

Operator's Manual

ELITE XTS

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ELITE[®]
ELITE SIMULATION SOLUTIONS

www.flyelite.com



Abstract

Thank you for purchasing an ELITE product. Since ELITE was first introduced, each version has incorporated suggestions and ideas from our customers – student and academic general aviation and professional. Through valuable customer feedback we were able to constantly enhance ELITE's PC-based simulation software, so please let us know what you think of ELITE XTS.

ELITE (ELECTronic IFR Training Environment) is software that allows you to use your personal computer to replicate the instrument panel, avionics and flight aerodynamics of specific aircraft to practice all procedures and simulate elements of flight under instrument meteorological conditions.

This Operator's Manual is to give an insight of the options and training possibility that ELITE XTS offers. If you have any questions or run into some trouble, please feel free to reach out to our Technical Support team.

ELITE Technical Support

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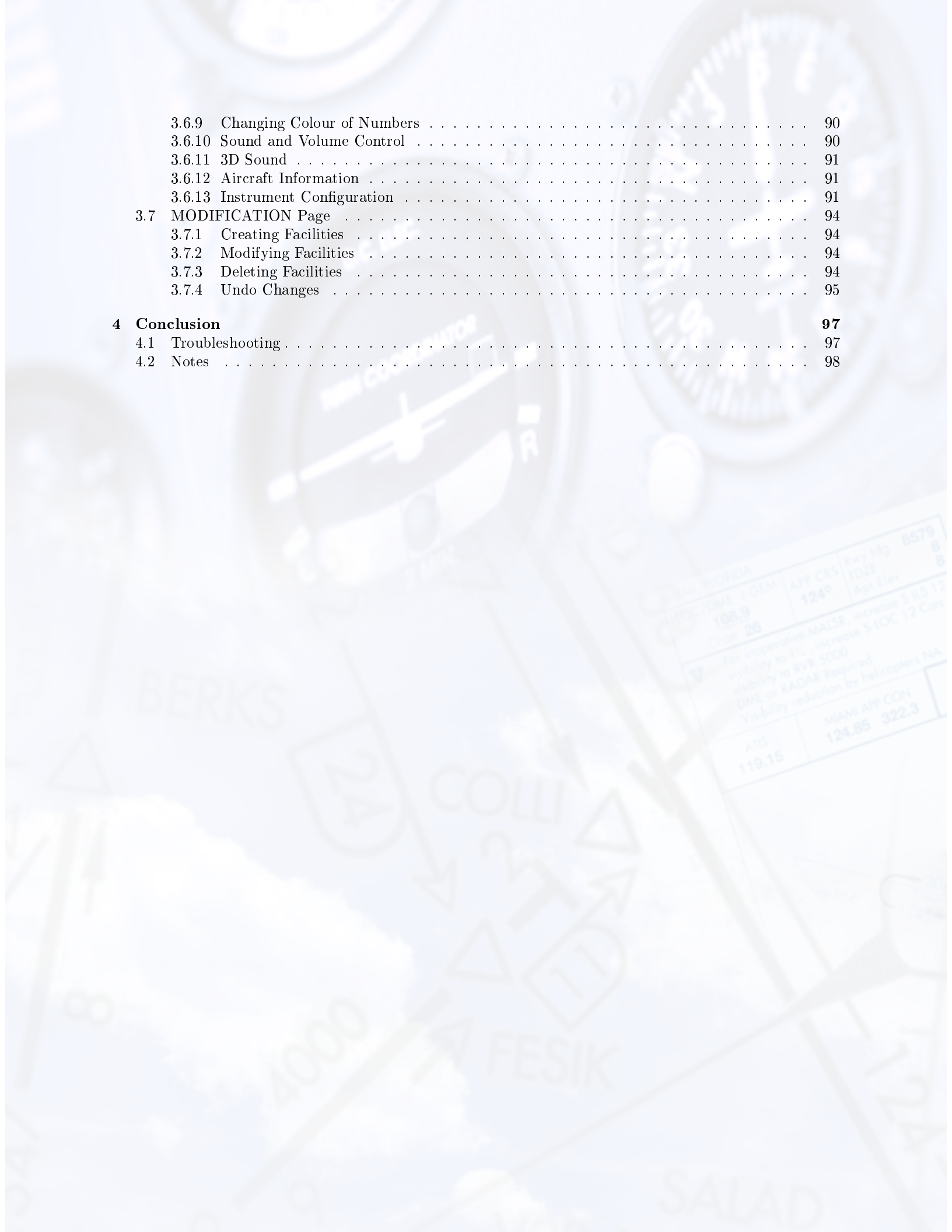
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1 | Operational Concept

1.1 Basic Operational Concepts

"Virtual" operations in the cockpit consist of using the mouse cursor shaped like a "hand" to push buttons, twist knobs, move handles, trim wheels, etc. With the use of optional external peripherals such as avionics panels and/or power quadrants, the use of the mouse for most cockpit operations can be avoided. Controls to fly the aircraft (yokes or flight sticks) are necessary. Rudder pedals are optional, but are highly recommended for single-engine operations in a twin-engine aircraft.

1.2 Keyboard Control

The keyboard is not primarily used to fly the aircraft, but rather to provide shortcut key commands to assist the user in general operations and Map functions. These functions can be found on the Main Menu dialog box (right-click), selecting Map screen and pressing the "?" at the bottom of the screen.

1.2.1 MAP Screen Shortcuts

Zoom

I = In

O = Out

N = Normal View

Alt + Click/Drag = Zoom In

Alt + Shift + Click = Zoom Out

Scroll

Left Arrow = Left

Right Arrow = Right

Up Arrow = Up

Down Arrow = Down

Route

Ctrl + Click = New Point

Ctrl + Shift + Click = Move Point

Ctrl + Alt + Click = Delete Points

Ctrl + "Clear" = Delete all Points

HDG/Dist

Shift + Click = Show heading and distance

Position

C = Center Map to Aircraft

Ctrl + C = Move Aircraft to Map center

Custom Zoom

Ctrl + "Zoom level Window" = Store actual zoom level

Select "Zoom level Window" = Set stored zoom level

1.2.2 General Shortcuts

Visual

T = Look Down
G = Look Center
B = Look Up
Shift + Left Arrow = Look to left
Shift + Up Arrow = Looks to Front
Shift + Right Arrow = Look to Right

Control

Alt + F = Freeze
Alt + Q = Quit
Alt + H = Help

Simulation Speed

S = Slower
F = Faster

Engine Sound

E = On/Off

1.2.3 Keyboard Commands

Thrust Control

Insert = Increase Throttle
Delete = Decrease Throttle
Home = Increase Prop Mix
End = Decrease Prop Mix
Page Up = Increase Mixture
Page Down = Decrease Mixture

1.3 Mouse Control

Press buttons, grab knobs or slide switches by clicking on the desired location and moving the mouse left or right (called click and drag). Operation is the same for stacked knobs or bezel rings. The fingertip is used as you would use your finger in the cockpit.

To move an actuator such as flaps or gear handle, move the fingertip over it, press and hold the mouse button, drag it to the desired position and then release the mouse button.



Figure 1.1: Sensitive Areas when SHIFT is pressed



Figure 1.2: Sensitive Areas when CTRL is pressed

ELITE XTS improves the recognition of push and toggle buttons as well as knobs and switches. Sensitive areas on the instrument panel can be viewed instantly when you press the Ctrl or Shift key as seen in figures 1.1 and 1.2.

- Red: Button to click
- Blue: Knob (drag diagonally from bottom-left to top-right)
- Magenta: Switch/Wheel (drag from bottom to top)
- Cyan: Switch/Wheel (drag from left to right)

1.3.1 Pushing Buttons

A Push Button is activated by moving the fingertip over it and pressing the left mouse button. Any button that is in its down or on position appears "pushed-in", a button in its up or off position appears "popped-out."

As some push-buttons are toggle buttons, they remain down or on once they have been pushed. To release a toggle button just push it again.



Figure 1.3: Examples of Push Buttons

1.3.2 Knobs and Rotary Dials

Knobs and rotary dials are mostly used to set the Heading Bug and the Course Deviation Indicator (CDI) on the HSI, or to set radio frequencies. Rotary dial functions are simulated in ELITE by knobs and push buttons.

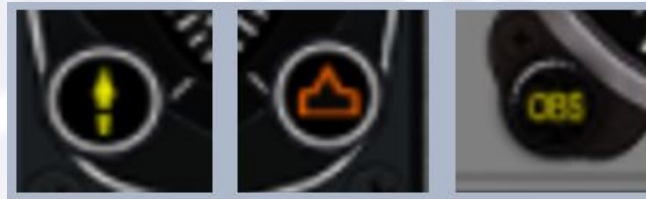


Figure 1.4: Examples of Knobs and Rotary Dials

Rotary Dials are activated by clicking on the edge of the dial and moving the mouse diagonally while holding it. Right movement turns the dial to the right (clockwise) and increases numbers, movement to the left has the opposite effect. In order to continue turning, a rotary dial changes to "auto scroll" when the fingertip is held at the edge of the screen and cannot be moved further. The button keeps turning as long as the fingertip stays at the edge area or as long as the mouse button is held.

Note: An alternative to changing avionics frequencies is to click on the numbers themselves. Clicking on the right side of the number decreases and clicking on the left side increases the numerical count.

1.3.3 Switches

Switches work similarly to push buttons. Click on them to operate like a typical rocker switch.



1.3.4 Power Levers

Some aircraft in the ELITE cockpit show Power Levers, others do not. If they are available, power levers are graphically modelled and coloured according to those in the real aircraft, like throttle, propeller (RPM), mixture, flaps and gear.

Operate the levers by clicking on the end of the lever and dragging it up or down by moving the finger tip. Release the mouse button when the settings are as desired.



1.3.5 Wheels

Rudder and elevator trim wheels are operated like levers. Move the fingertip cursor over the wheel, press and hold the mouse button, rotate the wheel by moving the fingertip. Release the mouse button when the settings are as desired.



Note: The mouse "holds" the lever or wheel as long as the mouse button is held, even after the finger tip has left the lever or wheel symbol.

1.4 Program Menu

After starting the program, you will enter the simulation in the cockpit (in front of the Instrument panel). A right click on any area within ELITE opens a pop-up menu on the mouse pointer position. As you move through each selection, the item to be opened will be highlighted. Keyboard shortcuts are listed by side their corresponding menu item. For shortcuts, hold the keyboard ALT key and the designated letter. CAPS Lock should be OFF.

Note: The simulation is in the FREEZE mode if red blinking "FREEZE" word is displayed on top left corner.

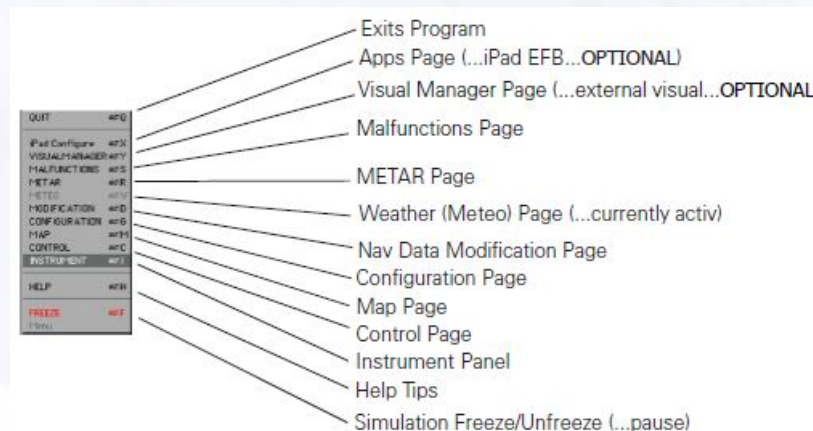


Figure 1.5: ELITE XTS Menu

The following sections are to provide an overview of the MENU layout. For detailed capabilities and operations, see Chapter 3, Program Features.

1.4.1 Malfunctions Page

The MALFUNCTIONS Page is used to create failure scenarios. You have the opportunity to selectively or randomly fail individual instruments, systems, avionics, engines, gear, flaps and more.

1.4.2 Meteo Page

The METEO (meteorological) Page is used to create the weather environment. Various parameters such as visibility, wind, turbulence, pressure and temperature can be adjusted as desired.

1.4.3 Metar Page

The METAR Page is used to download real-time weather reports from METAR reporting stations for use in ELITE GenView. When METAR weather is "engaged" (activated) to function in ELITE, the weather dynamically changes when flying between METAR reporting stations and METAR time.

1.4.4 Modification Page

The MODIFICATION Page is used to add, delete or modify navigation database facilities. Fifty modifications/additions are possible for each navigation database. The US is divided into 9 areas.

1.4.5 Configuration Page

The CONFIGURATION Page is used to:

- set ELITE start up preferences
- adjust control sensitivity
- change units of measurement for fuel and weight
- turn sounds on/off and adjust volume levels
- calibrate steering devices
- load new aircraft modules and
- save instrument configurations where applicable

Aircraft operational characteristics and limitations are shown but cannot be modified.

1.4.6 Map Page

The MAP Page is a graphical representation of the flying area showing navigation facilities, frequencies, lat/long, runways, boundaries and much more. An aircraft symbol shows the flight path in real time (both horizontal and vertical profile views) that can be replayed, saved and printed for evaluation. The aircraft flight parameters (magnetic heading, altitude and IAS) can be set from the map page. In addition, you can also save and load training states or load ATC scenarios.

1.4.7 Control Page

The CONTROL Page allows you to set date and time, airport lighting features and runway markings. Activate/deactivate yaw control (for using rudder pedals), adjust fuel loading and aircraft weight configuration. Save and load training situations you created (training states) or load ATC scenarios.

1.4.8 Instrument

Selecting INSTRUMENT brings you back to the chosen aircraft's instrument panel (cockpit) on a single monitor setup. On a multi-monitor setup the instrument panel is always displayed.

1.4.9 iPad Configure

The iPad Configure Page lets you setup your ELITE Software with some Apps running on an iPad. These apps include ForeFlight, Garmin Pilot and SimControlX and many more.

1.4.10 Visual Manager

In case you are using a multi-monitor setup, you can configure the parameters here.

1.4.11 Help

"HELP Tips" are available anytime by pressing ALT-H. Move the help cursor (?) over any on-screen item that you would like more information about. When the help cursor reveals its document icon help is available for that item. Simply click on the item to display related help tips.

1.4.12 Freeze

The Freeze selection suspends the simulation. Aircraft parameters (i.e. power settings, frequency changes, OBS selections, etc.) can still be changed. When first entering ELITE, the program is in the FREEZE mode as indicated by a red "Freeze" label on the instrument upper left corner.

1.4.13 Quit

Selecting **Quit** ends the program and returns you to the operating system.

1.5 ELITE XTS Startup

The process when ELITE is started is as follows:

1. Panel Arrangement (if applicable)
2. Aircraft Module Selection
3. NavDatabase Selection
4. Instrument Screen

Adjustments and settings can be done on the first three windows until the Instrument screen is shown. In order to better understand these settings, all three windows are explained in the sections below (Section 1.5.1 - 1.5.4).

1.5.1 Panel Arrangement

If more than one monitor is connected when ELITE XTS is started the Panel Arrangement Screen appears as seen in figure 1.6. This pop-up window lets you rearrange the panels.

Drag-and-Drop the monitors in order to move them. If some screens are not used of you want them to be empty, click on the button **Settings** in the bottom right corner and select the according page you want to be shown on this screen.

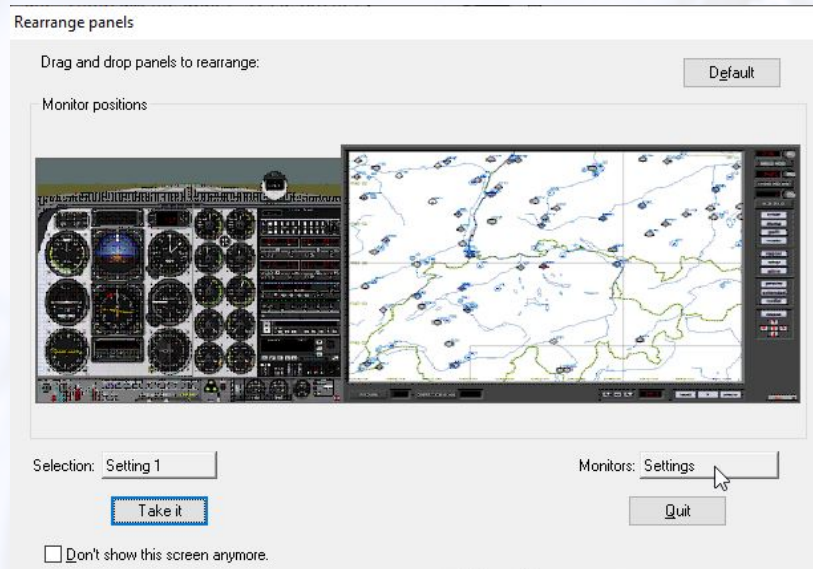


Figure 1.6: Panel Arrangement

1.5.2 Aircraft Module Selection

During the Startup of ELITE XTS, the Aircraft Module Selection appears. In case you are using a FullHD (or higher resolution) screen, there are three separate panels displayed as shown in figure 1.7.

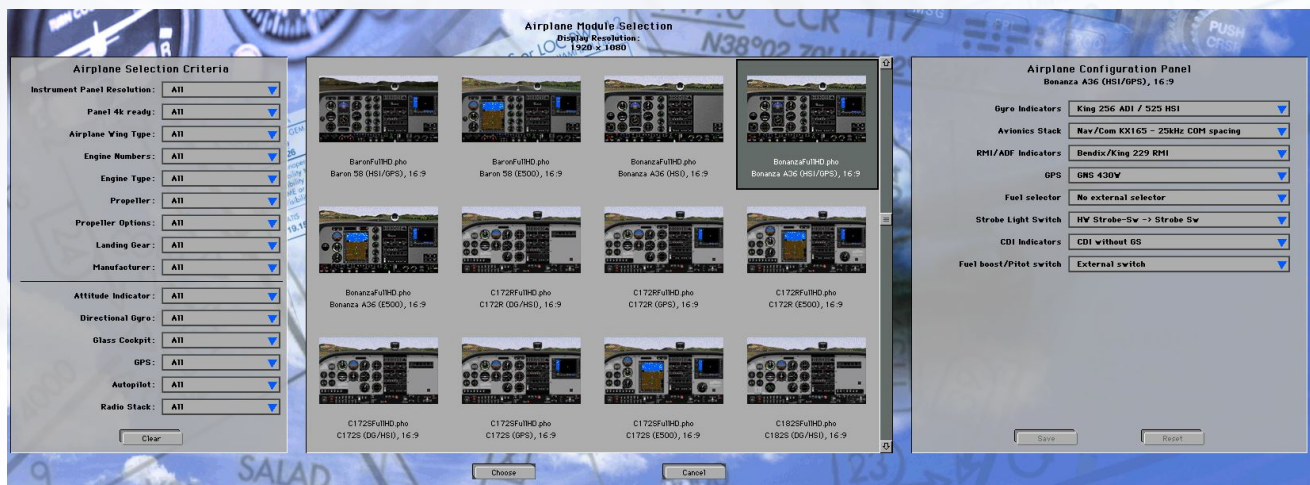


Figure 1.7: Aircraft Module Selection

The farthest left panel is to filter the shown aircraft modules in the middle. To select a filter, press and hold on a grey field so that the dropdown list appears and you can choose the desired filter. The middle part shows the aircrafts and different instrument options for each aircraft; DG, HSI, GPS and E500. The following aircrafts are available in ELITE XTS:

- Archer 3
- Arrow
- Beechcraft Baron 58

- Bonanza A36
- Cessna C172R
- Cessna C172S
- Cessna C182S
- King Air B200
- Mooney
- Seneca III

The panel on the farthest right position is to adjust the instruments per aircraft module type. Once an aircraft is selected, you can adjust the instruments by pressing and holding the various options and choosing the desired setup. These options for the instrument panel are also available on the Configuration Page (Chapter 3.6).

1.5.3 NavDatabase Selection

Each installation of ELITE XTS includes at least one package / area of NavData. Usually, this is the area around the user's home address. On the NavDatabase Selection page, you can choose the desired NavDatabase you would like to use during today's training session. Additional NavDatabases can be added on the Map Page (as described in Section 3.1.13).

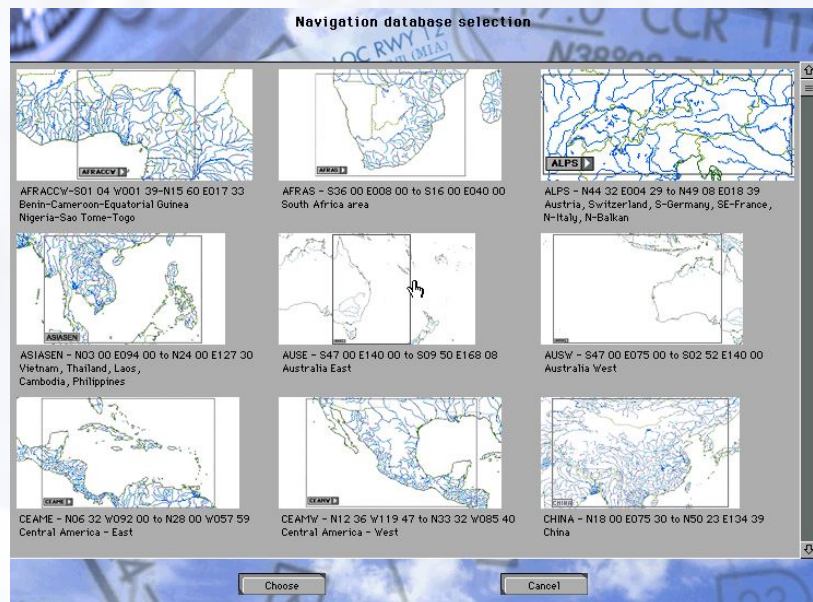


Figure 1.8: Navigation Database Selection

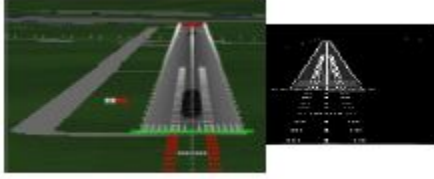
Once the NavDatabase is selected, press **Choose** to start ELITE with its Instrument Screen.

1.5.4 Instrument Screen

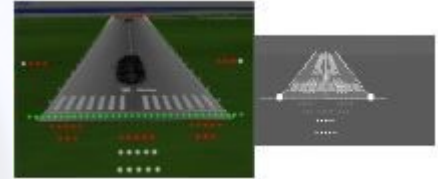
The instrument screen incorporates all particular items needed to pilot an aircraft. A cockpit window in the upper part of the screen offers outside views such as runway environments, ground and weather obstructions to visibility such as fog and low ceilings. This area will become black when using an external visual system (optional).

Note: The runway considered active by ELITE has its edge lights, centerline lights and approach lights on. ELITE determines the active runway based on the position of the aircraft and track relative to the runway, or in other words, the closest aligned runway with the aircraft.

As the aircraft descends below the programmable cloud base, the runway and ground become visible. See Chapter 3.2, for information on changing and customizing environmental conditions.



This window shows a runway with a British CALVERT II high intensity approach light system in a night approach. The visibility is set such that the entire runway is visible.



This window shows the scene at decision height on an ILS approach with minimal visibility to a runway with an ALSF high intensity approach light system (HIALS) in daylight.

2 | Aircraft

Many aircraft use the same instruments and avionics configuration. Basic features of this equipment will be listed here. Any variations specific to aircraft models will be explained in that aircraft's section.

2.1 General Instruments

2.1.1 Artificial Horizon

The Artificial Horizon or attitude indicator is the most important instrument in the cockpit for instrument flying. It displays pitch and bank in the usual way. Pitch lines are spaced 5° apart.



2.1.2 Airspeed Indicator

The Airspeed Indicator (ASI) is indicated in knots on the ASI instrument. The white, green, and yellow arcs as well as the red line have the standard meaning. True airspeed may be calculated by applying the usual techniques assuming ISA (International Standard Atmosphere) temperature. Airspeed indicator window adjustments for TAS (True Airspeed) function on some ELITE aircraft. If the airspeed indication should decrease without speed reduction, the Pitot may be iced. In order to prevent Pitot icing, turn on the Pitot Heat.



2.1.3 Turn Indicator

The Turn Indicator (Turn Coordinator) is actually a combination of two instruments. The aircraft symbol indicates rate of roll and rate of turn and is proportional to the roll rate. When the roll rate is reduced to zero, the instrument provides an indication of the rate-of-turn. The marks stand for a standard rate-of-turn (3° per second). The ball reacts to gravity and centrifugal force to indicate the need for rudder application.



2.1.4 Altimeter

The Altimeter which is shown on the picture on the right, is a conventional three-pointer type, but the type can vary. The air pressure is indicated in inches Hg (on the right side) and millibar in hPa (on the left side). Be aware that the instrument only shows the true altitude when its pressure setting corresponds to the QNH setting in the Environment panel on the Meteo screen.



2.1.5 Vertical Speed Indicator

Vertical speed indicators can be instantaneous and non-instantaneous, the latter exhibiting trend and lag effects. The image to the right shows a non-instantaneous vertical speed indicator.



2.1.6 Gyro Compass

The Gyro Compass indicates the actual heading. It has a turning compass card. The Directional Gyro (DG) is not slaved with the compass and will precess. As in the actual aircraft, it must be adjusted.

The orange arrow (heading bug) can be set with the rotary dial at the bottom right. The DG/ADF¹ configuration can be changed to an HSI²/RMI³ configuration in some ELITE aircraft such as the Piper Arrow IV as described in section 3.6.13 (Instrument Configuration).



2.1.7 Horizontal Situation Indicator

The Horizontal Situation Indicator (HSI) is connected to the NAV1 receiver. It consists of a turning compass card, a yellow course pointer (CDI⁴) turned by the left rotary dial, an orange heading bug moved by the right rotary dial and a yellow glide slope mark on both sides (when on ILS). The actual course is indicated by the white lubber line on the compass card. The HSI replaces the standard Directional Gyro the CDI in the aircraft's panel, combining slaved heading and VOR/LOC/Glideslope deviation information into one compact display.



This HSI is set to an ILS



This HSI is set to a VOR

Note: A red HDG or NAV flag indicates absence of station reception or malfunction of the receiver.

¹ADF = Automatic Direction Finding

²HSI = Horizontal Situation Indicator

³RMI = Radio Magnetic Indicator

⁴CDI = Course Deviation Indicator

2.1.8 Course Deviation Indicator

The Course Deviation Indicator (CDI) is of the conventional cross-pointer layout. It is connected to the NAV receivers (NAV1 or NAV2). The CDI compass card is rotated by the rotary dial.



This CDI is set to a VOR



This CDI is set to an ILS

2.1.9 Radio Magnetic Indicator

The Radio Magnetic Indicator (RMI) incorporates a slaved (self-rotating) compass card, a green single pointer, and a yellow double pointer. The green single pointer may be switched between NAV1 receiver and NAV2 receiver. The double-line pointer is pointing to the ADF receiver. If any navigation set is not receiving a valid signal from a station, the corresponding needle is parked in the horizontal position.



2.1.10 Moving Dial Indicator

The Moving Dial Indicator (MDI) is connected to the ADF receiver. It is an improved Relative Bearing Indicator (RBI) which has a fixed 360° compass card, whereas the compass card of the RBI can be turned by the rotary dial. The actual variation, which is the difference between magnetic and true north, is automatically picked up from the variation of a navigation facility tuned in from a runway in the vicinity. Bearing Pointer indicates relative or magnetic bearing to station as selected by the HDG knob. If the *relative heading of north* is manually selected under the lubber line by the pilot, then the bearing pointer indicates the relative bearing to the station. If the *aircraft's magnetic heading* is selected under the lubber line by the pilot, then the bearing pointer indicates the magnetic bearing to the station.



2.2 Radio Navigation Receivers

ELITE is equipped with up to five radio navigation equipment receivers and two communication receivers. The two "NAV" receivers are combined with the "COM" receivers (COM1/NAV1), (COM2/NAV2). Please keep in mind that the Radio Navigation Stack depends on the Aircraft Module (e.g. if a GPS is chosen).

2.2.1 Com/Nav

On the "COM1/NAV1", "COM2/NAV2", and the "ADF" receivers, the right window displays the standby frequency and the left one displays the active frequency. Setting a frequency is done in the same way as on a real receiver. Use the rotary dials to count up or down the standby frequency, or click on the numbers themselves (clicking on the right side of the number decreases and clicking on the left side increases the



Figure 2.1: Radio Navigation

numerical count). Pushing the double-arrow button will toggle ("flip-flop") the frequencies. Each receiver may be switched on and off individually by dragging the ON/OFF button. The receivers are initially all on. The identification code of the currently selected "NAV" station will be audible over the computer's built-in speaker, or external speakers, while the ID button is pressed.

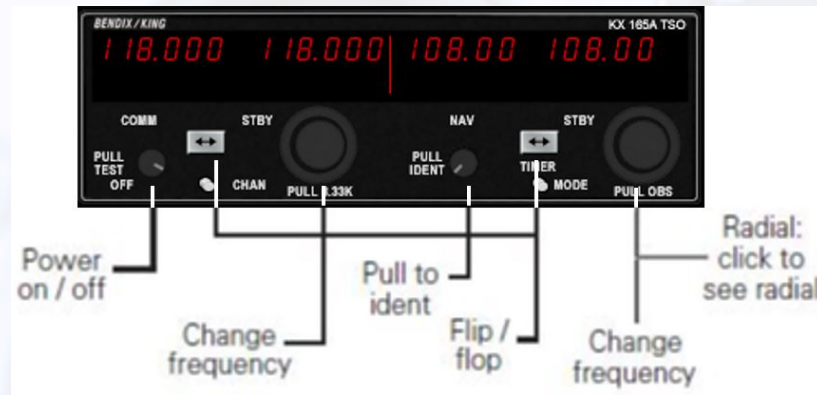


Figure 2.2: NAV/COM Module

When the RAD button (Radial) on the NAV1 or NAV2 receiver is activated, the actual radial from the VOR station is displayed in place of the standby frequency and you set with the rotary dials direct the active frequency. There is, of course, no radial available when an ILS frequency is tuned.

2.2.2 DME Receiver

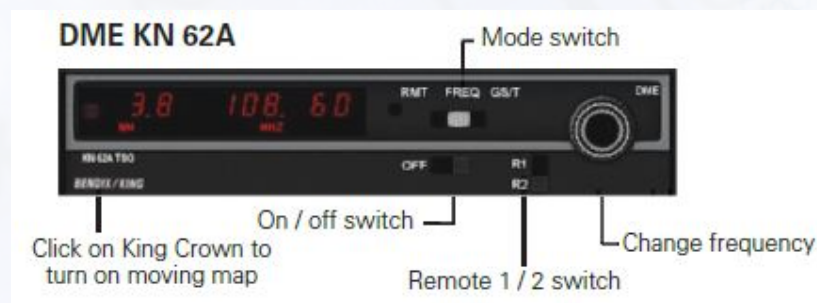


Figure 2.3: DME Receiver

Frequency Mode

Distance and selected frequency are displayed. The DME (Distance Measuring Equipment) receiver is in the frequency mode by default. It is then channelled internally with its own two concentric frequency selection knobs (rotary dials) which count up or down the active frequency. If a tuned station is DME equipped the relative distance to the station is indicated.

GS/T Mode

Distance, GS (Ground Speed) and TTS (Time-to-Station) are displayed. Activating the GS button results in displaying the Ground Speed relative to the DME station (in knots) instead of the DME frequency. In addition, the Time-to-Station is displayed. Rotating the frequency selector will have no effect on the display, because the DME is in "Frequency Hold". This mode prevents accidental re-channelling of the DME when the frequency is not displayed.

RMT Mode

Distance, GS and TTS of remote frequency (RMT) are displayed. By activating the N1 or N2 button, the corresponding frequency is automatically taken from the NAV1 or the NAV2 receiver. Search time is about one second. When no ground station can be locked, dashes will be displayed. Distance, GS and TTS are only available if the station remotely tuned is DME equipped.



2.2.3 ADF Receiver

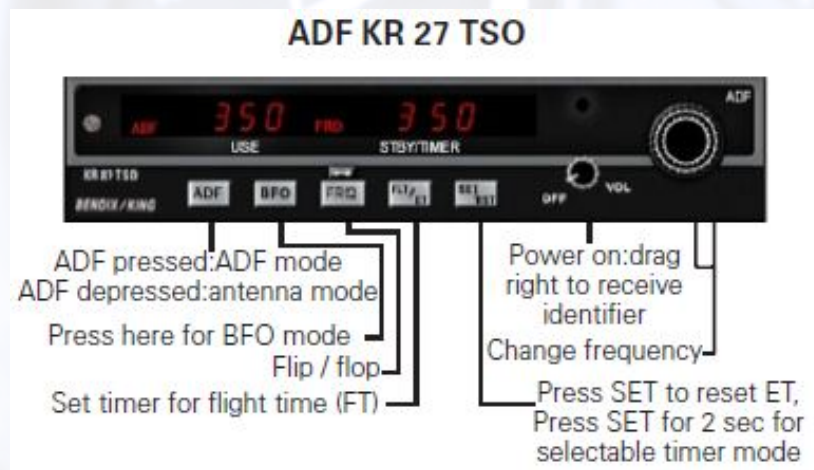


Figure 2.4: ADF Receiver

The Automatic Direction Finder Receiver (ADF) in ELITE selects a Non Directional Beacon (NDB) in the frequency range ± 600 Hz around the frequency set. This means that, for example, an NDB with a frequency of 371.5 kHz may be received with the ADF set to either 371 or 372.

Note: When a receiver is tuned to a frequency, the closest NAVaid with this frequency is received. When two facilities in the same area have identical frequencies, ELITE will show a dialog box to select the desired one.

2.2.4 Marker Receiver

The Marker Receiver can be switched to LO (low), HI (high) and TEST (test). The "Low" selection may be made to set marker reception to low sensitivity, i.e. markers will only receive data at a short distance, such as during the approach. The marker lamp panel consists of the conventional: "A" lamp (white when lit, airway marker, inner marker), "O" lamp (blue when lit, outer marker), "M" lamp (amber when lit, middle marker). When passing a marker, the appropriate identification code is heard while the corresponding marker lamp flashes. The duration of the marker reception as well as the reception range depends on the type of marker.



2.2.5 Transponder

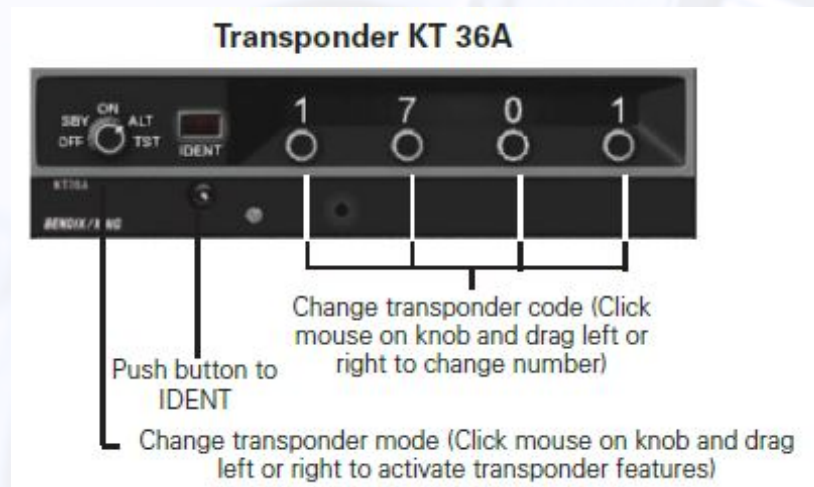


Figure 2.5: Transponder

The Transponder is a radio transmitter and receiver which operates on radar frequencies. Receiving ground radar interrogations at 1030 MHz, it returns a coded response of pulses to ground-based radar on frequency of 1090 MHz.

2.2.6 EFS 40 - EADI/EHSI

The Bendix/King EFS 40 is an advanced Electronic Flight Instrumentation System (EFIS) designed to meet the demands of today's complex flight environment. The actual real-world EFS 40 has numerous installation options/configurations that can be tailored to an individual aircraft and owner's preferences. The ELITE EFS 40 installation consists of the ED 461 control/display unit, ED 462 display unit, and the CP 470 control panel. The ED 461 and ED 462 function as the EHSI (electronic horizontal situation indicator) and EADI (electronic attitude direction indicator) respectively while the CP 470 is a separate control panel for the EADI. The EFS 40 EFIS is selectable in all aircraft currently available.

To select and add the EFS 40 EHSI by itself or the EHSI/EADI combination to any aircraft, simply go to the Configuration Page and select the corresponding option as desired under the Instrument Configuration column (further discussed in Section 3.6.13)

The complete EFS 40 Pilot's Guide is on the Main ELITE USB Memory stick and is also available at www.bendixking.com. Refer to the Pilot's Guide for specific operational techniques. Some of the EFS 40 features/functions have been implemented in the ELITE EFS 40 unit, due to the numerous real world installation options/configurations possible, not all features/functions are available.

The EFS 40 EADI utilises the CP 470 control panel (as shown in image 2.7. Mode controls that are used with the EHSI are located on the periphery of the EHSI instrument itself.

Some features include but are not limited to the following:

- **HEADING SYNC feature:** Click on center of knob to automatically set heading bug to current aircraft heading.
- **DIRECT TO feature:** Click on center of knob to automatically set course pointer and digital course readout to the direct course of the selected NAVAID or active waypoint.

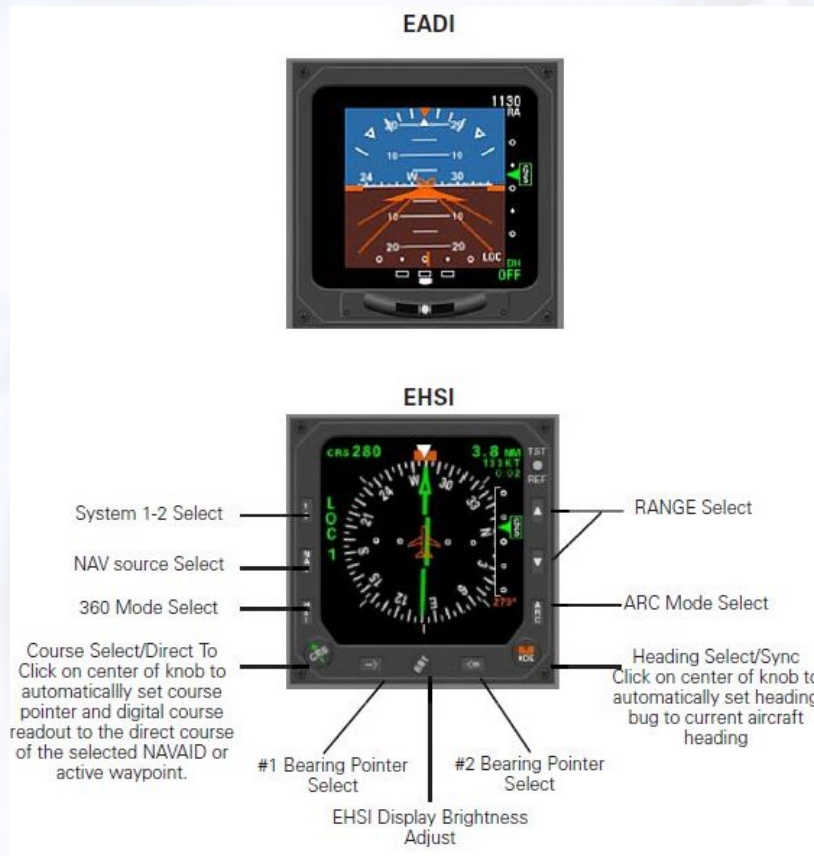


Figure 2.6: EFS 40

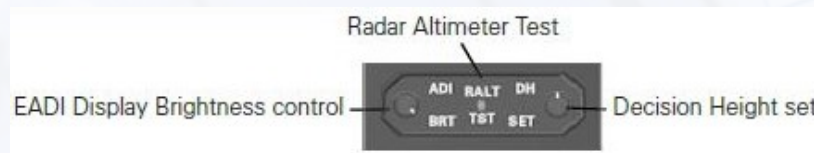


Figure 2.7: CP 470 Control Panel

2.2.7 Autopilot

KAP 150 / KFC 150

The KFC 150 and KAP 150 are both two-axis automatic pilot systems that operate almost identically. These autopilots each provide pitch and roll stabilization and automatic trim, as well as automatic response to all selected autopilot modes. The only difference being the KFC 150 also has a flight director (FD) function. Since the KAP 150 does not have a FD function it uses a standard attitude reference without V-bar commands.

To use the KAP 150 and KFC 150 autopilots refer to the instructions within the next few sections

Note: Press the TEST button and wait for the system to perform its self-test function, before you start using the Autopilot.



Figure 2.8: KAP 150 / KFC 150

AP ENG

The most basic form of autopilot operation is to engage only the autopilot engage (AP ENG) mode button. In this mode, with no other modes selected, the aircraft will maintain the pitch attitude existing at the time of AP ENG engagement and will fly with the wings level. Use of the vertical trim (UP/DN) switch in this mode will affect an approximate 0.9 degree per second pitch change.

HDG

In heading (HDG) mode the aircraft will maintain the heading selected by the heading bug. Be sure to place the heading bug in the desired position before engaging the HDG button, as the aircraft will immediately begin turning in the shortest direction toward the bug.

NAV

In navigation (NAV) mode the autopilot will intercept and track VOR courses. To use the autopilot with a conventional CDI-type VOR indicator first make sure the autopilot is in HDG mode and then tune the desired navigation frequency. Set the OBS to the desired course and then depress the NAV button causing the NAV indicator to flash signifying the mode is armed. Within five seconds move the heading bug to the same value as selected on the OBS. The autopilot will then fly a 45 degree intercept heading until course capture whereupon the system will track the desired course.

Note: The NAV indicator will not flash if the NAV mode is selected while the aircraft is level within ± 4 degrees and 2-3 dots of course deviation, but will rather go immediately into NAV mode directly.

To use the navigation feature of the autopilot with a HSI, first tune the navigation frequency. Use the Course Set Knob to select the desired course line value. Set the intercept angle by placing the heading bug on the desired heading and press the HDG button, if not already in HDG mode. Now press the NAV button and fly the selected heading until course capture. The NAV light will flash until course interception to indicate that it is armed.

APR/GS/BC

To use the autopilot in approach (APR) mode first make sure that the system is in HDG mode if using a conventional CDI-type VOR indicator. Tune the appropriate ILS, LOC or VOR frequency. Set the OBS to the final approach course. Note that if intending to fly a back course be sure to use the front course setting. Press the BC (Back Course) button after pressing the APR button. Press the APR button causing the APR light to flash indicating it is armed. Turn the heading bug to the inbound course within five seconds. The system will fly a 45° degree intercept heading until capturing the course. If flying an ILS the GS will be captured automatically causing the GS light to illuminate.

If using the APR mode with an HSI please tune the appropriate ILS, LOC or VOR frequency first. Use the Course Set Knob to set the desired final approach course. Turn the heading bug and press the HDG button if not already in HDG mode. Press the APR button. The autopilot will fly the desired heading until course capture. The BC and GS features operate the same way as described above.

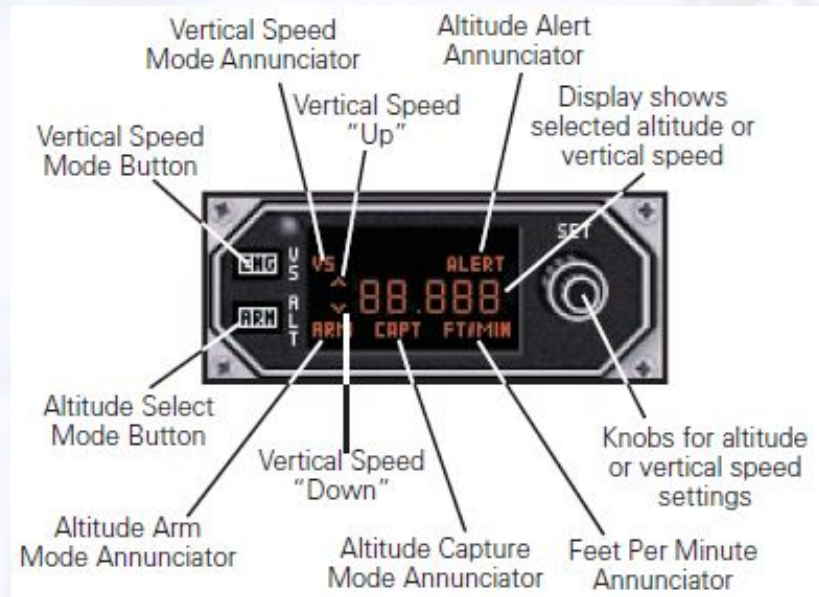


Figure 2.9: Altitude/Vertical Speed Selector

ALT

To operate in altitude hold (ALT) mode first fly to and level off at the desired altitude and then press ALT. Altitude adjustments may be made in ALT mode by using the vertical trim (UP/DN) switch. Moving this switch in either direction while in ALT mode will cause the aircraft to climb or descend at approximately 500 fpm. When the switch is released the autopilot will maintain the new altitude.

CWS

The control wheel steering (CWS) button located on the control yoke allows the pilot to manoeuvre the aircraft in pitch and roll with out disengaging the autopilot. The autopilot resumes control when the button is released.

FD

KFC 150 only

The KFC 150 has a flight director (FD) function that the KAP 150 does not. ELITE aircraft modules using this autopilot have a V-bar that appears on the attitude indicator anytime the FD or AP ENG features are selected. If the FD function only is selected the V-bar will command the user to make control inputs to satisfy the system requirements by manoeuvring the orange delta wing into the V-bar.

2.2.8 Altitude/Vertical Speed Selector

This feature is available only with the Bonanza, Baron, Seneca III and King Air (King radio option) aircraft modules only. The KAS 297B offers the user the ability to pre-select altitudes and vertical speeds while using the autopilot.

Altitude Pre-Select

To pre-select an altitude the unit must first be indicating ft. If it does not indicate ft then either push in the inner concentric knob if using a mouse or flip the toggle switch to ALT if using an ELITE avionics panel. Using the knob(s), choose the desired altitude and then press the ARM button to arm the altitude capture

mode. This will cause ARM to appear on the indicator. Use pitch attitude hold or select a vertical speed to guide the aircraft to the desired altitude. As the aircraft nears the desired altitude the system computes a roundout and will indicate altitude capture (CAPT) as the aircraft levels off. Once the aircraft has levelled off, the vertical speed mode disengages and the CAPT indication disappears.

Altitude alerting is provided by the KAS 297B and alerts the user with a two second aural tone at ± 1000 ft from the target altitude. An alert annunciation comes on with the tone and stays on until 300 ft from the target altitude. The aural tone also sounds again for two seconds when the aircraft reaches its selected altitude. The system also provides an aural warning any time the aircraft's altitude varies more than 300 feet from the selected altitude after level off.

Vertical Speed Pre-Select

To pre-select a vertical speed the unit must first be indicating ft/min. If not, pull the inner concentric knob when using a mouse or flip the toggle switch to V/S when using an ELITE avionics panel. Use the knob(s) to select the desired vertical speed. The indicated up/down arrows show whether a climb or descent has been selected. To engage the selected rate press ENG and VS will appear on the indicator. Engaging the vertical speed function will cancel the ALT mode if being used. There are several ways to change the rate of vertical speed once the function is engaged:

1. By rotating the knob while in V/S mode
2. By pressing the CWS button on the yoke and pitching to a new vertical speed value
3. By pressing the vertical trim switch on the autopilot. Using the vertical trim switch will affect a 100 feet per minute change in vertical speed for every second it is pressed

2.3 GPS Devices

There are four types of GPS devices available in ELITE XTS:

- **GNS 430 & GNS 530:** The two GNS devices are included in the ELITE XTS installation.
- **GTN 650 & GTN 750:** The GTN devices are *not* included in ELITE XTS and have to be purchased separately through the [ELITE Webshop](#).

Once the GNS Trainer is installed and the GNS has been activated using the key, you can select an aircraft module with a GPS device (as explained in section 1.5.2).

2.3.1 GNS 430 and GNS 530

The ELITE GNS module functions as its real world counterpart. The GNS controls can be used like any other buttons and knobs in ELITE. As a detailed instruction can be found in Garmin's Manual, only the most important parts are covered here:

- **Switch on the GNS:** To start the GNS, turn the top left "volume" knob clockwise by holding and dragging the mouse from the knob to the top-right corner.
- **Use the knobs and rotary dials:** The two concentric knobs can be operated by holding and dragging the mouse diagonally (bottom-left or top-right). In order to turn the inner knob, make sure that you are placing the mouse on the inner part of the concentric knob. To use the outer knob, place the mouse on the outer part of the concentric knob and move the mouse diagonally as well.

2.3.2 GTN 650 and GTN 750

The GTN devices are equipped with a touch screen and they are turned on automatically as soon as the avionics switch is on.

To use the GTN device, click on the desired location within the screen as you would with a touch screen.

3 | Program Features

3.1 MAP Page

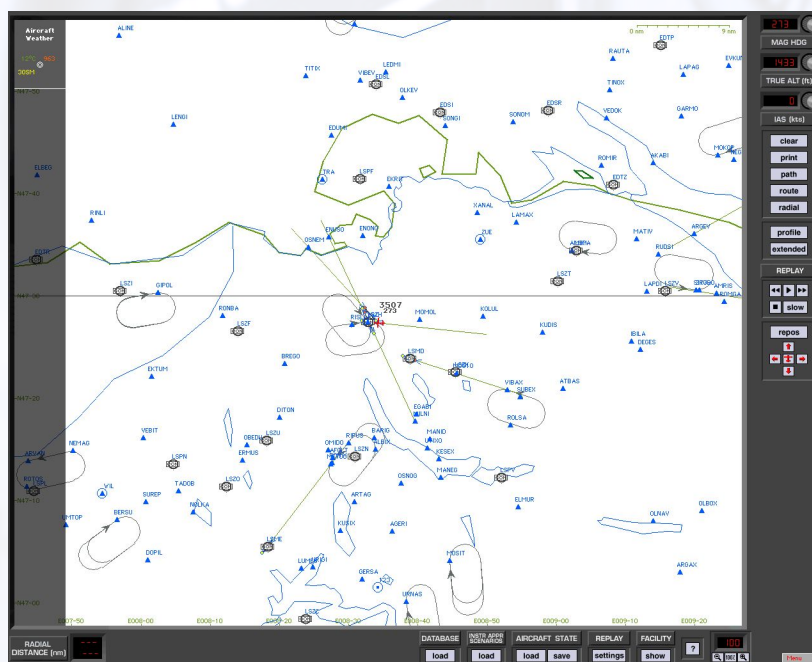


Figure 3.1: MAP Page

The MAP page is ELITE's command center. Its use is primarily to setup the aircraft's initial position for a given flight or procedure and to review the flight once you have finished flying. Systems equipped with a separate Instructor's Station monitor can also use the Map page to monitor the progress of a flight in real time.

Similar in appearance to an IFR Low Enroute chart, and laid out in approach plate-like format, the Map page is familiar and easy to navigate. The main part of the Map page displays the active (loaded) navigation region(s) and corresponding facility elements in plan (bird's-eye) view. Airports, runways, VORs, NDBs, airways, fixes, markers, DMEs, localizers, glideslopes, Flight Information Region (FIR) boundaries, country borders, comments and communication frequencies are all graphically and/or textually represented. Pressing the Profile button brings up a profile view (similar to the profile view on an approach plate). Other knobs, buttons, and data windows located around the periphery of the main map display are used to control the following items, discussed in detail later in this section.

- Aircraft HEADING
- Aircraft ALTITUDE

- Aircraft AIRSPEED
- Flight path CLEAR
- MAP Page PRINT
- Flight PATH save/load
- ROUTE save/load
- RADIAL (compass rose) display
- PROFILE view display
- Flight path REPLAY
- Aircraft Reposition
- DATABASE (Nav region) load
- IAS (Instrument Approach Scenario) load
- AIRCRAFT STATE save/load
- REPLAY settings
- FACILITY display
- ZOOM

3.1.1 Aircraft Position

The red aircraft symbol shows the actual aircraft position.



Geographical coordinates of the current view area appear in green and are located on the left side and bottom of the map for reference.

-N47-20

E008-30

3.1.2 MAP Scale

The actual scale of the map is indicated on the top right of the screen. The scale appears in green.
















Figure 3.2: Map Scale

The scale indication changes according the actual MAP view level, which can be changed with the zoom function.











3.1.3 NAV Data Symbols

The following Nav Data Symbols are visible on the Map page.

	FIX (with identification)
	NDB (with identification)
	VOR (with identification)
	VOR DME (with identification)
	DME (with identification)
	Holding (with direction arrow)
	Glide path Track
	Marker
	Localizer (yellow) transmitter
	Glideslope (red) transmitter
	Runway with displaced threshold
	Airport Symbol
	Communication frequencies

3.1.4 MAP Cursors

The cursor changes for different functions on the MAP page

	Normal cursor (fingertip)
	Zoom in cursor (Alt Key)
	Zoom out cursor (Shift-Alt)
	Zoom limit (either enlarging or reducing)
	Heading/Distance (Shift key)
	Add point (Route planner) (Control key)
	Remove point (Route planner) (CTRL-ALT Option)
	Change/Move Point (Route planner) (Shift-Control keys)
	Active Runway
	Box to show other shortcuts

3.1.5 MAP Information

All elements displayed on the Map page contain information applicable to that specific element such as variation, frequency, runway length, width, lighting, etc. To access information regarding a specific Map element, click and hold it with the mouse. For runway information, click on the runway's threshold. In

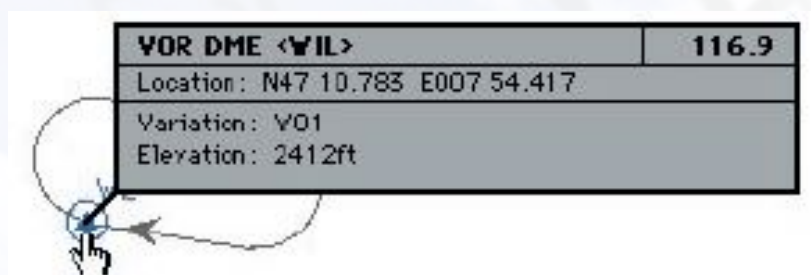


Figure 3.3: MAP Information

figure 3.3, several facilities nearly occupy the same location or are co-located. Information on these facilities is layered. Clicking the same spot repeatedly cycles through these layers to reveal information about each specific facility.

3.1.6 MAP Borders

Border types:

- Flight Information Region (FIR) borders appear in brown
- Country borders appear in green
- Waterways and lake boundaries appear in blue
- States appear in gray



3.1.7 Reposition

To easily reposition the aircraft to a specific airport and runway, click on the **Repos** button located toward the bottom-right of the Map page. A list of every airport in all currently loaded NAV databases will be listed alphabetically by ICAO airport location identifier (LOCID).

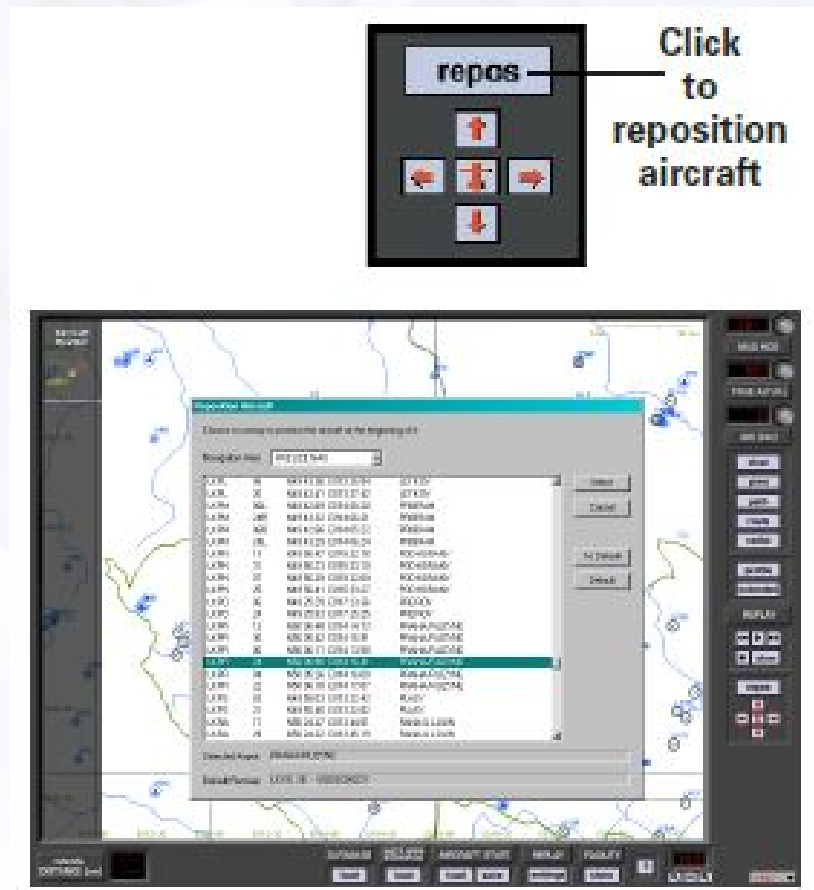
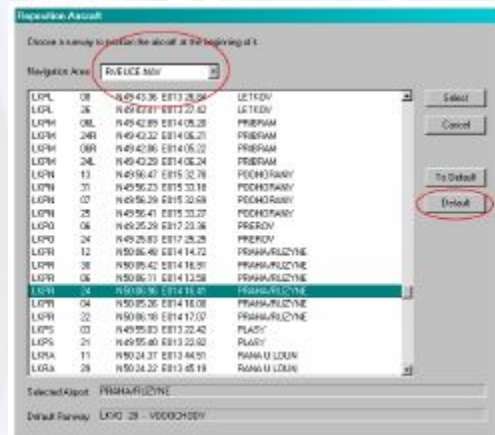


Figure 3.4: Repos to Airport

Choose

If necessary, scroll until the desired airport identifier is visible. Select an airport and runway by clicking its identifier/runway combination. Notice that the airport/runway lat. lon. is now highlighted and the airport's name is indicated just below the scrollable viewing area. Figure 3.4 shows Portland International (PDX) runway 10L selected. Click CHOOSE to position the aircraft at the threshold of the selected runway. Cancel repositioning by clicking on CANCEL. You will return to the previous display.



Default Runway

If you have a preferred airport/ runway that you would like to be positioned each time ELITE is started, you can designate a "default" airport/runway combination as described here.

It's first necessary to select the specific NAV database (or NAVset) that the desired default airport/runway is located in. Click and hold the small black arrow on the right side of the panel next to "Nav area" to open a drop-down menu of loaded databases and NAVsets. Move the finger cursor over the desired selection and release the mouse button to select it. Click on the airport/runway you would like to make the default, then click DEFAULT. Notice the airport identifier and runway selected (DEN 35R) now appears in the "Default Runway" box at the bottom-left. To actually go to the default runway now (or at any time in the future) simply click on TO DEFAULT. With a default airport/runway saved, ELITE will automatically position the aircraft there on each subsequent startup (assuming the same NAVdatabase/NAVset used to select the default airport/runway is utilized).



Figure 3.5: Nav Database

Note: You may choose one preferred (default) runway for each and every individual NAV database or NAVset. The default runway always remains associated with the NAV database or NAVset from where it was chosen. Since the example NavSet "MySet1" contained the USSW, USSE, and USNW databases, we could have chosen a default airport/runway for each individual database, in addition to the one created for the entire NAVset.

3.1.8 Manual Reposition



It is also possible to reposition the aircraft manually by dragging the aircraft symbol to a new location. Do this by clicking on the aircraft symbol and moving the mouse while holding the mouse button.

If the desired new location is outside the current visible Map area, the Map will start scrolling when the aircraft symbol is brought toward the edge of the screen using the method described above.

Aircraft Snapping

Bring the aircraft symbol near any runway threshold to "snap" to it. This will instantly place the aircraft on the runway threshold (at field elevation) of the runway "snapped" to. This is especially useful for quick repositioning from any location, altitude, heading, airspeed etc., to any specific airport runway. Although available at all Zoom levels, this feature is much easier to use at high (close-in) Zoom levels, where the runway layout is clearly visible.

Map Scrolling

Similar to the Map scrolling described above while dragging the aircraft symbol, it's also possible to scroll the Map view without dragging the aircraft symbol. This is accomplished by clicking anywhere on the Map page not occupied by a facility or Map element, and dragging the cursor (fingertip) toward the edge of the visible display. Scroll speed is controlled by varying the distance of the cursor to the edge of the screen and is dependent on the amount of data to be moved.

The four "arrow buttons" (up, down, left, right) located at the bottom-right of the display, and the cursor keys on the keyboard can also be used to scroll the visible Map view. If your scrolling takes you away from the current aircraft position (i.e. to explore the surrounding area) and the aircraft is no longer visible, you can quickly locate the aircraft and re-center the MAP to it by clicking the red aircraft symbol surrounded by the four arrow buttons or pressing the "c" key on the keyboard.



Centering



Conversely, it is possible to move the aircraft to where you have scrolled. Hold down the CTRL (control) key on the keyboard and click the red aircraft symbol or just use the key combination (CTRL-C) by itself. The aircraft will be brought to the center of the present map view. Following aircraft repositioning, Heading, Altitude, and Airspeed can all be adjusted as described in sections 3.1.17 - 3.1.19.

3.1.9 MAP Zoom Levels



Figure 3.6: MAP Zoom Level

Displays current Zoom level controlled by I (in), O (out), and N (normal) keys respectively or "magnifying glass" buttons. When you first enter the MAP page, the display will be in normal zoom level, defined as the 100% view. Click on the ZOOM IN or ZOOM OUT buttons to increase or decrease the Zoom level. The Zoom percentage is indicated on the display relative to the 100% view level.

Storing custom Zoom Level

You can store one custom Zoom Level in addition to the preset Zoom Levels (1, 5, 25, 50, 100, 250, 800, 1250). To store a custom Zoom Level:

1. Select the area you would like to Zoom in by holding down the ALT key and drawing a marquee around the desired area
2. Ctrl-Click in the Zoom level window to store the custom Zoom level created in previous step
3. To Zoom to this stored level again simply click in the Zoom Level display window

This custom Zoom Level can be changed anytime by simply following the procedure above to overwrite with a new value.

Note: Zoom level cannot be increased beyond 1250% maximum. With Zoom level at maximum you will not be able to marquee a selection area to Zoom in further. Marquee selection and Zoom-in are disabled when maximum Zoom level is reached. The Zoom function is screen centred, not aircraft centred. If the aircraft is not in the centre of the Map page and you Zoom in, the aircraft may temporarily disappear from the visible Map area. To relocate the aircraft and re-centre the Map page to it, click on the red aircraft symbol located near the bottom-right of the display.

3.1.10 Show Facilities

Click on the SHOW button for the "Show Facilities" dialog box as shown in figure 3.7. Specific map details are displayed dependent upon Zoom level. At high Zoom levels for example, markers are visible and runways labelled with their magnetic direction. At lower Zoom levels, certain map elements (facilities) are not displayed to prevent clutter and maintain map readability.

Click on the appropriate buttons to activate or deactivate the information to be shown in each Zoom level. Yellow buttons indicate an active button.

- Click OK and your selections will take effect
- Click CANCEL to return to the Map with no changes
- Click STANDARD for a preset of active facilities

3.1.11 Transponder Tag

In addition to the standard Map elements (NAV facilities, airports, land borders, etc.) ELITE has the ability to display an information data block (transponder tag) that moves with the aircraft symbol. This tag is similar in appearance and function to one that might be found on an ATC radar scope. To enable this feature click on the TRANSPONDER ID SHOW button (it should turn yellow) located at the bottom of the SHOW FACILITIES dialog box. Although this tag will be visible any time the Map Screen is called up, users with an instructor's station (multi-monitor system) can observe it updating in real time as would an air traffic controller. Instructors can use this feature to aid in monitoring a student's flight progress by verifying the correct transponder code, heading, and altitude assignments.

The tag itself will appear dark-gray in color when the transponder switch is in the OFF or SBY (standby) position. With the switch in the ON position the tag will turn green (after sufficient time has elapsed for warm up). The tag will turn red when the IDENT button has been pressed.

The data block consists of two lines with a total of three fields. The upper line is the 4-digit transponder squawk code. The lower line displays the aircraft magnetic heading and indicated altitude fields respectively. Note that the altitude will not appear unless the transponder switch is in the ALT (Mode-C) position.



Figure 3.7: Show Facilities



3.1.12 MAP Page "Spot Weather" Feature

The spot weather feature allows you to view the current WX conditions that exist at the aircraft's present position. The spot weather feature is especially handy when an instructor's station is being used as it allows the "instructor" to quickly ascertain the WX at any given moment without having to change screens and thus maintain uninterrupted monitoring of the student's flight. Outside air temperature (OAT), visibility, pressure, and wind will be displayed in a format similar to the "station model" symbol found on Surface Analysis charts. Please note that the reported pressure is the actual ambient pressure (not altimeter setting) at the aircraft's current altitude. Wind speed and direction are displayed graphically using a barb and flag system (see Figure 3.8 below connected to a "pole" that points in the direction from which the wind is blowing relative to True North. In the following example, the aircraft is at 3500 feet, wind is from the south-east at 15 knots, OAT¹ is 47° Fahrenheit, ambient pressure is 26.34 inches, and visibility is 25 statute miles. Note that unlike the station model used on Surface Analysis charts, no sky cover information is provided.



Figure 3.8: MAP "Spot Weather"

To turn ON/OFF aircraft spot weather simply click the FACILITY "show" button at the bottom of the Map Page. On the "Show Facilities" dialog box click on the Aircraft Info "SHOW" button. This button is an ON/OFF toggle that will turn yellow when activated. The spot weather data appears at the upper-left corner of the Map Page at the top of the shaded information display region.

3.1.13 Navigation Databases

All airports, airport lighting, fixes, NDBs, VORs, localizers, glideslopes, communications data etc. are contained in regional navigation databases. This data must be loaded for use in the program.

To understand the structure of the NAV databases, press the Zoom-out button several times until an entire continent is visible. Using Europe (shown in Figure 3.9 for example, notice there are boxes visible across the Map that define the regional boundaries of each NAV database. From this same view you can also determine if a specific NAV database (region) is loaded. Gray boxes indicate data is available but not loaded. Red boxes indicate the data within its boundary is loaded and ready for use.

¹OAT = Outside Air Temperature



Figure 3.9: Navigation Databases

Note: Each NAV database (region) is labelled for identification. The label (USNW) shown below is for the United States North West.

Click and hold the mouse on USNW part of label for detailed information on that database.

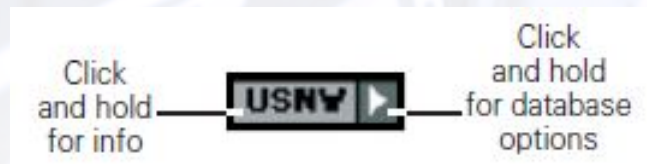


Figure 3.10: NavData Label

NAV Data Disclaimer

We do our best to ensure the accuracy of the NAV data in the software. Unfortunately, inaccuracies originating from the data source are beyond our control and may be encountered at some point over time in the normal course of using the product. If you do encounter data that you feel is in error please make a note and let us know. The more information you can gather about the specifics of your experience, the better. Make note of data that is suspected missing, inaccurate, erroneous, or otherwise anomalous and notify us with the details. Thanks!

3.1.14 Loading NAV Data

Click and hold the arrow symbol part of the label as seen in Figure 3.10. Move the cursor to Load Database and release the mouse button. When data has successfully loaded, the gray boundary box will turn to red. Click the arrow symbol once again and notice that "Load Database" is now greyed out and no longer available for selection. You can choose to release it (to free memory) or unlock it for modification (discussed in Chapter 3.7).

Note: Multiple NAV databases (regions) can be loaded simultaneously. To load multiple databases, repeat the process described here for each additional database.

Changing NAV Data

Navigation databases can also be added or changed quickly by clicking the DATABASE LOAD button at the bottom of the Map page.



Choose a NAV database from those listed by double-clicking on its name, OR by clicking on its name then clicking OPEN to load. Databases NOT listed, which are located in other directories/folders, may also be used by navigating the correct path to locate them.

Following the Open Navigation Databases window, another smaller pop-up window will appear giving you the option to choose either Add or Replace. To Add the selected database to those already loaded, click on ADD. To replace a currently loaded database with the selected one, click on REPLACE. Click OK to complete the operation.

Note: The last database loaded with the Load function is kept in memory and also used at the next startup.

Creating NAV Sets

As stated earlier, multiple NAV databases (regions) can be loaded simultaneously. These databases can then be saved collectively as one custom NAVset. You can save as many custom NAVsets as disk space will allow. Hold down the CTRL (Control) key on the keyboard and click on the LOAD button to save the NavSet

You now may save all currently loaded databases as a NAVset. Type in a name for the NAVset and click SAVE. In the example above, we first loaded the USNW, USSE, and USSW database regions, then saved them as one custom NAVset named "MySet1". This NAVset will now appear with the other available databases and NAVsets at program startup. It will also be available for loading from the Open Navigation Databases window described in section 3.1.14.

3.1.15 Instrument Approach Scenarios (IAS)

The Instrument Approach Scenarios (several add-on regions available) are scripted approach exercises flown in a simulated ATC environment. Each scenario begins with the aircraft at a predetermined altitude and generally positioned 15-20 miles from the IAF (Initial Approach Fix) of the selected approach.

To load an Instrument Approach Scenario simply click on the "INSTR APPR SCENARIOS" load button at the bottom of the Map Page.



If necessary, open the appropriate IAS folder (Approach) for the region you would like to fly in. Select and open the desired Instrument Approach Scenario from those listed. Note that a description of each scenario can be viewed (before it is opened) by highlighting any scenario file name with a single mouse click. Follow on-screen dialog box instructions to start a scenario.

Important IAS notes

Make sure to load and/or verify that the appropriate Navigation Database is active before using the Instrument Approach Scenarios. For example, to fly a scenario in the EC-3 (Illinois/Wisconsin) IAS package, make sure to load the IASEC3 database.

The autopilot is ON by default at the start of each scenario. Keep the autopilot ON briefly to let the aircraft stabilize. After the aircraft stabilizes you can continue to fly the scenario utilizing the autopilot or you can disengage the autopilot and fly the aircraft manually.

Approach plates for the Instrument Approach Scenarios can be accessed by clicking on the approach plate icon on your desktop. The plates are saved as a PDF and can be printed for more convenient use.

Whenever the program requires your attention you will here a series of alert tones. When these tones are heard, direct your attention to the information display area along the top of the screen for more information.

CTRL-R

Press CTRL-R to repeat the last ATC transmission directed at your aircraft. Your aircraft identification throughout the scenarios will always be N054EG. Listen carefully for this call sign and follow ATC's instructions to properly execute the approach.

CTRL-K

Press CTRL-K to acknowledge and/or answer a request from the program. One example of this might be if a controller asks you to "report field in sight". Since there is no way to actually converse with the virtual controllers, CTRL-K is used by the program as a communication trigger. This is similar to a quick double-click of a push-to-talk switch in a real aircraft (sometimes requested by ATC to verify communication).

CTRL-S

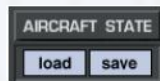
Press CTRL-S to disable the automatic setting of radios by the virtual instructor (see next section).

Instructor Help

At the beginning of the each scenario the program will ask if you would like to have the help of an instructor. By answering "yes" to this option you will be inviting a virtual instructor into the cockpit. The virtual instructor will act more like the copilot or PNF (pilot not flying) in these scenarios, setting up essential radios and thus taking some of the workload. The virtual instructor will also provide tips along the way when appropriate which will be displayed at the top of the screen in the information display area. Always make sure to stay in the loop and check the inputs of the virtual instructor!

3.1.16 Aircraft State Panel

The aircraft state panel makes it possible to save and load aircraft state files. You can think of state files as a way to take a "snapshot" of the aircraft's state at any given moment in time. When you save a state file the aircraft's position, altitude, heading, airspeed, etc. are stored along with current avionics settings (frequencies, autopilot configuration, etc.). In addition, you have the option of storing Navigation, Meteo (weather), and Malfunction data as well. The saved state file can then be loaded at any time in the future and instantly position the aircraft where it was (with the same settings) when the file was saved. State files are very useful when you want to practice the same approach, procedure, flight, or situation repeatedly. Individual pilots and instructors often create a library of state files, which allow them to conveniently return to a desired lesson without having to set up the aircraft again manually. State files can be saved at any time.



Before saving a state file make sure that the aircraft is set up just the way you want it. It is advisable to name the file according to its aircraft state so that it will be recognised later.

3.1.17 Heading Panel

Aircraft Heading can easily be changed with the MAG HDG panel. Magnetic heading in degrees is displayed in the window next to the heading adjust knob. To change it, click and drag the heading knob until the desired value is indicated. Notice the red aircraft symbol on the Map screen turns as heading is changed to reflect the actual indicated value. Click in the Heading window to instantly get the reciprocal of the displayed value.



3.1.18 Altitude Panel

Aircraft Altitude can easily be changed with the TRUE ALT panel. Altitude in feet (MSL²) is displayed in the window next to the altitude adjust knob. To change altitude in 10 foot increments, click-and-drag on the altitude knob until the desired value is indicated.

To change altitude in 500 foot increments, first single-click the altitude knob. The knob will push in. Click and drag the altitude knob for changes in 500 foot increments. The knob will reset in 5 seconds if there is no activity, or you can click on it a second time to reset it. Upon reset, the knob will pull out to its normal position and revert back to 10 foot increment adjustment.



3.1.19 Airspeed Panel

Aircraft Airspeed can easily be changed with the IAS panel. Indicated air speed in knots is displayed in the window next to the airspeed adjust knob. To change it, click and drag on the airspeed adjust knob until the desired value is indicated. Airspeed changes usually require some retrimming of the aircraft upon switching back to the instrument panel. Set air speed with attention to the particular aircraft's V-speeds. Speeds appropriate to the desired flight condition should be selected. Keep in mind that it is possible to dial in speeds near or be low stall.



3.1.20 Profile Button

Clicking the PROFILE button brings up the Map profile. Similar to the profile view on an instrument approach plate, the Map profile is a side view plot of aircraft altitude and flight path over time. The PROFILE button functions as a toggle switch turning the display ON/OFF. The display also contains distance marks corresponding to the DME station selected (when applicable) and shows the nominal glide path when an ILS station is tuned in.

Profile View Options

The MAP profile view provides several options for varying display presentation. These options let you tailor the appearance of the profile display allowing for improved flight analysis. The four buttons located at the bottom-right of the Map profile display control these options.



Glideslope Limits

The "G" (glideslope limits) button toggles the glideslope limits overlay ON/OFF. This overlay graphically represents the electronic glideslope signal limits of the specific approach flown. The "G" button and glideslope

²MSL = Main Sea Level



overlay only become available after the proper ILS frequency has been tuned in and the approach begun. Colour coding is used to represent course deviation as follows:
 Yellow lines = half-scale, Red lines = full-scale

Altitude Grid

The "A" (altitude grid) button toggles the altitude grid lines. These lines are used in conjunction with (and are extensions of) the altitude scale markings on the right side of the profile display.

Profile Scroll

The two arrow buttons are used to scroll the profile view left and right respectively, and operate independent of the main Map view.

In combination with the four buttons pictured above, use the Zoom functions (previously explained) to get more detailed Map profile views. While low (distant) Zoom levels are better for viewing the big picture, high (close in) Zoom levels are good for showing minute flight path and airspeed deviations.

Profile View Examples

The following example profiles demonstrate several of the different view options described on the previous section. The profile was created flying the ILS RWY 7 approach into Orlando Executive (ORL) airport. For illustration purposes, the glideslope was tracked to the non-precision Minimum Descent Altitude (MDA) and not to Decision Height (DH). A level-off at MDA and subsequent missed approach was started shortly thereafter.

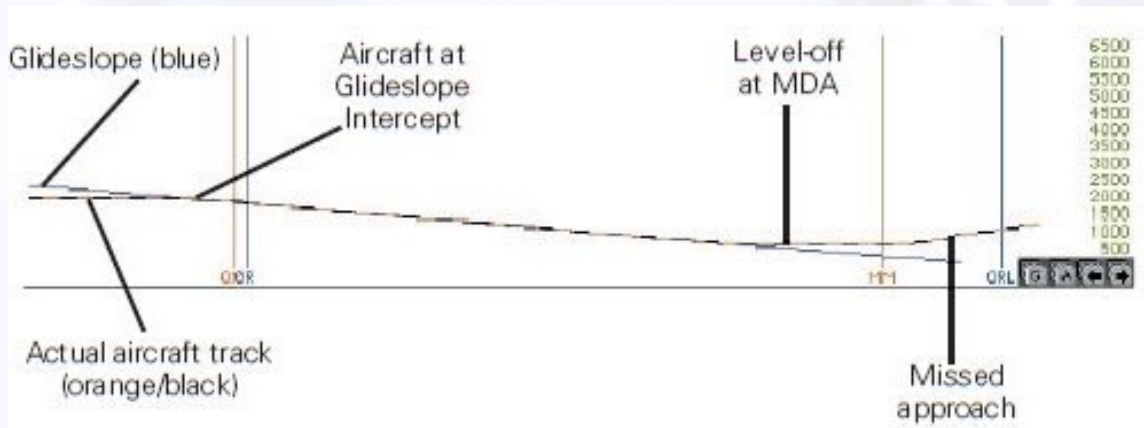


Figure 3.11: Profile view of ILS RWY 7 approach into Orlando Executive airport



Figure 3.12: Profile view with glideslope limits overlay turned on

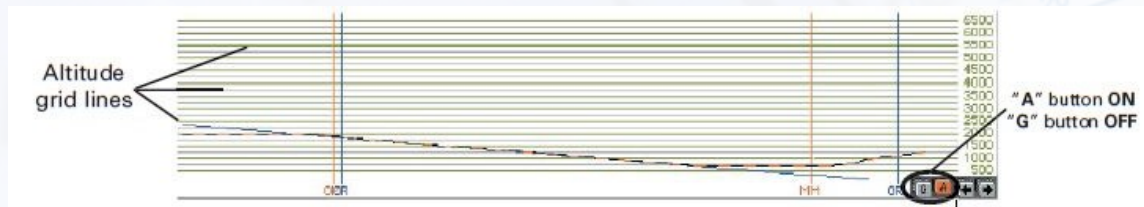


Figure 3.13: Profile view with altitude grid lines turned on

3.1.21 Extend Button

Clicking the EXTENDED button when the Map profile is displayed expands the profile view to include airspeed plot as well as gear and flap position graphs. The EXTENDED button functions as a toggle switch turning the expanded display on and off. You can also click the EXTENDED button first (instead of the PROFILE button) to display all four (altitude, airspeed, gear, and flaps) profile sections immediately.

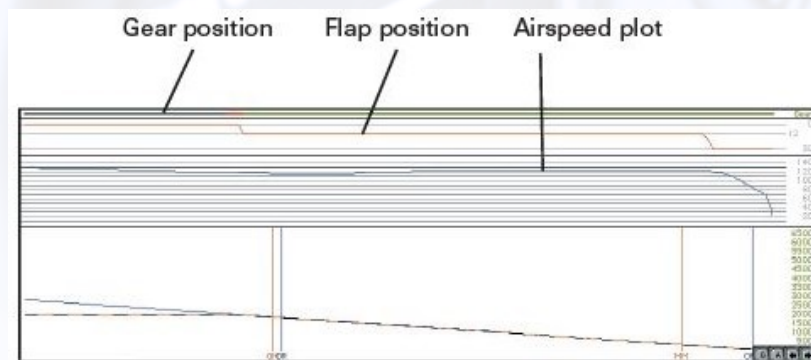


Figure 3.14: Expanded MAP profile view with extended button (incl. gear, flap and airspeed graphs)

3.1.22 Aircraft Information

While viewing the map profile, even more detailed aircraft information is accessible for any position along the plotted flight path as seen in figure 3.15. First verify ELITE is in the Freeze mode and the replay function is not activated. Click and hold the mouse button inside the profile area to display detailed information for any position along the plotted flight path. A vertical line appears at the selected location in the profile and positions the red aircraft symbol (on the main Map screen) to the place on the aircraft track corresponding to the selected profile location clicked on. Accompanying the red aircraft symbol is the ACFT (aircraft) Information box with data on location, altitude, heading, airspeed, vertical speed, gear and flap positions.

The red aircraft symbol and ACFT Information box are displayed as long as the mouse button is held inside the MAP profile.

Note: The "ACFT Information" box is not available during flight path replay.

3.1.23 Radial Button

The Radial feature allows you to place a compass rose around any FIX or NAVaid facility in the database. Before clicking the Radial button look at the Bearing To or Radial and Distance windows near the bottom-left of the Map screen. They should both have dashes in them. Now click the RADIAL button then click on any FIX or NAVaid in view on the MAP. ELITE instantly draws a compass rose around the selected FIX or NAVaid. Notice at the same time that the dashes located next to Bearing To or Radial and Distance have been replaced by actual values. Click and drag the red aircraft symbol to different positions and watch

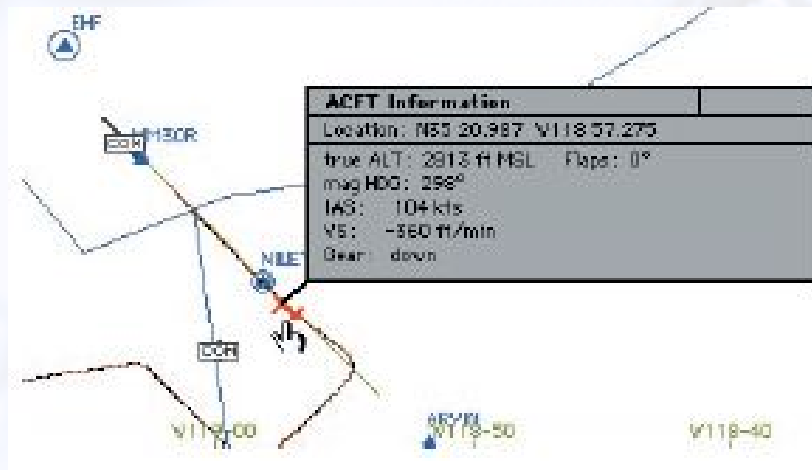


Figure 3.15: ACFT Information

the values change in these windows to reflect the actual Bearing To or Radial (from) and Distance relative to the selected FIX or NAVaid. This feature displays the exact aircraft location relative to the selected FIX or NAVaid and is helpful for quick, easy, and precise aircraft positioning. In addition, simple aircraft orientation can be demonstrated without flying or leaving the Map page. To toggle Bearing To or Radial indication, just click on the value displayed inside the adjacent window. In the example below, the compass rose is visible around the selected (UBG) VOR.



Figure 3.16: Radial Button

3.1.24 Virtual Flight Data Recorder

VCR style buttons control playback of the Virtual Flight Data Recorder (VFDR).



Replay

As you fly, ELITE continuously records your progress with an integrated virtual flight data recorder (VFDR). All recorded flight parameters are accessed via the Map Page. Flight path and profile, gear/flap position, airspeed, altitude and heading are all shown and available during the course of your flight. This same data can then be used to replay the last 60 minutes of the flight or saved as a "path" file for replay at any point in the future.

Play/Pause Button

Click to start replay and click again to pause it. Replay can begin at any point in the recorded flight path. Select a different Replay start point by moving the red aircraft symbol using the Rewind and Fast-Forward buttons.

Rewind Button

Click-and-hold to move backward through the recorded flight path. Double-click to jump to the beginning of the recorded flight path.

Note: Profile and extended profile data traces will still be plotted from left-to-right even when rewinding.

Fast-Forward Button

Click-and-hold to move forward through the recorded flight path. Double-click to jump to the end.

Slow Button

Click to slow down the replay speed.

Stop Button

Click to stop the Replay.

Note: The "ACFT Information" box is not available during flight path replay.

3.1.25 Flight with Instruments on Map

Cockpit instruments can be displayed on the Map Page for real time reference and/or flight path replay and review. Real time instrument display is especially useful for systems with a separate Instructor's Station that is not in close proximity to the main system. Systems such as those with an enclosure often have the Instructor's Station physically located outside of the cockpit environment entirely.

Both student and instructor can review a recorded flight on the Map Page with an enhanced total picture having the Map and instrument presentations displayed as the flight is replayed back.

Replay feature / Replay options button

The first time the Replay feature is used an "Initial settings for Replay functions" dialog box will appear. This box specifically relates to, and is used to define how the instruments will be displayed on the Map Page.



Figure 3.17: Replay Settings

You can control if, when, where and how the instruments are displayed. These settings can later be changed/modified by clicking on the "settings" button at the bottom of the Map Page under Replay.

3.1.26 Path Button

Flight path and associated data recorded by ELITE's VFDR can also be saved in a path file. The number of path files stored is limited only by available disk space. These stored path files can be loaded at any time in the future and then displayed and/or replayed on the Map screen for analysis.

Click the Path button to bring up the box below (figure 3.18):

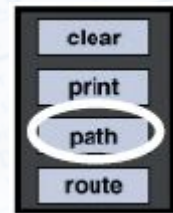


Figure 3.18: File Path Box

Save

To save the flight path just flown, click the **Save** button to bring up the Save Path files window. Type a name in the "File name:" box for the flight path file then click **Save** to complete the operation.

Load

To load a flight path, click the **Load** button and select a path from the previously saved paths listed.

Clear

The **Clear** button clears the flight path from the Map page and deletes all associated flight path data from memory.

3.1.27 Route Button

Similar to the flight path files discussed on the preceding page, you may also save a self created route into a Route file by using the **Route** button. Routes are explained further on in this chapter.



Figure 3.19: Route Button

3.1.28 Print Button

Clicking the **Print** button captures an image of the Map page. Once captured, you can then print the image or save it to disk for viewing later. Set Map Zoom level and select Profile as desired to "customize" the Map to your taste before clicking the **Print** button.



Figure 3.20: Print Button

Print

To print the Map page click **Print** and follow the print dialog boxes specific to your operating system.

Save

To save the Map page image, click **Save** and type a name for the graphic file. The graphic is saved as a bitmap (.bmp).

3.1.29 Heading / Distance Cursor

E6B-style calculations can be displayed using the TIME/SPEED/DISTANCE feature. To display magnetic track, heading, distance and time from the red aircraft symbol, to any point in the selected NAV database:

1. Hold down the Shift key on the keyboard.
2. The time / speed / distance cursor appears.
3. Click and hold anywhere on the Map Page. An orange course line representing the desired track from the aircraft symbol to the selected point will appear. In addition, the time / speed / distance information box appears as shown in figure 3.21.

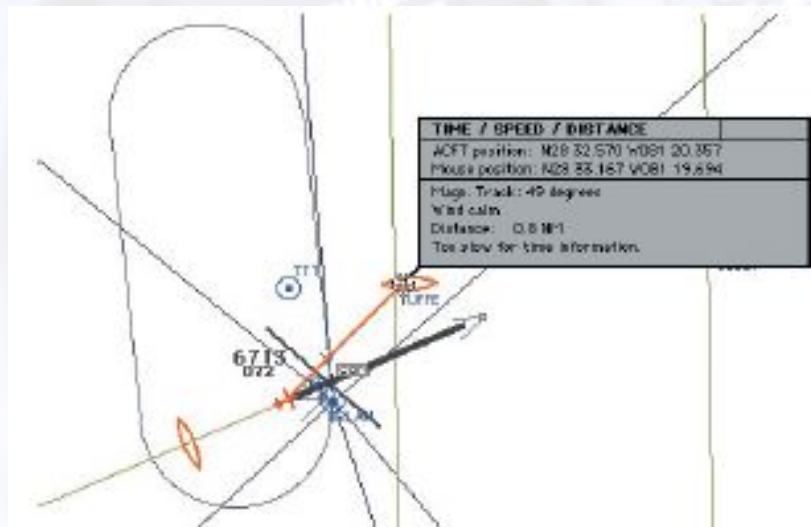


Figure 3.21: Heading / Distance Cursor

The upper portion of the time / speed / distance information box contains the actual location of the aircraft and selected point (mouse position) displayed as coordinates in degrees lat/lon. The lower portion of the time / speed / distance information box contains magnetic track, aircraft heading, wind speed/direction, distance, ETA, and ground speed.

Note: Heading shown (course corrected for wind) incorporates wind correction angle (WCA). This is not necessarily the aircraft's current heading, but rather the heading required to maintain the desired track across the ground.

Time (ETA) shown is calculated from the aircraft position to the selected point based on ground speed.

Note: Change wind settings on the Meteo Page to see the effects of different winds on ETA, heading, and ground speed. You can also observe the effects of differing aircraft speed and/or altitude in a similar manner. Simply change values in the IAS (kts) and True ALT (ft) windows (panels) respectively to have the time / speed / distance information box figures recalculated.

3.1.30 Route Planner

The route planner is a special tool for quick flight planning.

Add Point

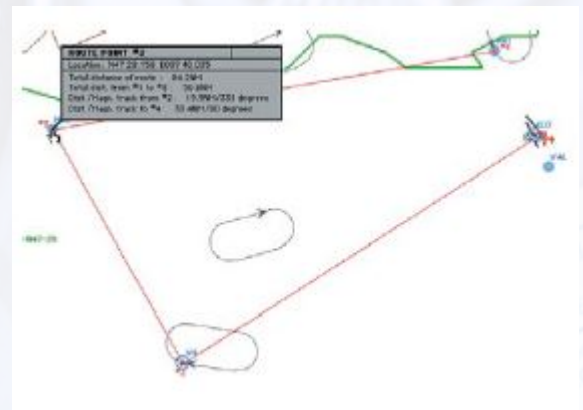
Push the Ctrl key on the keyboard and the cursor changes to "add point". Click on any location from which you will start your route and you get the first route point # 1. The next click displays route point # 2 and so on, until you release the Ctrl key. To add a point between existing points, click on the route line itself.

Remove Point

Push the Ctrl and Alt keys and the cursor changes to "delete point". Click on any route point you want to remove from your route and it disappears while the other route points renumber.

Move Point

Push the Ctrl and Shift keys on the key board and the cursor changes to "move point". Click on any route point you want to move and drag it with the mouse to another location. Release the mouse button and changes take effect.



Route Info

Click and hold on individual route points to get route and leg information. Point coordinates, as well as track and distance information are displayed in an accompanying window as long as the mouse button is held down.

3.1.31 Shortcuts

To display the Shortcuts Information window, click on the "?" button. The Shortcuts window will open and display all shortcuts (key combinations that enable certain functions).

SHORTCUTS			
MAP SCREEN:			
Zoom			
I	In	Route	Control + Click
O	Out		Control + Shift + Click
N	Normal view		Control + ALT + Click
ALT + Click/Drag	Zoom In		Control + 'CLEAR'
ALT + Shift + Click	Zoom Out		
+			
Scroll			
Left arrow	Left	Hdg/Dist	Shift + Click
Right arrow	Right		Show time, speed and distance
Up arrow	Up	Position	
Down arrow	Down	C	Center map to ACFT
		Control + C	Move ACFT to Map center
Custom Zoom			
Control + Click in 'Zoom level window'			Store actual zoom level
Click in 'Zoom level window'			Set stored zoom level
Runway			
ALT + 'A' and click on runway			Manually select active runway
ALT + 'A' and click off runway			Deselect manually selected active runway
Taxiway			
Click and hold on aircraft /			Reposition aircraft on taxiway parallel
press 'ALT' and drop on runway end			to runway
Click and hold on aircraft /			Reposition aircraft on taxiway perpendicular
press 'Shift' and drop on runway end			to runway
GENERAL:			
Visual		Control	Simulation speed
T	Look down	ALT + F Freeze	S Slower
G	Look center	ALT + Q Quit	F Faster
B	Look up	ALT + H Help	Engine sound
Shift + Left arrow	Look to left		E On/Off
Shift + Up arrow	Look to front		
Shift + Right arrow	Look to right		
Click the mouse button to continue.			

Figure 3.22: Shortcuts

Runway Positioning Shortcuts

Placing aircraft abeam the runway threshold on parallel taxiway	Click-and-hold the aircraft symbol / press Alt and drop the aircraft on the runway threshold, then release first the mouse and Alt key.
Placing aircraft perpendicular to runway threshold in a "hold short" position on taxiway	Click-and-hold the aircraft symbol / press SHIFT and drop aircraft on runway threshold, then release first the mouse and Alt key.
Manual selection of active runway toggle	Press Alt and A to engage or disengage mode. This enables you to manually select ELITE's active runway by clicking on the threshold of desired runway (runway colour turns green). You can change your selection as many times as you like as the manual selection mode will stay engaged until Alt-A is pressed again. Only one runway at a time can be active. To deselect a manually selected active runway disengage Manual Selection and click anywhere on the Map Screen not occupied by a runway.

Summary

1. Alt-A to engage manual selection mode
2. Click on runway threshold as desired to make active
3. Change runway selection as desired
4. Deselect by clicking anywhere off the selected runway
5. Alt-A to disengage manual selection mode

An active runway is normally selected automatically by the software based on aircraft orientation and distance from a given runway. Once the active runway has been determined, runway lights are turned on. You can however override this automatic selection by manually selecting the active runway following the procedure above.

3.1.32 Airport Frequency Information

COMM (communication) and NAV (navigation) frequencies for associated airports and NAV facilities are in the database. As described earlier in the chapter, the Map page also functions as a virtual A/FD (airport/facility directory). Click and hold the **COM** symbol in the center of the runway complex. A Communication box will come up displaying information and number of frequencies available at this airport.

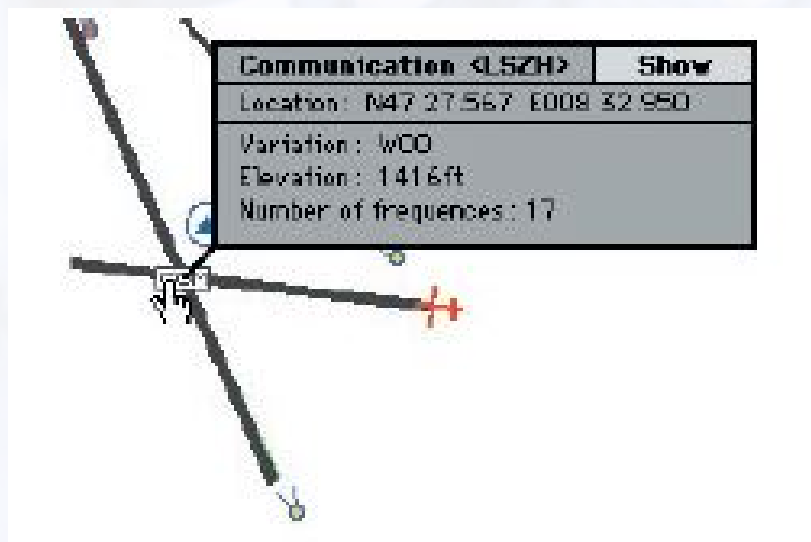


Figure 3.23: Airport Frequency Information

Frequency Column

While holding down the mouse button, move the cursor to the **Show** corner located at the top-right of the Communication box. All frequency information available for the airport will be displayed as shown in figure 3.24.

FREQ	1	2	GRH	CALLSIGN
APP 125.32			R N	ZURICH FINAL
APP 127.75			R Y	ZURICH TERMINAL
ARR 118.00			R Y	ZURICH
ARR 119.70			R Y	ZURICH
ARR 120.75			R Y	ZURICH
ARR 127.75			R Y	ZURICH
ATI 128.52		T	N	
CPT 121.80			Y	ZURICH DELIVERY
DEF 125.95			R Y	ZURICH
DEF 127.75			R Y	ZURICH
GND 118.10			Y	ZURICH
GND 119.70			Y	ZURICH
GND 121.90			Y	ZURICH
RMP 121.75			N	ZURICH APRON
TYR 118.10			Y	ZURICH
TYR 119.70			Y	ZURICH
TYR 127.75			Y	ZURICH

Figure 3.24: Frequency Column

Following is some of the information that may appear in the Frequency Information display.

ACC	Area Control Center
ACP	Air lift Command Post
APP	Approach Control
ARR	Arrival Control
ATI	Automatic Terminal Information Service (ATIS)
AWO	Automatic Weather Observing Station (AWOS)
CLD	Clearance Delivery
CPT	Clearance Pre-Ta
CTL	Control
DEP	Departure Control
DIR	Director (Approach Control/Radar)
EMR	Emergency
FSS	Flight Service Station
GND	Ground Control
GTE	Gate Control
HEL	Helicopter Frequency
INF	Information
MUL	Multicom
ODP	Parametres (French Radio)
OPS	Operations
RDO	Radio
RDR	Radar Only Frequency

Continued on next page...

RFS	Remote Flight Service Station (RFSS)
RMP	Ramp / Taxi Control
RSA	Airport Radar Service Area (ARSA)
TCA	Terminal Control Area
TRS	Terminal Radar Service Area (TRSA)
TWE	Transcribed Weather Broadcast (TWEB)
TWR	Air Traffic Control Tower
UAC	Upper Area Control Center
UNI	Unicom
VOL	VOLMET

Column 1

The following characters may appear in Column 1.

A	Airport Advisory Service
C	Community Aerodrome Radio Station (CARS)
D	Departure Service
F	Flight Information Service (FIS)
I	Initial Contact (IC)
L	Arrival Service
S	Aerodrome Flight Information Service (AFIS)
T	Terminal Control Area

Column 2

The following characters may appear in Column 2.

A	Air / Ground
G	Remote Communications Air to Ground (RCAG)
L	Language other than English
M	Military Frequency
P	Pilot Controlled Lighting (Air/Ground)
R	Remote Communications Outlet (RCO)

Column G

The following characters may appear in Column G.

G	Guard
T	Transmit
<>	both (blank)

Column R

This column indicates if radar service is available.

R	Yes
N	No

Column H

Indicates if 24 hours service is available.

Y	Yes
N	No

3.1.33 Hotplates

HotPlates is a handy feature that allows you to view an approach plate any time you are in the Instrument (cockpit) Screen.

Press the "P" (plates) key on your keyboard to bring up the HotPlates viewer as seen in figure 3.25. The first thing you will notice is the large main window on the left. This viewing window can be zoomed using the +/- **buttons** located at the top of the viewer or scrolled using the horizontal and vertical scroll bars to focus in on a specific area of a chart. For faster (and easier) chart repositioning, click-and-drag anywhere in the main window. You will see the finger cursor change to a closed hand that grabs the chart for easy moving.

The window to the upper-right displays the contents of the "Plates" folder. Approach plates must be stored

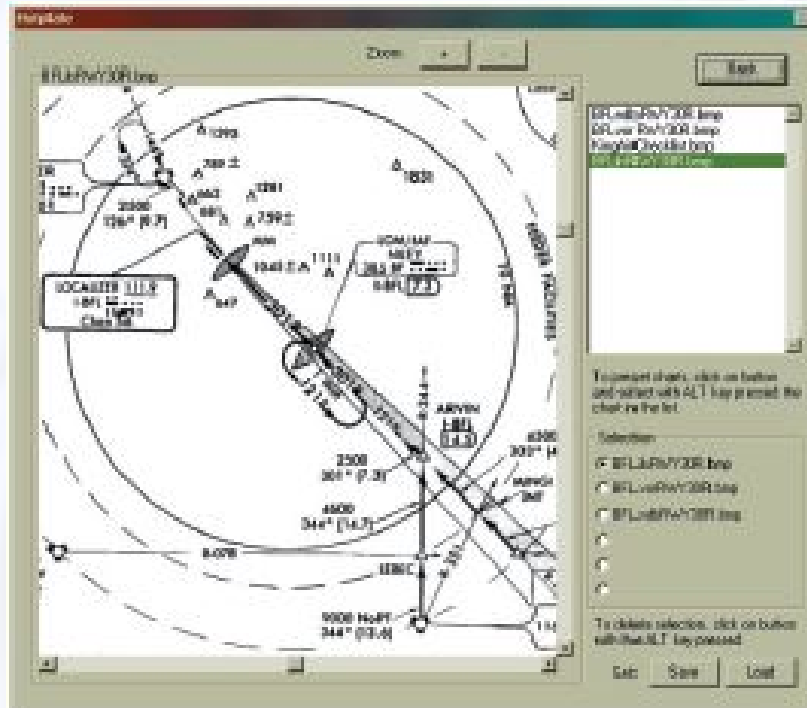


Figure 3.25: HotPlates

in this folder to be viewed with the HotPlates viewer. In addition to approach plates, other items such as check-lists can be placed in this folder for viewing. Three approach plates are included with ELITE. These are the plates for the three "sample" ATC Scenarios at Bakersfield, California. To select a plate for viewing choose one from those listed and click on it.

As you build your approach plate library you may find it difficult to keep your charts organized due to the number of files in the Plates folder. The HotPlates viewer has a simple way to reorganize your plates into logical "sets". A set is a grouping of six files (maximum) that can be loaded for use as needed. Once loaded, the files are placed in the Selection box for convenient access. To create a plate set click on one of the six "radio" buttons located at the bottom-right of the HotPlates viewer. Hold down the Alt key on your keyboard and select a file from those listed above. The selection will appear next to the selected radio button. Repeat these steps to add files (plates) to the set as desired. Files can be assigned to the radio buttons in any order. To remove a selection from a radio button at any time just hold down the Alt key again and click on the desired radio button.

When you have created a set and are happy with it click on the **Set Save** button. In the Save plate set dialog box, type in a unique name for the set next to File name: such as "Bakersfield" and click **Save**. Now any time you want to bring up that (or any other) set click on the **Set Load** button. Select a set from those listed in the Load plate set dialog box and click **Open**.

Any file formatted as described below and placed in the Plates folder will be available for display in the HotPlates viewer. Files must be in bitmap (.bmp) format to be viewed by the HotPlates viewer. In general, files with a resolution of 144dpi (dots per inch) tend to look good in the HotPlates viewer although some experimentation may be necessary to achieve best results.

Note: HOTPLATES are available in U.S. navigational database only!

3.2 METEO Page

Depending on the monitor size and resolution, the Meteo page displays the winds/clouds settings on the same page (on HD displays) or displays either the winds/clouds settings, which can be selected by a button at the bottom of the page.

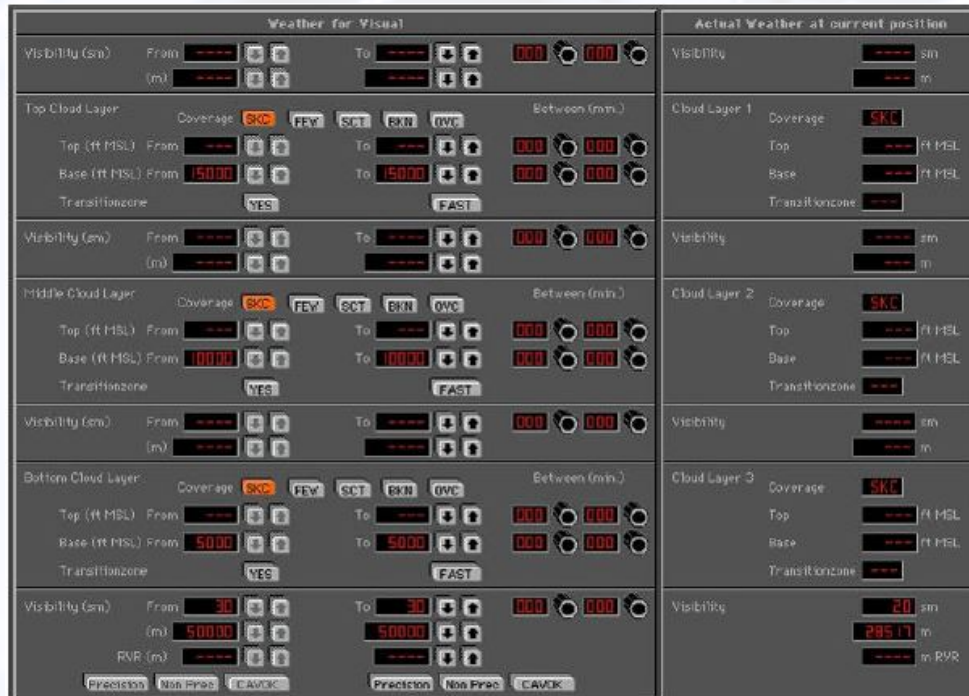


Figure 3.26: Meteo Clouds Settings

The Meteo (meteorological) Page is used to create the weather environment in ELITE. Parameters such as visibility, ceiling, wind, turbulence, pressure and temperature can be set and changed as desired to tailor the weather to meet your specific training requirements.

The Meteo Page is extremely flexible and provides an opportunity for an almost infinite amount of weather possibilities.

3.2.1 General Layout

The Meteo Page is split up into two parts; the "Clouds" and the "Wind" Part. To get from one page to the other simply click on **Clouds** or **Wind** as applicable near the bottom of the current page.

Both pages are set up in the same format left-to-right with "From" weather, "To" weather, and "Actual" weather respectively. The Clouds Page is set up top-to-bottom as Layer 1 (top layer), Layer 2 (mid layer), and Layer 3 (bottom layer). The Wind page is set up top-to-bottom as Top, Mid and Bottom Layer Wind, Altimeter setting, Temperature, and Structural Icing. We will examine each of these elements in greater detail in upcoming sections.



Figure 3.27: Meteo Wind Settings

3.2.2 Dynamic WX

In addition to setting static (unchanging) weather conditions, the Meteo Page also allows you to create dynamic (changing) weather conditions. To setup Dynamic Weather, specify the time range in the "Between" column to define the start and end time of the condition. This is the dynamic weather time interval and determines both when and over what period of time the weather conditions will change. Next, define the conditions that will exist at the beginning (the "From" weather) and end (the "To" weather) of the specified period of time. To set the "From" weather, click the appropriate up and down arrows to adjust the value of the desired weather parameter(s). Repeat this in the same way to set the "To" parameters. Note that the intensity or rate-of-change of the weather is controlled by this time interval. For example, large parameter variances in relatively short time intervals produce rapidly changing weather as opposed to small parameter variances over longer time intervals.

Note: "From" column up/down buttons will remain greyed-out (not active) until a dynamic weather time interval is entered.



3.2.3 Actual Weather Column

The "Actual" weather column at the far-right of the Meteo Page displays the current actual weather parameter values and cannot be adjusted. For example, the current state of the Dynamic Weather (explained in section 3.2.2) is displayed in the Actual Weather Column. In addition, this column can be referenced when Active Metar (explained in section 3.3.1) data is engaged, as it will reflect weather changes over time and location. As both dynamic and static weather is reflected, it is easy to get a quick picture of the weather with just a glance.



3.2.4 Static Weather

To set static (unchanging) weather use the "To" weather column only and do not set a time interval. If a time interval is set then the "From" weather automatically becomes the current weather.

Note: Remember, it is possible to use any combination of static and dynamic weather settings.

3.2.5 Wind



Figure 3.28: Wind

There are three wind layers in the ELITE weather environment. Each wind layer can have its own characteristics and are all configured in the same way on the Meteo Page utilizing identical control panels. Wind layers can NOT be less than 200 feet thick. The thickness of each layer is defined by the values entered on the panels. Note that the top of the bottom wind layer is also the base of the mid wind layer. The top of the mid wind layer is also the base of the top wind layer.

3.2.6 Transition Zones

Transition Zones are available for each of the three Cloud Layers and can only be selected when Overcast (OVC) coverage is in use. A Transition Zone creates a gradual visual transition between each cloud layer that is associated with the Overcast condition and the cloud layer next to it.



Figure 3.29: Transition Zones

3.2.7 Wind Direction

Wind direction is always magnetic and can be set in 10° increments by clicking the up and down arrows. To make the wind direction variable (with respect to the selected direction) simply press the +/- button. When setting up dynamic (changing) winds it is possible to have the winds change in a clockwise or counter-clockwise manner. The CW (clockwise) button is a toggle switch that when depressed will change to CCW (counter-clockwise). Simply leave this button up (unselected) for clockwise rotation of the changing winds or down (selected) for counter clock wise rotation.



3.2.8 Wind Speed

Wind speed in knots (0-60) is set by clicking the up and down arrows. To make the wind speed variable simply press the +/- button.

3.2.9 Turbulence

Turbulence level 1(light) through 12(extreme) is set by clicking the up and down arrows. Separate turbulence levels can be set for each of the three corresponding Wind Layers.

The image shows a 'Weather for Visual' panel with the following settings:

- Top Cloud Layer:**
 - Visibility (sm): From ---- To ---- (000)
 - Visibility (m): From ---- To ----
 - Coverage: SKC (selected), FEW, SCT, BKN, OVC
 - Top (ft MSL): From ---- To ---- (000)
 - Base (ft MSL): From 15000 To 15000 (000)
 - Transitionzone: YES, FAST
- Middle Cloud Layer:**
 - Visibility (sm): From ---- To ---- (000)
 - Visibility (m): From ---- To ----
 - Coverage: SKC (selected), FEW, SCT, BKN, OVC
 - Top (ft MSL): From ---- To ---- (000)
 - Base (ft MSL): From 10000 To 10000 (000)
 - Transitionzone: YES, FAST
- Bottom Cloud Layer:**
 - Visibility (sm): From ---- To ---- (000)
 - Visibility (m): From ---- To ----
 - Coverage: SKC (selected), FEW, SCT, BKN, OVC
 - Top (ft MSL): From ---- To ---- (000)
 - Base (ft MSL): From 5000 To 5000 (000)
 - Transitionzone: YES, FAST
- Surface Layer:**
 - Visibility (sm): From 30 To 30 (000)
 - Visibility (m): From 50000 To 50000
 - RVR (m): From ---- To ----
 - Precision: Non Prec, CAVOK

Figure 3.30: Visibility Panel

3.2.10 Visibility

Top Cloud Layer

Select visibility using up and down arrows as desired.

Note: Visibility can only be adjusted if the top cloud layer coverage is set to Overcast.

With an Overcast layer programmed, selected visibility will become the controlling visibility above the top of the Overcast up to FL400 (40,000ft). If no top layer Overcast is programmed, visibility adjustment is disabled and the visibility setting associated with the next lowest Overcast layer will control visibility. If no lower Overcast layer is programmed, then "surface" visibility will be the controlling visibility for all altitudes from the surface up to FL400 (40,000ft).

Middle and Bottom Cloud Layers

Select visibility using up and down arrows as desired.

Note: Visibility can only be adjusted if cloud coverage is set to Overcast.

With an Overcast layer programmed, selected visibility will become the controlling visibility above the top of the Overcast up to the next highest overcast layer programmed. This then becomes the visibility

between the Overcast layers. If no higher Overcast layer is programmed, then the selected visibility will become the controlling visibility for all altitudes from the top of the Overcast up to FL400 (40,000ft).

If no Overcast is programmed at the current layer, visibility adjustment is disabled and the visibility setting associated with the next lowest Overcast layer will control visibility. If no lower Overcast layer is programmed, then "surface" visibility will be the controlling visibility for all altitudes from the surface up to the next highest Overcast layer programmed. If no higher Overcast layer is programmed, this will be the controlling visibility for all altitudes from the surface up to FL400 (40,000ft).

Surface

Select visibility using up and down arrows or preset buttons as desired. Preset buttons have the following corresponding visibility values:

Precision = 1/2 statute mile

Non Precision = 1 statute mile

CAVOK (Ceiling/Visibility OK) = 30 statute miles

Note: CAVOK by definition also indicates (in part) that no clouds or precipitation exist below 5,000ft. Pressing the CAVOK button in ELITE with Cloud Layer 3 Base set to \leq (less than or equal to) 5100ft MSL will also set cloud coverage to Sky Clear (SKC) in addition to changing visibility to 30 statute miles.

Preset buttons can be used to "jump" quickly to 1/2, 1, and 30 statute mile values respectively and then further adjusted as desired. Visibility value selected will become the visibility from the surface up to the next highest Overcast (OVC) cloud layer programmed. If no Overcast layer is programmed, this will be the controlling visibility for all altitudes from the surface up to FL400 (40,000ft).

3.2.11 Clouds

The Clouds Page has three Cloud/Visibility layers. Layer 1 (top), Layer 2 (mid), and Layer 3 (bottom) respectively. Select cloud coverage for each layer as desired by pressing any one of the buttons corresponding to the following :

SKC	Sky Clear	0 cloud coverage
FEW	Few Clouds	1/8 cloud coverage
SCT	Scattered Clouds	2/8 to 4/8 cloud coverage
BKN	Broken Clouds	5/8 to 7/8 cloud coverage
OVC	Overcast	8/8 cloud coverage

Cloud bases can also be defined by pressing the corresponding up and down buttons. Tops can only be specified for an Overcast (OVC) layer.

3.2.12 Altimeter

Altimeter setting in hectoPascals (same as millibars) and/or inches of mercury can be set by clicking the appropriate up and down arrows.

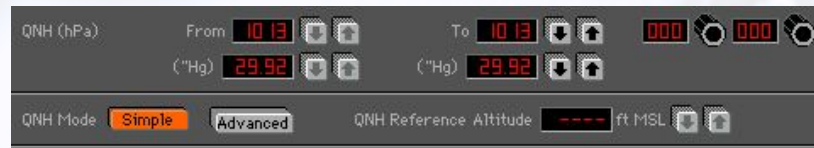


Figure 3.31: Altimeter

Note: By creating a dynamic (changing) pressure over time scenario it is easy to demonstrate the "Going from a high to a low lookout below" adage. This is great for instructors who want to make sure their students always perform a thorough approach briefing (checking the ATIS etc.). To do so, set your "To" Altimeter value lower than your "From" Altimeter value, then set in a time interval for the pressure change to take place. As the pressure drops, the student will have to descend to maintain indicated altitude or ask for the local altimeter setting / tune in the ATIS.

3.2.13 Temperature



Figure 3.32: Temperature

Temperature in degrees Celsius can be adjusted by clicking the up and down arrows. Note that this is not setting the temperature directly but is actually adding to or subtracting from the ISA³ values. If your performance tables call for an ISA + or - X° day simply dial in X° to increase or decrease the OAT⁴ by X° amount.

At the lower-left of the Meteo Page you will find a box containing functions that are applicable to the entire Meteo Page as opposed to the control of individual weather parameters described previously.

3.2.14 Structural Icing

It is crucial to always be aware of the "symptoms" of icing.

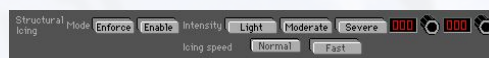


Figure 3.33: Symptoms of Structural Icing

Icing can be implemented in two different ways:

1. Press **Enforce** and choose an intensity level (Light, Moderate, Severe) to activate icing regardless of OAT or visible moisture present. This can be used by an instructor for example to demonstrate the affects of icing on aircraft performance at any time.
2. Press **Enable** and choose an intensity level (Light, Moderate, Severe) to activate temperature/moisture dependent icing. Ice will begin forming at the intensity chosen anytime the aircraft is in visible moisture and at a temperature of approximately 32 degrees Fahrenheit and lower. For the purposes of the simulation, visible moisture is defined as 1/4 statute mile visibility and less, or flying in an Overcast (OVC) layer.

³ISA = International Standard Atmosphere

⁴OAT = Outside Air Temperature



Figure 3.34: Icing in ELITE XTS

With either icing implementation, intensity levels affect "icing factor" in the following ways:

Light: icing factor goes up to 50% in 60 minutes

Moderate: icing factor goes up to 100% in 20 minutes

Severe: icing factor goes up to 100% in 10 minutes

Icing factor is defined as a decrease in lift, an increase in drag, and an increase in weight.

Icing factor: 100% = 50% less lift / 40% more drag / 20% more weight

Notice that Pitot Tube icing is not part of the icing factor equation. Pitot Tube icing is actually controlled separately on the Malfunction Page (chapter 3.4).

Note: Active Metar does not modify the chosen Icing Settings. You still have to enable or enforce Icing manually.

3.2.15 Saving and Loading Meteo Files

The **Save** and **Load** buttons next to Meteo state are used to save and load specific Meteo conditions. Once all the parameters are set, you can click on **Save** to save this Meteo State. If you want to reload it, click **Load**.



Type a name in the "File name:" box then click Save to complete the operation. To load this Meteo state (or any other) in the future, just click on the **Load** button to open the Open Meteo files dialogue box. Select a Meteo state from those listed (previously saved) and click **Open**. This feature allows you to create an unlimited library of Meteo states that can be recalled almost instantly.

The two **Reset** buttons provide a quick way to "zero-out" the Meteo Page. The Meteo **RESET** returns all parameter settings to zero where applicable, sets the Ceiling/Visibility to CAVOK, and sets the Altimeter/Temperature to standard. The Time Intervals **Reset** clears all the time interval settings used for dynamic weather. The Ref. Meteo Time **Reset** button sets the Reference Meteo Time back to zero minutes. This is used in conjunction with the interval settings to control dynamic weather as explained in Section 3.2.16.

3.2.16 Reference Meteo Time

The Reference Meteo Time is simply an elapsed time counter that runs as the aircraft is flown. The dynamic weather time intervals discussed previously use this time to determine when to begin changing the weather as set up by the "From" and "To" parameters.



Figure 3.35: Reference Meteo Time

The Reference Meteo Time can be reset back to zero at any time during the flight. This will allow dynamic weather scenarios to be easily repeated. Note that it is important to set up dynamic weather for a

future point within the simulation. This is especially crucial when already flown for an extended period of time. Make sure to either reset the Reference Meteo Time or be careful to set time intervals in the future.

3.3 METAR Page

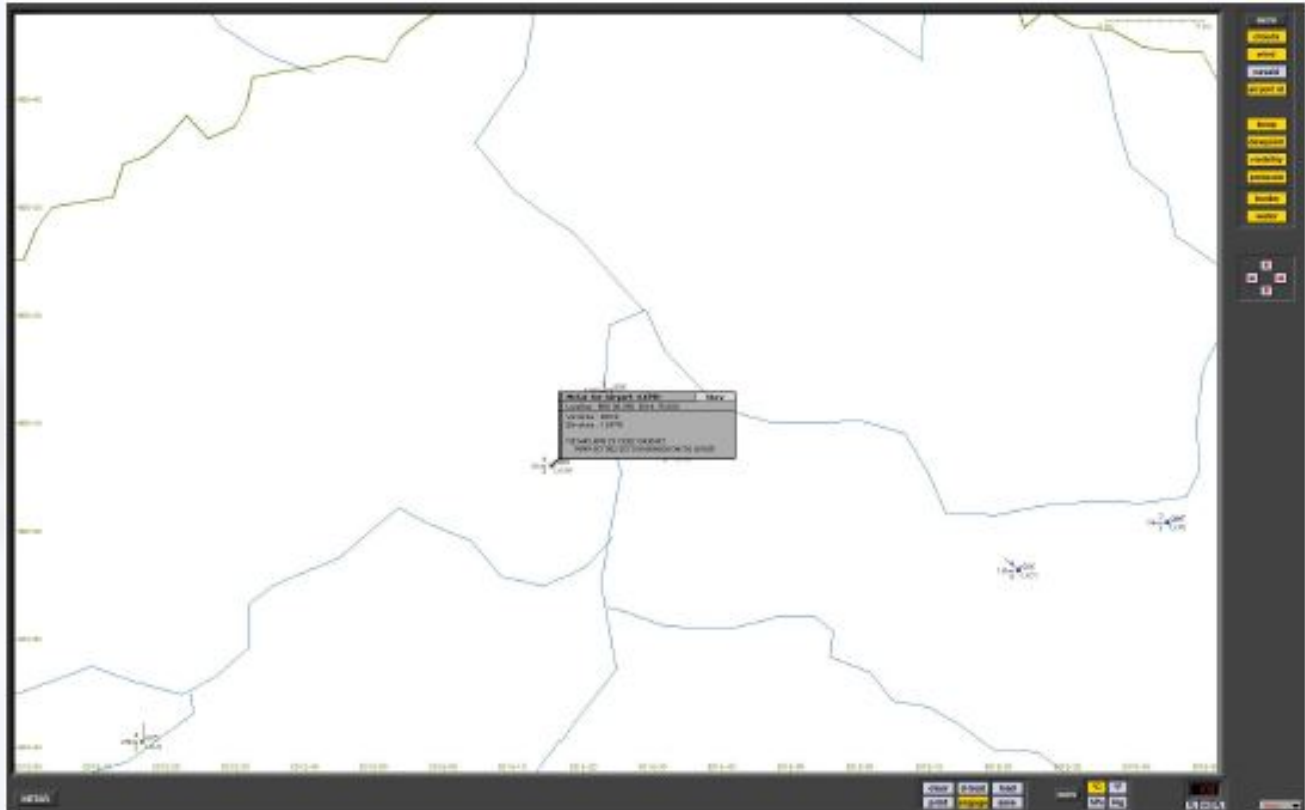


Figure 3.36: ELITE's Metar Page

Metar page is available with GenView/RealView visual databases - on single machine (instrumentation/visual on the same PC) and also with external visuals. The Metar page is not available when the Prepar3D visual is used.

3.3.1 Active Metar

Active Metar means that you can download real-time weather reports from Metar reporting stations for use in ELITE GenView. When Metar weather is engaged (activated) the weather dynamically changes when flying between Metar reporting stations and Metar time. Sky conditions, visibility, wind speed, wind direction and turbulence are accurately depicted in the visual system.

Metar weather conditions represent the actual weather derived from the local Airport stations. Although ELITE calculates the precise coverage of the clouds, ELITE cannot represent a specific cloud type such as a Cumulus or Nimbostratus. If the downloaded Metar readout of a visibility is '9999', ELITE will set a value between 10 km and 30 km, otherwise it will take the reported value such as i.e. 24 km or 15 sm.

3.3.2 Wind and Gusts

ELITE calculates the weather between the Metar conditions received by the Aircraft. If the wind is 270° and the next available Metar station reads 260°, ELITE will constantly update the wind from 270° to 269, 268, 267 etc. until reaching 260°. The same appears for all other values such as wind speed, cloud coverage, temperature, dew point, visibility and QNH/ALT. The symbols used in the Metar Page are ICAO standard.

When gusts are reported, ELITE will set the appropriate wind speed and turbulence to level 2 for a short period.

3.3.3 Using the Metar Page

Open the Metar page through the menu or type **Alt + R** on your keyboard.

Once in the Metar page, you have the choice of selecting existing Metar conditions which have been downloaded from the Internet. Or you can download Metar data online by using the D-LOAD (download) function in ELITE.

3.3.4 Using Existing Metar

1. Press the **Load** button in the Metar page to open existing Metar files previously saved to your hard drive.



2. Select from the directory list the Metar file. (i.e. 05Z.TXT) 05Z means zulu time, 434.5Kb is the size of the file and May 29 08:07 represents the date and time the file was downloaded. To select a different path from the directory list, use the **up** button to browse to a higher directory level.
3. To select the file, highlight the time and click **Open** or double-click the file.

4. As Metars are updated very frequently and have only the zulu-time, you have to link your selection to a specific date. Click the **OK** button to continue.



5. To activate the Metar conditions, click the **Engage** button in the Metar Page.



6. When you are flying, you can check the actual Weather at current position in the Meteo Page.



7. Once the Metar is active, all other weather conditions previously selected in the Meteo Page are inactive. To deactivate the Metar conditions, press **Engage** and it will turn from yellow to gray.

3.3.5 Downloading Metar Files

Basic

1. Press the **D-Load** button on the Metar or Meteo Page.
2. Press Download button on the Metar dialog box to begin download. Metar reports will be downloaded and engaged automatically.



Advanced

Press the **Advanced** button and follow the procedure below for manual selection of Metar files as desired.

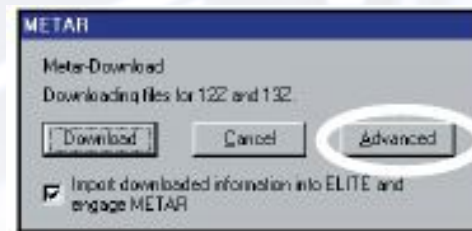


Figure 3.37: Advanced Button for Metar Files

1. Press the **Show** button for the Directory listing. The Metar-Download page has a default internet address ready. Note that a stable internet connection is needed to download Metar files.
2. Select a file you wish to download, i.e. 1300Z (1300Z represents the UTC time of the report). Metar files cover the entire world.
3. Click the Metar-File Download button to start the download process. Click **Save** to put the file into your Metar folder.
4. Once the download process has finished, click the **Back** button to leave this menu.

In the Metar or Meteo Page, press the **Load** button to select the file from the directory list you downloaded. Note that ELITE will only open the Metar files from your installed GenView Navigation data.

5. Once the file is selected, click the **Back** button to leave the directory list.
7. Metar reports are updated frequently and correspond to specific UTC times and dates. These reports however can be linked to any specific date. To link your selection to a specific date choose the date and click the **OK** button to continue.

8. To activate the Metar conditions, click the **Engage** button in the Metar Page. To view the current weather, change to the Meteo Page while unfreezing the simulation.



3.3.6 Metar Stations

All Metar stations are graphically depicted on a map overlay in the Metar Page.

- **Red** symbols indicate Metar stations under IFR conditions with a ceiling below 1,000 ft and/or visibility less than 3 miles
- **Blue** symbols indicates stations under MVFR conditions with a ceiling 1,000 to 3,000 ft and/or visibility 3 to 5 miles
- **Green** symbols indicates stations under VFR conditions with ceiling greater that 3,000 ft and visibility greater than 5 miles



Figure 3.38: Metar Stations on the MAP Page

On the Map Page, Metar stations are marked with a red circle. Clicking on the red symbol opens an information window that shows the airport Metar. Selecting the **Show** button gives you all reports loaded for that station sorted by date and time.

Note: Several clicks may be necessary in order to access the Metar information.

3.3.7 Station Plot

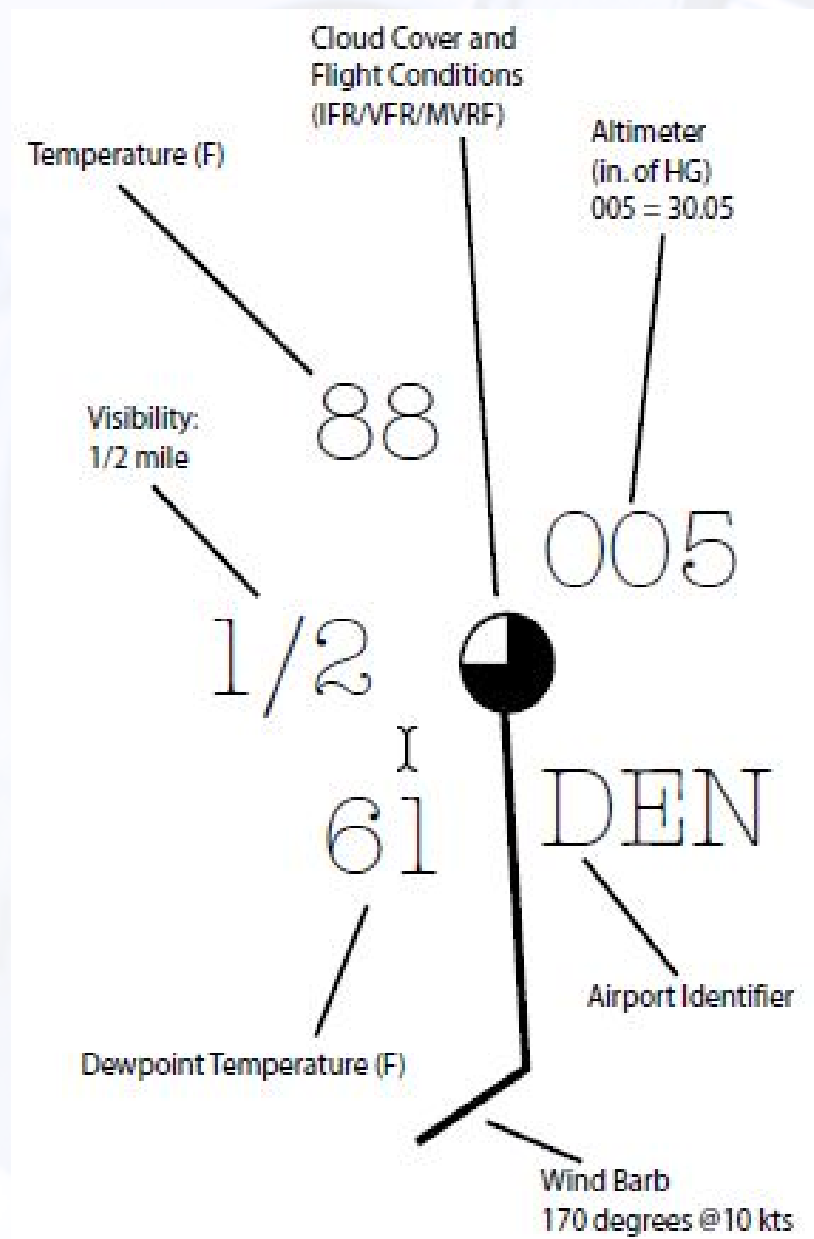


Figure 3.39: Station Plot

The units for temperature and pressure can be set in the bottom right corner to C° or F° and to hPa or iHg.

3.3.8 Wind Barb Description in the Northern Hemisphere

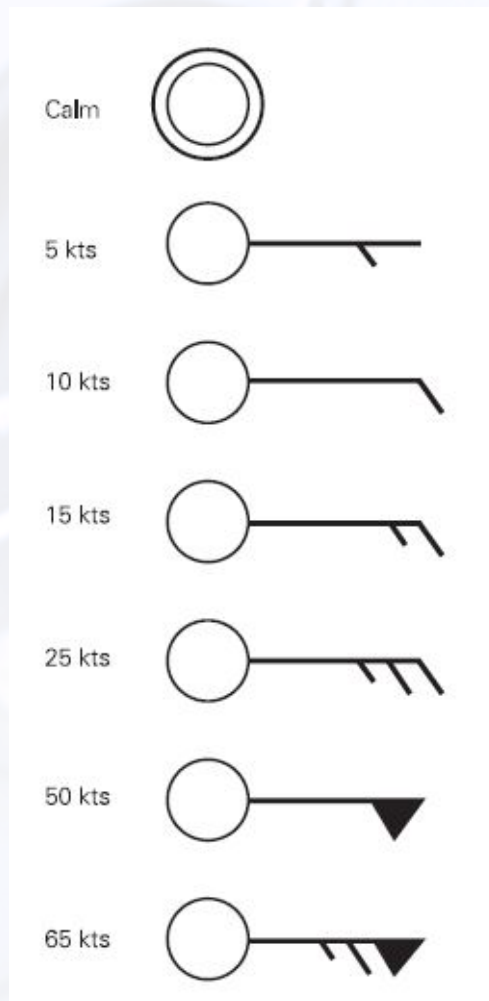


Figure 3.40: Wind Barbs

3.3.9 Aerodrome Actual Weather Metar and Spec Code

Pressure	Q P P P P _h P _h	QNH in whole hectopascals or inches, tenths and hundredths of an inch depending on indicator
		Indicator of QNH in hectopascals If Q = A then QNH is in inches
Temp and Dew Point	T T' / T _d T _d	Dew-point temperature in whole degrees Celsius (if below 0° C preceded by M)
		Temperature in whole degrees Celsius (if below 0° C preceded by M)
CAVOK		Cloud And Visibility OK. Replaces visibility RVR, present weather and cloud if: 1. Visibility is 10 km or more 2. No cumulonimbus cloud and no cloud below 1500 meters (5000 ft) or below the highest minimum sector altitude whichever is greater, and 3. No precipitation, thunderstorm, sandstorm, shallow fog or low drifting dust, sand or snow
Visibility	WWW	Minimum horizontal visibility in meters 9999 = 10 km or more
Identification	G G g g Z	Indicator (Z) of UTC
		In individual messages, time of observation in hours (GG) and minutes (gg) UTC
	CCCC	ICAO four -letter location indicator

Figure 3.41: Aerodrome Actual Weather Metar and Spec Code - Part 1

Surface Wind				Clouds			
d	d	t	t	G	t _m	KMH or KT or MPS	N ₁ N ₂ N ₃ h ₁ h ₂ h ₃
Mean wind direction in degrees true rounded off to nearest ten degrees (VRB = VARIABLE)				Mean wing speed (ten minute mean or since discontinuity)		Maximum wind speed "gust" (f _m) - if necessary	Wind speed units used
Mean wing speed (ten minute mean or since discontinuity)				Indicator of gust (G) - if necessary			
0000 = calm				Followed when there is a variation in wind direction of 80° or more and wind speed >3 kt by:		Replaced when there are no clouds and CAVUK is not appropriate by:	
d _n d _n d _n Vd _i d _i d _i				SKC		Sky Clear	
Extreme direction of wind (d _n d _n d _n)				Indicator of Variability (V)		Other extreme direction of wind (measured clockwise)	

Figure 3.42: Aerodrome Actual Weather Metar and Speci Code - Part 2

3.4 MALFUNCTIONS Page

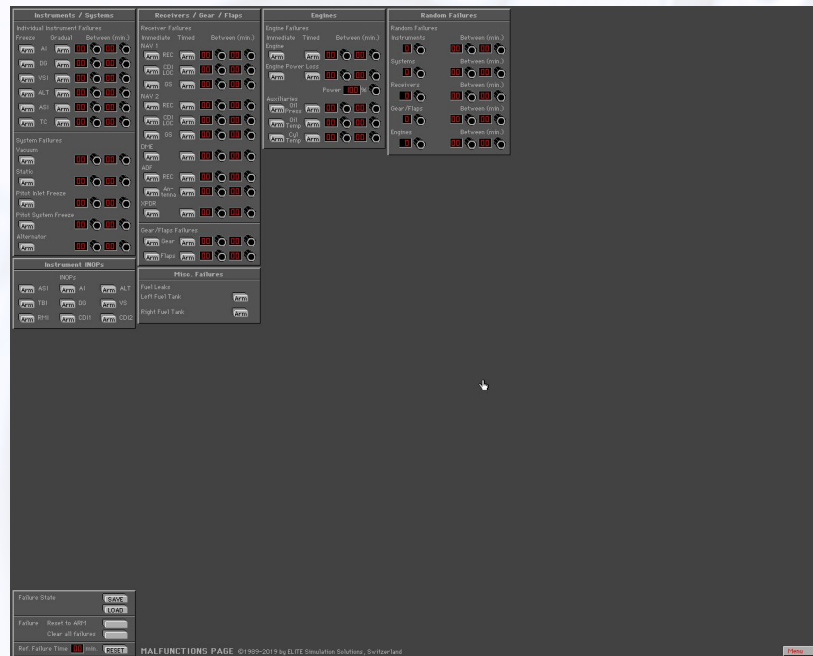


Figure 3.43: Malfunctions Page

The Malfunction Page is used to create failure scenarios. The ability to set up and practice realistic failures is one of the most powerful features in any simulation. Many of these failures would be impractical, impossible, or unsafe to recreate in an actual aircraft. Yet, exposure to these same situations in a simulated environment can give you invaluable experience (the airlines and military have proved this for decades). The Malfunctions Page offers the opportunity to selectively or randomly fail individual instruments, systems, avionics, engines, gear, flaps, and much more. Elements of the Malfunctions Page will be covered in greater detail in this chapter. Setting up failures requires three simple steps:

1. Decide on the failure(s) that you would like to invoke.
2. Determine when you would like the failure(s) to occur. Failures can be set to occur immediately, at a specified time, or at some point within a defined failure time frame.
3. Arm the failure(s) by pressing the associated **Arm** button(s).

Note that the **Arm** button will change to "Fail" when that particular item has actually failed. Click on the **Fail** button once to reset the item to Arm. Click again to clear the failure.

3.4.1 Instruments and System Failures

Individual instruments can be failed in two different ways:

1. Freeze (instrument maintains indications that exist at time of failure)
2. Gradual

To Freeze an instrument, click on its associated **Arm** button under the "Freeze" column. To have an instrument fail gradually, click on its associated **Arm** button under the "Gradual" column. A gradual failure of this type is sometimes referred to as an "insidious" failure as it is not as readily apparent and thus could potentially be more dangerous. Fixating on the AI (Attitude Indicator) and flying the aircraft to maintain wings level as it (the AI) slowly tumbles, is one example of the consequences of this type of failure.



3.4.2 Failure Time Frame

The "Between" column is used to set the failure "time frame" interval. The values entered in minutes (00-99) are compared to the Ref. Failure Time and determine when or during what time period (window) the corresponding Armed failure will occur. Example: If we want the AI to gradually fail at some point between seven and fifteen minutes from now, we will center 07 and 15 respectively in the "Between" column and press the **Arm** button in the "Gradual" column next to "AI". If this were done at the start of our flight the Ref. Failure Time would already be set to zero. But, if we had been flying for some time and wanted the failure to occur between seven and fifteen minutes from now we could just Reset the Ref. Failure Time. As the Ref. Failure Time counts up from zero as we fly, the AI will begin its gradual failure at sometime between seven and fifteen minutes.



3.4.3 Immediate Failure

To invoke an immediate failure, enter the same values (minutes) in each window that correspond to the current Ref. (reference) Failure Time displayed at the lower-left. If for example the Ref. Failure Time displayed is 07 (7 minutes), enter 07 in both "Between" windows next to the desired Armed failure. An easier way to invoke an immediate failure is to leave both "Between" values at 00 and simply reset the Ref. Failure Time by pressing the reset button next to the Ref. Failure Time display window. Keep in mind though that all failure time window intervals use the Ref. Failure Time and as such will be affected.

3.4.4 Timed Failure

To invoke a failure at a specific (future) time, enter the same values (minutes) in both "Between" windows. If we had been flying for fifteen minutes and wanted the Pitot Tube to freeze over with an accumulation of ice three minutes from now, we would simply enter 18 and 18 respectively in the "Between" column. When the Ref. Failure Time reached 18 minutes, the Pitot Tube would freeze over and we would observe a subsequent erroneous indication on the Airspeed Indicator.

Note that if a System failure is invoked its associated **Arm** button will change to "Fail" when that particular System actually fails. Affected items within the failed system will be flagged (turn orange) for easy identification. The Arm buttons of these items will not change to "Fail". Example: If we failed the Static System, the **Arm** button under "Static" would change to "Fail" at the time of the failure and the VSI (Vertical Speed Indicator), ALT (Altimeter), and ASI (Airspeed Indicator) labels respectively would change to orange.

3.4.5 Receivers, Gear and Flaps Failure

Failures in this panel are set up the same way as previously discussed except that immediate failures are invoked by using the **Arm** buttons in the "immediate" column. To set a specific failure time or a failure time window interval you must use the **Arm** buttons in the "Timed" column.



3.4.6 Enging Failures

Failures in this panel are set up the same way as the previous (Receivers, Gear and Flaps: Section 3.4.5) panel. Note that it is not only possible to fail an engine, but also to simulate a power loss (leaving partial power). Combine this with various "auxiliary" failures and you have the opportunity to create some interesting failure scenarios. The Power Loss window shows the power available, not the percentage of power loss.



Note: Once an engine failure or power loss has been invoked, the failure must be cleared to allow for engine restart or power restoration.

3.4.7 Random Failures

The Random Failures panel allows you to experience what it is like to expect the unexpected. To set up a random failure simply enter the failure time window interval(s). As previously described, you can use these intervals to invoke failures immediately, at specified times, or within a defined failure time window. Then dial in the number of failures you would like to occur. If for example we entered in a failure time window of between 3 and 12 minutes, then entered 2 in the Instruments window, ELITE would randomly fail two of the six instruments (each at some random time between 3 and 12 minutes).



Note: The part "Engines" does not refer to the number of engines but rather to the number of possible engine failures. Depending on the aircraft there might be up to 5 failure types (power loss, oil pressure, oil temperature, etc.) as shown on the engine failure panel.

3.4.8 Instrument Inops

The Instrument INOPS feature allows you to place a virtual instrument cover on one or more selected instruments. The covers are similar in appearance to the rubber suction cup covers used in instrument training for partial panel practice. The covers can be used independent of, or in conjunction with, specific malfunctions as follows:



- Invoke a malfunction by itself (without the cover)
- Cover the instrument (without invoking a malfunction)
- Invoke a malfunction and cover the instrument

To place an instrument cover on one or more instruments, select the desired instrument's **Arm** button. The button will turn orange and subsequently display "Fail" to indicate the instrument has been covered. Note that the Instrument INOPS feature is activated almost immediately after **Arm** has been pressed. The Instrument INOPS feature is therefore not "timed" nor does its use depend on the Ref. Failure Time.

3.4.9 General Actions

At the lower-left of the Malfunctions Page you will find a box (as seen in figure 3.44) containing several buttons that are applicable to the entire Malfunctions Page.

Failure States

Similar to saving and loading Meteo States, the Save and Load buttons next to "Failure State" enable you to Save and Load Failure States. You can literally develop a library of these states that can be instantly recalled for use anytime. Create a failure scenario (state) and tweak it until you are satisfied, then click the Save button to open the Save Malfunction files dialogue box. Type a unique name in the "File name:" box such as "OilPressLoss" then click Save to complete the operation. To load this failure state (or any other) in the future, just click on the Load button to open the Open Malfunction files dialogue box. Select a failure state from those listed (previously saved) and click Open.



Figure 3.44: Panel for General Failure Settings

Reset to Arm

The **Reset to Arm** and **Clear all failures** buttons provide a quick way to reset the Malfunctions Page as required.

Use the **Reset to Arm** button when a completed failure scenario sequence needs to be repeated. Pressing this button will leave the entire failure state intact, but reset all **Fail** buttons back to Arm.

Use the **Clear all failures** button to reset the entire Malfunctions Page (including failure time intervals).

Ref. Failure Time

The Ref. Failure Time's **Reset** button sets the Reference Failure Time back to zero minutes. This is used in conjunction with the failure time window interval settings as described in section 3.4.2.

3.5 CONTROL Page

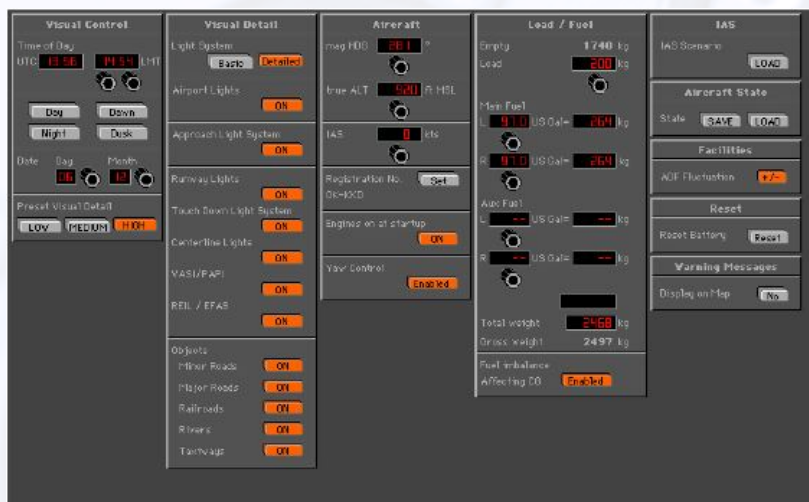


Figure 3.45: Control Page

Use the Control page to configure aircraft load and fuel, control visual settings, load ATC Scenarios, save/load "State" files, and more.

3.5.1 Visual Panel

Use the Visual panel to configure ELITE's visual display settings. Everything from Time-of-Day to the amount of runway environment detail displayed can be changed.



Set Date and Time

Set the Time of Day and Date. Daylight is accurately reflected based upon navigation data loaded and time set.

At program start, ELITE references your computer's internal clock, then applies the (LT)/(UTC) offset from the General settings dialog box on the Configuration screen. The calculated current UTC (Universal Time Coordinated) time is then used for all cockpit clocks and appears on the Time of Day panel in the UTC window. The time displayed in the LMT (Local Mean Time) window will probably not reflect the current local watch time of the area flown in. This is by design, as LMT is used to calculate accurate sunrise and sunset times. Depending on aircraft location within the specific Time Zone flown in, and Daylight Saving Time, LMT may be "off" by as much as 2 Hrs. Use this time only as a reference for setting day/night flying conditions. To change time of day, click and drag on hours/minutes adjust knobs located below LMT display window.

3.5.2 Preset Level of Detail

Software performance is directly related to the computer hardware and associated capabilities used to run it. Many factors such as processor speed, memory, video card and drivers, come together to formulate what the end user perceives as computer power. Some performance gain may be achieved however through the software by fine-tuning GenView's visual settings.

Based on the processing power of your computer, you may want to adjust the Level of Detail (LOD) setting by pressing one of the **low**, **medium**, or **high** buttons. These buttons control various parameters used to create the view of the outside world and determine the resulting "Level of Detail" implemented by these parameters. Fast computers can normally use a high setting, while relatively slower computers may require a low or medium LOD setting. In addition, these same buttons can be used to select one of three Visual Detail presets.

Unlike the LOD parameter settings, which are broader in nature, the Visual Detail settings are related to specific lighting and scenery object elements. The processing power required to display these elements might cause the simulation to run sluggish on relatively slower computers. The Visual Detail panel allows you to tweak these settings to get the best performance possible from a given system.

Simply CTRL-click on any one of the **low**, **medium**, or **high** buttons (turns orange) and its corresponding Visual Detail preset will become activated. Presets can then be modified manually as desired by selectively turning items on/off in the Visual Detail panel. The selected **low**, **medium**, or **high** button will remain orange as long as the Visual Detail buttons corresponding to that preset match. If the Visual Detail buttons are modified after selecting a preset, the selected **low**, **medium**, or **high** button will return to gray to signify the preset has been modified. Experiment to determine what configuration yields the best combination of performance and visual detail.



3.5.3 Engine Startup

The engine(s) start automatically at initial startup when the on button is active.



3.5.4 Aircraft Panel

The heading, altitude, and airspeed panels found on the Map screen are duplicated here for convenient aircraft setup while using the Control page. These panels function exactly the same as those on the Map page discussed earlier in chapter 3.1.

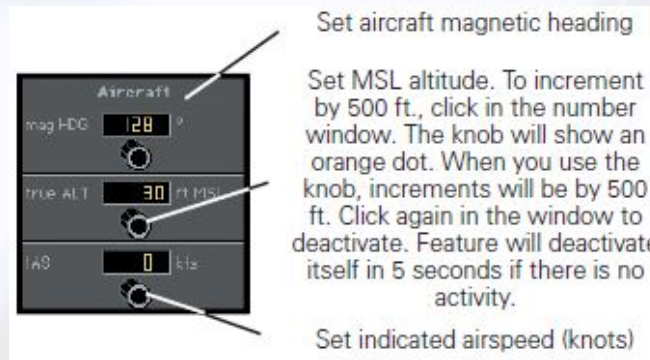


Figure 3.46: Aircraft Panel settings

3.5.5 Fuel / Load Panel

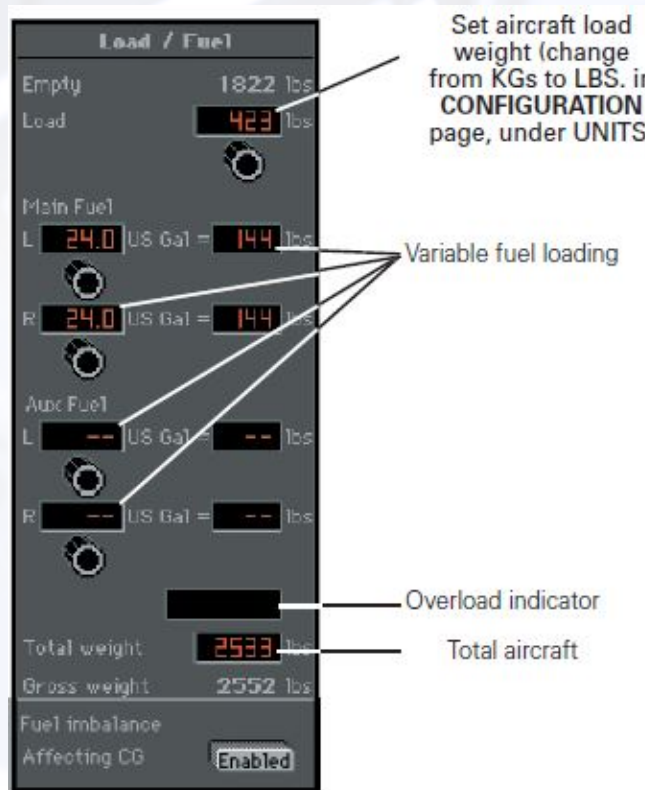


Figure 3.47: Fuel / Load Panel settings

Fuel Imbalance

When enabled, allows for flight characteristics to be affected by lateral asymmetric fuel loading.

3.5.6 Yaw Control

Yaw Control enabled when lit (for use with rudder pedals). If not lit, the aircraft stays in coordinated flight and tracks runway centerline on take-off.



3.5.7 Aircraft Identification

You can customize the aircraft identification "placard". Click on the **Set** button in the Identification panel.

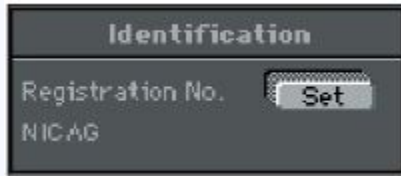


Figure 3.48: Identification Panel

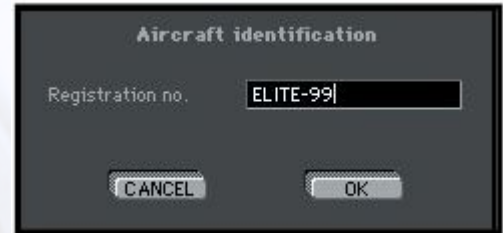


Figure 3.49: Pop-up Window - Aircraft Identification

Enter the aircraft "Registration number" into the field of the pop-up window shown in figure 3.49 to be displayed on the instrument panel in the cockpit.

Note: This identification number is not reflected in the ATC Scenario call sign.

3.5.8 Running the Instrument Approach Scenarios (IAS)

The Instrument Approach Scenarios are scripted instrument approach exercises flown in a simulated ATC environment. During these exercises, you must listen for your call sign "on frequency" amidst the chatter of other aircraft and controllers to hear your instructions. Follow clearances and vectors closely or you will be reminded to get back to your assigned altitude or heading.

The scenarios generally begin with the aircraft at a predetermined altitude and positioned 15-20 miles from the IAF (Initial Approach Fix) of the selected approach scenario.

Note: IAS scenarios are optional. You can purchase these scenarios from your local dealer.

To load an IAS, click on the IAS **Load** button located at the bottom of the Map page or use the **Load** button on the Control page.



Highlight the IAS you wish to fly from those listed, then click **Open**. Ensure that the correct NAV database (region) is loaded for flying the IAS (USSW-United States Southwest).

When you select **Open**, you will hear a succession of beeps followed by information and option dialog boxes. Make your selections and follow on-screen instructions.

After the last selections are made, you are ready to fly the approach. Return to the Instrument screen and release the Freeze button.

Please note that when you release the Freeze button, the autopilot will engage and stabilize the aircraft. When the heading and altitude have stabilized, you can continue to use the autopilot or disengage it to manually fly the approach.

Note: If you miss an ATC instruction, you can have it repeated by pressing CTRL + R (R for repeat) on the keyboard.

3.5.9 Loading and Playing Scenario Flight Paths

1. Click on the **Path** button on the Map page and choose **Load**.

2. Choose the ATC Scenario path that you would like to see.
3. Click on Replay to review the flight path. Use the **Profile** and **Extended** buttons on the Map page as desired to display all associated aircraft data.

3.5.10 State Panel

The State panel makes it possible to save and load aircraft state files. These files allow you to save aircraft position, frequencies entered, weather settings, NAVdata etc. into a file. This file can then be loaded at any time to instantly position the aircraft where it was (with the same settings) when the file was saved.



Saving States

To save the current aircraft state, click the **Save** button to bring up the Save State file window. Type in a name for the "state" file and click **Save**. Select "state" file options as desired, then click **Ok**.



Figure 3.50: Saving State

Loading States

To load an aircraft state file, click the **Load** button to bring up the Open State files window. Highlight the "state" file you wish to load from those listed, then click **Open**.

3.5.11 Time Flown Panel

The Time Flown panel always indicates the elapsed time ELITE has been flown. Time automatically stops when the flight is frozen or while not flying on the Instrument panel.



3.6 CONFIGURATION Page

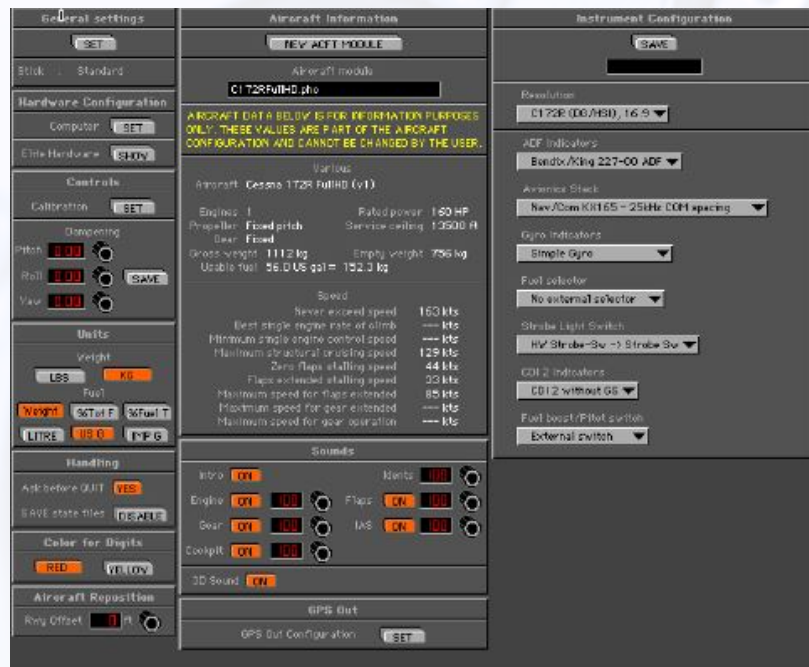


Figure 3.51: Configuration Page

Use this page to configure flight controls, hardware, instrumentation, and sound.

3.6.1 General Settings

Under General Settings, clicking the **Set** button opens a dialog box that lets you customise features in the startup sequence, set/change passwords, set LT/UTC offset, toggle PCATD detection report, and activate failure control from the keyboard. These settings are retained until changed or reset.

Aircraft Module

When the "Aircraft Module at program start button" is on (orange), ELITE will ask you (on every startup) to select an aircraft module. "Easy open of aircraft modules" allows you to choose an aircraft by viewing thumbnails (small pictorial representations) of each aircraft cockpit. This is the default and recommended setting. The same is true for NAV databases.

Navigation Databases

When "Ask for Navigation Databases at program start" button is on, ELITE will ask (on every startup) to select a NAV database area to fly in.

"Easy open of Navigation databases" allows you to choose a NAV area by viewing thumbnail maps of all available individual navigation areas installed.

Note: To have ELITE automatically start up (default) to the same aircraft and NAV area each time, first make sure you are currently using the desired aircraft and NAV area you would like for subsequent startups, then turn off both "Ask for Aircraft module" and "Ask for Navigation databases at program start".



Figure 3.52: General Settings

State Files

When the "Ask for State File at Program Start" button is on, ELITE will display a dialog box (on every startup) allowing you to choose any training "State File" previously saved. You will be positioned with the same aircraft in that specific state (including Navdata and Meteo State selected).

Visual Settings

When the "Visual Settings always store in Preference File" button is on, all visual settings selected on the control page are stored.

Password Protection



Figure 3.53: Password Protection Pop-up Window

You may protect the Configuration and Modification pages with a password. Click on the **Set** button, type a password and follow written instructions on the screen. Click **OK** to save the settings. To delete the password, click the **Set** button and enter the password. When asked for a new password, select **OK** with the password field blank.

Time Difference LT to UTC

For ELITE to properly calculate daylight (sunrise and sunset) times, you must set the difference between your local time (LT) and UTC (Zulu) time. First verify that your computer's clock is set correctly. Click on the **Set** button. Calculate your local time using 12:00 UTC as a reference. Note that Daylight Saving Time has to be included in this calculation. To have ELITE perform this calculation automatically (recommended) simply click the "Take Local Time from Computer" option.



Figure 3.54: Local Time vs. UTC

3.6.2 Activating Failures with Keyboard

Failures Activating with Keyboard on allows the user to fail specific instruments and systems via the keyboard completely independent of the simulation. This is especially useful for system configurations not incorporating a separate graphical instructor's station (2nd monitor). The instructor can control failures without interruption of the simulation or the student's flight. Keyboard commands are as follows:

INSTRUMENT FAILURE	ACTIVATE INSTANT FAILURE	ACTIVATE GRADUAL FAILURE	DEACTIVATE FAILURE
Attitude Indicator	1	7	SHIFT 1 or 7
Directional Gyro	2	8	SHIFT 2 or 8
Vertical Speed Ind.	3	9	SHIFT 3 or 9
Altimeter	4	0	SHIFT 4 or 0
Airspeed Indicator	5	Q	SHIFT 5 or Q
Turn Coordinator	6	W	SHIFT 6 or W
SYSTEM FAILURES			
Vacuum	ALT 1	N/A	SHIFT&ALT 1
Static	ALT 2	N/A	SHIFT&ALT 2
Pitot Freeze	ALT 3	N/A	SHIFT&ALT 3
Pitot & Drain	ALT 4	N/A	SHIFT&ALT 4
Electrical	ALT 5	N/A	SHIFT&ALT 5
Left Engine (or single)	ALT 6	N/A	SHIFT&ALT 6
Right Engine	ALT 7	N/A	SHIFT&ALT 7

Figure 3.55: Keyboard Shortcuts for Failure Handling

3.6.3 Hardware Configuration

Computer Configuration

Under Hardware Configuration, clicking the **Set** button next to Computer brings up a control screen for setting/changing COM port, Monitor detection, Monitors rearrangement, Game controller, and Help text language preferred.



Figure 3.56: Computer Configuration

COM port

Clicking **Change** next to COM port brings up the COM Port Detection dialog, where you can change the COM Port settings and Scan for new ELITE Hardware.

Game Controller

Clicking **Change** next to Game controller brings up a window for selecting flight control devices connected to the computer's joystick (game or USB) port.

Clicking on **Configure** from this window takes you to the Game controller configuration screen. Here you can assign various simulator functions to flight control device buttons and Coolie-Hat switches. To assign a function to a specific joystick button for example, simply press and release the desired joystick button and notice one of the red lights under buttons illuminate. Now under settings, choose a function from the drop-down menu to assign to the button just pressed. Notice the red light turns green when assigned a function. Repeat this process for all remaining buttons you would like to program.

To view any button's assignment, click the button and look for its assignment next to "Function". Click **Ok** when finished, quit and restart ELITE for assignments to take affect.

3.6.4 Flight Controls Calibration

ELITE supports up to two third party flight control devices, e.g. a yoke and pedals or a yoke and a throttle quadrant. Calibration is necessary to bring these controls into proper tolerances and allow ELITE to learn the control nuances or limits of the specific devices being used.

Note: Flight controls connected to a computer's joy stick (game or USB) port must first be calibrated in the computer's operating system. For example, on Windows, calibration is performed through the Control Panel.

Under Controls click the **Set** button next to "Calibration". The Calibration screen is divided into three sections or panels. From left to right these are; Limits, Null zone, and Power Quadrant and Brakes.

Follow the instructions in the subsequent paragraphs to properly calibrate your flight control device(s):

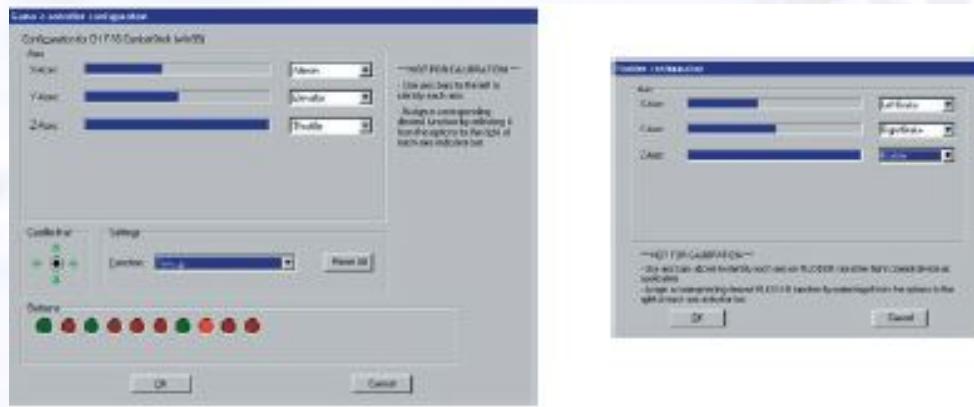


Figure 3.57: Game Controller Setup

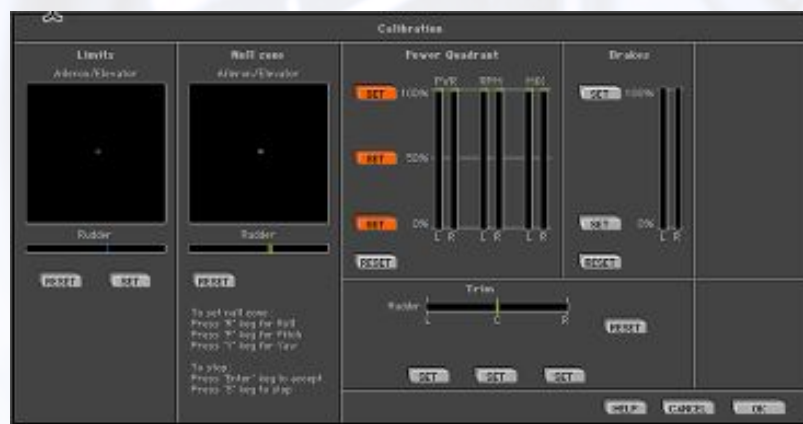


Figure 3.58: Flight Controls Calibration Window

Limits

Under Limits, click the **Reset** button. Notice the small cross-hairs in the box just below "Aileron/Elevator". Now move your yoke or stick through its full range of motion, i.e. forward (down) elevator, back (up) elevator, full left and right aileron. The cross-hairs have now traced a blue box graphically representing the limits of the control device being used. If rudder pedals are connected, apply full left and right rudder. You will see a small vertical line move with the application of rudder input. Click **Set** to store the new limits settings.

Null Zone

The center Null Zone panel allows the user to define a box within which the control device is considered centred. If a flight control does not physically return exactly to center but is still within the limits of the box defined under the Null Zone panel, no flight command input will be sent to the software. Some experimentation with different Null zone settings may be necessary to achieve optimum control response. In general, larger Null zones require greater flight control travel accompanied by a coincident perceived decrease in sensitivity. Under Null Zone, click **Reset**. Press the "R" key on your keyboard and move the stick or yoke to adjust the size of the aileron (Roll) Null zone. To accept and store this setting hit Enter or press the "S" key to return to the previously stored value. Next, press the "P" key on your keyboard and move the stick or yoke to adjust the size of the elevator (Pitch) Null zone. To accept this setting hit Enter or press the "S" key to return to the previously stored value. If rudder pedals are connected press the "Y" key on the key board and move the pedals to adjust the width of the of the rudder (Yaw) Null zone.

Note: Clicking the **Reset** button returns all Null zone settings to default. Individual Null zones can be adjusted without clicking **Reset** by simply pressing "R", "P", or "Y" keys respectively.

Power Quadrant

Under Power Quadrant, click **Reset**. Now physically move the Mixture, Prop, and Throttle levers (if applicable) on your power quadrant or similar device to their halfway position. Do not use lines on screen under PWR, RPM, and MIX columns for reference. Once levers are positioned physically at 50% (on device) click the middle **Set** button next to the 50% marking on screen. Next, move the levers full forward (Throttle open, Prop high, Mixture rich) and click the top 100% **Set** button. Finally, move the levers full aft and click the bottom 0% **Set** button. Calibration is now complete! Click **Ok** to save these settings and return to the Configuration page, or **Cancel** to return and revert to previous settings without saving. Quit and restart ELITE for new calibration settings to take affect.

3.6.5 ELITE Hardware



Figure 3.59: ELITE Hardware Window

Press "Elite Hardware" button to see ELITE USB hardware connected.

3.6.6 Adjusting Control Sensitivity

Control dampening is designed to desensitise or add slop to the controls. Start with low to midrange values and adjust to your satisfaction. Yaw usually requires more dampening than pitch or roll. Click **Save** to store new dampening values after adjustment. Numbers between 0.00 (no dampening) and 0.50 (maximum dampening) change the sensitivity of flight control devices.



3.6.7 ELITE BCLS-H Configuration

In addition to the existing Pro Panel II, ELITE XTS supports the new ELITE ProPanel III console and the Brunner CLS-H⁵ yoke out of the box.

⁵CLS = Control Loading System

ELITE Startup

The following description only applies if a control loaded yoke is connected and detected by ELITE XTS. When starting up ELITE XTS the control loaded yoke is initialize. This process takes a few seconds, during which the following message is displayed:



Figure 3.60: Start Message for CLS-H Yoke

The initialization process moves the yoke through its whole range, so be careful not to inhibit the movement by any kind of objects, otherwise the calibration will fail.

CLS-H Configuration

If a control loaded yoke is detected a new menu item named "CLS INFO" is added to the context menu.

Clicking on this menu item opens the following panel:

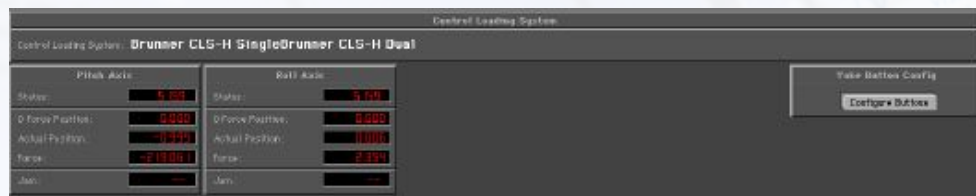
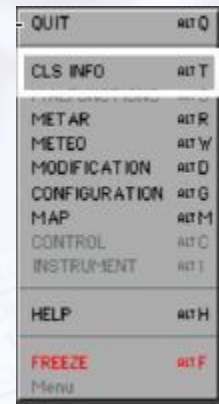


Figure 3.61: CLS-H Panel

The panel shown on the left side reflects the current position and force of the various yoke axes and are for information only. The axes assignments are pre-defined by ELITE and cannot be changed. Button assignments can be customised by clicking on the button **Configure Buttons**, which opens the button configuration window.

To configure the buttons, select the action to be assigned to the corresponding button from the drop-down list. The elements on the form are not animated (pressing on a button on the yoke will not be reflected in the form). Once the assignments have been done, click **Ok** to save the current configuration or the **Save to Defaults** button if you want the current assignments to be saved as default.

Clicking on **Restore Defaults** will set back the button assignments to the configuration last saved as default.

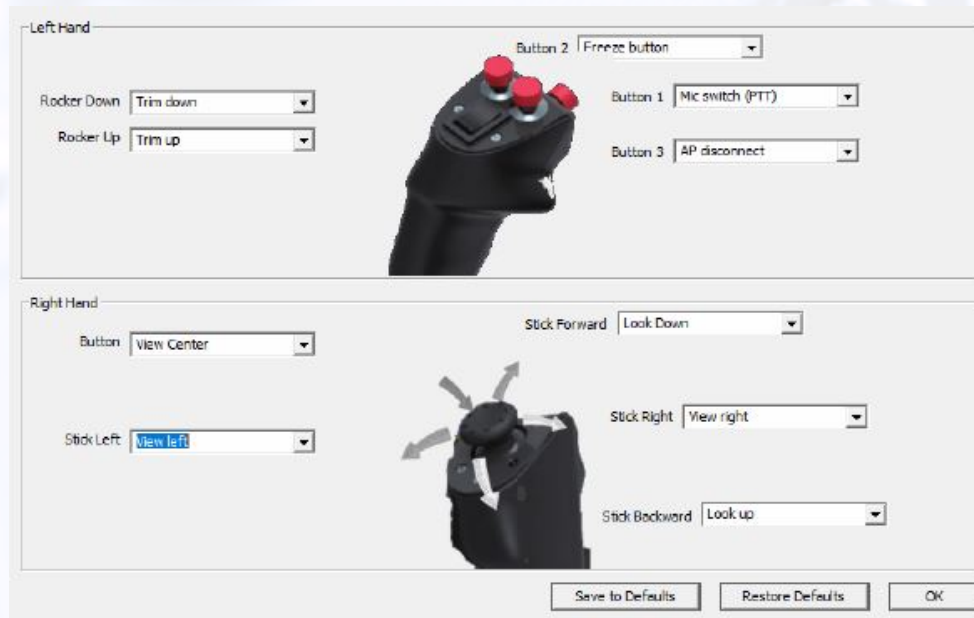


Figure 3.62: CLS Button Configuration

3.6.8 Measurement for Weight and Fuel

You can choose what units of measurement are displayed for weight and fuel values as desired.

- Weight in pounds or kilos
- Fuel in litres, U.S. gallons or Imperial gallons



3.6.9 Changing Colour of Numbers

For readability, you can change the colour of numbers shown on all screens, except the photo-realistic panels. Click on **Red** or **Yellow** as desired.



3.6.10 Sound and Volume Control



Figure 3.63: Sound and Volume Control

ELITE's Advanced True Integrated Sound (ATIS) smoothly mixes multiple-channel aircraft and ATC sounds providing a realistic, uninterrupted, high quality, ((stereo)) audio environment (stereo sound card

and speakers required). The Sounds control panel illustrated above lets you tailor or mix individual sound elements, giving you complete control of your ELITE sound experience. Engine sound can also be switched On or Off with the "E" key on the keyboard.

3.6.11 3D Sound



Figure 3.64: 3D Sound

When enabled, allows for an enhanced audio experience on 3D compatible sound systems.

3.6.12 Aircraft Information



Figure 3.65: Aircraft Information

The Aircraft Information panel shows actual aircraft configuration details. Figures cannot be changed and are for information purposes only.

3.6.13 Instrument Configuration

The Instrument Configurations panel is different for each aircraft module depending on the cockpit resolution(s), instrument configurations, power units, and external switches unique to that module.

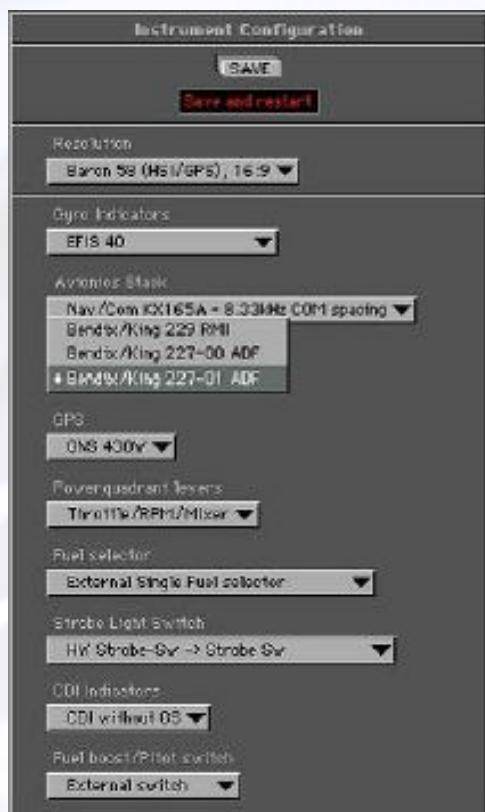


Figure 3.66: Instrument Configuration

Clicking on a black arrow opens a drop-down menu displaying all available (changeable) options for that section. Drag the fingertip to the option desired and release the mouse button to make your selection.

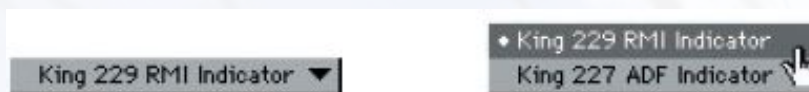


Figure 3.67: Selection of Instrument Configuration

The selected option will be indicated, replacing the previous selection. The Baron B58 for example, has several instrument configuration options. Most notable is the ability to change from an HSI/RMI configuration to a simple Directional Gyro (DG) and ADF configuration.

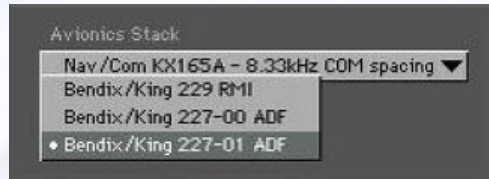


Figure 3.68: Instrument Configuration Panel for Baron B58

When you select and change an option on the Instrument Configuration panel you will be prompted to save and restart ELITE for the changes to take affect.



Figure 3.69: Save and Restart ELITE

Note: Changes must be saved and only take effect after a restart of ELITE.

To save and quit in one action, press and hold the **Save** button.

3.7 MODIFICATION Page

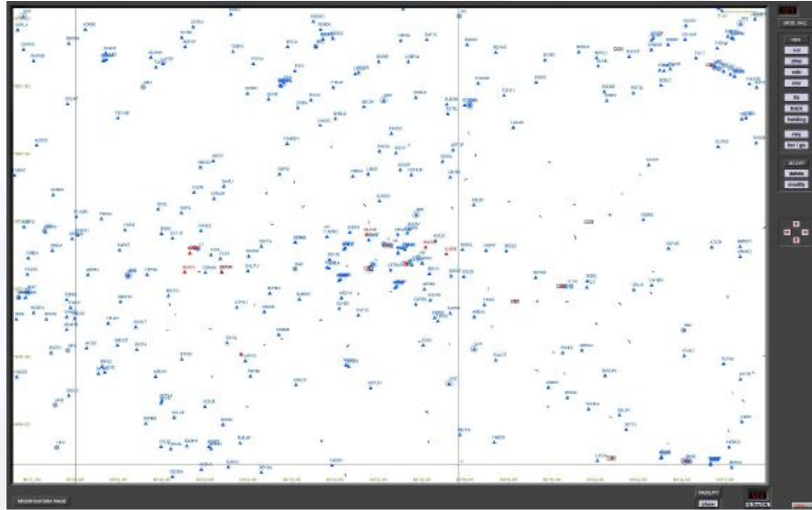


Figure 3.70: Modification Page

3.7.1 Creating Facilities

The desired facility can be created by clicking on the appropriate button. When a button is clicked, a window will appear showing the detailed data fields required to create the facility.



3.7.2 Modifying Facilities

Any facility can be modified by using the **Modify** button, shown on the Modify panel.

Click the **Modify** button and then the desired facility to be changed. A window will appear with the specific data of the facility. Data can be changed and the change will take effect after clicking the **Ok** button.



3.7.3 Deleting Facilities

Facilities can be deleted the same way as created and modified. Click on the **Delete** button first and then on the facility you would like to delete.

A pop-up window will ask for verification before the deletion takes place.

Note: A deletion or modification does not modify the original database file on your hard disk, but only a copy of the data.

If you choose to delete an *original* facility that has already been modified, a pop-up window asks for confirmation to delete the modification. In case you choose to delete a *self-created* facility, the pop-up window will ask you if you want to irrevocably delete your self-created facility.

After creating, modifying or deleting a facility, click on the **Ok** button to confirm the changes.

If you select the **Cancel** button, all previous instructions are cancelled and you return to the Modification page.

All self-created and modified facilities are displayed in red on the Modification page. When changing to the Map page, your modifications have the same appearance and colour as all original data. When changing back to the Modification page, however, your changes will again appear in red.

3.7.4 Undo Changes

To return to the original status of facilities, you can undo modifications or deletions. Hold the ALT key while clicking on the **Modify** button. The pop-up window as shown on the right will appear on the screen. Select a facility and click on **Choose** to undo changes.



To restore an original facility that had been deleted, hold the ALT key while clicking on the DELETE button. A pop-up window as in figure 3.7.4 will appear on the screen.

You can now undo a previous facility deletion and it will once again be displayed on the Map.



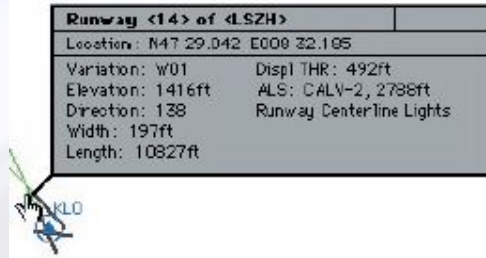
Deleting an existing (original) facility counts as one change. Deleting a self-created or modified facility releases one for further use. Undeleting a previous deletion of an original facility will also release a change for further use.

When 200 modifications have been made the message in figure 3.71 appears.



Figure 3.71: Pop-up window "Can't change more facilities"

Click on **Facilities** to display detailed information. For runway information, click on the runway threshold.

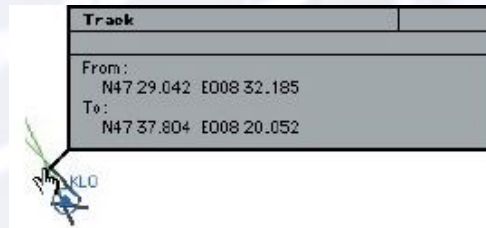


A screenshot of a software interface showing a dialog box titled "Runway <14> of <LSZH>". The dialog box is overlaid on a map of an airport. The map shows a runway and a small aircraft icon labeled "KLO". The dialog box contains the following information:

Runway <14> of <LSZH>	
Location: N47 29.042 E008 32.185	
Variation: W01	Displ THR: 492ft
Elevation: 1416ft	ALS: CALV-2, 2788ft
Direction: 138	Runway Centerline Lights
Width: 197ft	
Length: 10827ft	

Figure 3.72: Runway Information

When facilities are in the same location or covered by other ones, click on the same spot once more and information about the next facility will appear.



A screenshot of a software interface showing a dialog box titled "Track". The dialog box is overlaid on a map of an airport. The map shows a track and a small aircraft icon labeled "KLO". The dialog box contains the following information:

Track	
From: N47 29.042 E008 32.185	
To: N47 37.804 E008 20.052	

Figure 3.73: Layered Facilities

In the example above (figure 3.72 and 3.73, several facilities nearly occupy the same location or are co-located. Information on these facilities is layered. Clicking the same spot repeatedly cycles through these layers to reveal information about each specific facility.

4 | Conclusion

4.1 Troubleshooting

As this document is to give an overview of the possibilities within ELITE and how to handle the software, it does not include any troubleshooting topics nor steps to resolve this.

In case you run into any issues, please check the document "Troubleshooting" on your USB Card / Download File.

If there are any open questions regarding the installation or the setup of the software, please refer to the installation manual. The most common issues that occur during the setup are also included in this documents. The most frequent questions and issues are discussed in these documents. Please feel free to contact the ELITE Support Team if the topic is not discussed in either of the two manuals.

ELITE Technical Support

www.flyelite.com/support

support@flyelite.com

4.2 Notes

Please feel free to add any notes here:

