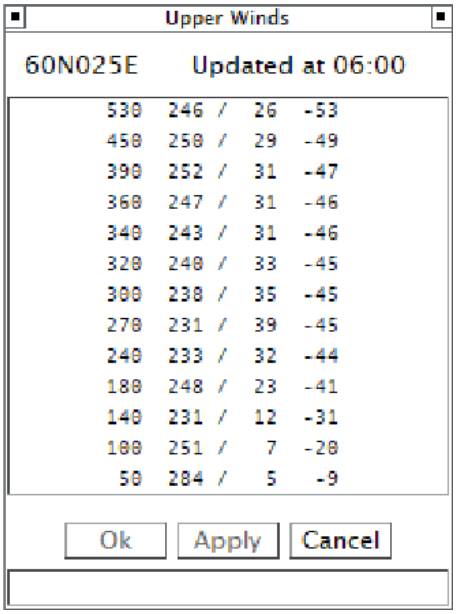



Figure 3.92: Upper Winds Window

The window displays upper winds and temperatures from a range of levels at a user specified position. To enter the point, click on the “–N—E” item and enter the position. Acceptable entries are locations defined in the active sector file and lat/lon positions in whole degrees (either in the flight plan format or ARINC424 shorthand, i.e. “60N025E” or “6025E”).

The “Updated at HH:MM” displays the timestamp of the data downloaded by the plugin (the data itself is the forecast for 6 hours after that time). If no time is shown, then no data is available.

### 3.7.41 Airfield Data Window

*Global Menu* MET -> Airfield Data

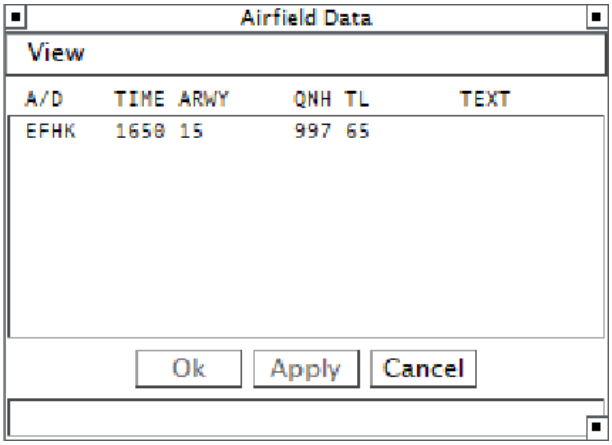



Figure 3.93: Airfield Data Window

The window displays the QNH values, transition levels and other information 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 following information is displayed:

| | |
|---|---|
| A/D | Aerodrome ICAO code |
| TIME | METAR timestamp |
| ARWY | Arrival runway (first one if more than one active) |
| QNH | QNH value |
| TL | Transition level |
| TEXT | Other active arrival runways (if more than one) |

TIME, ARWY and TEXT display can be toggled from the "View" menu.

### 3.7.42 General Information Window

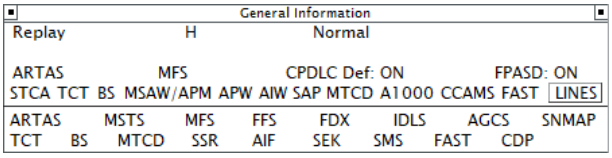



Figure 3.94: General Information Window

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

| | |
|---|---|
| mode | “Free”, “Operational”, “Proxy”, “Replay” or “Training” depending on the connection method |
| role | Own controller ID (between the mode and the “Normal” item) |
| QNH | Shows the local QNH value (below the “Normal” item when available) |
| CPDLC Def: [ON\|OFF] | Displays the state of the CPDLC Default setting |
| FPASD: [ON\|OFF] | Displays the state of the FPASD setting |
| 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. |
| TCT | TCT Displayed if the TCT function is enabled |
| BS | BS Displayed if the Blind Spot function is enabled |
| CCAMS | Displayed if plugin is selected as the SSR code source<br>• Urgency color if the SSR data file contains no codes<br>• Warning color if simulated traffic is not downloaded or ESE file or fixed range selected as the code source |
| FAST | Displayed if the FAST function is enabled. Warning color if AMAN as source and data loading has failed |
| IDLS | Plugin set up to send DCL. Warning color if datalink comms are failed. |
| AGCS | Warning color if Hoppie datalink comms are failed |
| MTCD | Warning color if prediction time is set to zero |
| SEK | Displayed if plugin is receiving AMAN data. Warning color if data loading has failed. |
| SMS | Displayed if FAST function is enabled |
| FAST | Displayed if FAST function is enabled |

### 3.7.43 Miscellaneous Information Window

*Global Menu* -> Info -> MISC Information...

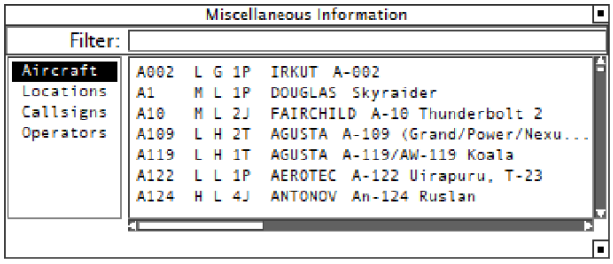



Figure 3.95: Document Viewer Window

The Miscellaneous Information Window is used to browse and search for information in specific data files

- Aircraft - Information about aircraft types
  - Type designator
  - Wake turbulence category
  - Description (Amphibian, Gyrocopter, Helicopter, Landplane, Seaplane, Tiltrotor)
  - Engine count and type (Electric, Jet, Piston, Rocket, Turboprop/turboshaft)
  - Manufacturer and model
- Locations - Information about aerodromes
  - Location indicator
  - Location name
  - (State/Territory)
- Callsigns - Information about aircraft operators
  - Three-letter designator
  - Telephony designator
  - (Aircraft operating agency and notifying state)
- Operators - Information about aircraft operators
  - Three-letter designator
  - Aircraft operating agency and notifying state
  - (Telephony designator)
- NAT TrkM - Downloaded NAT Track Message (for oceanic setups)

The information can be filtered using the “Filter” box. The list will only display lines containing the entered text string (case insensitive).

### 3.7.44 NOTAM List Window

*Global Menu* -> Info -> NOTAM...

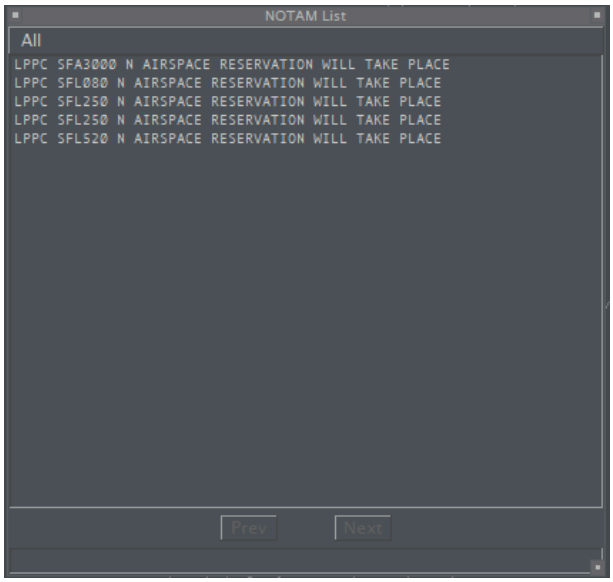



Figure 3.96: NOTAM List Window

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 two 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

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”.

The NOTAM List is automatically displayed at startup in order to fetch the current FUA. It may be closed after loading.

### 3.7.45 Small QNH/TL Window

*Global Menu* -> Info -> Small QNH/TL. . .

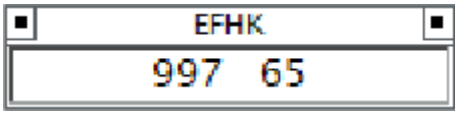



Figure 3.97: Aerodrome Window

Displays the QNH and transition level for one pre-defined aerodrome. If an aerodrome code has not been defined in the settings file, the code will be taken from the login callsign for APP logins and below. For CTR callsigns the window will automatically display data for LPPT.

### 3.7.46 LFUNC Frequency Plan Window

*Global Menu* -> Info -> LFUNC Frequency Plan...

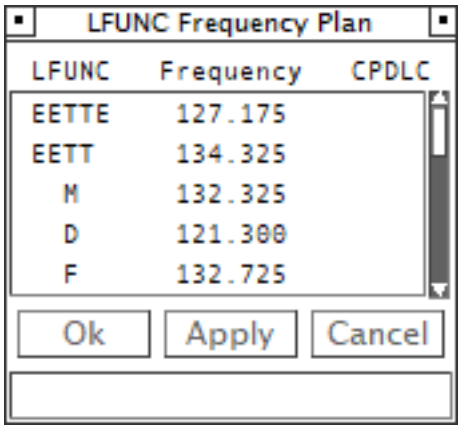



Figure 3.98: LFUNC Frequency Plan Window

The LFUNC Frequency Plan Window displays the currently online position-identified controllers and their primary frequencies as well as their CPDLC logon callsigns where applicable. The CPDLC information is not displayed on proxy instances or when there are no CPDLC stations online.

### 3.7.47 Notepad Window

*Global Menu* MSG -> Notepad...

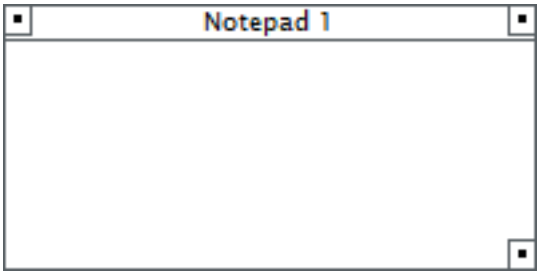



Figure 3.99: Notepad Window

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, and if necessary, the "|" character can be used to force a line break. 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.

### 3.7.48 Personal Queue Window

*Global Menu* MSG -> Personal Queue...

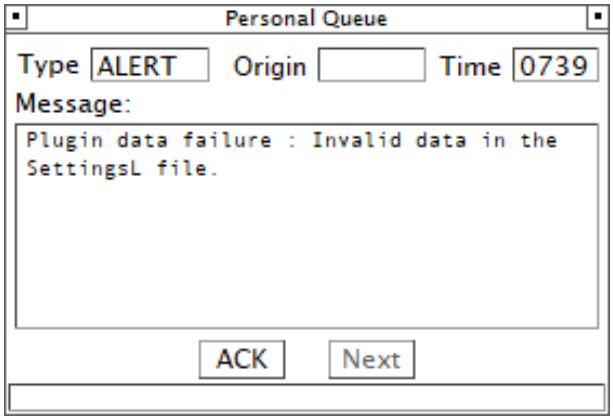



Figure 3.100: Personal Queue Window

The Personal Queue Window displays warning messages related to TopSky's operation: high priority messages informing about potential critical failures in TopSky code, and low priority messages informing about faults in TopSky'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 shown. 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.

### 3.7.49 ATC / Primary Frequency Messages Window

*Global Menu* MSG -> ATC Messages...
*Global Menu* MSG -> Prim Freq Messages...

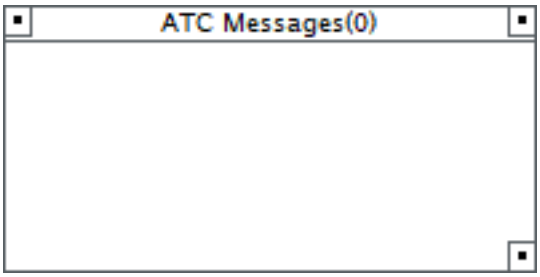



Figure 3.101: ATC / Primary Frequency Messages Window

These windows display up to 99 last messages transmitted on the relevant text channel ("ATC" or the primary frequency). Each message line displays a time stamp, the sender callsign (blank if you) and the message itself.

New incoming 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 windows do not resize automatically to show all the messages in them, 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. Holding a mouse button down on a message will display the entire message.

### 3.7.50 NAT Track Messages Window

*Global Menu* MSG -> NAT Track Messages...

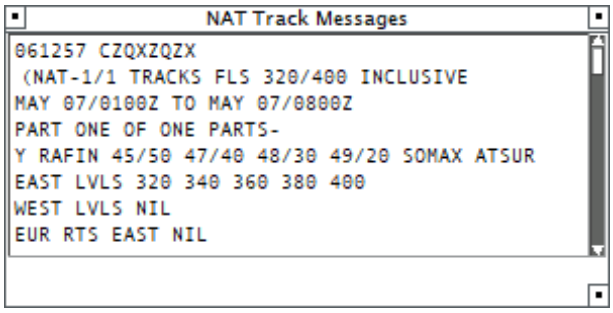



Figure 3.102: NAT Track Messages Window

The NAT Track Messages Window displays the downloaded track messages. The messages are downloaded when the window is opened the first time and then updated hourly. The tracks extracted from the messages can be displayed on the radar screen – they are placed to a "NAT" folder in the *Maps Windows*. Any named waypoints in the tracks that cannot be found in the active sector file are

just skipped so the displayed tracks may not be accurate. The track letter is added to the name of the first and last waypoints in parentheses, so a missing track letter is a sure sign of at least some waypoints missing.

### 3.7.51 Safety Nets Status Window

*Global Menu* STS -> Safety Nets Status...

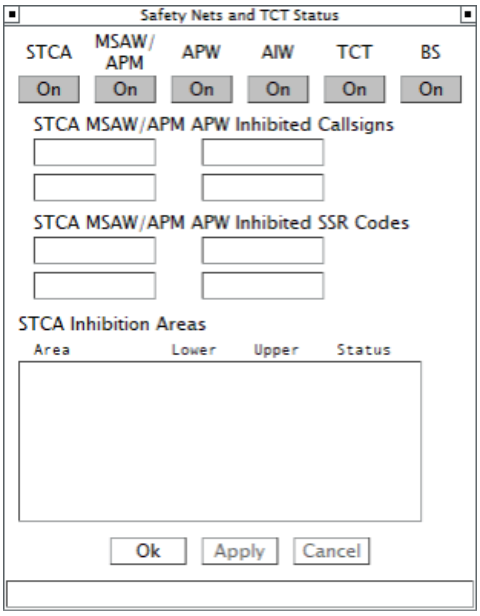



Figure 3.103: Safety Nets Status Window

Allows setting the status for the *STCA (Short Term Conflict Alert)*, *MSAW (Minimum Safe Altitude Warning)*, *APW (Area Proximity Warning)*, *AIW (Airspace Infringement Warning)*, *Tactical Controller Tool (TCT)* and *Blind Spot function* 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 the specified 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 the specified safety nets.

If there are STCA inhibition areas defined in the areas 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.

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

| | |
|---|---|
| Ok | Applies the changes if any, closes the window |
| Apply | Applies the changes |
| Cancel | Cancels the changes |

### 3.7.52 TCT Status Window

*Global Menu* STS -> TCT Status...

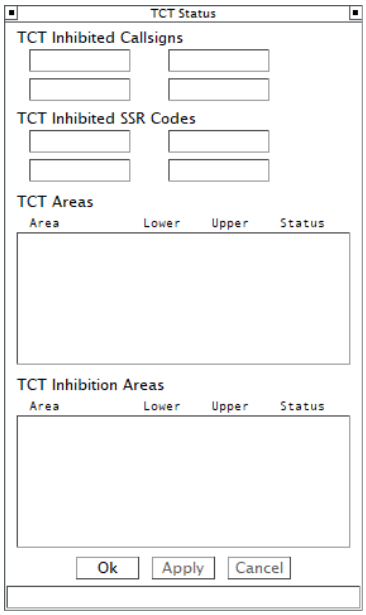



Figure 3.104: TCT Status Window

The window contains four entry boxes for callsigns to exclude specific callsigns from TCT. 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.

If there are TCT areas or TCT inhibition areas defined in the areas 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) can be edited by clicking on the values, and the area activation can be toggled by clicking on the area status.

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

| | |
|---|---|
| Ok | Applies the changes if any, closes the window |

| | |
|---|---|
| Apply | Applies the changes |
| Cancel | Cancels the changes |

### 3.7.53 Divergence Detection Status Window

*Global Menu* STS -> Divergence Detection Status...

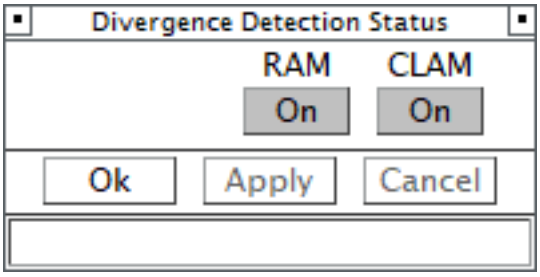



Figure 3.105: Divergence Detection Status Window

Allows setting the status for the *RAM (Route Adherence Monitoring)* and *CLAM (Cleared Level Adherence Monitoring)* 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 if any, closes the window |
| Apply | Applies the changes |
| Cancel | Cancels the changes |

### 3.7.54 MTCD Status Window

*Global Menu* STS -> MTCD Status...

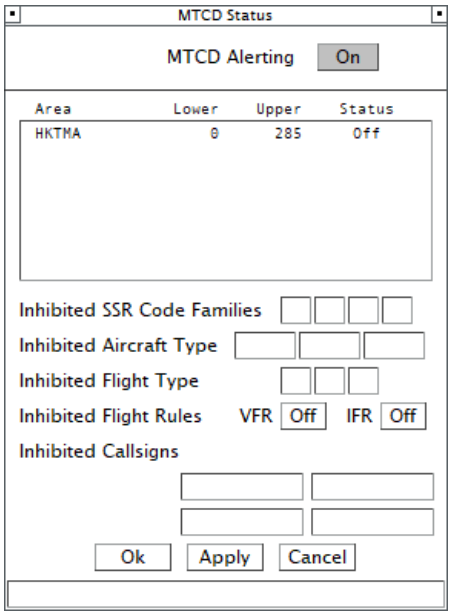



Figure 3.106: MTCD Status Window

Allows setting the status for the *MTCD (Medium Term Conflict Detection)* system. The “On/Off” button controls the system’s status.

MTCD inhibition areas will be listed in the area below the “On/Off” button. The area activation can be toggled by clicking on the area status.

Below the inhibit areas, there are four SSR code boxes that can be used to exclude specific SSR codes from MTCD processing. The entered values must be 2 octal digits, and the system will match codes starting with the entered digits (i.e. “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.

VFR or IFR flights can be excluded by selecting the respective “Inhibited Flight Rules” button to “On”.

Finally, there are four entry boxes to exclude specific callsigns. 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”.

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 |

### 3.7.55 FPCA Status Window

*Global Menu* STS -> FPCA Status...

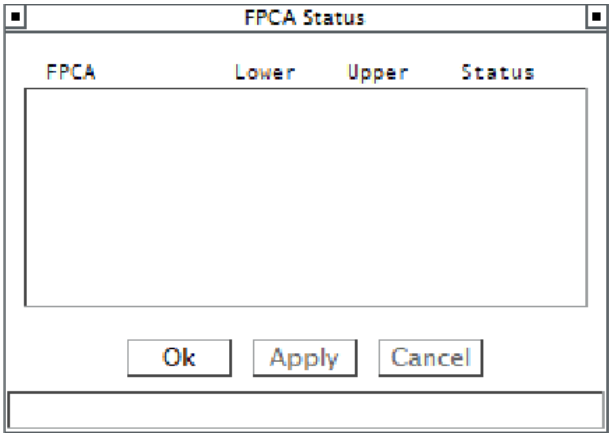



Figure 3.107: Runway in Use Window

The FPCA Status Window displays and allows setting the status for the flight plan conflict areas defined in the area data file.

The area activation can be toggled by clicking on the area status.

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 |

### 3.7.56 Runway in Use Window

*Global Menu* STS -> Runway In Use... (opens the *Aerodrome Menu* for airport selection)

### 3.7.57 FAST Configuration Window

*Global Menu* STS -> STS -> FAST Configuration FAST List -> left-click on the area of the menu bar where the MSS and SYS GAP are displayed

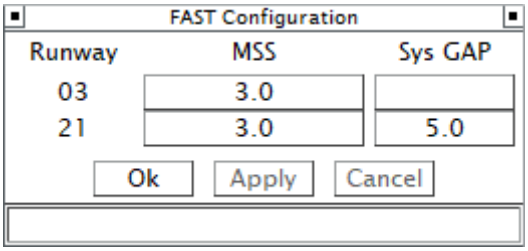



Figure 3.108: FAST Configuration Window

The FAST Configuration Window is used to change approach-specific settings. If an approach has more than one possible minimum surveillance separation defined, left-clicking on the button in the MSS column cycles through them. Left-clicking on the button in the Sys GAP column opens the GAP menu to set up a systematic gap to be applied for all new aircraft entered into that approach sequence. Right-clicking removes any previously defined gap.

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 |

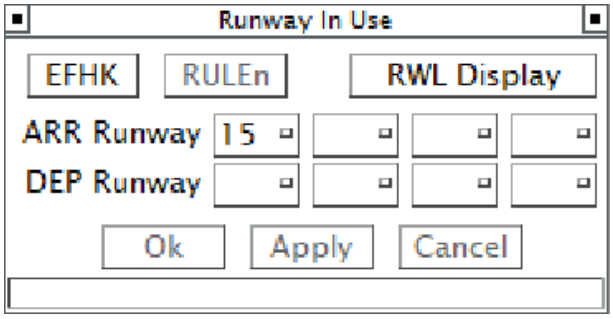



Figure 3.109: Runway in Use Window

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

The “RWL Display” button opens the *Runway Approach Line Window* for this aerodrome.

### 3.7.58 Runway Approach Line Window

*Global Menu* STS -> RWY line display... (opens the *Aerodrome Menu* for airport selection)

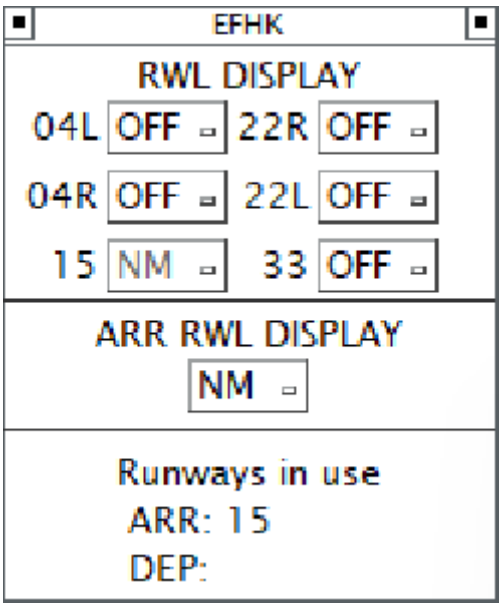



Figure 3.110: Runway Approach Line Window

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. 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 options, and their default settings for the approach lines are as follows:

| | |
|---|---|
| OFF | No line drawn |
| NM | 16nm line, 5 markers at 2nm intervals |
| NME | 30nm line, 5 markers at 2nm intervals, then 4 markers at 5nm intervals |
| Km | 30km line, 5 markers at 2km intervals, then 4 markers at 5km intervals |

The color of the line is different depending on whether the runway is active for arrivals or not.

### 3.7.59 Operations Rate Window

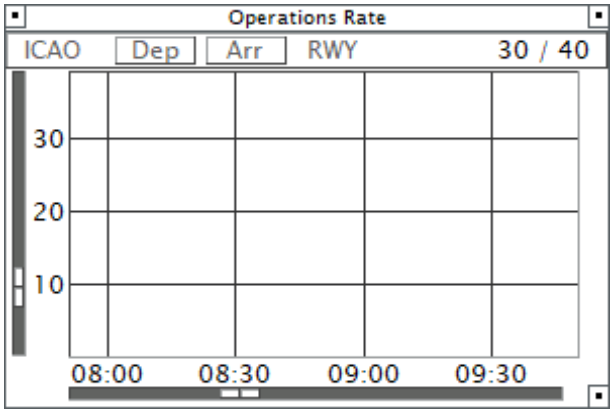



Figure 3.111: Runway in Use Window

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 immediately if their ground status is set to “DEPA”, earliest in 5 minutes if “TAXI” and earliest in 10 minutes if “PUSH”, with a maximum departure rate of one aircraft per minute.

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 rates are color coded so that a rate at or below the caution limit will be shown in COL Under Threshold color, a rate above that but at or below the warning limit in COL Above Threshold and a rate above that in Urgency. When both arrivals and departures are selected for display, the departures are shown with a hatched color.

| | |
|---|---|
| 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 |

### 3.7.60 Predicted Traffic Window

*Global Menu* 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. If the monitored ID is your own, the data area background will be in "Active Sector" color, otherwise in Inactive Sector.

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 COL Under Threshold color, a number above that but at or below the warning limit in COL Above Threshold and a number above that in Urgency.

The two sliders change the traffic number and time scales.

### 3.7.61 Air Traffic Flow Management Window

*Global Menu* STS -> Flow Management. . .

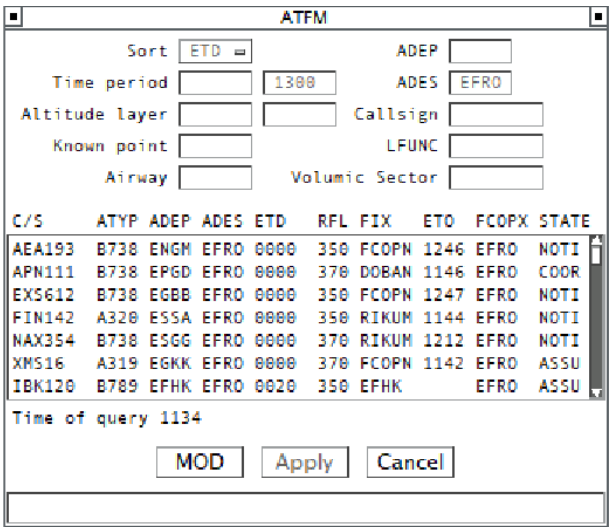



Figure 3.112: Air Traffic Flow Management Window

The Air Traffic Flow Management Window can be used to list the aircraft flying in the AoR within a specified time period. The following options are available to sort and filter the results (the end of the time period is the only mandatory item):

| | |
|---|---|
| Sort | The list sorting parameter, click to toggle between ETD and C/S. |
| Time period | The start and end of the specified time period |
| Altitude layer | The lower and upper limits for the RFL value |
| Known point | A point in the filed route |
| Airway | An airway in the filed route |
| ADEP | Departure airport (starting with the entered string) |
| ADES | Destination airport (starting with the entered string) |
| Callsign | Callsign (starting with the entered string) |
| LFUNC | Predicted to enter airspace of this position ID |
| Volumic Sector | Not implemented |

For entry into the list, an aircraft must meet all specified filtering criteria. The list displays the following information about each aircraft:

| | |
|---|---|
| C/S | Callsign |
| ATYP | Aircraft type |
| ADEP | Departure airport |
| ADES | Destination airport |
| ETD | Estimated Time of Departure |
| RFL | Requested Flight Level |
| FIX | The “Known point” if specified, otherwise the FIR entry coordination point |
| ETO | Estimated time over the fix |
| FCOPX | FIR exit coordination point |
| STATE | Flight plan system state |

The buttons in the window:

| | |
|---|---|
| MOD | Makes the entry boxes and sorting option selectable, clears the list data. |

| | |
|---|---|
| Apply | Calculates the data. Available only when MOD has been selected and at least the end of the time period has been entered. If the start of the time period is left empty, the current time is used. |
| Cancel | Clears all entries and list data |

### 3.7.62 Current Operational Load Window

*Global Menu* STS -> Current Operational Load. . .

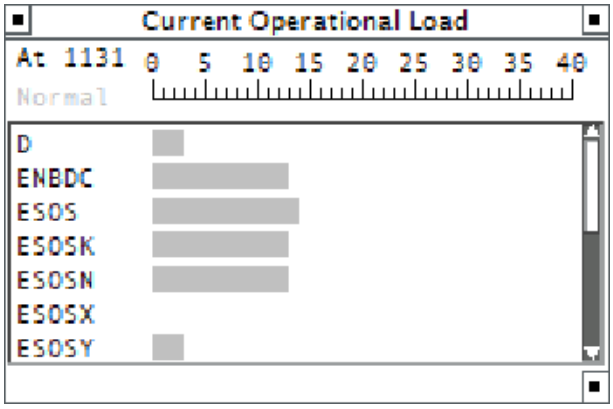



Figure 3.113: Current Operational Load Window

The Current Operational Load Window displays the number of aircraft currently assumed by or flying in the airspace of the displayed controllers. The display is refreshed at 60 second intervals. The bars displaying the number of aircraft are shown with COL Under Threshold color up to a defined number (20 by default), and with COL Above Threshold above it. The state is displayed as Normal Load unless at least one controller has more than the alert number of aircraft, in which case it is displayed as Warning.

### 3.7.63 Operational Load Forecast Window

*Global Menu* STS -> Operational Load Forecast. . .

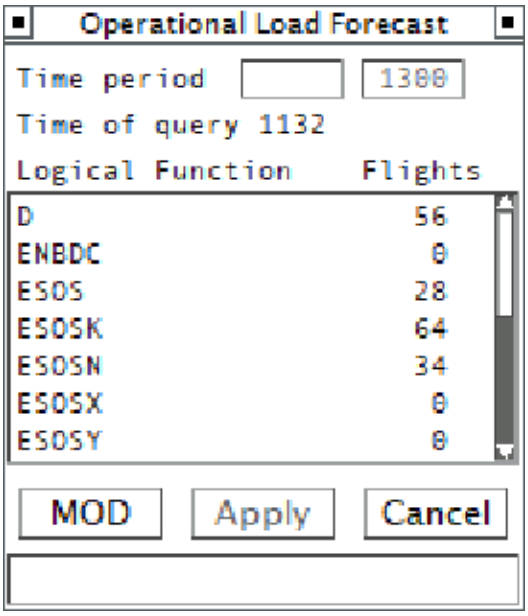



Figure 3.114: Operational Load Forecast Window

The Operational Load Forecast Window displays the predicted number of aircraft entering the airspace of the displayed controllers within a specified time period.

| | |
|---|---|
| MOD | Makes the start and end of time period boxes selectable for entry. |
| Apply | Calculates the data. Available only when MOD has been selected and at least the end of the time period has been entered. If the start of the time period is left empty, the current time is used. |
| Cancel | Clears all entries and data. |

### 3.7.64 Pre-Departure Clearance Window

“Open DCL Window/PDC Window” label function

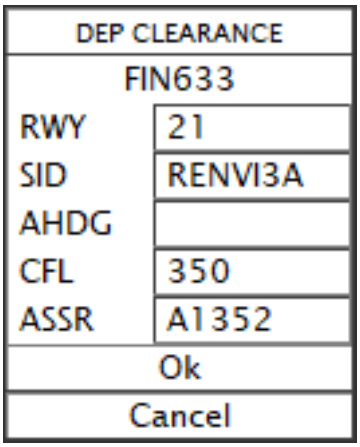



Figure 3.115: Pre-Departure Clearance Window

The Pre-Departure Clearance Window is used to adjust clearance data and toggle the clearance flag. The following data fields are displayed for review:

| | |
|---|---|
| RWY | Departure runway (left-click to open RWY setup popup list) |
| SID | Assigned SID (left-click to open SID setup popup list) |
| AHDG | Assigned heading (left-click to open *AHDG Menu*) |
| CFL | Cleared level (left-click to open *CFL Menu*) |
| ASSR | Assigned transponder code (left-click to open *SSR Code Menu*) |

The RWY field text is displayed in Proposition In color if the clearance has not yet been issued and the selected runway is not active for departure. The CFL level background is displayed in Warning color for DEL/GND/TWR/APP controllers when it is above XFL, and for CTR controllers when it is above PEL.

| | |
|---|---|
| Ok | Sets the clearance flag, closes the window |
| Cancel | Clears the clearance flag, closes the window |

The “Ok” button is active when at least “RWY”, “CFL” and “ASSR” contain data. The window closes automatically if the aircraft is assumed by another controller.

### 3.7.65 Departure Coordination Window

“Toggle EST/DEP/ABT” label function (when clearance flag not set and ground state not “DEPA”)

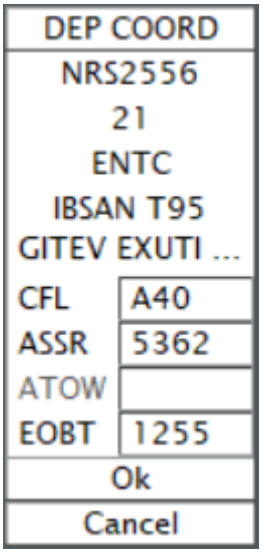



Figure 3.116: Departure Coordination Window

The Departure Coordination Window can be used to set the clearance flag. The window displays the aircraft callsign, departure runway, destination and beginning of the route and allows setting the *CFL*, *ASSR* and *EOBT* values.

| | |
|---|---|
| CFL | Opens the *CFL Menu* |
| ASSR | Opens the *SSR Code Menu* |
| ATOW | Not implemented |
| EOBT | Opens the *Time Menu* |
| Ok | Applies any changes, sets the clearance flag and closes the window |
| Cancel | Disregards any changes, closes the window |

### 3.7.66 Departure Clearance Window

“Open DCL Window/PDC Window” tag function

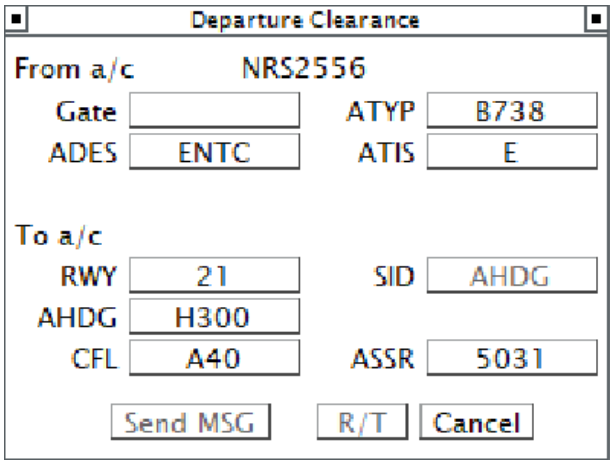



Figure 3.117: Departure Clearance Window

The Departure Clearance Window is used to issue datalink clearances.

The top part of the window ("From a/c") displays the aircraft callsign and information received from the aircraft in the clearance request message:

| | |
|---|---|
| Gate | Stand designator |
| ATYP | Aircraft type |
| ADES | Destination |
| ATIS | ATIS designator |
| RCD-RMK | Remarks text (only displayed if not empty) |

The bottom part is used to compose and send a reply:

| | |
|---|---|
| RWY * | Departure runway (left-click to open RWY setup popup list) |
| SID | SID designator (left-click to open SID setup popup list) |
| AHDG | Assigned heading (left-click to open *AHDG Menu*) |
| CFL * | Cleared level (left-click to open *CFL Menu*) |
| ASSR * | Assigned transponder code (left-click to open *SSR Code Menu*) |

The buttons are as follows:

| | |
|---|---|
| Send | MSG Sends the clearance message, closes the window |
| R/T | Sends a "REVERT TO VOICE" message, aborts the datalink clearance process |
| Cancel | Closes the window |

The “Send MSG” button is available when a clearance can be sent – a defined format is available, all required fields have been filled (all fields marked with “*” above, when present, are required fields) and another controller is not tracking the aircraft (so it’s possible to set the clearance flag).

### 3.7.67 Oceanic Time Restriction Window

“Open Oceanic Time Restriction Window” label function

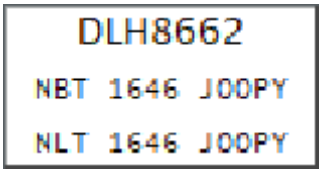



Figure 3.118: Oceanic Time Restriction Window

The Oceanic Time Restriction Window displays the time restriction(s) contained in the OCM. The window closes when the cursor leaves the window area.

### 3.7.68 Group SSR Code Window

“Open Group SSR Code Window” label function “Open Group SSR Code Window / ASSR menu” label function Left-click FSSR button in Flight Plan Window

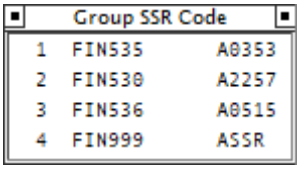



Figure 3.119: Group SSR Code Window

The Group SSR Code Window displays the aircraft belonging to the formation, and their assigned transponder codes. Left-click on a code to open the *SSR Code Menu* to assign a new code.

## 3.8 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 (Medium Term Conflict Detection)* and *SAP (Segregated Area Probe)* processing. The following colors are possible:

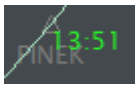
| | |
|---|---|
| Urgency FL | MTCD conflict or potential predicted conflict, SAP conflic |
| Warning FL | MTCD risk, SAP risk |
| Potential FL | MTCD potential risk |
| Conflict Ack FL | MTCD acknowledged conflict |
| Information FL | MTCD and/or SAP processing available, no conflicts or risks detected |
| 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.

The Flight Leg is displayed by clicking on various track label and list items depending on the setup and is either automatically removed from display when the mouse cursor leaves the label area or must be manually toggled off, depending on the function that was used to display it.

The Flight Leg line is one pixel thick, except when it is showing only SAP conflicts (opened from the SAP Window) or showing also MTCD information (any conflicting aircraft legs). In that case the FLEG for the referenced flight is three pixels thick and the other FLEGs one pixel thick.

The label that's shown on each route point includes the following predefined fields:

| | |
|---|---|
|   | Estimated Time Over the point |
| | Top of Climb |
| | Top of Descent |

## 3.9 Tactical Controller Tool (TCT) Leg

The TCT leg displays the predicted trajectories of the selected aircraft and the conflicting aircraft up to the closest point of approach. If the selected aircraft is involved in more than one conflict, the displayed one for the selected aircraft is the conflict where the time to start of conflict is the least.

The leg is TCT Leg color until the start of the conflict, and then TCT Leg Embellished until the closest point of approach. On the conflicting aircraft's leg, a label is displayed in TCT Label color. It displays the minimum distance and time to that point (closest point of approach).

When TCT legs are being displayed, all minimum separation tools (except for tracks with STCA alert), velocity vectors (except for tracks with STCA alert) and flight legs are temporarily hidden.

## 3.10 Keyboard Shortcuts

Some TopSky functions can be accessed using a keyboard shortcut. The available shortcuts and their keys are:

| | |
|---|---|
| <ALT+F> | Open *Flight Plan Window* for the selected flight |
| <ALT+E> | Open *Flight Plan Selection Window* |
| <ALT+Q> | Start new *QDM Vector* |
| <ALT+U> | Toggle *Quick Look* on/off |
| <ALT+S> | Start a new *Minimum Separation Tool* |
| <ALT+C> | Reposition cursor at the center of the radar screen |
| <ALT+T> | Start *Find Track* function |
| <ALT+Z> | Toggle *Zoom Window* |
| <ALT+R> | Toggle *CARD* |
| <ALT+I> | Toggle *Message In Window* |
| <ALT+O> | Toggle *Message Out Window* |
| <ALT+M> | Toggle *Airspace Management Window* |
| <ALT+A> | Toggle *Create APL Window* |
| <ALT+N> | Open new *Notepad Window* |
| <ALT+D> | Toggle *Airfield Data Window* |

Table 3.90: keyboard Shortcuts

“Selected flight” means that the mouse cursor is over that flight’s track label.

## 3.11 Color Values

| Color name | Color | Usage |
|---|---|---|
| ***Aircraft colors*** | | |
| ACF Via CFL | | Labels |
| AMAN Data Highlight | | Labels |
| Assumed | | Labels, Tracks |
| CARD Mark All | | Labels |
| CARD Mark Own | | Labels |
| Concerned | | Labels, Tracks |
| Coordination | | Labels, Tracks |
| Freq Indicator | | Labels |
| FSQ SI | | Labels |
| Info Coord | | Labels |
| Information | | Labels, Windows |
| Informed 1 | | Labels, Tracks |
| Informed 2 | | Labels, Tracks |
| Informed 3 | | Labels, Tracks |
| Negotiation In | | Labels |

| Color name | Color | Usage |
|---|---|---|
| Negotiation Out | | Labels |
| Oceanic Level Highlight | | Labels |
| Proposition Accepted | | Labels |
| Proposition In | | Labels |
| Proposition Out | | Labels |
| Redundant | | Labels, Tracks |
| Reminder | | Labels |
| Rwy Locked | | Labels |
| Sid Star Allocation | | Labels |
| Sid Star No Allocation | | Labels |
| Suite Highlight | | Labels |
| TCT Warning | | Labels |
| Temp Track Highlight | | Labels (Find Track function) |
| Track Default | | Tracks |
| Track Highlight | | Tracks |
| Unconcerned | | Labels, Tracks |

| Color name | Color | Usage |
|---|---|---|
| Unknown | | Labels |
| Urgency | | Labels, STCA callsign background on plugin windows/lists, Windows |
| VFR | | Labels, Tracks |
| Warning | | Labels, Windows |
| ***CPDLC colors*** | | |
| CPDLC Controller Late | | Labels, Windows |
| CPDLC Discarded | | Windows |
| CPDLC DM Request | | Labels, Windows |
| CPDLC Failed | | Labels, Windows |
| CPDLC Pilot Late | | Labels, Windows |
| CPDLC Standby | | Labels, Windows |
| CPDLC UM Clearance | | Labels, Windows |
| CPDLC Unable | | Labels, Windows |
| CPDLC Urgency | | Labels, Windows |
| ***Aircraft related items on the radar screen*** | | |
| AIW intrusion | | AIW alert related items |

| Color name | Color | Usage |
|---|---|---|
| Conflict Ack FL | | Part of flight leg with acknowledged conflict |
| Flight Leg | | Part of flight leg without MTCD and SAP coverage |
| FTD Nominal | | FAST separation indicators |
| FTD Urgency | | FAST separation indicators and labels when overtaken |
| GAP Nominal | | FAST gap indicators |
| GAP Warning | | FAST gap indicators when overtaken |
| Heading Vector | | Heading vector |
| Information FL | | Part of flight leg with no MTCD or SAP problems |
| MQDM | | MQDM vector |
| Potential FL | | Part of flight leg with MTCD potential risk |
| QDM | | QDM vector |
| SEP Tool | | Minimum separation tools 8 and greater |
| SEP Tool 1 | | Minimum separation tool 1 |
| SEP Tool 2 | | Minimum separation tool 2 |
| SEP Tool 3 | | Minimum separation tool 3 |
| SEP Tool 4 | | Minimum separation tool 4 |

| Color name | Color | Usage |
|---|---|---|
| SEP Tool 5 | | Minimum separation tool 5 |
| SEP Tool 6 | | Minimum separation tool 6 |
| SEP Tool 7 | | Minimum separation tool 7 |
| SEP Vert | | Extensions of minimum separation tools |
| System Calculated TOC | | TOC symbol on flight leg |
| System Calculated TOD | | TOD symbol on flight leg |
| TCT Label | | TCT leg labels |
| TCT Leg | | TCT leg part before conflict start |
| TCT Leg Embellished | | TCT leg from conflict start to CPA |
| Urgency FL | | Part of flight leg with MTCD or SAP conflict |
| Warning FL | | Part of flight leg with MTCD or SAP risk |
| ***Map colors*** | | |
| Active Map | | Active TSA map border |
| Active Map Type 1 | | TSA map border/fill |
| Active Map Type 2 | | TSA map border/fill |
| Active Map Type 3 | | TSA map border/fill |

| Color name | Color | Usage |
|---|---|---|
| Active Map Type 4 | | TSA map border/fill |
| Active Map Type 5 | | TSA map border/fill |
| Active Map Type 6 | | TSA map border/fill |
| Active Map Type 7 | | TSA map border/fill |
| Active Map Type 8 | | TSA map border/fill |
| Active Map Type 9 | | TSA map border/fill |
| Active Map Type 10 | | TSA map border/fill |
| Active Map Type 11 | | TSA map border/fill |
| Active Map Type 12 | | TSA map border/fill |
| Active Map Type 13 | | TSA map border/fill |
| Active Map Type 14 | | TSA map border/fill |
| Active Map Type 15 | | TSA map border/fill |
| Active Map Type 16 | | TSA map border/fill |
| Active Map Type 17 | | TSA map border/fill |
| Active Map Type 18 | | TSA map border/fill |
| Active Map Type 19 | | TSA map border/fill |

| Color name | Color | Usage |
|---|---|---|
| Active Map Type 20 | | TSA map border/fill |
| Active RD Infill Map | | Active R or D map fill |
| Active RD Map | | Active R or D map border |
| Active Text Map | | Active TSA map text |
| Auto Map Label | | Auto-generated maps |
| Auto Map Symbol | | Auto-generated maps |
| East NAT Map | | Auto-generated maps, maps |
| Map 1 | | Maps |
| Map 2 | | Maps |
| Map 3 | | Maps |
| Map 4 | | Maps |
| Map Hotspot | | Map hotspots |
| Map Border | | Maps |
| Map Info | | Range rings, range marker |
| Map Land | | Maps |
| Map Symbol | | Maps |

| Color name | Color | Usage |
|---|---|---|
| Preactive Map | | Pre-active map border |
| Preactive Text Map | | Pre-active map text |
| Predisplay Map | | Pre-display map border |
| Rwy App Line Inuse | | Runway approach line for runways in use |
| Rwy App Line Not Inuse | | Runway approach line for runways not in use |
| TSA Border Highlight | | Highlighted TSA map border |
| Weather Map | | Weather radar data |
| West NAT Map | | Auto-generated maps, maps |
| ***Window and menu colors*** | | |
| Active Sector | | Predicted Traffic Window and VAW active sector background |
| Arm | | Inactive window texts |
| Background | | Background |
| Border | | Various lines in windows |
| BottomShadow | | 3D effects in windows |
| BS Aged | | CFL menu Blind Spot function results |
| BS Crossed Level | | CFL menu Blind Spot function results |

| Color name | Color | Usage |
|---|---|---|
| BS No Conflict | | CFL menu Blind Spot function result |
| BS Unknown | | CFL menu Blind Spot function result |
| BS Warning | | CFL menu Blind Spot function result |
| CARD Min Sep | | CARD minimum separation area |
| CARD Reminder | | CARD warning time triangle |
| CARD Symbol Fg | | CARD conflict numbers |
| CARD Time Vector | | CARD time vectors |
| COL Above Threshold | | COL flight bars above warning threshold |
| COL Above Threshold | | COL flight bars under warning threshold |
| Conflict Ack | | Acknowledged conflicts in CARD/VAW |
| Field Highlight | | Selected field |
| Flight Highlight | | Selected item |
| Foreground | | Window titles, menu items, active texts, close/min/resize boxes |
| Global Menu Highlight | | Highlighted items in the Global Menu |
| Inactive Sector | | CARD, Predicted Traffic Window, SMW and VAW background |
| LatLong Info | | Coordinate value in Lat/Long Window |

| Color name | Color | Usage |
|---|---|---|
| Normal Load | | Normal load color |
| Overflown | | Overflown points in Complete Route Window |
| Overload | | Overload color |
| Potential | | Potential conflicts in CARD/VAW |
| Select | | Selected radio buttons and selection boxes |
| Selected | | Active filters in Radar menu |
| Selected Period | | Active areas text in area window |
| SMW Highlight | | AFL-CFL boxes in SMW (mouse-over) |
| SMW Level Band | | AFL-CFL boxes in SMW |
| SMW Overflight | | Overflight lines in SMW |
| SMW Overlap | | Overlapping AFL-CFL boxes in SMW |
| SMW Overlap Box | | Multiple same CFL's box in SMW |
| SMW Overshoot | | Level bust AFL-CFL boxes in SMW |
| TopShadow | | 3D effects in windows |
| Trough | | Slider area background |
| TSA Active | | Active areas background in area window |

| Color name | Color | Usage |
|---|---|---|
| TSA Preactive | | Pre-active areas background in area window |
| VAW Profile | | Selected aircraft profile in VAW |
| VAW Sector Limits | | Sector boundaries in VAW |
| VAW Track Position | | Selected aircraft position in VAW |
| WM Active Fg | | Active window title text |
| WM Bg | | Window title bar background |
| WM Border | | Window border line |
| WM Fg | | Window texts |
| WM Frame | | Window frame when dragging |
| ***Other colors*** | | |
| Standard Line RDF | | Direction Finder position circle or direction line |
| Text Notes | | Text notes |
| ***A-CDM colors*** | | |
| color1 | | |
| color2 | | |
| color3 | | |

| Color name | Color | Usage |
|---|---|---|
| color4 | | |
| color5 | | |
| color6 | | |
| color7 | | |
| color8 | | |
| color9 | | |
| color10 | | |
| color11 | | |
| color12 | | |

Table 3.91: Color Names

*Chapter 4*

# Known issues

## 4.1 GitHub Repository

TOPLIS is maintained in the *topskylppc GitHub repository*. An up to date list of known issues can be checked on the *issues page*, aswell as reporting new ones.

## 4.2 Airport and area hotspots block screen panning

If you happen to drag one of the airport or area hotspot symbols when trying to move the screen, the screen will not move.

## 4.3 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.

## 4.4 Problems opening the Radar Menu

The default method of opening the Radar Menu (<ALT>+right-click) may not always work on Mac hardware. It's possible to adjust TopSky settings to try another combination, but the easiest way is to insert the following line to the TopSkySettingsLocal.txt file:

```
Shortcut\RadarMenu\Combo=0x00
```

The Radar Menu is then opened by right-clicking anywhere on the Global Menu.

*Appendix A*

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# Bibliography

# Bibliography

[1] EUROCONTROL. *A-CDM Airport collaborative decision-making*. URL: https://www.eurocontrol.int/concept/airport-collaborative-decision-making.

[2] Juha Holopainen. *TopSky plugin for EuroScope - Coordination*. 2022. URL: https://forum.vatsim-scandinavia.org/d/34-topsky-plugin-25.

[3] Juha Holopainen. *TopSky plugin for EuroScope - Data Link Functions*. 2022. URL: https://forum.vatsim-scandinavia.org/d/34-topsky-plugin-25.

[4] Juha Holopainen. *TopSky plugin for EuroScope - General*. 2022. URL: https://forum.vatsim-scandinavia.org/d/34-topsky-plugin-25.

[5] Roger Puig. *CDM GitHub*. URL: https://github.com/rpuig2001/CDM.

[6] *TopSky plugin for Portugal vACC*. URL: https://github.com/pinatacolada/topskylppc#disclamer.