ELITE SIMULATION SOLUTIONS

ELITE MODEL TH100
ADVANCED AVIATION TRAINING DEVICE OPERATOR'S HANDBOOK

Software Serial Number: _____

Software Version: _____

TABLE OF CONTENTS

PREFACE

APPLICABILITY

Application of this handbook is limited to the specific model of training device and software designated by version number and serial number on the face of the title page of this handbook.

WARNING

Any unauthorized changes to the trainer regarding removal, replacement or repositioning of original flight control components, avionics or switches, not in accordance with manufacturer specifications, will void the FAA approval for logging flight time credit. Only ELITE ATD software may be used with this training device for certification purposes. The instructions and limitations detailed in the FAA letter of approval pertaining to this model of advanced aviation training device must be adhered to and kept in close proximity to the trainer. The controlling authority for the use this training device in a Part 61 or 141 or 142 course of instruction is the Federal Aviation Administration, General Aviation and Commercial Division, AFS-810, 800 Independence Avenue, Washington D.C. 20591.

REVISIONS

For operational purposes, this handbook should be kept in current status with revisions provided with software upgrades or hardware modifications. Revisions to this handbook will be distributed whenever necessary as complete replacements or additions and shall be inserted into the handbook as below:

Revision pages will replace only pages with the same page number. Insert all additional pages in proper

numerical order within each section.

Page numbers followed by a small letter shall be inserted in direct sequence with the same common numbered page.

GENERAL DESCRIPTION

The TH100 is one of the most highly advanced rotary wind PC-based IFR flight training devices available today with the best “benefit-to-cost” ratio in its class. It is authorized for use in satisfying Tasks/Maneuvers, and Procedures under sections of Title 14 Code of Federal Regulations parts 61 and 141.

The trainer consists of the following components:

Flight controls (cyclic, collective, anti-torque pedals and ancillary switches)

Avionics, King Silver Crown – style on a center console

Dual CPUs (main computer, image generator with sound system)

Open cockpit with seat, collective, cyclic, anti-torque pedals, AC specific switches and throttle unit, instrument panel

External visual display system*

Instructor Operator Station (desk, LCD monitor, keyboard and mouse)

ELITE Version 8.x AATD helicopter software:

Many display options are available and equipment, models and composition may vary.

The aircraft is a “generic in-category” aircraft or aero model with correct performance parameters and systems to practice simulated flight, tasks and procedures under IMC or instrument meteorological conditions. Data modeling and performance characteristics, however, represent actual aircraft specifications and performance of the Eurocopter AS-350B single engine turbine helicopter. The instrument panel provides life-sized navigation and engine instruments that allow for a correct scan pattern and complete aircraft start up, run up and shut down.

The Operator, via the IOS, can change the flying environment such as winds, turbulence, icing characteristics, visibility, ceilings and cloud layers. Any aircraft instrument, receiver or system can be failed immediately, realistically or programmed for a timed failure without

interrupting the student's flight. Both weather and malfunctions scenarios can be saved and re-loaded. The software contains utilities to monitor record and replay flights over a map page displaying the horizontal and vertical flight paths in real time. The navigation data may be from the FAA National Flight Data Center (US only), Jeppesen®, NAVTEC® or other provider of approved navigation data. The data includes airways, intersections, published holding patterns, navaids and airports and airport frequencies. Though designed for instrument training and proficiency, the visual image is actual satellite digital elevation models with a generic texture showing urban areas, major bodies of water, rivers, railroad tracks and major roadways. Every IFR rated airport over 3,000 feet length and its lighting system is accurately depicted. ELITE is capable of using 3rd party enhanced visual scenery and may be included with your training device.

COPYRIGHT

LICENSE AGREEMENT

This is a license agreement and not an agreement for sale. A license agreement is a legal agreement between you, the end user (You), and ELITE Simulations Solutions AG "Licensor." Please read this software license agreement "Agreement" carefully. If you do not agree with the terms and conditions of this Agreement, you should contact ELITE Simulation Solutions AG within 30 days from the invoice date.

NOTE: The user of this manual is expected to know how to fly a rotary wing aircraft. It is not designed to teach instrument navigation or serve as a tutorial for starting, running up, flying or shutting down aircraft. It will not describe the purpose or function of all aircraft specific switches, knobs or levers.

Ownership of the Software

1. The enclosed ELITE software program “Software” and the accompanying written materials are owned by ELITE Simulation Solutions AG, Switzerland, and are protected by United States copyright laws, by laws of other nations, and by international treaties.

Grant Of License

2. Licensor grants to You the nonexclusive right to use one copy of the Software on the TH100 in accordance with the terms of the Agreement. You may not install the software on a network or on a computer other than the one that came as a component of the TH-100 Advanced ATD without express written permission from ELITE Simulation Solutions.

Restrictions on Use and Transfer

3. You may not use the software on another computer or loan, rent, transfer, or assign them to another user except as part of the permanent transfer of the TH-100 aviation training device.
4. You may not copy the Software, except that you may transfer the Software to a single hard disk for backup or archival purposes. You may not copy the written materials.
5. You may permanently transfer the TH-100 Software and accompanying written materials (including the most recent update and all prior versions) if you retain no copies and the transferee agrees to be bound by the terms of this Agreement. Such a transfer terminates “Your” license. You may not rent or lease the Software or otherwise transfer or assign the right to use the Software, except as stated in this paragraph.
6. You may not reverse engineer, decompile, modify, disassemble or create derivative works based upon the Software in whole or part.

Term and Termination

7. This license terminates if you fail to comply with any provision of this Agreement. You agree upon termination to destroy the Program, with all copies, modifications and merged portions in any form, including any copy in Your computer memory or on a hard disk.

Limited Warranty

8. Licensor warrants that the Software will perform substantially in accordance with the accompanying written materials for a period of 90 days from the date of your receipt of the Software. Any implied warranties on the Software are limited to 90 days. Some states do not allow limitations on duration of an implied warranty, so the above limitation may not apply to You.

9. LICENSOR DISCLAIMS ALL OTHER WARRANTIES, EITHER EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO IMPLIED WARRANTIES OF MERCHANTA BILITY, FITNESS FOR A PARTICULAR PURPOSE, AND NON-INFRINGEMENT, WITH RESPECT TO THE SOFTWARE AND THE ACCOMPANYING MATERIALS. This limited warranty gives You specific legal rights. You may have others, which vary from state to state.

10. LICENSOR'S ENTIRE LIABILITY AND YOUR EXCLUSIVE REMEDY SHALL BE, AT LICENSOR'S CHOICE, EITHER (A) RETURN OF THE PRICE PAID OR (B) REPLACEMENT OF THE SOFTWARE THAT DOES NOT MEET LICENSOR'S LIMITED WARRANTY AND WHICH IS RETURNED TO LICENSOR WITH A COPY OF YOUR RECEIPT. Any replacement Software will be warranted for the remainder of the original warranty period or 30 days, whichever is longer. These remedies are not available outside the United States of America.

11. This Limited Warranty is void if failure of the Software has resulted from modification, accident, abuse, or misapplication.

12. IN NO EVENT WILL LICENSOR BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY LOSS OF PROFITS, LOST SAVINGS, OR OTHER INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF YOUR USE OR INABILITY TO USE THE SOFTWARE.
Because some states do not allow the exclusion or limitation of liability for consequential or incidental damages, the above limitation may not apply to You.
13. This Agreement constitutes the entire agreement between You and Licensor regarding the Software and supersedes any other information, advice or representation given to You by Licensor or its dealers, distributors agents or employees. This Agreement is governed by the laws of the State of Florida, U.S.A. and Switzerland, whichever is applicable. If any provision of this Agreement is found to be invalid by any court of competent jurisdiction, the balance of this Agreement shall remain in full force and effect.
14. If You have any questions concerning this Agreement or wish to contact Licensors for any reason, please email info@flyelite.com or write to:

ELITE Simulation Solutions AG
Im Schoerli 1
8600 Duebendorf, Switzerland
or
ELITE Simulation Solutions
5700 Dot Com Court Suite 1010
Oviedo, Florida 32765

15. U.S. Government Restricted Rights. The Software and documentation are provided with Restricted Rights. Use, duplication, or disclosure by the Government is subject to restrictions set forth in subparagraph (c)

(1) of The Rights in Technical Data and Computer Software clause at DFARS 252.227-7013 or subparagraphs (c)(1)(ii) and (2) of Commercial Computer Software - Restricted Rights at 48 CFR 52.227-19, as applicable.

Starting and Configuring the TH100

SYSTEM FEATURES

GENERAL DEVICE DESCRIPTION

- Precise rotary wing aerodynamic modeling
  High resolution, accurately detailed, life-sized instrument panel
- Graphical instructor's station
- Accurately detailed runway environments and lighting
- Automatic local/UTC time set and offset
- Enhanced 3D sound
- Weather and malfunction "state" files with flight recording and replay

NAVIGATION DATA

- US navigational databases (optional world data)
- US GenView ™ Visual Database
- International GPS database
- Add, delete, and modify navigation facilities/ database elements

AVIONICS, INSTRUMENTATION, AND HARDWARE

- Bendix King Silver Crown Avionics
- Garmin GNS 430W or 530W GPS
- HSI/RMI, ADF, DME
- Moving map display
- Autopilot / flight director
- Altitude/vertical speed preselect
- Radar altimeter
- Rotor brake
- Cyclic, Collective, Anti-torque pedals
- AS350B specific switches and throttle unit.

MALFUNCTIONS

- Fully programmable instrument, power plant, avionics, gear, and system failures
- Set immediate, timed, gradual, and random failures
- Accurately modeled insidious failure behavior
- Virtual instrument covers (for partial panel work)
- Create and save an unlimited number of malfunction “state files”.

WEATHER

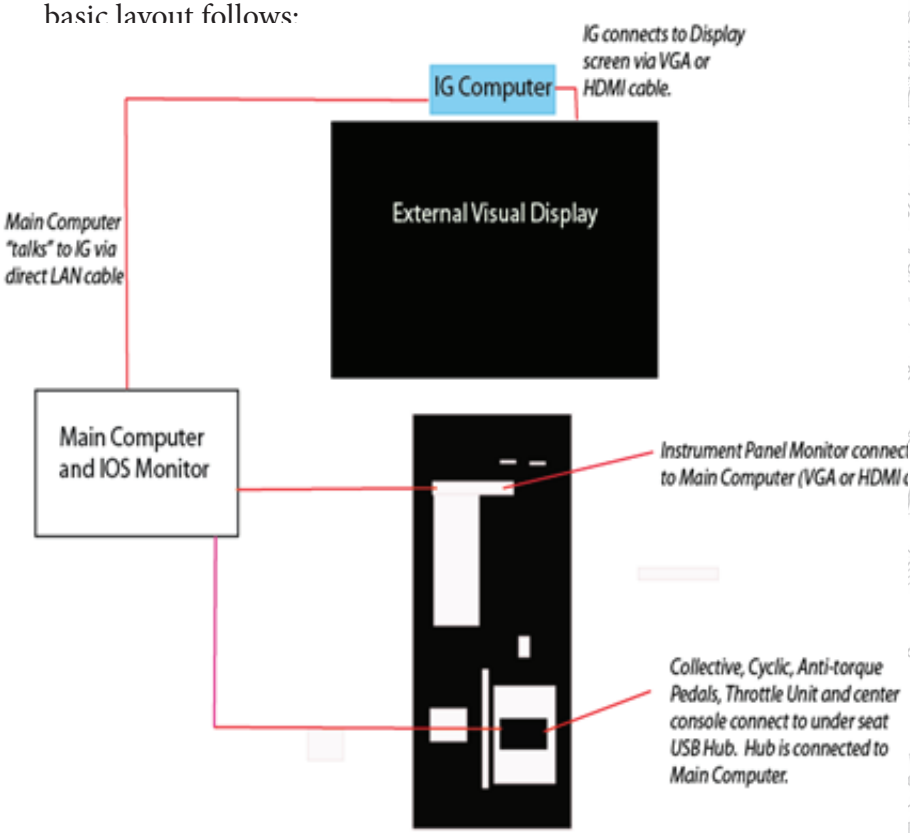
- Advanced static and/or dynamic weather modeling
- Fully programmable wind, turbulence, visibility, clouds, temperature, pressure and icing
- Downloadable METAR reports and integrated real time weather
- Create and save an unlimited number of weather “state” files

MAPPING AND EVALUATION

- Plan, profile and extended profile views
- Gear/ flap position graph and airspeed plot
- Flight Data Recorder with VCR-style playback control
- Virtual airport facility directory
- Transponder tag w/squawk code, heading and altitude readout
- “Spot WX” station model display symbology (wind, temp, visibility and pressure display)
- Quick “click and drag” aircraft repositioning
- Real time and/or recorded flight instrument presentation on IOS Map Screen
- Route planner
- Heading/Distance MAP cursor (instant E6B¬style calculations)
- Instrument Approach Scenarios (optional)
- Print, save, and replay and unlimited number of aircraft “path” files
- Create and save an unlimited number of aircraft “state” files

CONNECTING SIMULATOR HARDWARE TO COMPUTERS

Because the TH100 is PC-based and uses "off the shelf" or OTS components, connecting simulator components to the computers is no more difficult than setting up a personal computer at home. ELITE uses USB technology and provides a USB hub to connect various hardware devices to the appropriate computer. The video cables connect the Instrument Monitor to the Main Computer. The Visual Computer (aka Image Generator) is connected to the main computer via LAN cable and has one video cable to the main LCD display. The computers are clearly marked for easy connection. The basic layout follows:



HELICOPTER evolution SERIES

TH-100 Advanced ATD

NOTE: USB WIBU KEY

The WIBU Key is a dongle that contains the serial number to the simulator's software. If this key is missing, malfunctioned or the WIBU key driver is missing or corrupted, the simulation will stop in 3 minutes! If the simulator freezes in 3 minutes, make sure the WIBU key is in plugged into a functiong USB port on the HOST computer (NOT image generator computer) and the device is recognized and operating properly in the Windows Device Manager. Contact ELITE for additional support if needed.

NOTE: Surge protectors are essential to the protection of your electrical equipment!

DO NOT POWER ON COMPUTERS OR EQUIPMENT UNTIL ALL COMPONENTS ARE CONNECTED TO POWER!

Failure to do so will result in Windows Operation System reconfiguring important display settings.

1. Plug the main USB cables coming from the helicopter base into the back of the main Apple iMac computer.

2. Plug the LAN cable into the iMac LAN port and the other end to the IMAGE Generator computer LAN port.

3. Power cords from 2 computers (iMac and Image Generator behind TVs) and all display TV(s) plug into the surge protector mounted to front end helicopter base.

4. Labeled VGA/HDMI video cables go from TV(s) to Image Generator computer.

STARTING UP AND SHUTTING DOWN THE TH100

- **Use the Power Switch to turn on or "launch" the main computer system.**

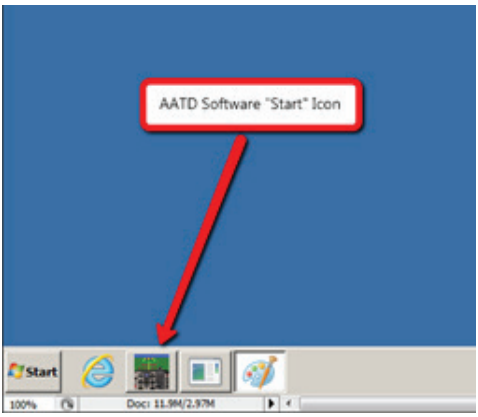
NOTE: This is a remote switch to the power outlet that comes with the trainer. If the power outlet is changed, this remote switch will NOT work and the main power switch on the power outlet must be used as the Master Power Switch.

- **This remote power switch controls both the main computer AND the Image Generator (external visual computer) through the surge protector mounted on the helicopter base.**
  Turn on the external visual display(s) screen (large screen LCD TV(s).
  NOTE: The Instrument LCD monitor on top of the center console is defaulted to Power On.

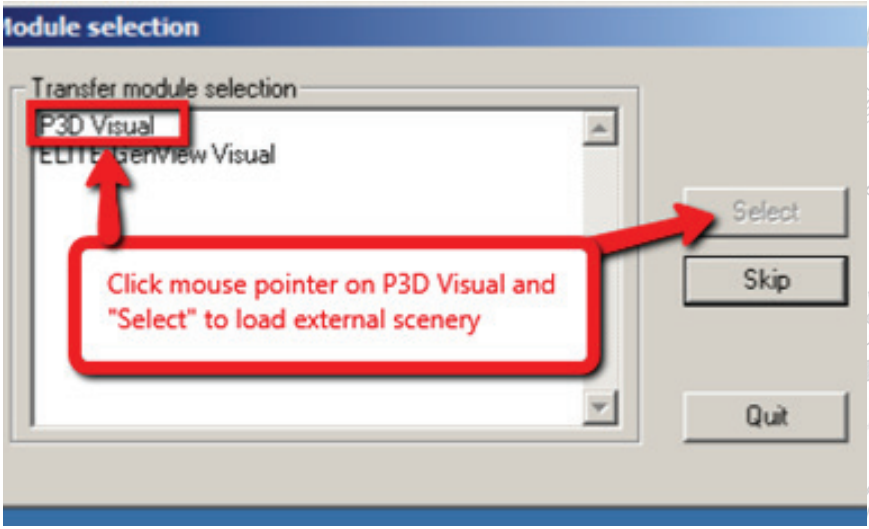
- **The external visual computer has completed booting when you see visible scenery. It is in a "wait mode"… waiting on communication from the main computer.**

- **The startup screen for the ATD (main Windows desktop) will be on the iMAC Instructor display screen (IOS)**

1. Click on the ATD icon to start the helicopter software.



2. Click on the P3D Visual module and Select. This enables ELITE to communicate with the visual scenery.



3. **Choose your navigation database** by highlighting your desired navigation area and clicking "choose" or double clicking on the navigation area icon.

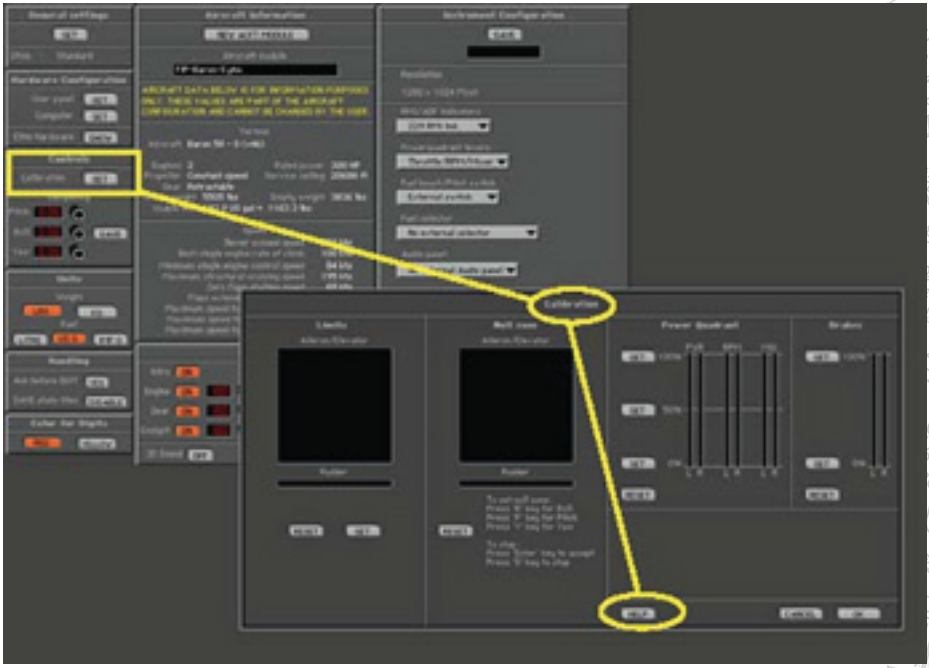
4. The main computer will connect or communicate with the image generator and you will see the aircraft position itself… first an aerial view then positioning on a runway threshold. The instrument and engine gauges will appear.

5. Before the first flight, it is important to calibrate the flight controls. This is a simple exercise to teach the software the range of values from the pitch, roll, yaw, brake and throttle movements. This calibration is only required for the first flight and in the event that the flight controls have been disconnected and reconnected (ie. device has moved). To calibrate the flight controls:

a. Bring up the program menu selections on the instructor LCD (right mouse click anywhere on the screen).
b. Choose **CONFIGURATION**
c. Left mouse click on CONTROLS CALIBRATION
The calibration dialog box will open; left mouse click on HELP
d. Follow on-screen instructions to calibrate the controls
e. Click OK to continue when finished and change

CONTROLS CALIBRATION SCREEN

Press HELP and follow instructions

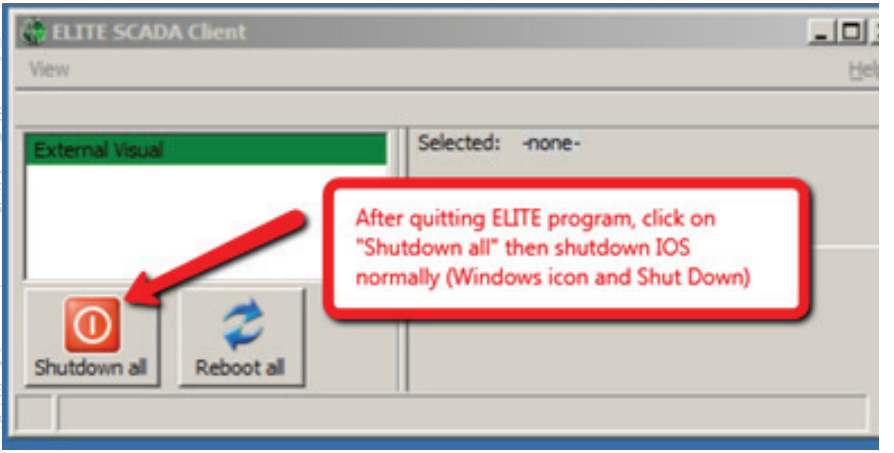


The flight controls, switches, levers and knobs perform the same function as their counterpart in the real aircraft. At this point you can change frequencies, adjust instruments and perform all procedures for flight as you would in the actual aircraft. The flight may be paused at any time by pressing the FREEZE button on the center console avionics panel or by using the main screen (Instructor screen) menu FREEZE selection.

SHUTTING DOWN THE TH100

Proper shutdown of the TH100 computer systems must be done from the Instructor/Operator Station (IOS) screen.

1. Quit the ELITE program (ALT Q shortcut or QUIT on menu dialog box) to the desktop.
2. At the SCADA Client dialog box, click SHUTDOWN ALL. When the external displays and image generator has stopped, perform a normal windows shutdown on the main host computer



At the Windows desktop, the Operator should use the typical Windows **"START BUTTON" / SHUTDOWN"** process.

NOTE: You do not need to turn the power off to the instrument panel LCD monitor. To remove power completely from the system, simply turn the power off to the surge protector.

INITIAL CONFIGURATION: THE CONFIGURATION PAGE

It is recommended that this page be reviewed carefully. After configuring to your satisfaction, press the SAVE button (RIGHT TOP CORNER) to keep all values. These selections are stored in a PREF folder in the program directory. These values will be read when starting the program. Once set, you will seldom need to go to this page. The instructor or operator can set a password to prevent access to the Configuration Page.

Certain features of the aircraft can be changed or configured to personal preference or training requirement. An example of Configuration was the control calibration performed as described above.

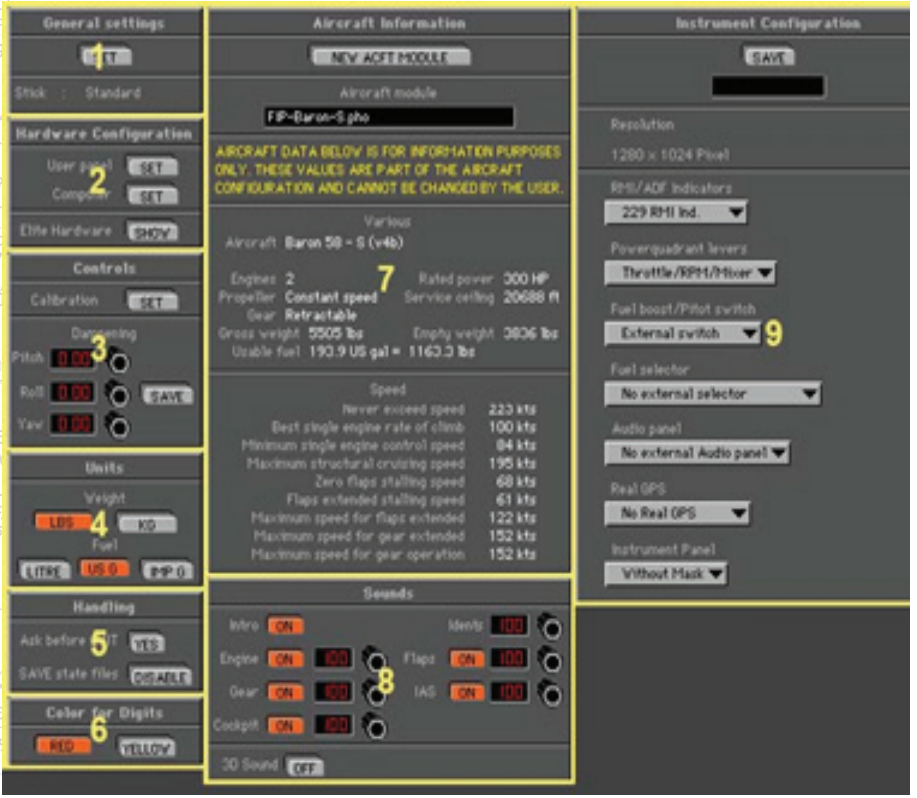
You get to the CONFIGURATION PAGE by right mouse clicking on the instructor's monitor when ELITE is running. This brings up the ELITE Main Menu. **Click on CONFIGURATION PAGE or use the keyboard shortcut "alt G".**

The Configuration Page consists of nine sections as shown: General Settings (1), Hardware Configuration (2), Controls (3), Units (4), Handling (5), Color for Digits (6), Aircraft Information (7), Sounds (8) and Instrument (9). This section will cover the basics to get the TH100 up and running. Other information from this screen will be covered in Chapter Two.

Box 1: GENERAL SETTINGS

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

CONFIGURATION PAGE DESCRIPTION



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; adjust volume levels
- calibrate flight control devices
- load new aircraft modules
- save instrument configurations where applicable.

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

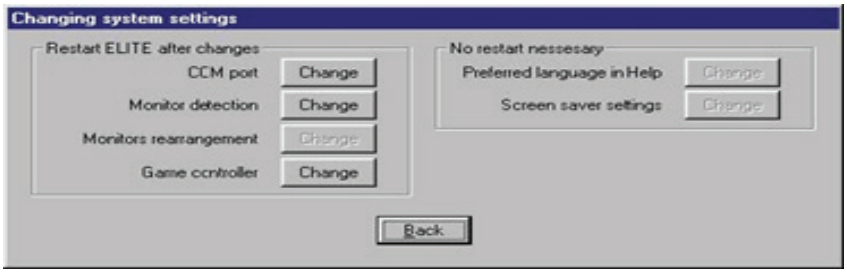
NAVIGATION DATABASES

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 NAV area you would like for subsequent startups, then turn OFF "Ask for Navigation data bases at program start" buttons.

Box 2: HARDWARE CONFIGURATION.

C**HANGING SYSTEM SETTINGS:** Do NOT USE Changing System Settings unless instructed to do so by ELITE Technical Support personnel.

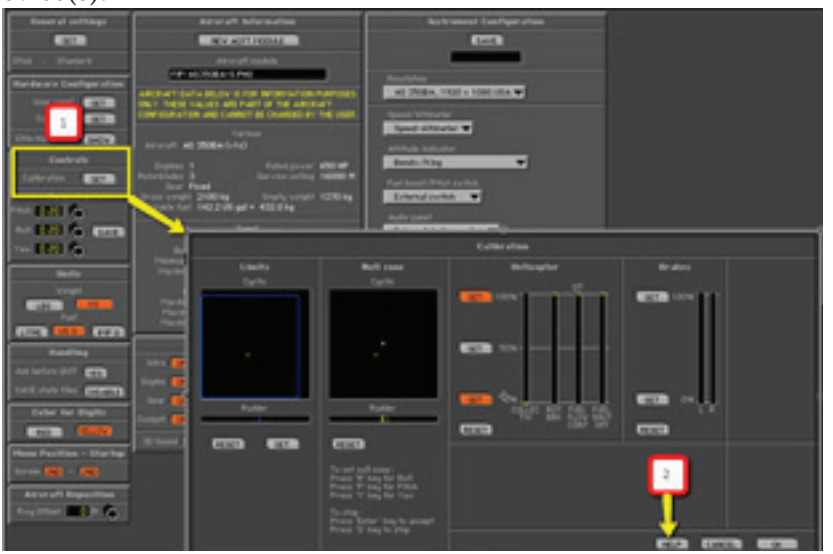


Adjustments to System Settings can render the TH100 inoperative!

FLIGHT CONTROLS CALIBRATION & DAMPING

Calibration is necessary to bring the TH100 flight controls (cyclic, collective, anti-torque and throttle system) controls into proper tolerances and allow ELITE to learn the limits of the of the controls. (Pressing the HELP button in the Calibration dialog box will open on screen instructions and walk you through the calibration process.)

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 Helicopter respectively.
Follow these instructions to properly calibrate your flight control device(s):



LIMITS

Under Limits, click the **RESET** button. Notice the small cross-hairs in the box just below "Cyclic." Now move your cyclic control through its FULL range of motion, i.e. left, right, forward and backward to the stops. The cross-hairs have now traced a blue box graphically representing the limits of the control device being used. Next apply FULL left and right anti torque. You will see a small vertical line move with the application of pedal 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(s) is considered centered. If a flight control does not physically return exactly to center but is still within the limits of the "box" under the Null Zone panel, no flight command input will be sent to the sof ware. 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 key board and move the cyclic to adjust the size of the (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 cyclic to adjust the size of the (Pitch) Null zone. To accept this setting hit ENTER or press the "S" key to return to the previously stored value. Next press the "Y" key on the key board and move the pedals to adjust the width of the of the (Yaw) Null zone.

NOTE: Clicking the RESET but ton 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.

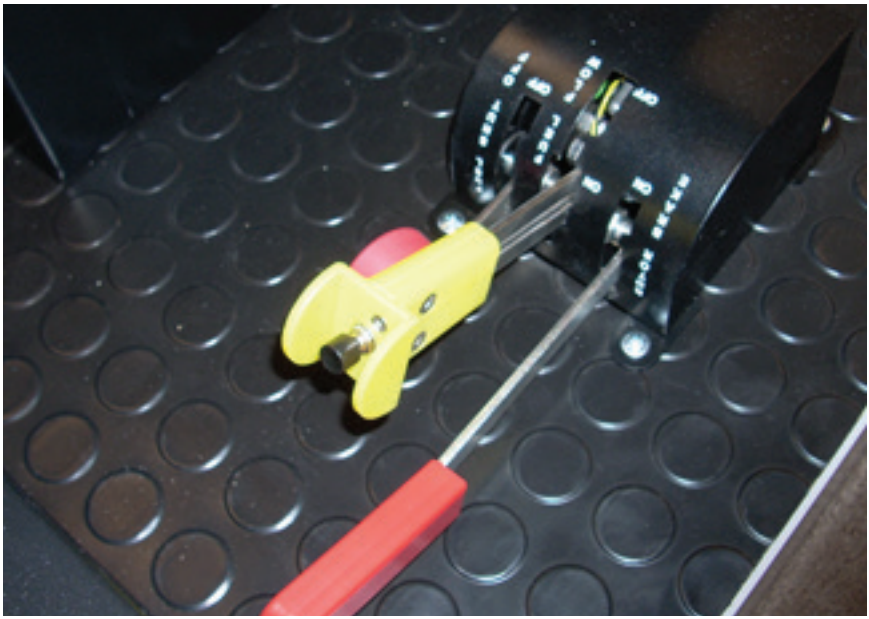
HELICOPTER POWER QUADRANT

Under Helicopter, click **RESET**. Now physically move the Collective, Rotor Brake, Fuel Flow Control and Fuel Shut Off levers to their halfway or 50% position.

Do NOT use lines on screen under COLLECTIVE, ROT BRK, FUEL FLOW CONT and FUEL SHUT OFF 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, raise the collective and move the levers FULL forward (Rotor Brake OFF, Fuel Flow ON, Fuel Shut Off 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 & 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 effect.

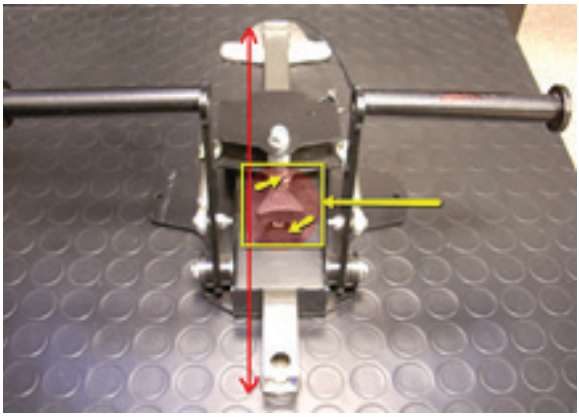


Real aircraft are inherently stable, simulators are not. For in experienced simulator pilots, the most common difficulty is over controlling or getting used to the control sensitivity.

Practice basic flying maneuvers as you would in any new air craft transition before starting your IFR practice. Remember "the less is more" adage and make small pitch and roll corrections for variation in altitude and/or heading. Do NOT chase the VSI. Monitor instrument/needle trend, not just movement. This makes for smooth, precise, instrument flight and prevents awkward action/ reaction responses.

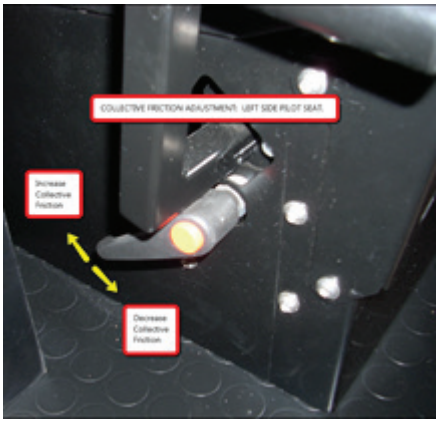
ANTI-TORQUE PEDAL ADJUSTMENT

The TH100, like most small helicopters, does not have an adjustable seat. Size is accommodated with adjustable anti-torque pedals. To adjust the TH100 anti-torque pedals, turn the lock screw knob counter clockwise to loosen, adjust the pedals to your satisfaction and turn the lock screw know clockwise to tighten and secure the position of the pedals.



CONTROL FRICTION ADJUSTMENT

The friction on the collective and cyclic control can be adjusted individually:



USB BUTTON

Press "USB" button to see ELITE USB hardware connected

ADJUSTING CONTROL SENSITIVITY:

Increase or decrease numbers in the P, R, Y boxes to adjust control sensitivity. Start with low to mid-range. Yaw usually requires more dampening than pitch or roll. Click on SAVE to store new dampening values after adjustment. values and adjust to your satisfaction.

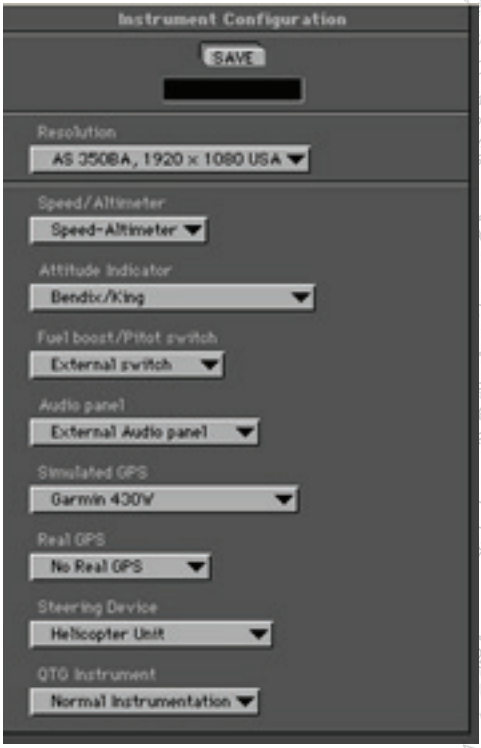
Numbers between 0.00 (no dampening) and 0.20 (maximum dampening) change the sensitivity of flight control devices.

SECOND MONITOR

Pressing the **2ND SCREEN** button assigns the program menu to the 2nd monitor. This allows someone sitting at the instruc-

INSTRUMENT CONFIGURATION

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



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

The selected option will be indicated, replacing the previous selection.

NOTE: Some options may NOT be available even though there is a configuration option! Contact ELITE if there are any doubts.

INSTRUCTOR / OPERATOR STATION (IOS)

MENU DESCRIPTION AND OVERVIEW

When the instruments are displayed in the cockpit and the external visual displays shows a runway, the IOS LCD monitor will depict a map screen. From here, the operator can access all areas of the program through a MENU system. A brief over view of the MENU items follow:

PROGRAM MENU

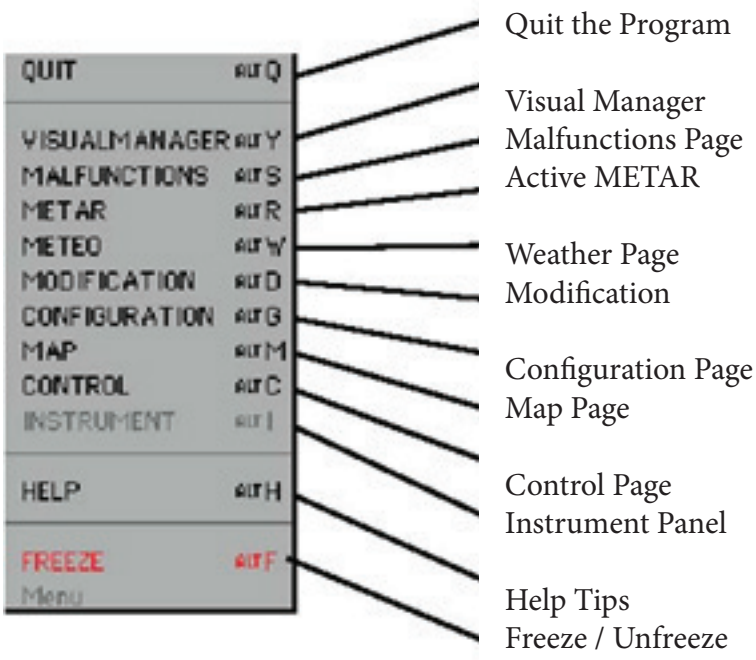
After starting the program, you will enter the simulation in the cockpit (in front of the Instrument panel).

The MENU button at the bottom right of your instructor screen is your access to the many features.

Click and hold on the MENU button to open the menu. While holding your mouse button, move the cursor to the menu selection and release. As you move through each selection, the item to be opened will be highlighted. **Keyboard shortcuts are listed beside their corresponding menu item**. For shortcuts, hold the key board ALT key and the designated letter. CAPS Lock should be OFF.

NOTE: The simulation is in the FREEZE mode if Menu or FREEZE is colored red.

ELITE MENU STRUCTURE



The following is only an overview of the MENU layout. For detailed capabilities and operations, see Program Features

NOTE: Keyboard shortcuts right of menu title. Shortcuts save time and allow instructor to change menus without alterting the student. Clicking on menu page will FREEZE simulation.

MALFUNCTIONS PAGE

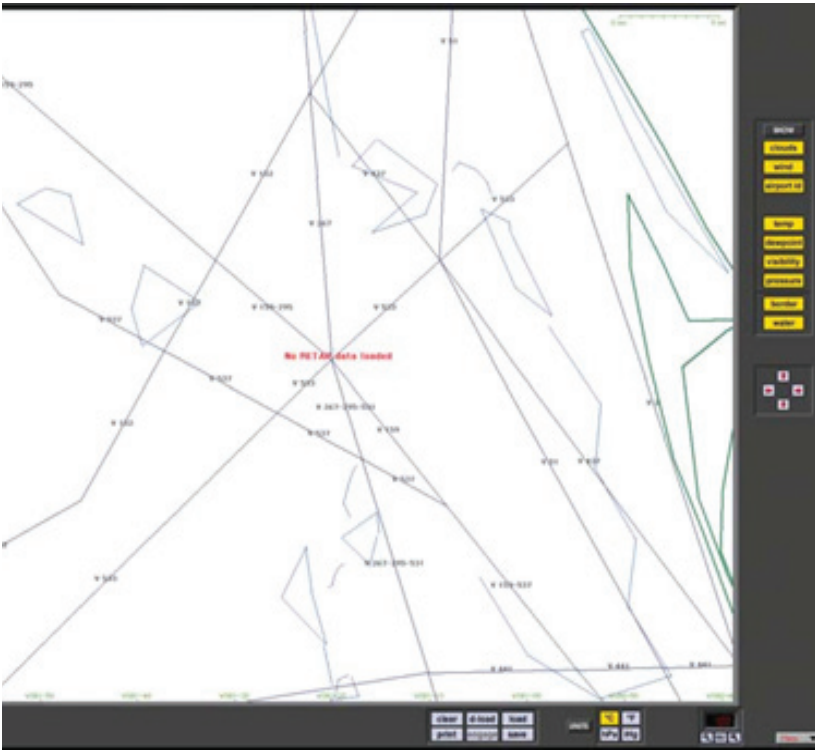
The MALFUNCTIONS Page is used to create failure scenarios. You have the opportunity to selectively or randomly fail individual instruments, systems, avionics, engines, gear, tail rotor, hydraulics and more.

METEO PAGE

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

METAR PAGE

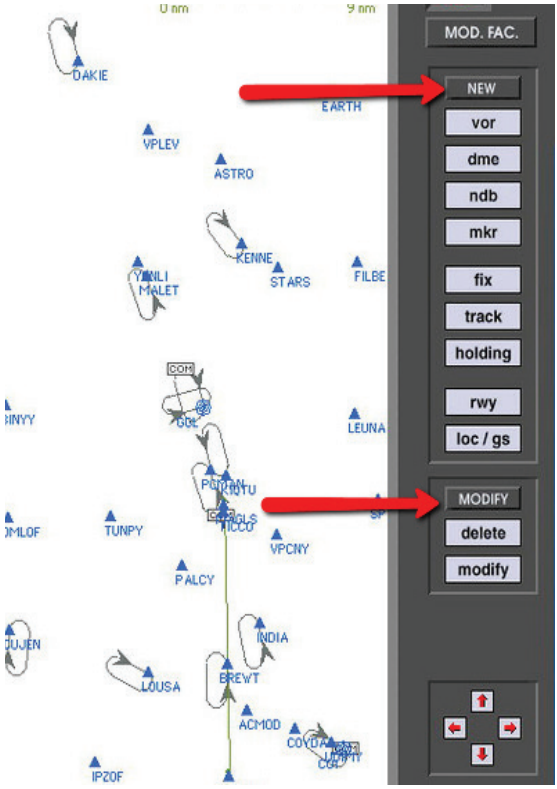
NOTE: The METAR real-time down load feature is only available with GenView visual scenery. It is currently not available with the



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.

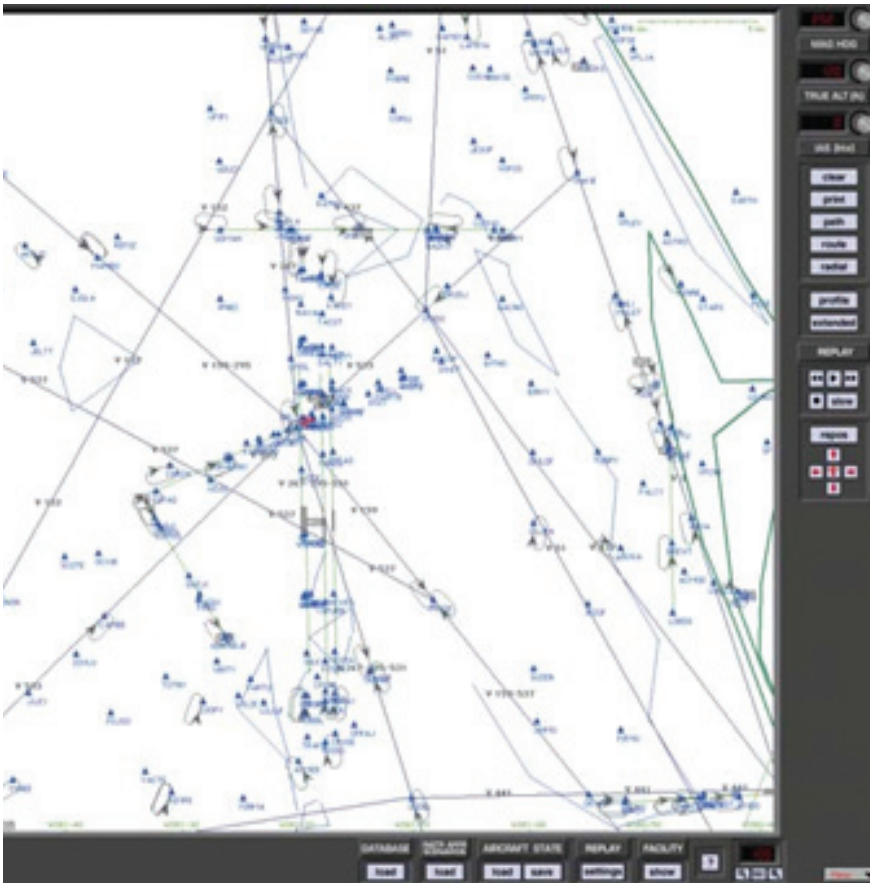
MODIFICATION PAGE

The **MODIFICATION** Page is used to add, delete or modify up to fifty navaid or facility modifications or additions for each navigation data base area. For example, the US is divided into 9 areas. x 50 = 540 modifications to the navigation database.



NOTE: Modifications to navigation data will not be reflected in the visual scenery.

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. Over 15 map features can be displayed at 8 separate zoom levels. 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 Instrument Approach Scenarios (IAS).

CONTROL PAGE

The **CONTROL** Page allows you to set date and time of day, airport lighting features and runway markings. Activate yaw control (for using rudder pedals), adjust fuel loading and aircraft weight configuration and call sign. Save and load training situations you created (training states) or load optional Instrument Approach Scenarios (IAS).

INSTRUMENT PAGE

Selecting **INSTRUMENT** brings you back to the aircraft's instrument panel (cockpit). With an IOS (instructor monitor), the INSTRUMENT panel will always be visible.

FREEZE

The FREEZE selection suspends the simulation. Aircraft parameters (i.e. power settings, frequency changes, OBS selections, etc.) can still be changed and the Hobbs meter continues to run. When first entering ELITE, the program is in the **FREEZE** mode as indicated by a red MENU triangle in the lower right corner of the screen. When FREEZE mode is released, the aircraft engine(s) will be ON.

QUIT

Selecting **QUIT** ends the program and returns you to the IOS (Host Computer) operating system.

MAP PAGE

"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.

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, monitor the flight path and to review the flight once you have finished flying. The MAP page allows the instructor to monitor the progress of a flight in real time. Similar in appearance to an IFR Low En route 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, glide slopes, 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

POSITION

The red aircraft symbol shows the actual aircraft position and heading. Geographical coordinates of the current view area appear in green and are located on the left side and bottom of the map for reference.

MAP SCALE

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

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

NAV DATA SYMBOLS

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

NDB (with identification)

DME (with identification)

ADF (with identification)

VOR (with identification)

FIX (with identification marker)

Holding pattern with direction arrow

Glide Slope indicator / Glide Path Track

Marker beacon location


Mouse cursor


ZOOM in


ZOOM out


ZOOM Limit (enlarging or reducing)


Head/Distance (Shift key)
Add point (route planner)


Rroute planner (add or remove waypoint)


Change/Move point (route planner)


Active runway


Localizer transmitter (yellow)


Glideslope transmitter (red)


Runway with displacement


Airport symbol


Communication frequencies

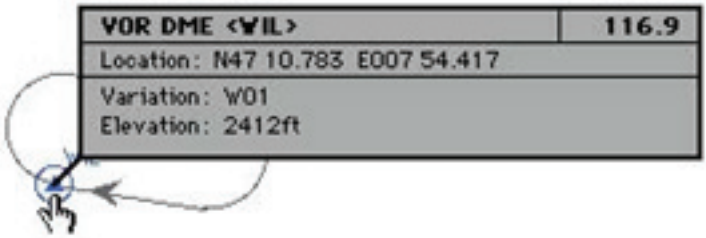
NOTE: Click on this box  ***for other shortcuts!***

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)

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 on it with the mouse**. For runway information, click on the runway's threshold.



In the example above, 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. The MAP Page is a virtual facility directory. Just point, click and hold!

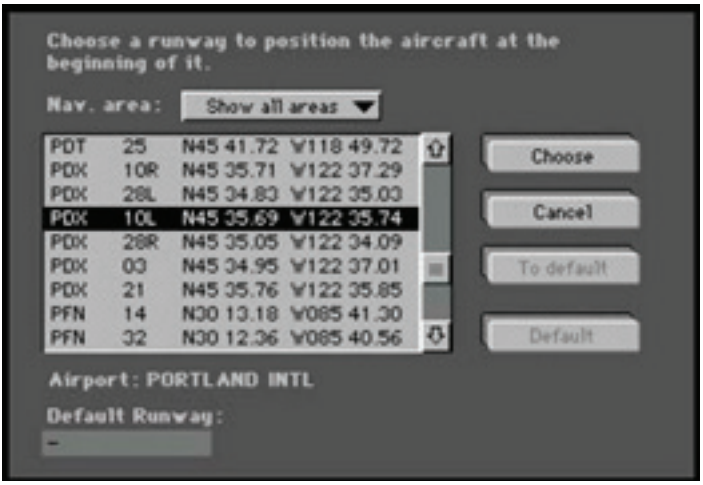
MAP BORDERS

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.

REPOSITION

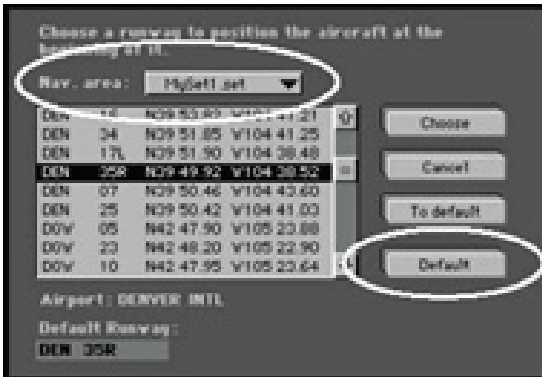
To easily reposition the aircraft to a specific ai port and run way, click on the **REPOS** button located toward the bottom-right of the MAP page. A list of every airport in all currently loaded NAV databases will be listed alphabetically by ICAO airport location identifier (LOCID). Click to reposition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



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/long is now highlighted and the airport's name is indicated just below the scrollable view flying area. The example above shows Portland International (PDX) run way 10L selected. Click on CHOOSE to position the air craft at the threshold of the selected run way.

Cancel repositioning by clicking on CANCEL. You will return to the previous display.

DEFAULT RUNWAY



It's first necessary to select the specific NAV database (or NAVset) where the desired default airport/runway is located. 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. In the example on the previous page, we have chosen to use "MySet1" (see "Creating NAV Sets" on page 216.) Click on the airport/run way you would like to make the default, then click DEFAULT. Notice the airport identifier and runway selected (DEN 35R) now appear in the "Default Runway" box at the bottom-left. To actually go to the default run way now (or at any time in the future) simply click on TO DEFAULT. With a default airport/runway now saved, ELITE will automatically position the aircraft there on each subsequent startup (assuming the same NAV database/NAVset used to select the default airport/ runway is utilized).

NOTE:

You may choose one preferred (default) run way for each and every individual NAV data base or NAVset. The de fault run way always remains associated with the NAV data base or NAVset from where it was chosen. Since "MySet1" contained the USSW, USSE, & USNW data bases, we could have chosen a default airport/runway for each individual database, in addition to the one created for the entire NAVset.

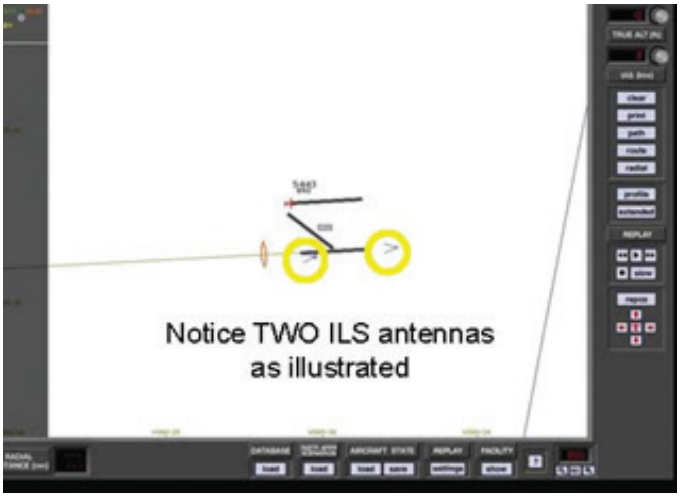
‚MANUAL REPOSITION

It is also possible to reposition the aircraft manually by simply **dragging the aircraft symbol** to a new location. 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.

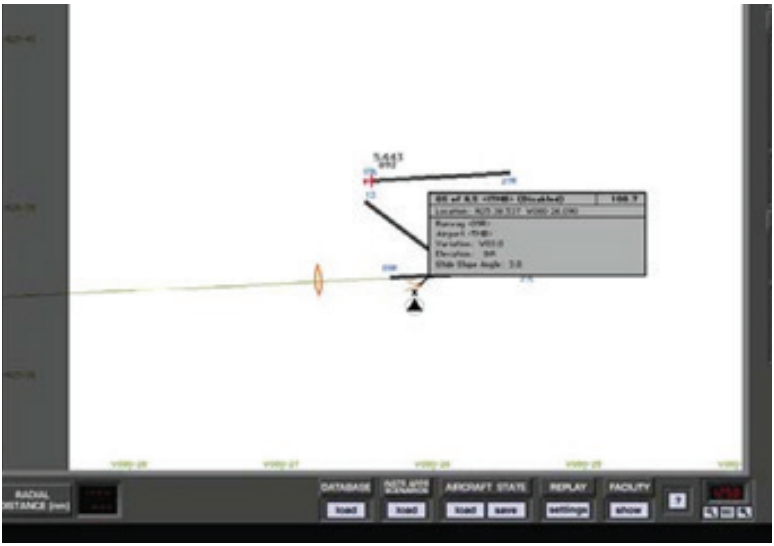
MULTIPLE ILS/DESELECTION

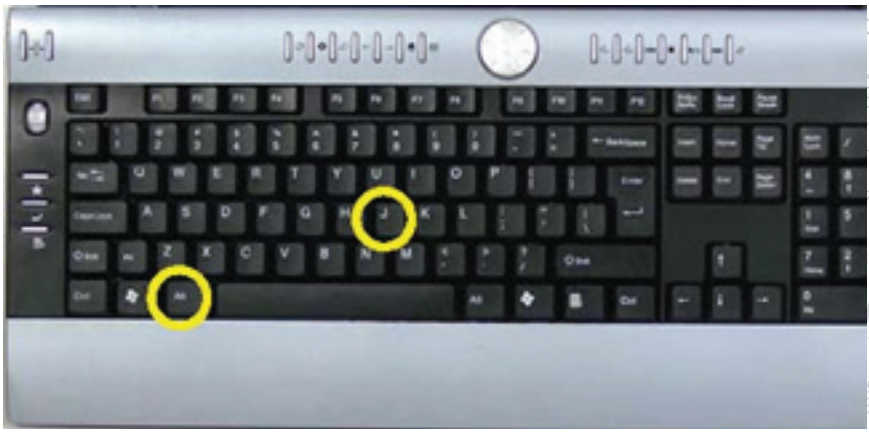
Many airports in the US have the same ILS frequency for both ends of the runway. For example, Runway 27 and runway 9 at XYZ airport may have 109.90 as the ILS frequency. If runway 27 is used for approaches, the tower will turn off the ILS transmitter for runway 9 to prevent any false ILS indications.

As within the real world, you must deactivate or deselect the unused ILS should there be an ILS frequency conflict. If you are flying the trainer in the vicinity of XYZ airport, tune the ILS and do not hear identifiers, this is due to the ELITE software not knowing which ILS on which end of the runway you want. Therefore you must deactivate the unused ILS with just a few clicks of the mouse.



To Deactivate the ILS





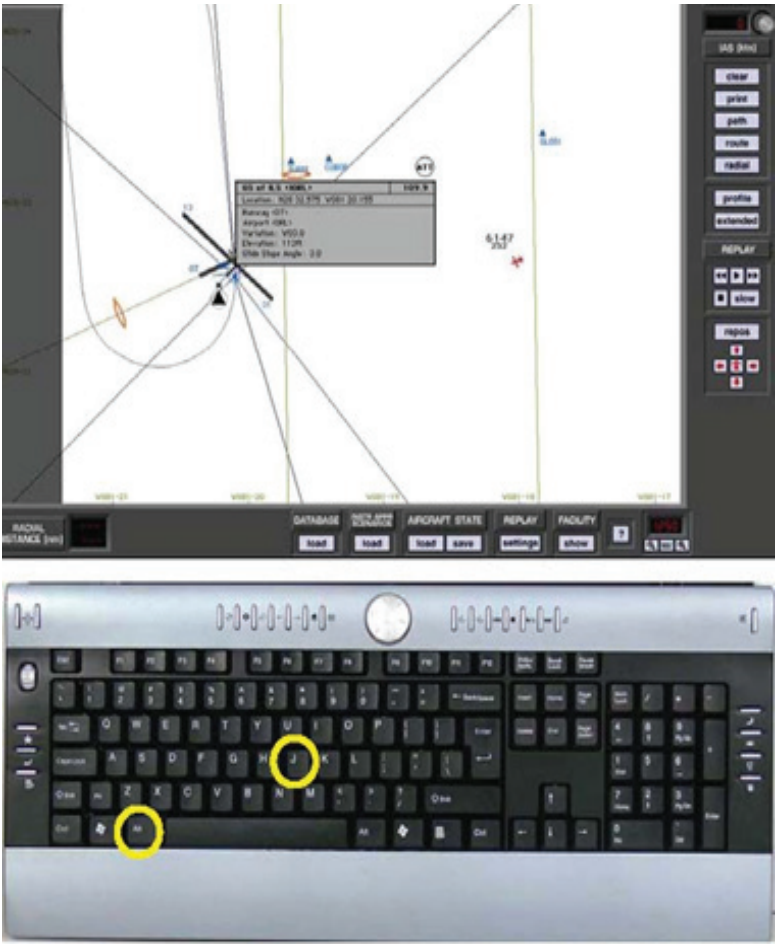
1. Select <ALT> and <J> simultaneously.

2. The "finger" pointer will change to the "select/ deselect" icon.

3. Using your mouse place the "x" over the apex of the ILS you wish to deselect and push the left mouse button. The ILS antenna icon will change color from blue to amber.

4. The navaid databox will display showing the ILS is disabled.

To Reactivate the ILS



1. Select <ALT> and <J> simultaneously.

2. The “finger” pointer will change to the “select/ deselect” icon
.
3. Using your mouse place the “x” over the apex of the ILS you wish to reactivate and push the left mouse button. The ILS antenna icon will change color from amber back to blue.

4. The navaid databox will display showing the ILS is now enabled.

AIRCRAFT SNAPPING

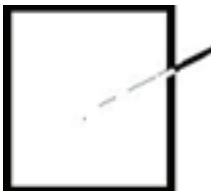
Bring the aircraft symbol near any runway thresh old to “snap” to it. This will instantly place the aircraft on the runway threshold (at field elevation) of the runway “snapped” to. This is especially useful for quick repositioning from any location, altitude, heading, air speed etc., to any specific airport runway. Al though available at all ZOOM levels this feature is much easier to use at HIGH (close-in) ZOOM levels, where the runway lay out 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 key board can also be used to scroll the visible MAP view. If your scrolling takes you away from the current air craft position (i.e. to explore the surrounding area) and the air craft 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 a row buttons or pressing the “c” key on the keyboard.**

CENTERING

CTRL Click to locate aircraft



Click AC symbol to bring aircraft to MAP center

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.

MAP ZOOM LEVELS

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.

CUSTOM ZOOM LEVELS

The zoom percentage is indicated on the display relative to the 100% view level.
You may zoom directly to an area of your choice (custom ZOOM) by tracing a rectangle around the perimeter of the area to be ZOOMed. Hold the ALT key then click-and-drag to create an outline around the desired area. Release the mouse button for the new ZOOMed view.
Storing custom ZOOM Level: You can store one custom ZOOM

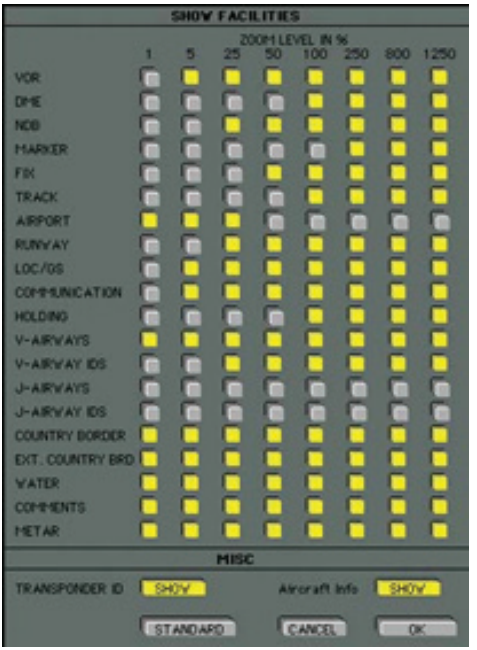
Level in addition to the preset ZOOM Levels (1, 5, 25, 50, 100, 250, 800, 1250). To store a custom ZOOM Level:

- Select the area you would like to ZOOM on by holding down the ALT key and drawing a marquee around the desired area.
- CTRL-Click in the ZOOM level window to store the custom ZOOM level created in previous step.
- 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 over write 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 centered, NOT aircraft centered. If the aircraft is not in the center of the MAP page and you ZOOM IN, the aircraft may be temporarily "lost." To "find" the aircraft and re-center the MAP page to it, click on the red aircraft symbol located near the bottom-right of the display.

SHOW FACILITIES

Click on the **SHOW** but ton for the "Show Facilities" dialog box. Specific map details are displayed dependent upon **ZOOM** level. At high ZOOM levels for example, markers are visible and runways labeled with their **FACILITIES** magnetic direction. At lower ZOOM levels, certain map elements (facilities) are not displayed to prevent clutter and maintain map readability.



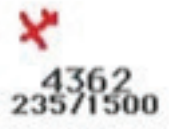
NOTE: You may determine which MAP elements (facilities) are displayed for corresponding ZOOM levels.

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.

TRANSPONDER TAG

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



In addition to the standard MAP elements (NAV facilities, air ports, 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 Page is called up, users with an instructor's station (multi-monitor system) can observe it updating in real time as would an air raffic 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 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 ransponder switch is in the ALT (Mode-C) position.

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" symbology 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 on page 105) 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 southeast at 15 knots, OAT 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.

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 pushed in (ON). The spot weather data appears at the upper-left corner of the MAP Page at the top of the shaded information display region.

NAVIGATION DATABASES

All airports, airport lighting, fixes, NDBs, VORs, localizers, glide slopes, communications data etc. are contained in regional navigation data bases. 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 North America (shown below).

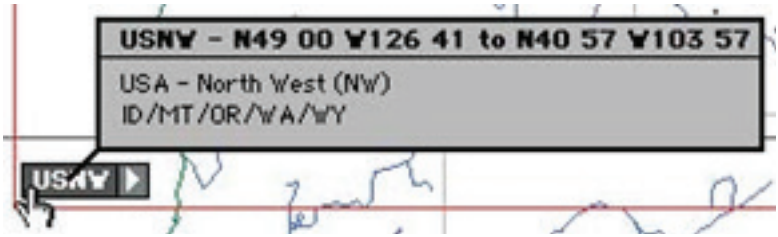
For example, notice there are boxes visible across the U.S. that define the regional boundaries of each NAV database. From this same view you can also determine if a specific NAV data base (region) is loaded. Gray boxes indicate data is available but not loaded. Red boxes indicate the data within its boundary is loaded and ready for use.

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

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.

There can be several sources of navigation data with the trainer: the data shown on the map screen (provided by ELITE); the GPS nav data provided by Jepp/Garmin and the visual data provided by ELITE, Lockheed Martin or other 3rd party visual provider. All data will not be necessarily synced or dated the same.



LOADING NAVIGATION DATA

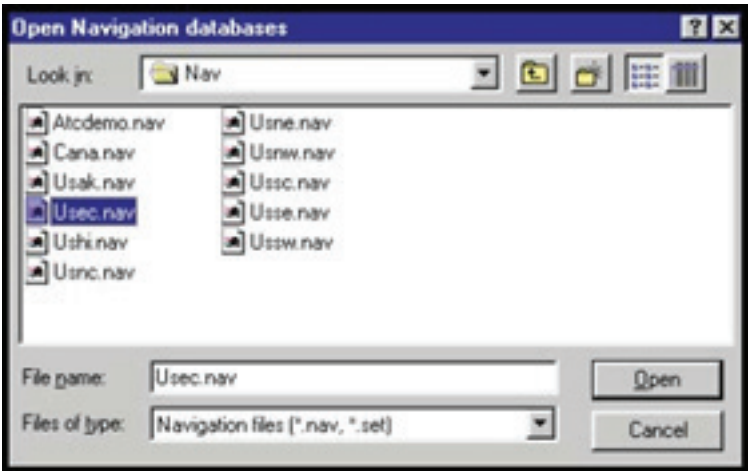
Click and hold on the arrow symbol part of the label. Move the cursor to Load Database and release the mouse button. When data has successfully loaded, the gray boundary box will turn to red. Click on

arrow symbol once again and notice that Load Database is now grayed out and no longer avail- able for selection but you can choose to release it (to free memory) or unlock it for modification (to be covered later).

NOTE: Multiple NAV databases (regions) can be loaded simultaneously as desired. To load multiple data bases, repeat the process described previously for each additional data base.

CHANGING NAVIGATION 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.

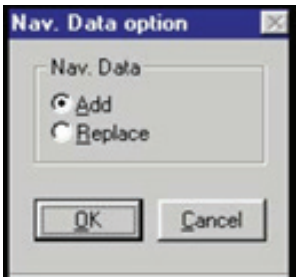


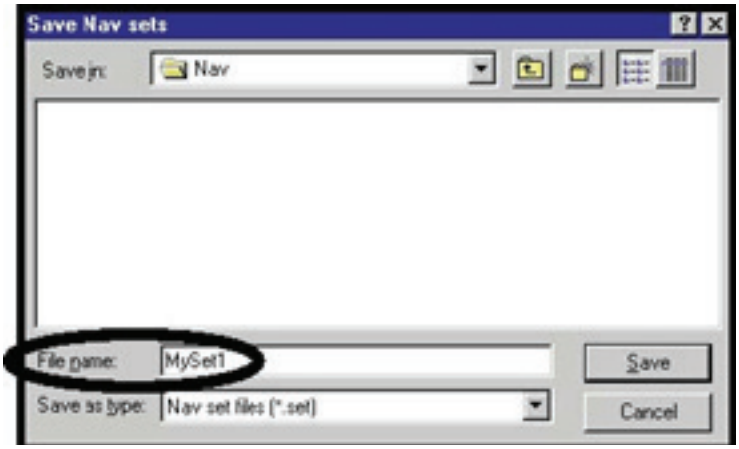
NOTE: The last database loaded with the Load function is kept in memory and also used at the next startup.

CREATING NAV SETS

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 load ed database with the selected one, click on REPLACE. Click OK to complete the operation,

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 DATABASE LOAD button to display the following window:





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, & USSW database regions, then saved them as one custom NAVset named "MySet1." This NAVset will now appear with the other available data bases and NAVsets at program startup. It will also be available for loading from the Open Navigation Data bases window described earlier.

INSTRUMENT APPROACH SCENARIOS (IAS)

The OPTIONAL Instrument Approach Scenarios (several add-on regions available) are scripted approach exercises own 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.

One sample scenario is included with each ELITE package (an ILS approach into Champaign-Urbana, Illinois). The approach plate for this demo scenario can be found in the supplements section at the back of this manual or in the ELITE "Manuals" folder on your computer.

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 (EC3, SE3, etc.) for the region you would like to fly in. Select and open the desired Instrument Approach Scenario from those listed. NOTE: 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 scenario.

IMPORTANT IAS NOTES

Make sure to load and/or verify that the appropriate Navigation Database (IASEC3, IASSE3, etc.) is active before using the Instrument Approach Scenarios. For example, to fly a scenario in the EC3 (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 appropriate approach plate icon on your desktop. The plates are in Adobe Acrobat® format (.pdf) and can be printed for more convenient use.

Whenever the program requires your attention you will hear 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!

STATE PANEL

The state panel makes it possible to save and load aircraft "state" files. You can think of state les as a way to take a "snapshot" of the aircraft's state at any given moment in time.

When you save a state le the aircraft's position, altitude, heading, airspeed, etc. are stored along with current avionics settings (frequencies, auto pilot 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 setup 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. Once everything is to your liking be sure to name the state file something that will be meaningful now and in the future. A good naming convention is to include an airport identifier or nearby Navaid and brief description such as "ORL ILS RWY 7 Low Ceilings."

Even if you haven't loaded this file in a while it will be easily identified as the ILS approach into Orlando Executive's runway 7 (with low ceilings). This is much better than "My first ILS."

HEADING PANEL

Click in window for reciprocal heading

Aircraft Heading can easily be changed with the **MAG HDG** panel. Magnetic heading in degrees is displayed in the window next to the heading ad just knob. To change it, click and drag on the heading adjust knob until the desired value is indicated. Notice the red air craft symbol on the MAP page 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.

ALTITUDE PANEL

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

Single-click for 500 foot increments

To change altitude in 500 foot increments, first single-click on the altitude adjust knob. The knob will push in. Click and drag on the altitude adjust 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.

AIRSPEED PANEL

Aircraft Airspeed can easily be changed with the IAS panel. Indicated airspeed 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 re-trimming 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.

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.

GLIDE SLOPE LIMITS

The **"G" (glide slope limits) button** toggles the glide slope limits overlay ON/OFF. This overlay graphically represents the electronic glide slope signal limits of the specific approach. The "G" button and glide slope overlay only become available after the proper ILS frequency has been tuned in and the approach begun. Color 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

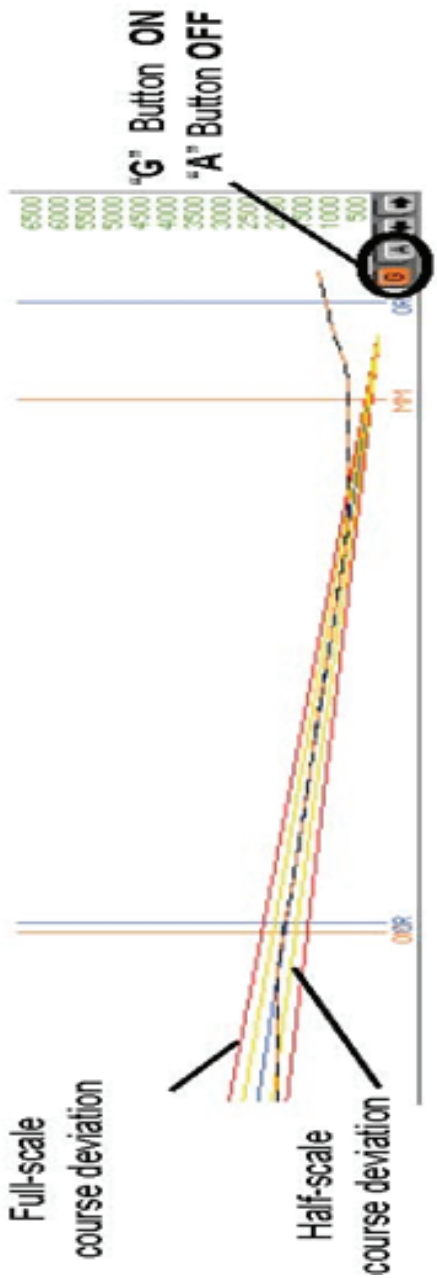
The two arrow buttons are used to scroll the profile view left and right respectively, and operate independent of the main MAP view.

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.

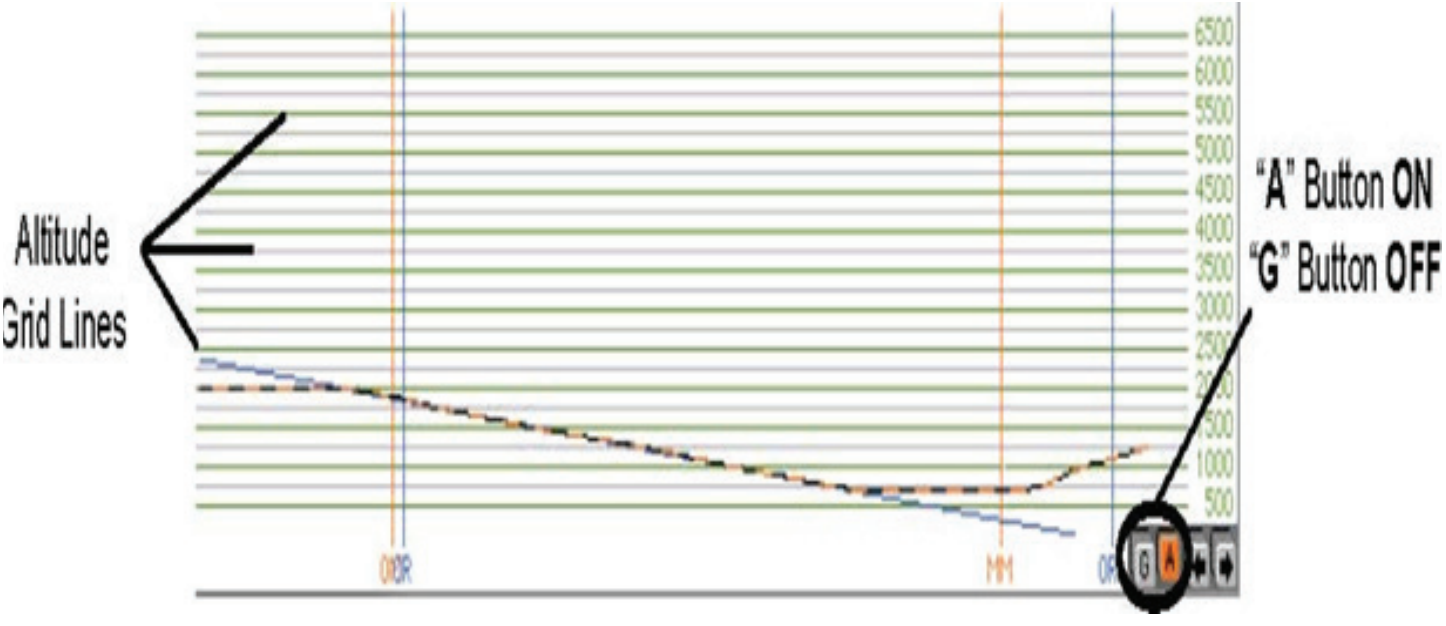
Profile View Examples:

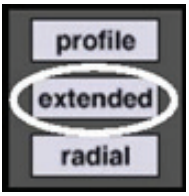
The following example profiles demonstrate several of the different view options described in the previous section. The profile was

created flying the ILS RWY 7 approach into Orlando Executive (ORL) airport. For illustration purposes, the glide slope was tracked to the non-precision Minimum Descent Altitude (MDA) and NOT



Two more pro le views of the ILS RWY 7 approach into Orlando Executive airport.
Top: Pro le view with glideslope limits overlay turned **ON**.
Bottom: Pro le view with altitude grid lines turned **ON**.

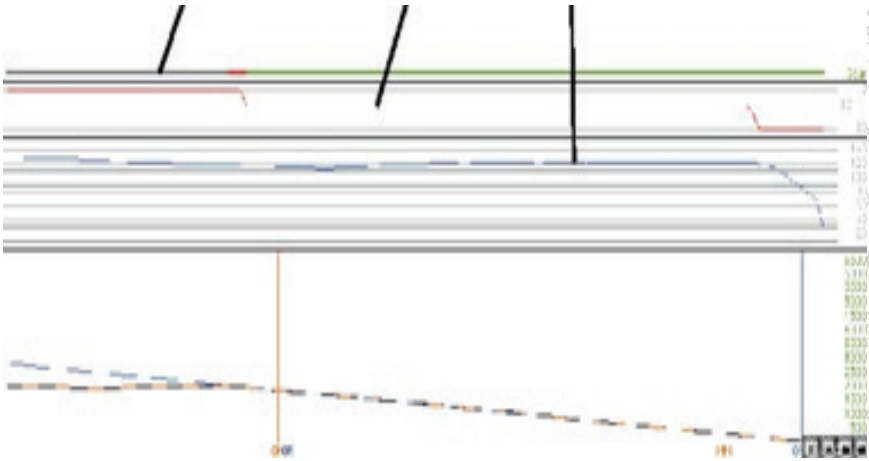

Altitude
Grid Lines
"A" Button ON
"G" Button OFF
6500
6000
5500
5000
4500
4000
3500
3000
1000
500
G
A



Clicking the **EXTENDED** button when the **MAP PROFILE** is displayed expands the profile view to include air speed plot as well as gear and apposition graphs. The **EXTENDED** but ton functions as a toggle switch turning the expanded display ON/OFF. You can also click the EXTENDED button first (instead of the **PROFILE** button) to display all four (altitude, air speed, gear, & flap) profile sections immediately.

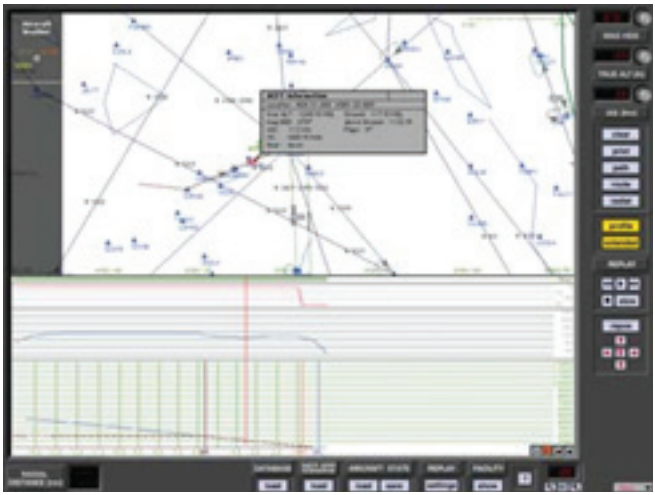
ACFT INFORMATION

GEAR POSTION, FLAP POSITION, AIRSPEED PLOT



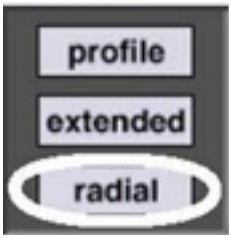
While viewing the MAP profile, even more detailed aircraft information is accessible for any position along the plotted flight path. First verify ELITE is in the FREEZE mode and the replay function is not activated. Click and hold the mouse button inside the profile area to display detailed information for any position along the plotted flight path. A vertical line appears at the select d location in the profile and positions the red air craft 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 Information box with data on location, altitude, heading, airspeed, vertical speed, gear and flap positions (fixed wing only).

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



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

RADIAL BUTTON



The Radial feature allows you to place a compass rose around any FIX or NAV aid facility in the database. Before clicking the RADIAL button look at the BEARING TO or RADIAL and DIS TANCE 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 NAV aid in view on the MAP. ELITE instantly draws a com- pass rose around the selected FIX or NAV aid. Notice at the same time that the dashes located next to BEAR ING TO or RA- DIAL and DISTANCE have been replaced by actual values. Click and drag the red aircraft symbol to different positions and watch the values change in these windows to reflect the actual BEARING TO or RADIAL (from) and DISTANCE relative to the selected FIX or NAV aid. This feature displays the exact aircraft location relative to the selected FIX or NAV aid 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. The compass rose is visible around the selected (UBG) VOR.

VIRTUAL FLIGHT DATA RECORDER

VCR style buttons control play back 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, air speed, 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. CLICK again to **PAUSE** replay. 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 recorded flight path. **DOUBLE-CLICK to jump to BEGINNING** of 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 recorded flight path. **DOUBLE-CLICK to jump to END** of recorded flight path.

SLOW BUTTON

CLICK to SLOW replay speed.

STOP BUTTON

CLICK to STOP Replay.

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

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 "remote" 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.

Installations with a remote Instructor's Station are common and often purposely designed to prevent the student from "peeking" at the Instructor's Station monitor (otherwise known as the Instant Situational Awareness Indicator). Such systems require an instructor to have to look some distance over-the-shoulder of the student if he/she wants to observe the instrument presentations. By having the instruments displayed on the MAP page this problem is eliminated. The instructor no longer has to worry about the proximity of the Instructor's Station to the main system and can easily monitor the flight by concentrating solely on the MAP page. In addition, 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.

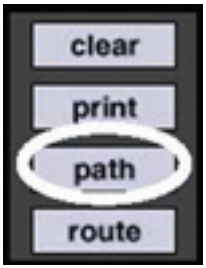
INSTRUMENTS REPLICATED ON MAP PAGE

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.

You can control if/when/where/how the instruments are displayed.

Change or modify the initial replay settings as desired. These settings can be changed/modified at any point in the future by simply clicking on the “settings” button at the bottom of the MAP page under REPLAY.

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 page for analysis.

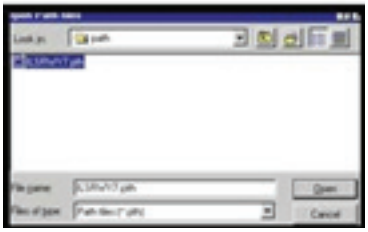
Click the **PATH button** to bring up the following box:

SAVE BUTTON

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 ("BCRWY25" in the example) for the flight path file then click Save to complete the operation.

LOAD BUTTON

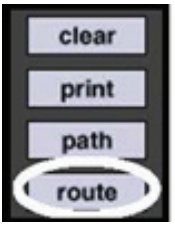
To load a flight path, click the **LOAD** button and select a path from the previously saved paths listed.



CLEAR BUTTON

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

ROUTE BUTTON

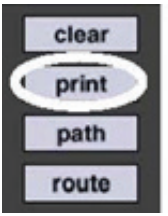


Similar to the flight path files discussed in the preceding section, you may also save a self-created route into a Route file by using the ROUTE button. Routes are explained further on in this chapter.

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.

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 will be saved as a bitmap (.bmp) file.

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:

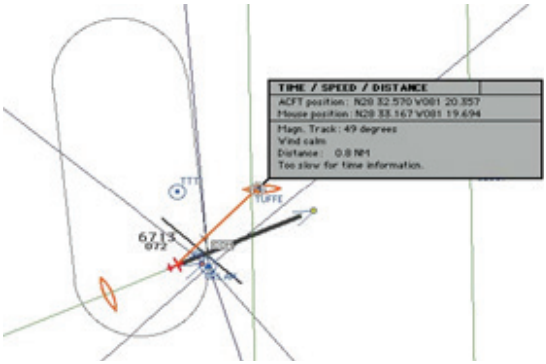
Hold down the **SHIFT** key on the keyboard.

The **TIME / SPEED / DISTANCE** cursor appears

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 on the next page.

The upper portion of the TIME / SPEED / DIS TANCE information box contains the actual location of the aircraft and selected point (mouse position) displayed as coordinates in degrees lat/long.

The lower portion of the TIME / SPEED / DIS TANCE information box contains magnetic track, aircraft heading, wind speed/direction, distance, ETA, and ground speed.



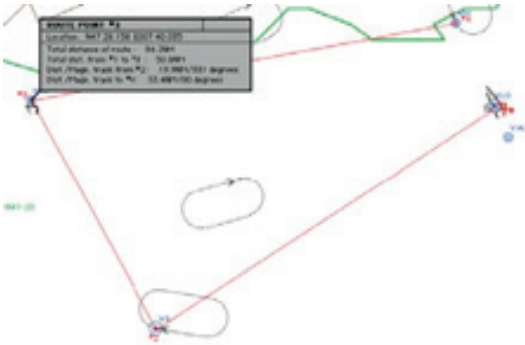
NOTE: Heading shown (course corrected for wind) incorporates wind correction angle (WCA). This is NOT necessarily the aircraft's current heading, but rather the heading required to maintain the desired track across the ground.

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

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) panels respectively to have the TIME / SPEED / DISTANCE information box figures recalculated.

ROUTE PLANNER

The route planner is a special tool for quick flight planning. Use the keyboard commands described on the next page to design a route.



ADD POINT

Push the CTRL (control) 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 & ALT keys on the key board and the cursor changes to "delete point." Click on any route point you want to re move from your route and it disappears while the other route points renumber.

MOVE POINT

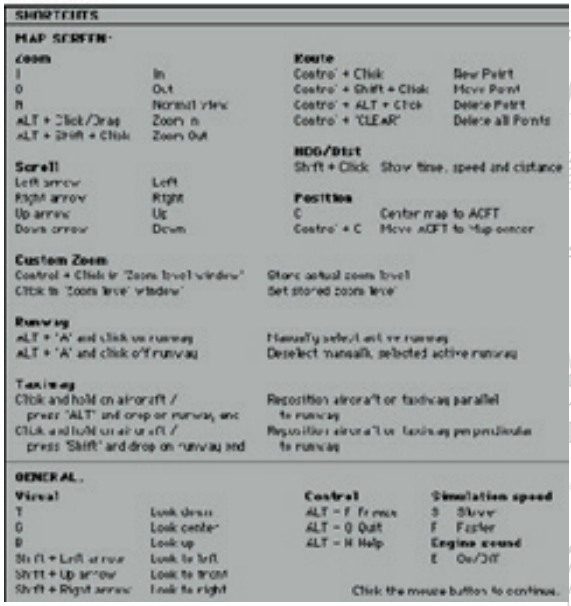
Push the CTRL & SHIFT keys on the key board and the cursor changes to “move point.” Click on any route point you want to move and drag it with the mouse to another location. Release the mouse button and changes take effect.

ROUTE INFORMATION

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.

SHORTCUTS

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



PLACING AIRCRAFT ABEAM THE RUNWAYTHRESHOLD ON PARALLEL TAXIWAY

Click-and-hold on aircraft symbol / press ALT and "drop" aircraft on runway threshold.

Placing aircraft perpendicular to runway threshold in a "hold short" position on taxiway:

Click-and-hold on aircraft symbol / press SHIFT and "drop" aircraft on run way threshold.

MANUAL SELECTION OF "ACTIVE" RUNWAY TOGGLE

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 for that runway. You can however override this automatic selection by manually selecting the active runway following the procedure below.

Press **ALT-A** to engage or disengage mode. Once engaged, enables you to manually select ELITE's "active" runway by clicking on the threshold of desired runway (runway color changes to green to identify that it is active). You can change your selection as many times as you like while the manual selection mode is engaged. 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 press ALT-A (if not already in manual selection mode) and click anywhere on the MAP page 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

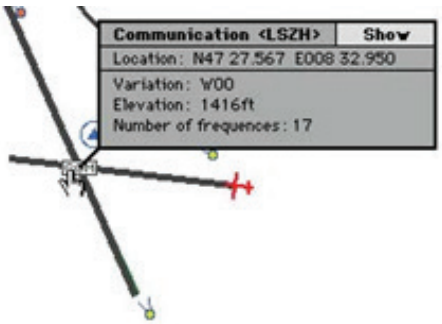
AIRPORT FREQUENCY INFORMATION

COMM (communication) & 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 the com box icon

and hold on the symbol in the center of the runway complex. A Communication box will come up displaying information and number of frequencies available at this airport.

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 avail able for the airport will be displayed as shown below.



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

ACC - Area Control Center
ACP - Airlift Command Post
APP - Approach Control
AWO - Automatic Weather Observing Station (AWOS)
CLD - Clearance Delivery
CPT - Clearance Pre-Taxi
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 - Parameters (French Radio)
OPS - Operations
RDO - Radio
RDR - Radar Only Frequency
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

FREQ			12GRH	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
DEP	125.95		R Y	ZURICH
DEP	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
TWR	118.10		Y	ZURICH
TWR	119.70		Y	ZURICH
TWR	127.75		Y	ZURICH

METEO PAGE

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 need.

It is advisable to practie procedures without "weather" initially so as to gain a degree of proficiency in their execution. The, progressively increase the level of difficulty by adding weather to these same procedures. One example might be to practice holding without wind at first, then add winds and turbulence as you begin feeling more comfortable. This way it is easier to visualize the big picture first (without wind) and grasp the essence of the procedure. After a while you will be shooting approaches to minimums and practicing holds in strong winds and turbulence without a problem.

The METEO Page is extrememly flexible and provides an opportunity for an almost infinite amount of weather possibilities. Please feel free to experiment.

METEO GENERAL LAYOUT

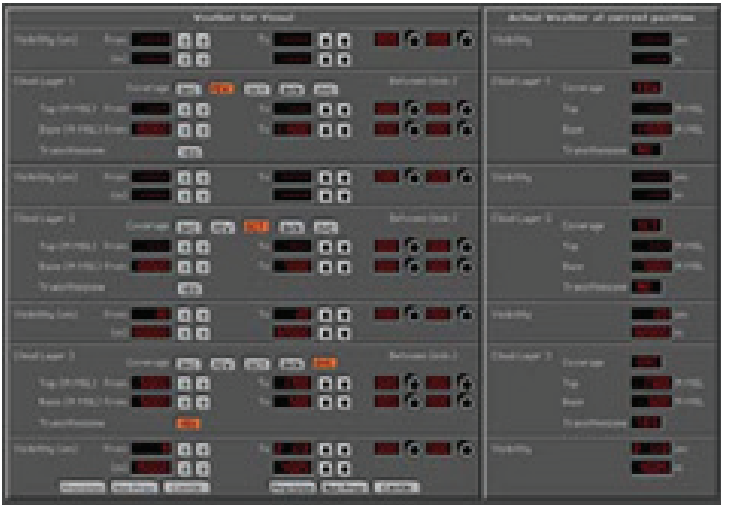
The METEO Page is rather comprehensive and might look a bit intimidating at first. Actually, it is set up quite logically and is easy to use once you understand its layout. The METEO Page is actually two separate pages; the "CLOUDS" page and the "WIND" page. Both pages are set up in the same formate 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), CLOUD AND VISIBILITY, Layer 2 (mid layer) CLOUD AND VISIBILITY, and Layer 3 (bottom layer) CLOUD AND VISIBILITY respectively.

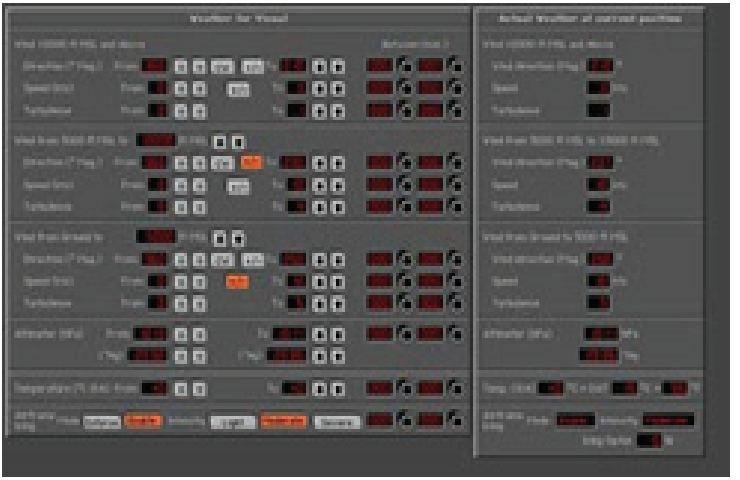
The WIND page is set up "top-to-bottom" as WIND (top layer), WIND (mid layer), and WIND (bottom layer), ALTIMETER setting, TEMPERATURE, and STRUCTURAL ICING respectively.

We will examine each of these elements in greater detail in upcoming sections.

To get from CLOUDS page to WIND page, simply Click on CLOUDS or WIND as applicable near the bottom of the current page.



METEO CLOUD PAGE



METEO WIND PAGE

DYNAMIC WEATHER

In addition to setting static (unchanging) weather conditions, the METEO page also allows you to create dynamic (changing) weather conditions. Dynamic weather is set up by first specifying a time period with in which these changes will occur by dialing in values (minutes) in each of the windows under the corresponding "Between" column. 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 initial "From" weather simply click on the appropriate UP and DOWN arrow buttons to adjust the value of the desired weather parameter(s). Repeat this in the same way to set the "To" parameters. It is important to remember that the intensity or rate-of-change of the weather is also controlled by the procedure described in the previous section. 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 grayed-out (not active) until a dynamic weather time interval is entered.

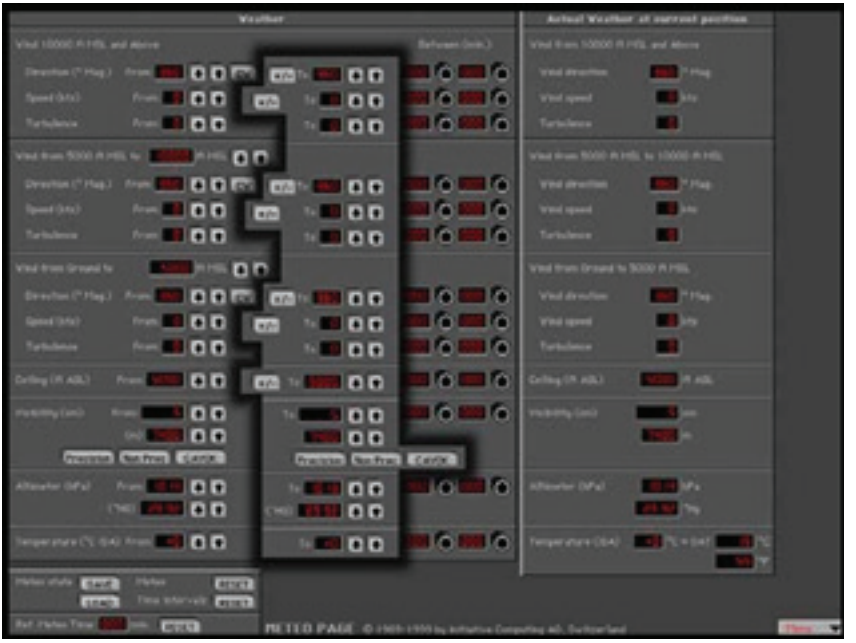
ACTUAL WEATHER COLUMN

The "Actual" weather column at the far right of the METEO page displays the current actual weather parameter values and cannot be adjusted. Think of it as a "snap shot" of the weather conditions at the current location and time. This is especially useful if dynamic weather has been set up and you would like to see the exact current conditions change over the time period specified.

In addition, this column can be referenced when Active METAR data is engaged, as it will reflect weather changes over time and location. As both dynamic and static weather are reflected, it is easy to get a quick picture of the weather with just a glance.

STATIC WEATHER

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



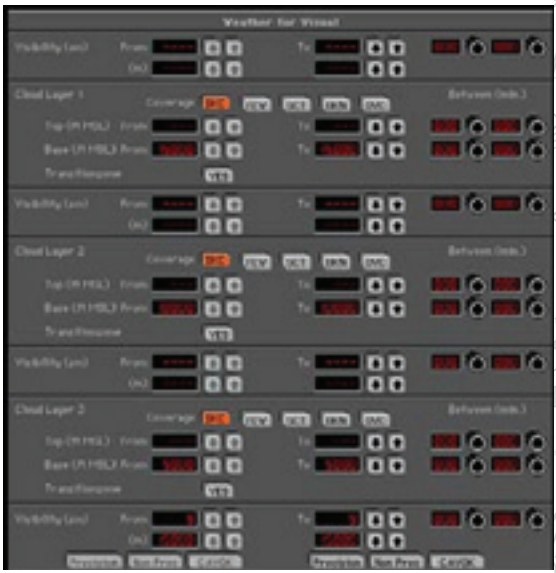
NOTE: Remember, it is possible to use any combination of static and dynamic weather settings.

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.

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 to and from the cloud conditions existing above or below the layer where it is used and is noticeable only when climbing or descending into, or out of, the overcast layer it is associated with.



STANDARD VIEW

There are two inherent “transition zones” each 100 feet thick between the top/mid layers and the mid/bottom layers respectively. These transition zones comprise the last 50 feet of each layer (the lowest part of the higher layer and the highest part of the lower layer). Depending on the parameters set in each of the wind layers you may experience some turbulence and changing conditions when transitioning through these shear zones.

WIND DIRECTION

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

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

WIND SPEED

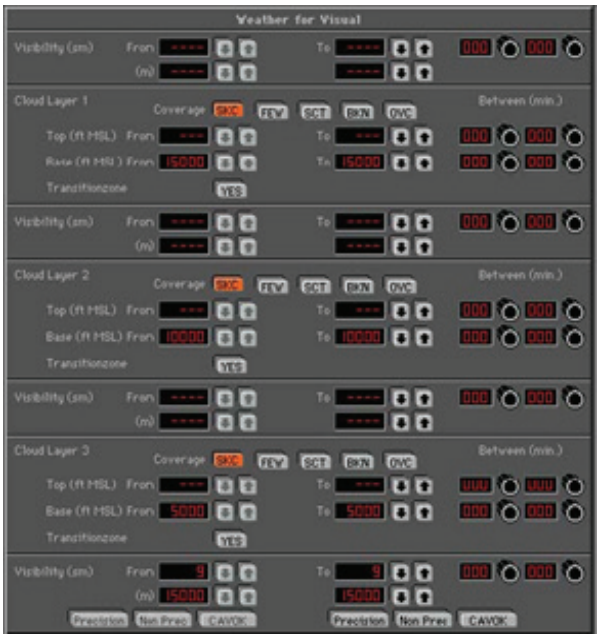
Wind speed in knots (0-60) is set by clicking the UP and DOWN arrow buttons. To make the wind speed variable simply press the +/- button.

TURBULENCE

Turbulence level 1(light) through 12(extreme) is set by clicking the UP and DOWN arrow buttons. Separate turbulence levels can be set for each of the three corresponding wind layers.

CEILING (STANDARD VIEW)

Ceiling in feet Above Ground Level is set by clicking the UP and DOWN arrow buttons. To make the ceiling variable (with respect to the selected height) simply press the +/-button.



VISIBILITY

Above Cloud Layer 1:

Select visibility using UP/DOWN arrows as desired.

NOTE: Visibility can only be adjusted if cloud layer 1 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 layer 1 OVERCAST is programmed, visibility adjustment is disabled and the visibility setting associated with 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).

Cloud Layers 2 and 3:

Select visibility using UP/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. sired. Preset buttons have the following corresponding visibility values:

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/DOWN arrows or preset buttons as desired.

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 <= (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).

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 FEW 1/8 cloud coverage SCT 2/8 to 4/8 cloud coverage

BKN 5/8 to 7/8 cloud coverage

OVC 8/8 cloud coverage

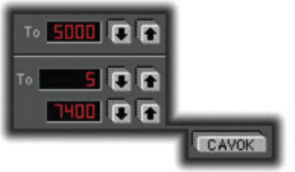
Cloud bases can also be defined by pressing the corresponding UP/DOWN buttons. Tops can only be specified for an overcast (OVC) layer.

VISIBILITY (STANDARD VIEW)

Visibility in Statute Miles and/or Meters can be set by clicking the appropriate UP and DOWN arrow buttons. In addition, there are three combination visibility/ceiling presets that allow you to quickly choose Precision, Non-Precision, or CAVOK minimums respectively. Once selected, these preset values can then be further adjusted as necessary. These preset minimums are as follows:

Precision:
200ft. (ceiling), 1/2 Mile (visibility)
Non-Precision: 500ft. (ceiling), 1 Mile (visibility)

CAVOK:
5000ft. (ceiling), 5 Miles (visibility)



ALTIMETER

Altimeter setting in hectoPascals (same as millibars) and/ or inches of mercury can be set by clicking the appropriate UP and DOWN arrow buttons.

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.). Simply 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. If the student doesn't ask you for the local altimeter setting or tune in the ATIS, he/she will get a big surprise on the approach.

TEMPERATURE

Temperature in degrees Celsius can be adjusted by clicking the UP and DOWN arrow buttons. Note that this is NOT setting the temperature directly but is actually adding to or subtracting from the ISA (International Standard Atmosphere) values. If your performance tables call for an ISA + or - (X°) day simply dial in X° to increase or decrease the OAT temperature by X° amount.

At the lower-left of the METEO Page you will find a grouping of functions that are applicable to the entire METEO Page as opposed to the control of individual weather parameters described previously. These functions are described in further detail starting with the section on "Saving and Loading METEO Files."

STRUCTURAL ICING

All instrument pilots are familiar with the dangers of icing and the coincident degradation of aircraft performance associated with the accretion of ice on an aircraft. Various insidious aspects of icing can creep into an otherwise "normal" flight and make for a really bad day. Increased weight, alteration of airfoil shape and disruption of air flow to name just a few, can often yield unpredictable flight characteristics at best. At worst, these elements can conspire to become catastrophic.

Like most things in life, preparation is probably the most important part of success. Aviation is no different. Proper training, pre-flight planning (you did check the icing forecasts and PIREPs right?) and overall forethought are your best course for a successful, non-eventful trip. Preparation also refers to the act of being prepared for something that may occur during a flight. This is where "staying ahead of the airplane" comes in. As Rod Machado says, "the two most important things in aviation are the next two." If conditions are ripe for icing then be on alert for subtle performance changes and/or indications that may be symptomatic of icing.

The goal of any simulation is to sharpen your "situational" awareness. This is not only geographic (positional) awareness but "how are things going" awareness. ELITE's intent is not to prepare you for how to exactly react to an icing "encounter" (that is best learned from the POH, aircraft manufacturer, & experience) but rather to enhance your ability to recognize that "something is not quite right" feeling and thus get you thinking. Your ability to properly analyze and successfully resolve a problem is greatly improved by quick recognition in the first place. Time and altitude are precious. In other words, don't be caught cruising along "fat, dumb, and happy." With a good scan, and knowledge of what indications should be normal/abnormal, the degradation of aircraft performance associated with icing should be readily apparent. Always stay ahead of the airplane and maintain a constant self-dialogue. If you notice an abnormality or something doesn't feel quite right then try and maintain focus.

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 effects 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.

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 MALFUNCTIONS Page. This separation of control is intentional. Although Pitot tube icing is often coincident with structural icing, structural icing can be subtler to reveal itself (initially). In most instances the onset of Pitot tube icing is more apparent and thus more easily recognizable. One form of Pitot tube icing is readily identified by a rather quick loss of airspeed indication. Airframe icing MAY be a bit harder to detect initially depending on accretion rate, icing type, etc.

NOTE: Active METAR does NOT modify the chosen Icing Settings. You still have to ENABLE or ENFORCE Icing manually.

SAVING & LOADING METEO FILES

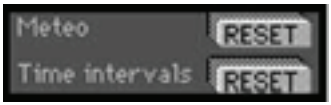
The SAVE and LOAD buttons next to Meteo state are extremely powerful. Let's say you have set up a weather scenario on the METEO Page. You get it just exactly the way you want it with all the parameters set, but you would also like to save this Meteo "state" for future use.

Simply click on the SAVE button to open the Save Meteo files dialog box.

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 dialog 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 re called 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 set tings 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 next.



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. If for example you set the bottom layer winds to increase between 005 and 015 minutes and the ceiling to lower between 010 and 020 minutes, these changes will not begin to take effect until the Reference Meteo Time reaches 005 minutes. At 005 minutes the bottom layer winds will begin increasing (and continue increasing) until 015 minutes where the "To" parameter values will have been reached. Five minutes after the bottom layer winds begin to increase (010 minutes) the ceiling begins to lower and will continue to lower until 020 minutes. Weather parameters that do NOT have a time interval set (static weather) remain constant.

The Reference Meteo Time can be RESET back to zero at any time in the flight. This will allow dynamic weather scenarios to be easily repeated. One important point to keep in mind is that if you have been flying a given sim session for an extended period of time, then set up some dynamic weather, make sure to either RESET the Reference Meteo Time or set time intervals in the future. If the time intervals set are before the Reference Meteo Time then the changes will never occur.

MALFUNCTIONS PAGE

"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.

NOTE: Malfunctions will vary according to aircraft type and model

The **MALFUNCTIONS Page** is used to create failure scenarios. The ability to setup and practice realistic failures are 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).

Although the MALFUNCTIONS Page might appear complex at first glance, similar to the METEO Page it is actually quite easy to use and is one of the most comprehensive available. You have 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 the following paragraphs, but to get started…

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 with in a defined "failure time window."
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.

INSTRUMENTS AND SYSTEMS FAILURES

Individual instruments can be failed in two different ways:

1. Freeze (instrument maintains indications)
2. Gradual (more realistic failure sequence occuring over time)

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 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.

AI - attitude indicator

DG - directional gyro

VSI - vertical speed indicator

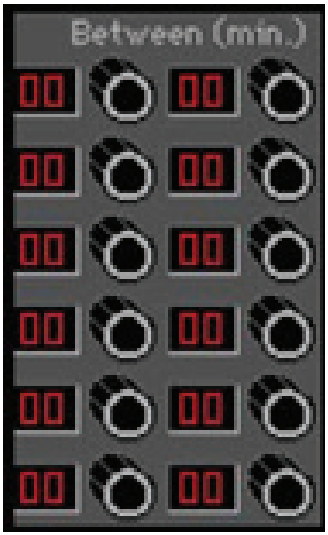
ALT - altimeter

ASI - airspeed indicator

TC - turn coordinator

FAILURE TIME WINDOW

The "Between" column is used to set the "failure time window" 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. If for example we want the Attitude Indicator to gradually fail at some point between seven and fifteen minutes from now, we would simply enter 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 Attitude Indicator will begin its gradual failure at some time between seven and fifteen minutes.



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.

SPECIFIC TIME 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 (a good time to turn ON Pitot heat).

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 for easy identification. The ARM buttons of these items will NOT change to FAIL. If for example 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 or change in color.

Faiures in this panel are setup in much 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.

ENGINE FAILURES

Failures in this panel are set up exactly the same as the previous (Instrument / Receivers) panel. Note that it is not only possible to fail an engine, but to also simulate a power loss (leaving partial power). Combine this with various "auxiliary" failures and you have the opportunity to create some interesting failure scenarios.

A good way to see if a student is including engine instruments in his/her scan is to invoke an Oil Pressure failure and see if the student notices the pressure dropping. To really bring the point home set up a scenario in which the Oil Pressure drops followed by an increase in Oil Temperature and subsequent power loss.

NOTE: The Power Loss window shows the power available, NOT the percentage of power loss. If for example the power loss window were set to 40%, this would indicate a 60% loss of power.

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

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: "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 as many as 5 failure types (power loss, oil pressure, oil temperature, hot starts, hung starts, etc.) as shown on the engine failure panel.

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 dialog 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 dialog box. Select a failure state from those listed (previously saved) and click Open.

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 (much easier than having to reset each individual Fail button).

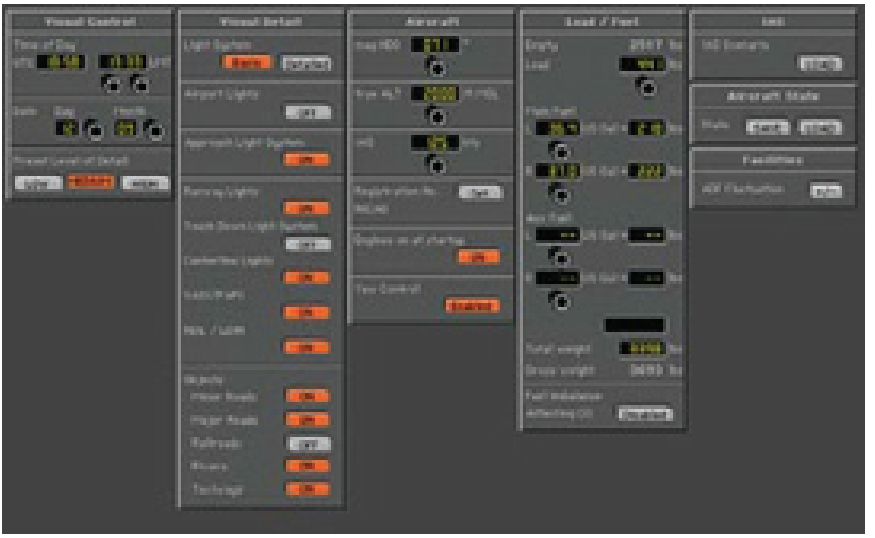
Use the “Clear all failures” button to **RESET** the entire MALFUNCTIONS page (including failure time intervals).

REF FAILURE TIME

The **Ref. Failure Time RESET button** sets the Reference Failure Time back to zero minutes. This is used in conjunction with the failure time window interval set tings as described previously.

The MALFUNCTIONS page is extremely flexible and provides an opportunity for an almost infinite amount of failure scenario possibilities. Please feel free to experiment.

CONTROL PAGE

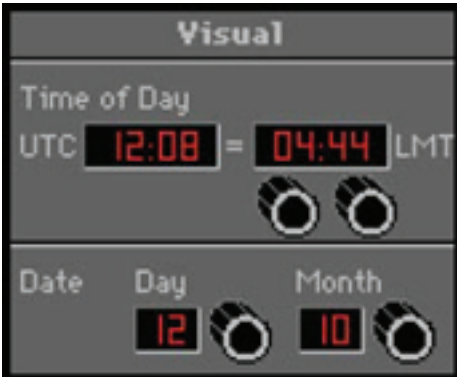


"HELP Tips" are available anytime by pressing ALT-H. Move the help cursor (?) over any on-screen item that you would like more information about. When the help cursor reveals its document icon help is available for that item. Simply click on the item to display related help tips.

Use the **CONTROL page** to configure air craft load and fuel, control visual settings, load Instrument Approach Scenarios, save/load "STATE" files, and more.

VISUAL DATE & TIME PANEL

Use the **Visual panel** to configure ELITE's visual display set tings. 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. 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 NORMAL! LMT is used to calculate accurate sun rise 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.

PRESET LEVEL OF DETAIL (GENVIEW ONLY)

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 Gen View'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.

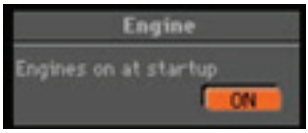
These buttons control various parameters used to create the view of the outside world and determine the resulting "Level of Detail" implemented by these parameters. "Fast" computers can normally use a HIGH setting, while relatively "slower" computers may re quire a LOW or MEDIUM LOD set ting. In addition, 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 but tons (turns orange) and its corresponding Visual Detail pre set will become activated. Presets can then be modified manually as desired by selectively turning ON/OFF items 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.

ENGINE "ON" AT STARTUP

The engine(s) start automatically at initial program startup when the ON button is active. To start engines manually (with checklist) turn off (ON button NOT lit)



AIRCRAFT PANEL

The heading, altitude, and airspeed panels found on the MAP page 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 the chapter.

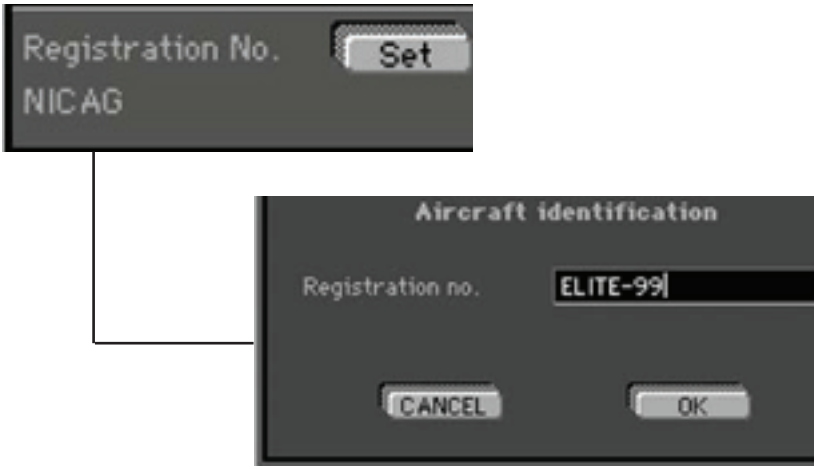
Set MSL altitude. To increment by 500 ft., click in the number window. The knob will show an orange dot. When you use the knob, increments will be by 500 ft. Click again in the window to deactivate. Feature will deactivate itself in 5 seconds if there is no activity. Set indicated airspeed (knots)

ENABLING FUEL IMBALANCE

When ENABLED, allows for flight characteristics to be affected by lateral asymmetric fuel loading. Set aircraft load weight (change from KGs to LBS. on CONFIGURATION page, under UNITS. Overload indicator Total aircraft weight

SETTING AIRCRAFT IDENTIFICATION

You can customize the aircraft identification "placard." Click on the SET button in the Identification panel. Another dialog box will appear that will allow you to enter a unique registration number.



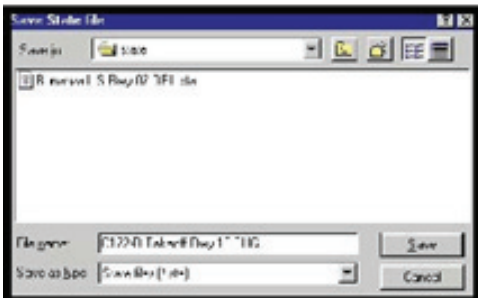
STATE PANEL

The **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, auto pilot 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 setup the aircraft again manually.

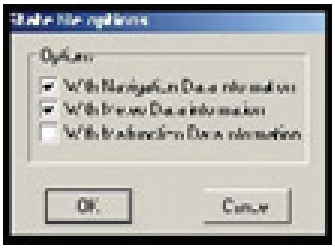
State files can be saved at any time. Before saving a state file make sure that the aircraft is set up just the way you want it. Once everything is to your liking be sure to name the state fi le something that will be meaningful now and in the future. A good naming convention is to include an airport identifier or nearby Navaid and brief description such as "ORL ILS RWY 7 Low Ceilings." Even if you haven't loaded this file in a while it will be easily identified as the ILS approach into Orlando Executive's runway 7 (with low ceilings). This is much better than "My first ILS."

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.



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**.

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.

CONFIGURATION PAGE

"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.

Use this page to configure flight controls, hardware, instrumentation, and sound. Some of these have already been covered during the Startup procedures in Chapter One.

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 Nav data 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. (GenView Only!)

IOS PASSWORD PROTECTION

You may protect the Configuration and Modification pages with a password. Click on the SET button, type a password and follow remove 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 sun set) 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 12:00UTC as a reference. For example in Orlando, Florida (UTC-5) you would set the local time value to 07:00, i.e. 12:00UTC - 5Hrs = 07:00. For periods of Day light Saving Time (UTC-4) in Orlando, this value would be set to 08:00. **To have ELITE perform this calculation automatically (recommended) simply click the "Take Local Time from Computer" SET button.**

ATD DETECTION REPORT

With ATD Detection Report button ON (ATD version only), ELITE will verify (on every startup) connection and proper communication with the required hardware necessary for use as an approved ATD (Aviation Training Device). If a required device(s) is not present or proper communication cannot be established, a warning message will appear during program start advising the system may NOT be used for flying credit allowed by the FAA.

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

MEASUREMENT FOR WEIGHT & FUEL

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

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

CHANGING COLOR OF NUMBERS

For readability, you can change the color of numbers shown on all pages (except the instrument panels.) Click on RED or YELLOW as desired.

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 on previous page lets you tailor, or mix individual sound elements, giving you complete control of your ELITE sound experience.

NOTE: Engine sound can also be switched ON or OFF with the "E" key on the keyboard.

3D SOUND

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

AIRCRAFT INFORMATION

The Aircraft Information panel shows actual performance characteristics of the aircraft. Figures cannot be changed and are for information purposes only.


Aircraft Information
NEW ACFT MODULE
Aircraft module
FIP-AS350BA-S.PHO
AIRCRAFT DATA BELOW IS FOR INFORMATION PURPOSES ONLY. THESE VALUES ARE PART OF THE AIRCRAFT CONFIGURATION AND CANNOT BE CHANGED BY THE USER.
Various
Aircraft AS 350BA (v1c)
Engines 1
Rotorblades 3
Gear Fixed
Gross weight 2100 kg
Usable fuel 142.2 US gal = 432.0 kg
Rated power 650 HP
Service ceiling 16000 ft
Empty weight 1270 kg
Speed
Never exceed speed 135 kts
Best single engine rate of climb --- kts
Minimum single engine control speed --- kts
Maximum structural cruising speed 141 kts
Zero flaps stalling speed --- kts
Flaps extended stalling speed --- kts
Maximum speed for flaps extended --- kts
Maximum speed for gear extended --- kts
Maximum speed for gear operation --- kts

NAV DATA "MODIFICATION PAGE"

"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.

The **Modification Page** allows you to **create or modify** up to 200 facilities, fixes, NAVaids or holding patterns in each navigation data base worldwide.

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.

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

Click on 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 on the OK button.

DELETING FACILITIES

Facilities can be deleted as well as created and modified. Click on the DELETE button first and then on the facility you want 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 data base file on your hard disk, but only a copy of the data.

If you choose to delete a self-created facility, the pop-up window will ask you if you really want to irrevocably delete your self-created facility.

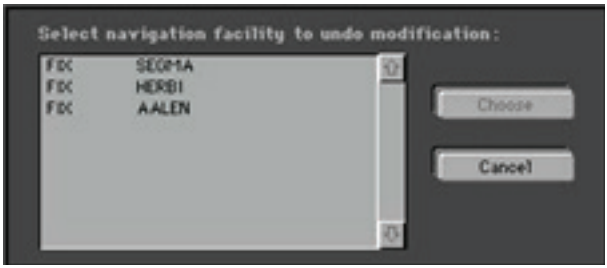
After creating, modifying or deleting a facility, click on the OK button to confirm the changes.

If you click on 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 color as all original data. When changing back to the MOD page, however, your changes will again appear in red.

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 following pop-up window will appear on the screen.



Now, select and choose to undo changes.

To restore an original facility that had been deleted, hold the ALT key while clicking on the DELETE button. The following pop-up window will appear on the screen.

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

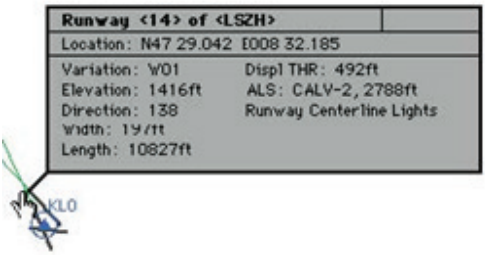
Deleting an existing (original) facility counts as one change. Deleting a self-created or modified facility releases one for further use. Undeleting a previous deletion of an original facility will also release a change for further use.

When 200 modifications have been made the following message appears:

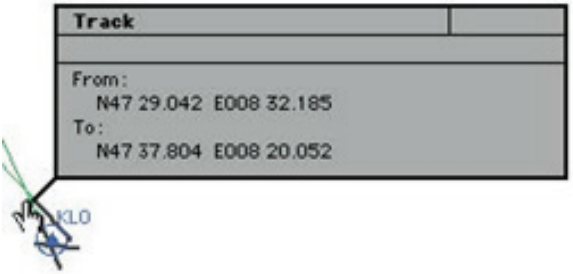
FACILITY INFORMATION

Click and hold the mouse on any facility to display detailed information about that facility. For run way information, click on the runway thresh old.

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.



In the example above, 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




VOR
Identification code :
DME EQUIPPED
Location :
N47 28.633
E008 32.217
Variation :
W00.0
°
Station elevation :
1000
ft
Frequency :
108.00
MHz
DME bias :
0.0
nm
CANCEL
OK


DME
Identification code :
Location :
N47 28.633
E008 32.217
Variation :
W00.0
°
Station elevation :
1000
ft
Frequency :
108.00
MHz
DME bias :
0.0
nm
CANCEL
OK


NDB
Identification code :
Location :
N47 28.633
E008 32.217
Variation :
W00.0
°
Station elevation :
1000
ft
Frequency :
350.0
KHz
CANCEL
OK


MARKER
Type :
OUTER
MIDDLE
INNER
AIRWAY
TERMINAL
Identification code (Awy/Term) :
Location :
N47 28.633
E008 32.217
Variation :
W00.0
°
Station elevation :
1000
ft
Orientation :
000
°
CANCEL
OK


FIX
Identification code :
Location :
N47 28.633
E008 32.217
Variation :
W00.0
°
CANCEL
OK


LOC/GS
LOC:
Identification code:
Location:
N47 28.633
E008 32.217
Variation:
W00.0
°
Station elevation:
1000
ft
Front Crse W.:
3.0
°
Frequency:
108.00
MHz
Magn. Loc. Bearing:
000
°
BACKCOURSE
GS:
GS EQUIPPED
Location:
N47 28.633
E008 32.217
GS Angle:
3.0
°
or HDG:
000
°
Distance:
0.0
nm
DME equipped:
LOC
GS
DISP
DME bias:
0.0
nm
CANCEL
OK


HOLDING
Identification code:
Location:
N47 28.633
E008 32.217
Variation:
W00.0
°
Inbound course:
000
°
Turn direction:
LEFT
RIGHT
Leg length:
2.8
nm
Turn radius:
1.5
nm
CANCEL
OK

EXTERNAL VISUAL DISPLAY - GENVIEW™ ONLY

GENVIEW VISUAL DISPLAY

GenView™ is an add-on visual display database that will allow you to fly in the virtual world with accurate digital elevation models (DEM) and vector data accurately depicting rivers, lakes, highways, railroads and built up areas. In addition, every airport environment is highly rendered with runway designators, appropriate runway lighting, approach light systems and properly lighted generic taxiways. Inherent to the DEM is a fully programmable dynamic weather system that further enhances the realism of flight by providing 3-D obstructions to visibility, cloud coverages, and several transition zones or layers for IFR, MVFR, SVFR or VFR on top. Utilizing actual downloadable METAR reports, you can create a real-time flight experience and save the most challenging weather scenarios for recurrent training.

GENVIEW VECTOR DATA

Elements in the digital elevation model depicts rivers, lakes, highways, railroads and built up areas such as cities, towns, villages, etc.

GENVIEW RUNWAY DEFINITIONS

1. Runways will have number designators such as 08 (8 for USA) or 26.
2. Centerline lights if appropriate. Space between lights is 50m.
3. Runway edge lights if appropriate. Space between lights is 50m.

Approach lighting system. Distance is in accordance with ICAO/FAA standard.

TAXIING/HOVER TAXIING IN GENVIEW

1. Generic taxiways have been implemented in GenView to allow the pilot to more closely follow the checklist sequence if used (conducting run ups, for example). Though the location of the runway and NAVaids are always accurate, the layout and orientation of taxi ways may not represent the exact layout at that airfield.

2. When ELITE is first loaded, the default position of the aircraft is on the end of the run way. You can reposition the aircraft relative to the taxiway in three ways:

a. Taxi the aircraft to the position you want to start (least recommended, especially if you are in a hurry)

b. Go to the MAP Page. Click on the aircraft symbol and hold the mouse button. Press the ALT key and drop the aircraft at the runway end and it will reposition to the taxiway parallel to the active runway.

c. Go to the MAP Page. Click on the aircraft symbol and hold the mouse button. Press the SHIFT key and drop the aircraft at the runway end and it will reposition perpendicular to the active runway.

3. The length of the runway determines the width of the taxiways (longer runways equal wider taxi ways). Wide taxiways have blue edge lights spaced at every 50m/164ft. Smaller taxiways have green centerline lights spaced at 50m/164ft. Runways with a width of 16m/52ft or less have no taxi way lights.

4. The length of the runway defines the amount of taxiway exits:

Runway length smaller 2500 ft 2 exits Runway length smaller 4500 ft 3 exits Runway length smaller 6500 ft 4 exits Runway length equal or longer 6500 ft 5 exits.

USING THE VISUAL MANAGER PAGE (GenView Only)

The Visual Manager was designed to control aspects of the external scenery display. If you go to the Visual Manager Page and the box

MAMBO
ORLANDO
HERNY
V267
V351
V437
V51
MODE C
SMER
LLNCH

below is not there... the main computer and visual computer are not communicating. Shut down and restart both computers (see System Shutdown, Chapter 1).

If this box is showing and CONNECTION is OFF or ACTIVE is NO, then press the corre¬sponding buttons to force communications between the main computer and visual computer. When communications is established, **CONNECTION will reflect ON** and **ACTIVE will reflect YES...** an external scenery will appear on your external visual display. **If the buttons return to OFF and NO, then com¬munications have failed and you must restart both computers.**

The remaining buttons (HDG through Level of Detail) are not used in the TH100 with one IG and should be left alone. The selections at the bottom of the page should be left alone as well with exception of **ACCESS box (where a password can protect access to this page if necessary) and the SHUTDOWN Menu box.**

NOTE: When using GenView, the Visuals and Computers button is the only correct way to shut down the TH-100. It will shut down the visual computer completely and the main computer will return to the Windows desktop. At the Windows desktop, the Operators should use the typi¬cal Windows "START BUTTON" / SHUTDOWN" process.

GENERAL INSTRUMENTS

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 degrees apart.

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 temperature. If the air speed indication should decrease without speed reduction, the pitot may be iced. In order to prevent pitot icing, turn the PITOT HEAT to ON.

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.

ALTIMETER

The Altimeter is the conventional three-pointer type. 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.

VERTICAL SPEED INDICATOR

The Vertical Speed Indicator (VSI) indicates the rate-of-climb or rate¬-of-descent. Vertical Speed is not instantaneous and will exhibit trend and lag effects.

GYRO COMPASS

The Gyro Compass (if equipped) 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 on the avionics console HDG BUG sub panel.

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 (CDI) 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 in the aircraft's panel, combining slaved heading and VOR/LOC/Glideslope deviation information into one compact display.

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

VOR/LOC/GLIDESLOPE INDICATOR

The VOR/LOC/Glideslope Indicator utilizes the conventional cross pointer layout. It is connected to the NAV receivers (NAV1 or NAV2). The compass card is rotated by the OBS knob in the conventional manner.

Receiver is set to a VOR

Receiver is set to an ILS

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.

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 MDI can be turned by the rotary dial. Bearing Pointer indicates relative or magnetic bearing to station as selected by HDG knob.

TH100 AVIONICS AND SWITCHES CONSOLE


ON
SBY
OFF
ALT
TEST
IDENT
5
5
1
4
DIM
MDI
ALT
NAV 2
CRS
CRS
OBS
HDG
FREEZE
INSTR
MAP
AUX
NAV 1
NAV 2
1
2
ELITE
BATT
FUEL PUMP
GEN
ON
CRANK
ON
INVTR
WLT TEST
PITOT
ACOL LGT
POS LGT
HYD TEST
OFF
HORN
OFF
LAND LGT
STBY AH
RADIO MSTR
ELITE
ELITE SIMULATION SOLUTIONS
www.flyelite.ch
KN 97A TRANSPONDER
HEADING BUG SUB PANEL
COURSE, ALT, NAV2, HDG, MDI (RADAR ALT)
AS350 SWITCHES PANEL

AVIONICS

ELITE is equipped with an ALT/VSI reselect, Marker Beacon Lights, Audio Panel, either a Garmin 430 or 530, (the COMM1/ NAV1 function is provided in the GPS unit), NAV2/COMM2 (KX 165 TSO), ADF (KR27)and a Flight Director/Autopilots (KFC 150).

NAV/COMM

On the "COMM2/NAV2", and the "ADF" receivers, the right window displays the stand by 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 to count up or down the standby frequency. Pushing the double-arrow button will toggle ("flip-flop") the frequencies. Each receiver may be switched on and off individually. 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, when the ID button is pressed.

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. While in the radial mode, direct tuning of the active frequency is available using the methods described above. There is, of course, no radial available when an ILS frequency is tuned.

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.

MARKER RECEIVER

The Marker Receiver can be switched to LO, HI and TEST. The LO 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.

TRANSPONDER

Transponder KN 67A
Push button to right to change number)IDENT Change transponder mode (Click mouse on knob and drag left or right to activate transponder features)
Change transponder code (Click mouse on knob and drag left or
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.

USING THE COURSE/HEADING PANEL

NOTE: Instrumentation may vary among trainers

The Course/Heading panel of the AP4000 Avionics stack is used to set course and headings using either the HSI/ flight director (if equipped) or using VOR #1 OBS and VOR #2.OBS. In addition, the altimeter setting and radar altimeter bug may also be set as necessary. A 2-position switch (CRS or OBS) is used to assign the CRS knob to function as a course selector for HSI or OBS. The MDI serves as the adjustment knob for the radar altimeter.

Course/Heading Control Panel

Selects Altitude Alert/Decision heading bug Altitude on Radar Altimeter

Controls VOR OBS #1

es between HSI and OBS #1

s the course in OBS #2

Sets the Altimeter

APPENDIX A - STARTING CHECKLIST

BEFORE STARTING ENGINE

1. Battery and Generator in circuit..... switches “ON”

   Lights on with a/c battery power: HYD, GEN, MDB, P, PITOT, ENG P., BLEED VALVE

2. Battery voltage..... Checked

3. Collective pitch lever, yaw pedals..... Freedom of Travel

4. Cyclic pitch conrol stick..... Neutral

5. Yaw pedals..... Neutral

6. Rotor brake released..... Forward

7. Fuel shut-off lever..... Forward

8. Fuel Flow Control..... Off

9. Test Warning-Caution Advisory Panel lamps - W/LT TEST

10. Hydraulic pressure..... On

11. Gyroscopic instruments..... On

STARTING

1. Switch on the booster pump..... On console

   - Check fuel quantity
   - Check fuel pressure

2. 30 seconds after switching on the booster pump, press the "START" push button.

3. When Ng reaches 10%, move fuel flow control forward about 1/3 of its travel range.

NOTE: In all cases, keep the starter running throughout the starting sequence.

- Check: Ng increase and
- Control t4 by modulating the fuel flow as required
  (hold t4 below specified "starting limit")
- Check the the rotor starts to turn

4. At Ng = 40 to 45%, release the "START" push-button

- Check that engine oil pressure rises

5. Gradually increase the fuel flow, maintaining a constant reate of rotor acceleration

- Check that the following Warning-Caution-Advisory Panel light go out. (see NOTE)

. PHM (ENG P) should be out at 70% Ng
. PH BTP (MGB.P)
. HYD, with simultaneous illumination of the KLAXON (horn) light
. KLAXON (horn) light out from 250 RPM (NR)
. Check aural warning operates at approximately 350 rmp

- Check NR - pointer in the green zone of the indicator, near the lower limit

- Check fuel flow control in "flight position"

NOTE: During engine acceleration, do not allow NR value to remain steady between 300 and 320 RPM.

6. Switch on PITOT heating..... On pedestal panel

7. Switch on the HORN; check that the PITOT and HORN lights go out.

8. **CHECK:**

- All warning and caution lights off
- Electrical system voltage and current
- Fuel pressure correct
- Engine oil pressure

9. Switch on/engage all necessary sytems (avionics. lights, etc).

10. Carry out a hydraulic accumulator test:

- Cut off hydraulic pressure by actuating the test push button on console.
- Check that the HYD light illuminates and HORN sounds
- Press the test pushbutton to restore hydraulic pressure (simulated)
- Check that the HORN is cancelled and HYD light goes out

NOTE 1: In strong wind, apply a little forware cyclic and accelerate the engine, up to approximately 320 RPM as fast as is compatible with t4 limitiations, then follow normal procedure.

NOTE 2: If the starting cycle has to be aborted, return the fuel flow control to the closed position, and switch off the fuel pump and the generator.

If the reason for aborting the start is high EGT (t4),check the battery voltage. If voltage is normal, crank the engine for about 15 seconds and immediately make a second attempt to start, increasing the fuel flow gradually (without allowing Ng to drop between cranking and the second attempt to start.

If battery voltage falls below 15 volts during the attempt to start, it may be impossible to obtain light-up.

CHECKS BEFORE TAKEOFF

1. Navigation, radio navigation & communication..... Test

2. Pressure and temperature..... Correct

   -When outside air temperature is lower than 0 degrees (C), takeoff may only be performed when engine oil temperature is 40 deg C or more.

3. All warning and caution lights..... Out

TAKEOFF

Take off by gradually increasing the collective pitch and maintain hover, head into the wind, at a height of about 5 ft. (1.5m).

Check that the engine and transmission monitoring instruments are within their normal operating ranges.

For transition from hover, increase speed without increasing power demand (power required for hover I.G.E.) and without climbing until IAS is 40 kt (74 km/h).

The bleed valve indicator light should be off when Ng exceeds 97%.

NOTE: When collective pitch is reduced, the light should illuminate when Ng drops below 93%.

AFTER LANDING

ENGINE AND ROTOR SHUTDOWN

1. Switch off all unnecessary power-consuming systems.

2. Using the fule flow control lever, reduce Ng to a value between 67 and 70%; wait 30 seconds until termperatures have stabilized.

3. Switch off the generator, fuel pumps, then all other consumer circuits.

4. Shut down the engine by setting the fuel flow control to the shut-down position.

5. Fully apply rotor brake when rotor speed is:

    140 rpm or lower - Normal HR
    170 rpm or lower - Maximum NR (high wind condition)

6. Battery..... OFF

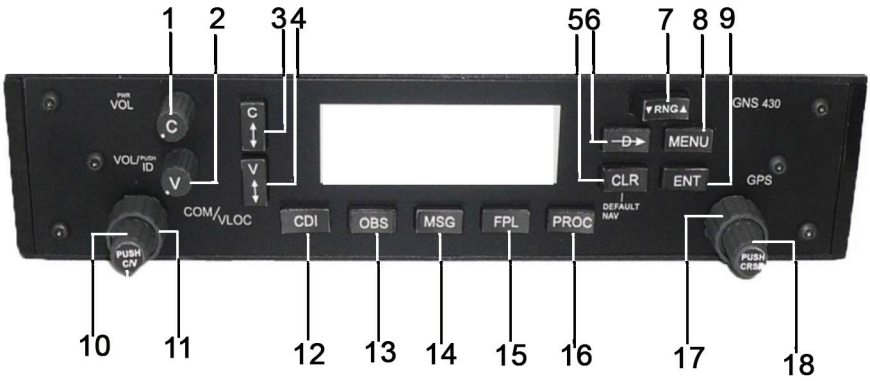
APPENDIX B - ELITE GNS430W

Quick Reference Guide

This guide is not designed to be a step-by-step operational instructional guideo n the operation of ELITE® software or hardware,nor is iti ntended to be a complete user guide of the Garmin® GNS430W GPS system.

ELITE® highly recommends users of the ELITE software and GNS 430W control module download the entire Garmin 400 W Series Pilot's Guide and Reference free ofc harge at http://www8.garmin.com/manuals/GNS430W_PilotsGuideandReference_190-00356-00_.pdf.

Inclusion of Garmin copyrighted material in this presentation-does not imply any endorsement by Garmin Ltd or its affiliates of the flight training material provided by Reality-XP.



Description

1.COM Power/Volume
2.VLOC Volume
3.COM Flip-flop
4.VLOC Flip-flop
5.CLR(clear)
6.Direct-to
7.RNG (map range)
8.MENU
9.ENT (enter)
10.Small left knob (tunes kHz) & push to activate cursor
11.Large left knob (tunes mHz)
12.CDI Selector
13.OBS Selector
14.MSG (message)
15.FPL (flightplan)
16.PROC (procedures)
17.Large right knob (selects page groups)
18.Small right knob (selects pages within groups) & push to activate cursor, and to select alphanumeric.

The ELITE® GNS430W control module is laid out exactly as the actual GNS430W with the exception of the centercolor LCD display. In order to keep costs low, ELITE® displaysthe GNS430W within the cockpit display of the software.Full-GNS430 W functionality remains intact.

There are certain limitations within the controlmodule.The ELITE version of the GNS430W does NOT provide optional displays and programming such as GDL49Weather Datalink, GDL69/69AXM Satellite Datalink or XM Satelliteradio, TAWS or GPWS terrainalerts.

Left-Hand Keys and Knobs

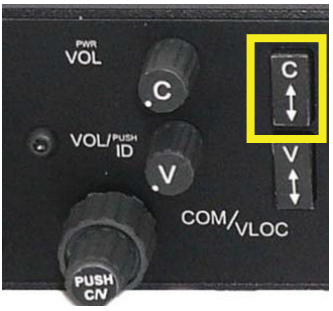
The **COMPower/Volume** knob controls unit power and communications radio volume.Press momentarily to disable the automatic squelch mode.

The **VLOC Volume knob** controls audio volume for the selected VOR/Localizer frequency. Press momentarily to enable or disable the ident tone.

The **large left knob** is used to tune the megahertz(mHz) value of the standby frequency for the COMt ransceiver or the VLOC receiver, whichever is currently selected by the tuning cursor.

The **small left knob** is used to tune the kilohertz (kHz) value of the standby frequency for the COM transceiver or theVLOC receiver, whichever is currently selected by the tuning cursor. Press this knob momentarily to toggle the tuning cursor between the COM and VLOC frequency fields.

The **COM Flip-flop** button is used to swap the active and-standby COM frequencies. Press and hold to select the emergency frequency of 121.500.



The **VLOC Flip-flop** button is used to swap the active and-standby VLOC frequencies.

Bottom Row Keys

The **CDI** button is used to toggle which navigation source (GPS or VLOC) drives the external HSI or CDI.

The **OBS** button is used to select either manual or automatic sequencing of way points. Pressing the **OBS** button selects OBS mode which retains the current‘ active to”waypoint as the navigation reference even after passing the way point. In other words,it prevents sequencing to the next waypoint. Pressing the **OBS** button again returns the unit to normal operation with automatic waypoint sequencing. When **OBS** mode isselected, the pilot may set the desired course to or from a waypoint by using the “SelectOBSCourse” pop-upwindow or anexternal OBS selector on the HSI or CDI.

The **MSG** button is used toview system messages and pilot alerts such as warnings and requirements.

The **FPL** button allowst he pilot to create, edit, activate, invert flightplans as well as access approaches,departures and arrivals.The closest point to aflight plan feature is also available by pushing the **FPL** button.

The **PROC** button allows the pilot to select and delete approaches, departures and arrivals from the flight plan.When using a flightplan, all available departure or arrival proce-

dures are suggested automatically. Otherwise, the pilot may select the desired airport followed by the desired departure or arrival procedure.

Right-HandKeysandKnobs

The **RNG** button allows the pilot to select the desired map range in nautical miles.Press the **UP** arrow side of the button to zoom out to a larger area or press the **DOWN** arrow to zoom into a smaller area.

The **Direct-To** button allows access to the direct•-to function, which allows the pilot to enter ad estination waypoint and establishes a direct course to the selected destination.This-course is indicated by a magenta line from the aircraft to the destination waypoint.•

The **MENU** button displays a specific list of operational options.This options list allows the pilot to access additional features or make settings changes asthey relate to the currently displayed page.

The **CLR** button is used to erase information,remove map detailing or to cancel an entry. Pushing the CLR button and holding for a fewseconds will immediately display the default NAV page.

The **large right knob** is used to select between thevarious page groups such as NAV, WPT, AUX, or NRST.With the

on-screen cursor enabled, the knob allows the pilot to move the cursor around the page.The knob is also used to move the target pointer right (clockwise) or left (counter clockwise) when the map panning function is active.

The **small right knob** is used to select between the various pages within the page groups of NAV, WPT,A UX or NRST. Push the knob momentarily to display the on-screen cursor. The cursor allows the pilot to enter data and/or make a selection from a list of options.The knob is also used to move the target pointer up (clockwise) or down (counter clockwise) when the map panning function is active.
Section4•

Powering ON

To power on the ELITE GNS430W module you first must insure that the master avionics switch is turned on.
Turn the **COMPower/ Volume** knob clockwise tot urn onthe unit power and set the desired transceiver volume.

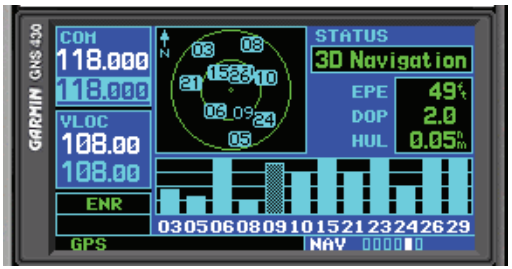
A welcome page will appear briefly while the unit performs a self-test, followed by the display of several brief pages (relating to obstacle, terrain, airport data, etc.) are self-tested to ensure proper operation.

Once the unit's self-test is completed, the Database Confirmation Page is displayed, showing the effective and expiration dates of the navigation database.

Note: The database datess hown will NOT reflect the-current Jeppesen Navigational Databasec cycle.Your current NOS or Jeppesen charts may not reflect the ELITE® database within the simulator.

Press the **ENT** key to acknowledge the Database Page andproceed to the Instrument Panel-Self-testpage. The InstrumentPanel Self-testPage allows the pilot to verify the ELITE® 430W is communicating properly with the in-panel flight instruments—just as in the actual aircraft.Compare on-screen indications with the information depicted on the flight instruments such as the CDI/HSI, RMI (if equipped) and/or external annunciators. After verifying the proper operation of the flight instruments, push the **ENT** key to display-the Satellite Status Page.

When the Satellite Status Page is displayed, keepinmind the number and position of depicted satellites is simulated anddoes not reflect current satellite position.The Satellite StatusPage is for trainer use only and should not beconsidered live,current data.



Note:The number and position of depicted satellites may be displayed differently after each subsequent use of the ELITE® trainer. This is in no way indicative of a defective or faulty program.

Screen Layout

The ELITE 430W's display screen is divided into threedistinct "windows" or areas.The left1 /4 of the display screenprovides a COM window with active and standby frequencies as well as the VLOC with both standby and active frequencies.The active frequency is displayed in white characters while thestandby frequencies are shaded blue.

The right 3/4 of the display consists of a GPS window whichshows the various navigation, waypoint information and settings pages.

COM Window GPS Window

Active frequency.....
Standby frequency.....

Active frequency.....
Standby frequency.....

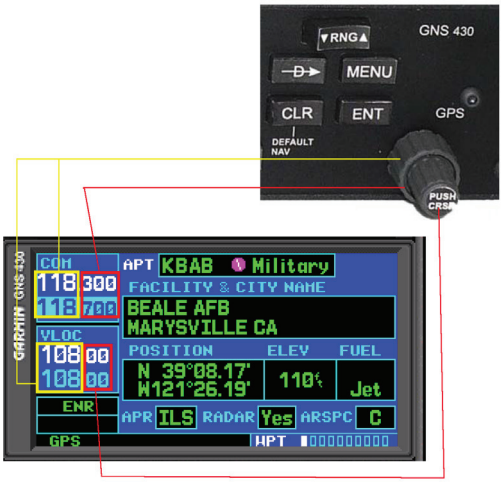
Each unique screen of information is referred to as a page. Pages are generally selected using the small and large right knobs,with the cursor removed from the GPS window. Review the next several pages for details on the arrangement of the GNS430W's main pages.

Cursors and Frequency Selection

There are two separate cursors: a tuning cursor and a GPS window cursor. The turning cursor is used to select either the standby COM or VLOC frequency. If desired, press the **small left knob** to move the tuning cursor to the VLOC window. Then, use the small and large left knobs to select the desired frequency. TheCOM Flip-flop and the VLOCFlip-flop keys are used to activate the desired frequency.

If the turning cursor is not currently in the desired window such as COM or VLOC, press the small left knob marked"**PUSHC/V**" momentarily. Turn the large left knob to dial in the desired mHz value. For example, to

select 118.700, use the large left knob to select **118** portion. Turn the small inner knob to select the desired kHz value, such as .**700** in our exampleof 118.700.



To activate the desired frequency, press the COMM Flip-flop-key for COM frequencies, or the VLOC Flip-flop key for VLOC frequencies.•

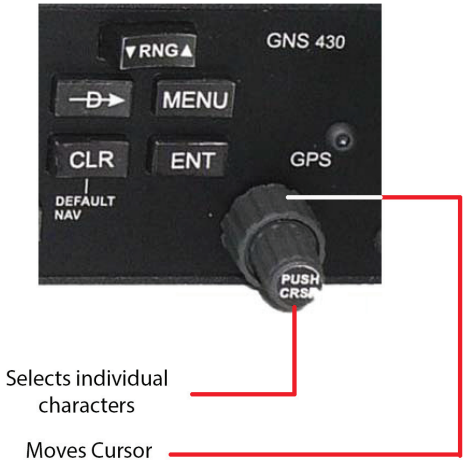
Remember, the white characters are ACTIVE, and the blue characters are STANDBY. Selects kHz & Push for cursor Selects mHz.

Data Entry and Main Page Groups

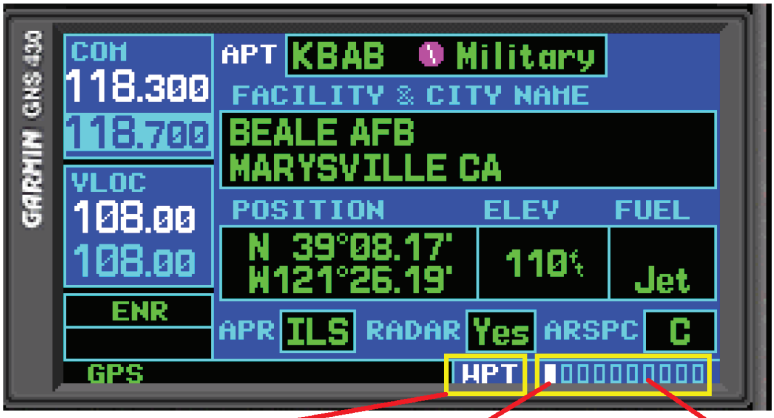
Data is entered into the 430W by using the large and small right knobs. The large right knob is used to move the cursor around a page. The small right knob is used to select individual characters for the high lighted cursor location.

The GNS430W's main pages are divided intofour separate page groups: **NAV**, **WPT**, **AUX** and **NRST**. Each group is composed of multiple pages. The page groups are selected using **the large right** knob. The individual pages are selected using the small right knob.

The bottom right corner of the screen indicated which page-group is currently being displayed, the number of screens available within that group, and the placement of the current screen with in that group indicated by a white square icon. In the example below, the current Page Group is **WPT** (selected by the large right knob) and have page one of 10s elected. (Selected by the small right knob). To select the desired page group, press and hold the CLR button to select the default **NAV** page.Turn the **large right knob** to select the desired page group.



To select the desired page within a group of pages, turn the small right knob.



NAV Page Group

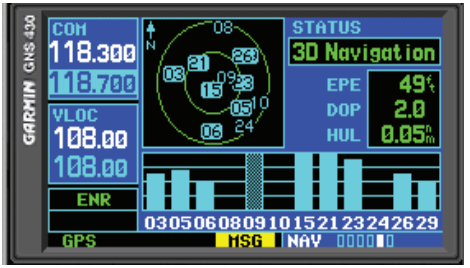
The NAV Page Group includes six pages.

Default NAV

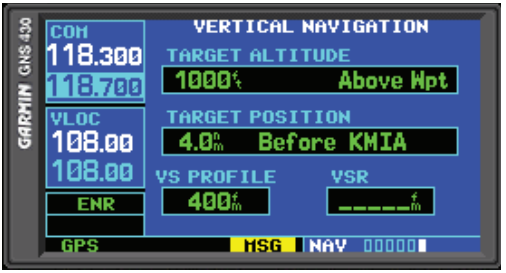
MAP

NAV/COM

Position



Satellite Status



VNAV

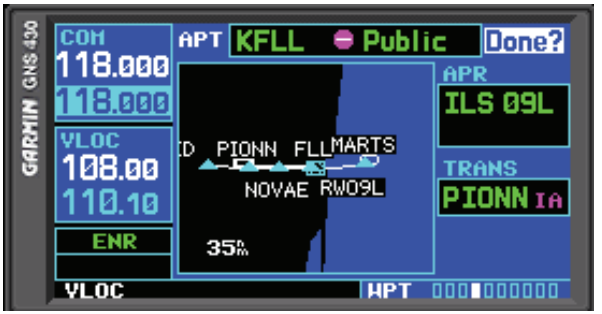
WPT Page

The WPT Page Group includes ten pages.

Airport Location

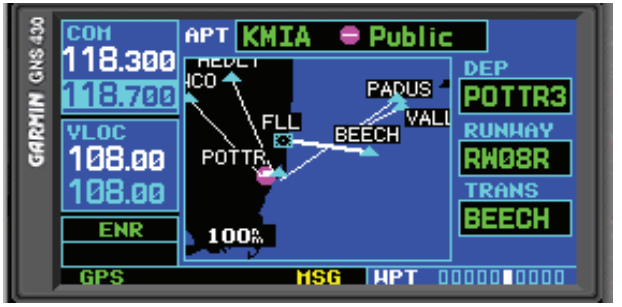
Airport Runway Environment

Airport Frequencies

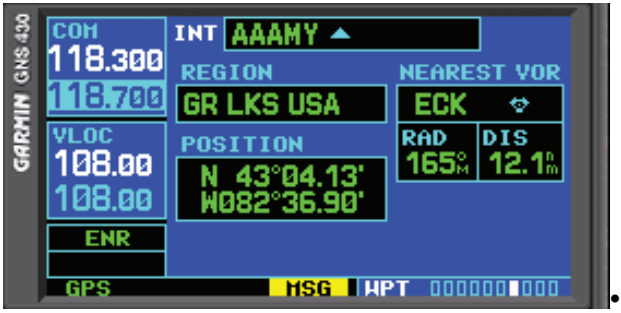


Airport Approach

Airport Arrival Procedures



Airport Departure Procedure



Intersection

NDB

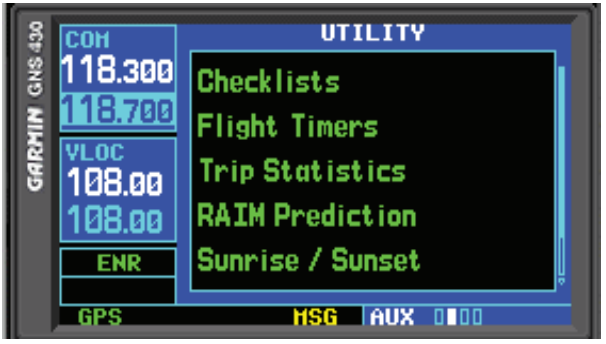
VOR

User Defined Waypoints

AUX Page Group

The AUX Page Group includes four pages

Flight Planning



Utility

SETUP 1

SETUP 2

Note:The flight plan pages are selected by pressing the FPL buttona nd using the small right knob to select the desired page.

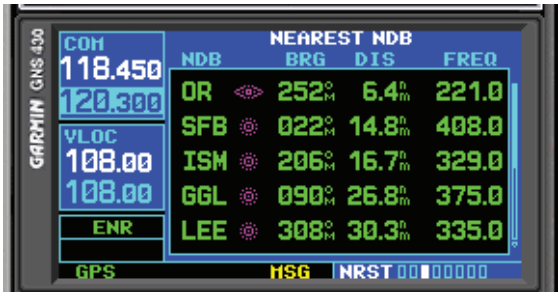
•

AUX Page Group

The NRST Pages consists of eight pages. To access an element push the **small right knob** to highlight the desired element followed by the **ENT** button. When the word “Done?” is flashing, push the ENT button again to activate. You may-also select an airport’s tower frequency by turning the big right knob and high lighting the appropriate requency. Push **ENT** to load the frequency. Push **ENT** again when the word“-Done?” is highlighted. Use the **COM Flip-flop** to switchfrom the standby to active mode.

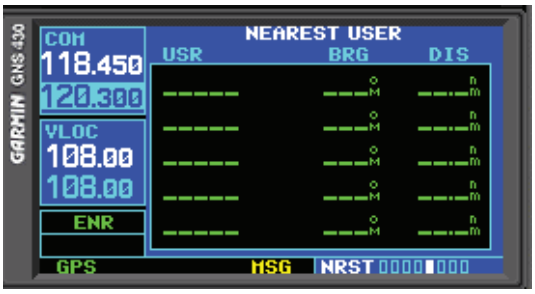
•

Nearest Intersections
(Can utilize the Direct-To feature)



Nearest NDB
(Can utiilze the Direct-To feature)

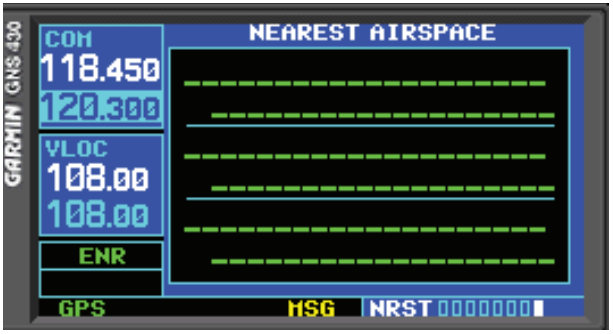
Nearest VORs
(Can utilize the auto-tune feature)



Nearest USER waypoints
(Can utilize the auto-tune feature)

Nearest ARTCC
(Can utilize the auto-tune feature)

Nearest FSS
(Can utilize the auto-tune feature)



Nearest Airspace
(Can utilize the Direct-To feature)

Creating a New Flight Plan

1.Press the **FPL** button.

2.Turn the **small** **right knob** to display the Flight Plan Catalog.

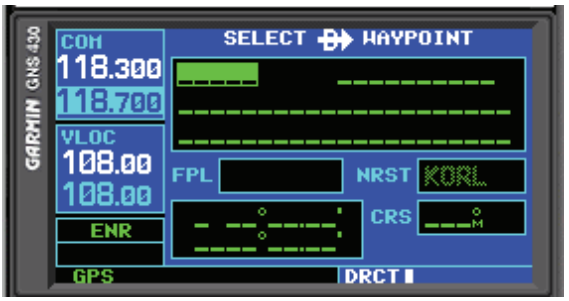
3.Turn the **large right knob** to high light “Create New Flight-Plan?” and select **ENT**.

4. A blank Flight Plan page appears. Using the **big** and **small right knobs**, enter the identifier of the departurewaypoint and push he **ENT** key.

5.Repeat all the steps instep 4 above to enter additional waypoint data.

6.After all waypoint data has been entered,- **press** the **small right knob** to return to the-Flight Plan

Selecting a Direct-To Destination



Press the **Direct-To** button. The Select Direct-To Waypoint-page appears with the waypoint identifier field highlighted.

Use the **small** and **large right knobs** to enter the identifierof the desired destination waypoint. The destination waypoint-can be an airport, fix, navaid (VORTAC,NDB) or a user-de-fined waypoint.•

Push the **ENT** button to confirm your selection.

The word “Activate” will be highlighted in flashing white.Push the **ENT** button again to activate the Direct-To function.

Selecting a Direct-ToDestination from the MAP Page

Select the MAP page from the NAV Page Group

Press the small right know to isplay the Group panning cursor (Arrow). Turn the right & left knobs to position the cursor at the desired location.

Press the Direct-To button over the desired location

Press the ENT button twice to select. “Activate will be highlighted in flashing white.

Push the **ENT** button again to activate the way point routeand to navigate to the selected waypoint. The route off light will be drawn with a solid magenta line from the current position to the selected waypoint.

Viewing Airport Information

Turn the **large right knob** to select the WPT Page Group WPT appears in the lower right corner of the screen.

Turn the small right knob to select the desired page, in this example, runway information

Push the **small right knob** to highlight the various runways.

Turn the small right knob to the selected runway. Push the **ENT** button. The primary tower frequency will be flashing-with green highlighting. Press **ENT** to auto tune the frequency in the COM standby mode. Use the **COM Flip-flop** button to make the frequency active.

Auto Tune a Frequency From a List

Select an airport using the right large and small knobs

Turn the small right knob to the third page of the WPT page.

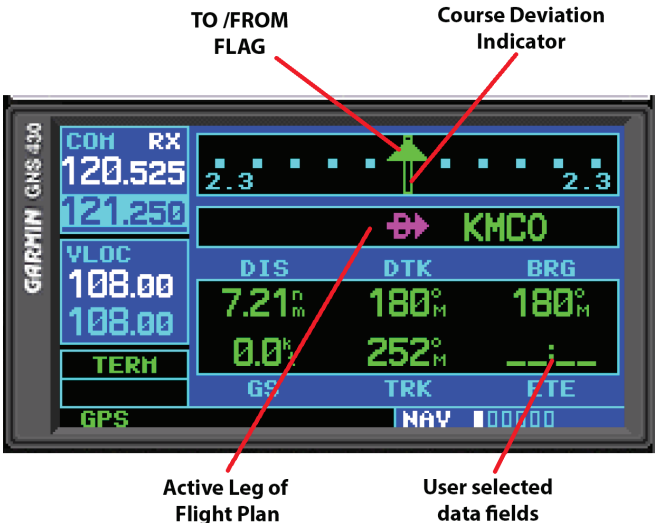
Push the right small knob to activate the cursor.

Turning the right large knob, scroll through to the desired frequency.

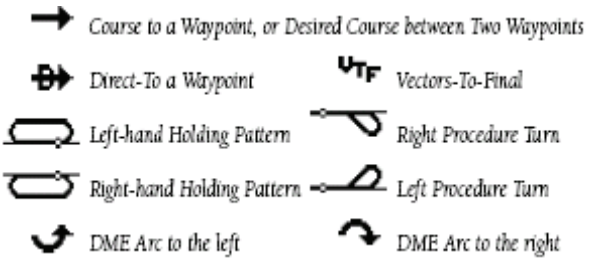
Press the **ENT** button which will move the frequency selected frequency into the COM standby box.

Press the COM Flip-flip button to make the frequency active. Note the “RX” in the COM box which indicates the COM receiver is receiving audio.

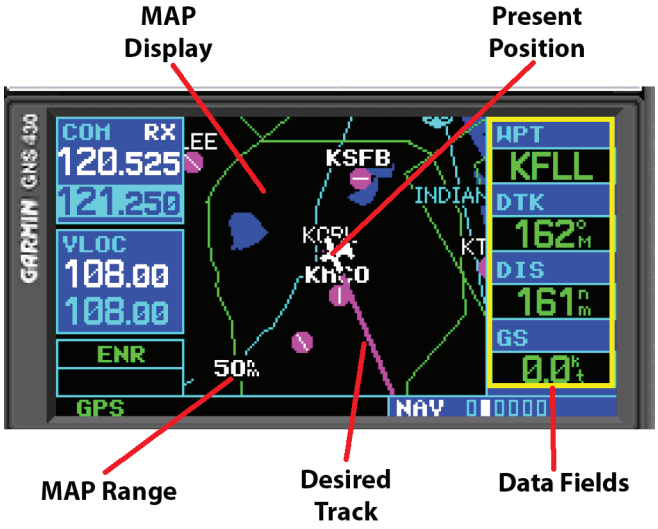
Default NAV Page



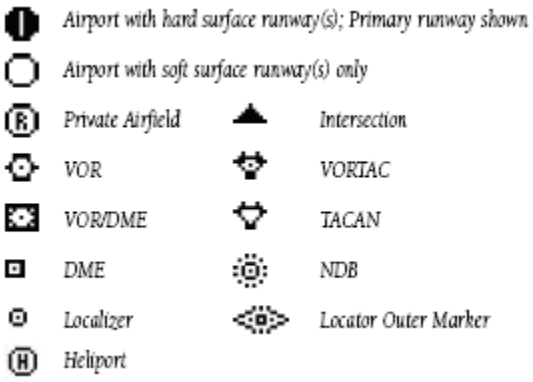
The following symbols are used on the Default NAV page below the CDI to depict the active leg of a flight plan or a Direct-to•



MAP Page



The following symbols are used on the MAP Page which depict airports, navaids, intersections and heliports.



To se- lect or

change a map range on the **MAP** page, pressthe **UP** arrow on the **RNG** button to zoom out to a larger area.

Press the **DOWN** arrow on the **RNG-** button to zoom into a smaller map area.

Bottom Row Annunicators and Messages

CDI/RAIM Modes

- APCH
- ENR
- TERM
- OCEN

Integrity Warnings

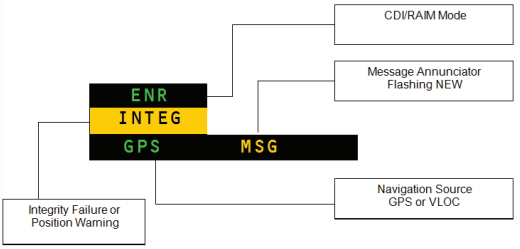
- WARN
- RAIM

NAV Source

- GPS
- VLOC

Message Annunciator

- FlashingMSG=NEW
- Steady MSG=OLD
- Blank=No messages



Approaches

The first step in flying an approach is you must first have anactive direct-to or an active flight plan which ends at an airport with a published approach.

1. Push the **PROC** button to display the procedures page.

2. Turn the **large right knob** and highlight “Select Approach?” followed by pushing the **ENT** button.

3. A window will be displayed on top of the primary display-showing all the available procedures. Turn the large right knob to move the highlight bar to the desired procedure and push the **ENT** button.

4.A second window will be displayed showing all the available transitions. Turn the large right knob to move the white-

highlight bar to the desired transition waypoint and push the **ENT** button.

5.Turn the **large right knob** to highlight “Load?” or “Activate?” and push the **ENT** key. Selecting “Load?” will add the procedure into the active flight plan and allow uninterruptednavigation and reserve the approach for quick activationwhen needed. Selecting “Activate?” over rides the enroute portion of the active flight plan proceeding directly to the approach portion.

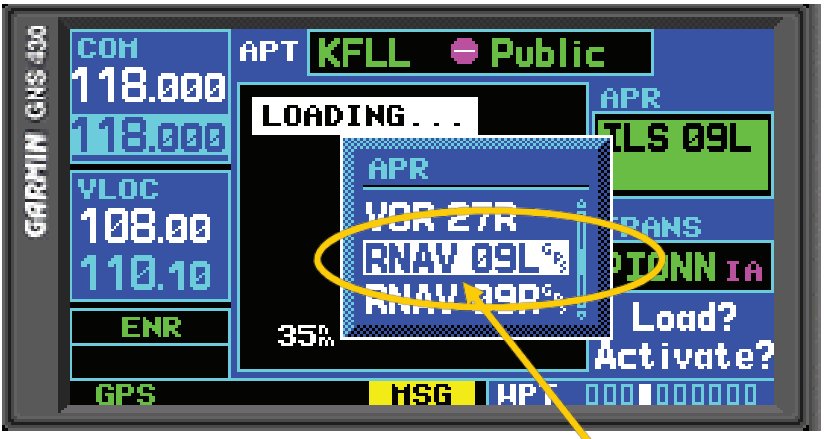
6. For non-GPS approved approaches, a window will be displayed reminding the pilot that GPS guidance on such an approach is ONLY for monitoring only and the use of the VLOC receiver portion of the GNS430 and the external CDI or HSI for primary navigation and course guidance. To confirm this reminder window you must highlight “Yes” and push the **ENT** button.

7. Push the CDI button to select VLOC which will assign VLOC guidance to the CDI/HSI. On the Flight Mode Annunciator and verify “VLOC” is illuminated white. You do NOT want to see the green GPS illuminated.

8. Once the approach is loaded, the entire approach procedure will be displayed including waypoints, fixes, holds, etc.

9. For additional details, push the small right knob to move the highlight bar on the particular aspect of the approach. The word “Done?” will be highlighted in white. Push the “ENT” which will return to the Active Flight Plan page.

Not all approaches are approved for GPS use. As of now, larger airports have published RNAV/GPS approaches with many replacing the old NDB approach procedures by “GPS overlays”. As an approach is selected, there may be “ILS 09L” or “RNAV 09L” with “GPS” noted to the right. If an approach with “GPS” is available and selected, the approach procedure can be flown using
the GPS receiver.



FORT LAUDERDALE, FLORIDA AL-744 (FAA)

RNAV (GPS) Z RWY 9L

FORT LAUDERDALE/HOLLYWOOD INTL (FLL)

WAAS CH 48902 W09A	APP CRS 093°	Rwy ldg 8423 TDZE 7 Apt Elev 9

For inoperative MALSR, increase LPV all Cats visibility to RVR 5000, LNAV visibility Cats. A and B to RVR 5000.
For uncompensated Baro-VNAV systems, LNAV/VNAV NA below -15°C (5°F) or above 48°C (119°F).
DME/DME RNP-0.3 NA. Visibility reduction by helicopters NA.

MALSR

MISSED APPROACH: Climb to 4000 direct ADOTE and via 086° track to MARTS and hold, continue climb-in-hold to 4000.

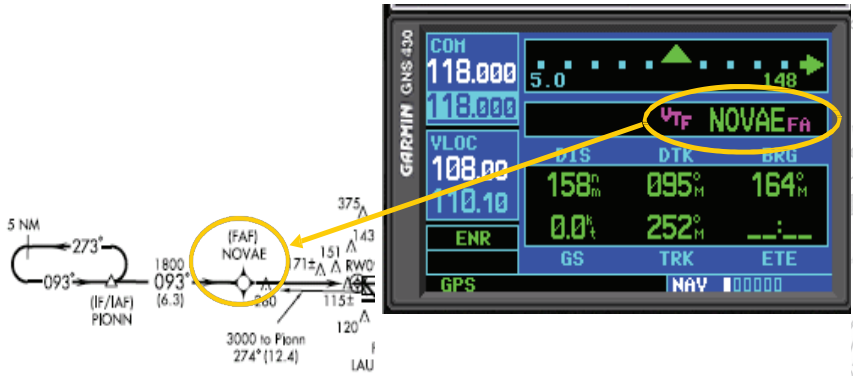
ATIS	MIAMI APP CON	FORT LAUDERDALE TOWER	GND CON	CLNC DEL
135.0	133.775 285.6	119.3 257.8	121.4	128.4

Activating an Approach with Vectors-To- Final

When utilizing the “Activate Vector-To- Final” mode, this mode allows to activate the final course segment of the approach. This mode assumes ATC will give you vectors to the final approach course and guides you to intercept the final approach fix before reaching the Final Approach Fix.

1. With the desired approach loaded in the active flight plan, push the PROC button to display the procedures page.
2. Turn the large right knob to highlight “Activate Vector-To-Final?”
3. Push the ENT key.

4. The Default NAV page will be displayed providing course guidance, distance, bearing, ground speed, and estimated time enroute.



Flying the Approach

Due to the wide range of available approach procedures, the specific steps presented in this guide will vary according to the approach selected. It is suggested to keep the following guidelines in mind when flying an approach using ELITE® and the GNS 430W control module.

• The ELITE® 430W is designed to complement your printed simulator approach plates and improve your situational awareness during simulated flight. Nevertheless, you must always fly the approach as it is depicted on the approach plate.

• You will generally select the destination airport as the last waypoint in the active flight plan or by using the Direct-to button. By doing so, the desired waypoint will automatically appear when choosing the “Select Approach?” mode from the procedures page. Otherwise, you must first choose an airport followed by the approach procedure.

• When a ground based ILS approach is loaded, the desired frequency is automatically placed in the standby position in the VLOC window. Push the VLOC Flip-flop key to move the frequency into the active position.

• If the VLOC receiver is to be used for the approach, make sure you switch the external CDI/HSI to “VLOC” by pushing the CDI button.

• An “Auto ILS CDI” setting provides automatic switching to “VLOC” as the final approach course is intercepted. When the ILS approach is activated and the correct frequency is in the VLOC window, the unit will automatically switch when within 1.2 nautical miles left or right of the approach course. However, this switching can take place anywhere from 2.0 to 15.0 nautical miles from the Final Approach Fix. To avoid abrupt CDI changes the switching occurs gradually. This automatic switchover does not occur automatically when

configured for the KAP140 autopilot system as Auto ILS CDI Selection is prohibited by limitations within the KAP140.

As progress is made to the next waypoint, a waypoint alert message such as “NEXT DTK 120º “ will appear in the lower-right corner of the display.

• During the approach, alerts will advise course changes with standard-rate turns such as “TURN TO 195º” will appear in the lower right corner of the display.

• For GPS approaches, RAIM will monitor satellite conditions and alert using the word “INTEG” at the bottom left corner of the display if protection limits can not be maintained. Should the “INTEG” alert occur, the GPS receiver should not be used as the primary navigation source. You must revert to an alternate navigation source such as an
ILS.

• LPV, LNAV+V, and L/NAV approaches will automatically downgrade to LNAV if GPS integrity can not be maintained. There is no need to switch guidance by other navigation equipment unless GPS LNAV is unacceptable or integrity degrades further.

• Within 31 nautical miles of the destination airport, the CDI scaling will transition from 2.0nm ENR mode 1.0nm terminal or TERM mode. In addition, when leaving a departure airport, CDI scaling will transition from 1.0nm to 2.0nm when 30 miles out. GPS-based ap- proaches will see a second transition when within 2.0nm of the FAF scaling from 1.0nm to full scale deflection. (approach mode, or “LNAV, LNAV+V, L/LNAV, OR LPV”)

• A “RT to xxxº x S” or “LT to xxxº x S will appear in the lower right corner to alert when you are at a safe distance to initiate the procedure turn. the procedure turn is displayed on the map page, however guidance through the turn is not provided

except through the roll mode of steering-equipped autopilots. Alerts for proper holding pattern entry such as “HOLD DIRECT” are displayed in the lower right corner of the display. Waypoint sequencing is automatically suspended (indicated by “SUSP” in the lower left center of the display) at the holding waypoint. Push the OBS button again to return to automatic waypoint sequencing. For course reversals, waypoint sequencing is suspended for one circuit around the holding pattern only, after which it will return to automat waypoint sequencing.

• The CDI will guide you through a DME arc. You will need to keep the needle centered as you fly along the arc.

• As you cross the MAP, “SUSP” will appear in the lower left center of the display indicating that automatic sequencing of waypoints is suspended at the MAP and a FROM indication will appear on the CDI/HSI.

Flying the Missed Approach Procedure

• After crossing the MAP, push the OBS button. The next waypoint in the approach is automatically displayed as the destination waypoint.

• Follow the published missed approach procedures as depicted on the approach plate including climb and heading instructions.

• An alert message in the lower right corner of the display will suggest entry procedures for entering the holding pattern such as teardrop, parallel or direct. As the holding pattern is flown, an automatic time appears on the default NAV page. The timer will automatically reset on the outbound side of the hold when abeam the hold waypoint. The timer will once again reset as the inbound turn is begun within approximately 30º of the inbound course.

• The GPS will provide course guidance ONLY on the inbound side of the holding pattern. Guidance is provided along the entire holding pattern if roll-steering autopilot systems are used.

GNS 430W Annunciations

Annunciation	Functional Description
LPV	Lateral Precision with Vertical Guidance Approach. Fly to LPV minimums. A yellow background indicates the approach is safe to continue but a downgrade to LNAV may occur.
L/VNAV	Lateral Navigation and Vertical Navigation approach. Fly to LNAV/VNAV minimums.
LNAV+V	Non-precision GPS approach with advisory vertical guidance. Some LNAV/VNAV approaches are not yet marked in the database and will show up as LNAV+V. If the approach plate shows the approach as LNAV/VNAV, it can be flown to LNAV/VNAV minimums.
MAPR	Indicates the system is providing missed approach integrity and CDI full-scale deflection +/- 0.3nm.
ENR	Indicates the system is in en-route mode. CDI full-scale deflection is 2.0nm or current CDI scale selection whichever is smaller.
TERM	Indicates the system is in terminal mode, CDI full-scale deflection is 1.0nm or current CDI scale whichever is smaller.
DPRT	Indicates the system is using non-precision approach integrity.
OCN	Oceanic mode, full-scale deflection is 2.0nm
LOW ALT	For LNAV+V, LNAV/VNAV, or LPV approaches, indicates aircraft's estimated altitude is lower than the final approach waypoint by more than 50 meters.

Index

D

E

F

G

H

I

K

L

M

N

O

P

Q

R

S

T

U

V

W

245
LEESBURG
LEE
OCF
Ashley
Fld Pvt (F47)
80
50
219
MAMBO
20
300
408
ORLANDO
Exec (ORL) (D)
113.60
(A) 127.25
HERNY
22
140
V267
V535
331
MRA 2500
Lake X
Pvt (57FA)
72 L 51
1600
28
13
30 NM
MODE C
37
SATE
257 SQT
N28°05.97
W0
74
V2
27
SMER
348
2100
V437
48
228
79
LLNCH
2000
V51
23
SHEDS
MRA 3000
32