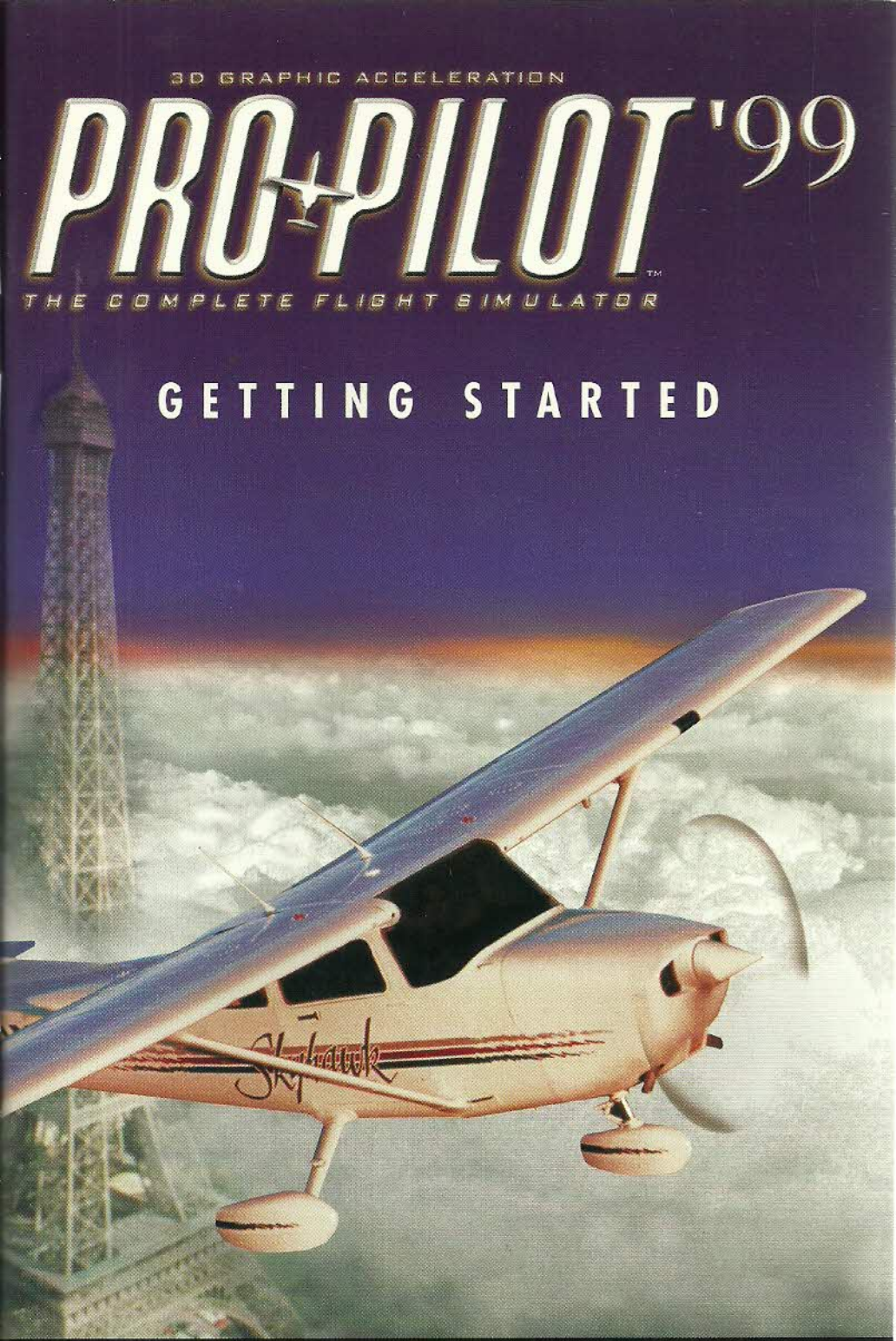
3D GRAPHIC ACCELERATION

PRO PILOT '99

THE COMPLETE FLIGHT SIMULATOR

GETTING STARTED



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PRO PILOT '99™

THE COMPLETE FLIGHT SIMULATOR

GETTING STARTED MANUAL

Dynamix®

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Table of Contents

Introduction

If you're like most people, you've always dreamed of learning how to fly... now you can! Welcome to *Pro Pilot '99*. Climb into one of six different civilian aircraft and travel to thousands of destinations all over the United States, Canada and Western Europe.

Whether you're just starting out or already have a logbook the size of a telephone directory, *Pro Pilot '99* will have you adding up your frequent flier miles in no time. We believe that *Pro Pilot '99* is simply the most authentic and visually stunning flight simulation on the market today. So... if you think you've got the right stuff, get ready for some pure adrenaline entertainment.

Pro Pilot '99 is a valuable learning tool geared toward helping novice and experienced pilots alike. But, no matter what group you belong to, *Pro Pilot '99* gives you the ability to practice your flight skills in the safety and security of your own home.

Thank you for purchasing *Pro Pilot '99*. On behalf of the entire development team, I wish you blue skies and soft landings.

— Douglas Kiang

How to use this manual

Pro Pilot '99 comes with two print manuals; a Flight Companion and this Getting Started Manual. The Flight Companion is a detailed look at flight operations in general. This Getting Started Manual is specifically designed to help you learn to play the simulation. Here you will find numerous tips on "gameplay" as well as information on the many new features that *Pro Pilot '99* has to offer.

When you have questions concerning any aspect of the simulation, *Pro Pilot '99* features a menu-driven On-line Help system. It can be accessed from the Preflight menu, or by right-clicking on any cockpit instrument. For detailed information on actual flight procedures, as well as a number of pre-written flight assignments, check the *Pro Pilot '99* Flight Companion.

Whether you are a seasoned pilot or an enthusiastic novice, the best way to learn more about *Pro Pilot '99* is to simply to get up in the air and start flying. Consult the Quick Start section on the following page for instructions on getting off the ground in a hurry.

Finally, if you are upgrading from a previous version of *Pro Pilot*, check out the list of new features to see what has been added to *Pro Pilot '99*. In particular, you will want to read up on how to use the Pilot's Operating Handbook.

There are two types of supplementary notes in this manual: Tips and Sidebars. Be sure to read Tips and Sidebars as you come to them in the text. Tips are helpful hints that the *Pro Pilot* team considers important to highlight. A Sidebar is a body of text that has been placed on a cloud background Sidebarsare used to clarify a particular point or concept.

Quick Start

How to take off in the Cessna 172P, 172R, or Bonanza

1. Press **Z**, **F**, **F**, **S**, and **X** to start your engine and avionics system.
2. Make sure your aircraft is pointed down the runway, and increase the throttle to 100% by pressing **backspace** or using the throttle control on your joystick.
3. As the aircraft accelerates, it should lift off the ground on its own. If this doesn't happen, pull back gently on the joystick as you approach the end of the runway.
4. If you are flying the Bonanza, press **G** to raise the landing gear once you are in the air.

How to take off in the Baron, Super King Air, or CitationJet

1. Press **8**, **Z**, **F**, **S**, and **X** to start your engines and avionics system.
2. Make sure your aircraft is pointed down the runway, and increase the throttle to 100% by pressing **backspace** or using the throttle control on your joystick.
3. As the aircraft accelerates, it should lift off the ground on its own. If this doesn't happen, pull back gently on the joystick as you approach the end of the runway.
4. Once you are in the air, press **G** to raise the landing gear.

Why won't my engine start?

1. Make sure you have turned the master switch on (press **Z**).
2. Make sure that your fuel switch is not set to OFF.
3. If you're flying the Cessna 172R Skyhawk, make sure you have turned the fuel pump on.
4. Make sure your mixture is set to FULL RICH (press **keypad** *).

New Features Overview

Pro Pilot '99 offers a number of enhancements over the original version of ProPilot. If you are upgrading from a previous version, here is a list of major changes:

Scenery enhancements

Pro Pilot '99 now features spectacular clouds and lighting effects, as well as new terrain bitmaps that dramatically increase the realism of your flight.

3D hardware support

Pro Pilot '99 now supports 3D Glide-compatible 3D accelerator cards for smoother textures and a faster frame rate.

Pilot's Operating Handbook

This on-line handbook contains information on checklists, performance data, tutorials, scenic flights, challenges, and pilot's notes. You can customize the information in this book to display all the information you need for a successful flight. The Pilot's Operating Handbook has been developed in conjunction with the National Association of Flight Instructors (NAFI).

USA and European Terrain

Pro Pilot '99 features beautifully rendered terrain throughout Western Europe, the United States, and Canada. You can now take off from any of hundreds of airports in Europe, and sightsee in over twenty countries. Don't forget your passport!

Request Landing Assistance

When approaching a controlled airport, you can now initiate a landing sequence simply by listening to the ATIS broadcast on your COM radio, even if you aren't on a flight plan.

New aircraft

The new Cessna 172R Skyhawk has been added. It features a new autopilot that is linked to the GPS so that it can fly through a series of waypoints along your flight plan.

New views system

You can use **shift** and the **arrow** keys, or your joystick hat switch, to smoothly change your camera perspective in any exterior view.

Chapter 1:

Pilot Interface

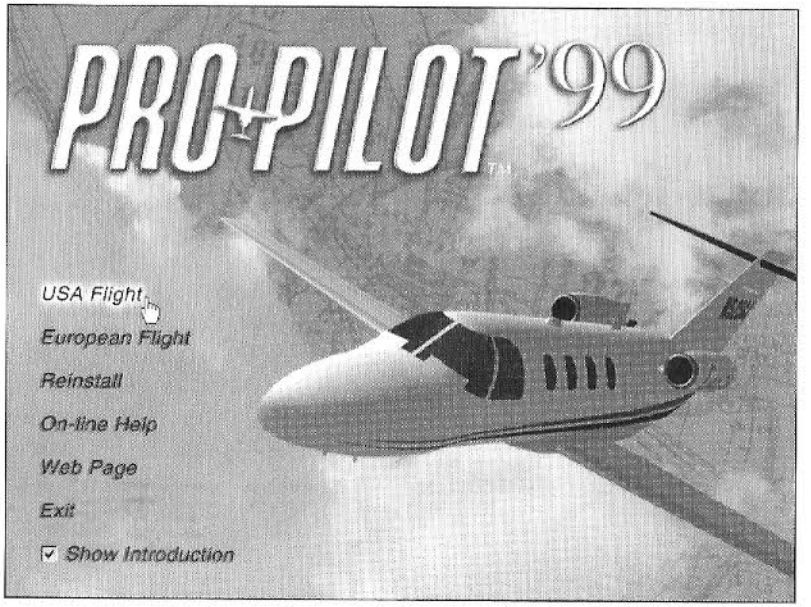
One of the key reasons for the success of the *Pro Pilot* series of simulations is non-intrusive nature of the player interface. This chapter is designed to familiarize you with *Pro Pilot '99*'s menu system.

The Preflight Menu

The Preflight Menu can be considered the simulation's main menu screen. It is the first screen you see after watching the introductory video sequence.

USA Flight

When you choose this option from the Preflight menu, you'll be taken to the default flight in the USA. This option makes all of the USA scenery available in the Airports menu and the Position Aircraft map.



European Flight

When you choose this option from the Preflight menu, you'll be taken to the default flight in Europe. This option makes all of the European scenery available in the Airports menu and the Position Aircraft map.

Reinstall

This option will reinstall *Pro Pilot '99*.

On-line Help

Pro Pilot '99 features an extensive context-sensitive help system. When you choose this option, you will be taken to the main page of the *Pro Pilot '99* help system, which you can browse by categories. On the instrument panel, you can right-click using the mouse to find out the name of any instrument. You can also click on its name in order to access more information about that instrument from the on-line help.

Web Page

There are a number of on-line resources that provide more information about *Pro Pilot '99*. When you choose this option, your internet browser will launch, providing links to a number of these sites. Note that you must have Internet access in order to take advantage of this option.

Exit

Are you sure you want to quit? Selecting this option exits you from *Pro Pilot '99*.

Show Introduction

If you uncheck this box, you can skip the opening video sequence at startup.

The Pilot Menu

Once you have entered into the simulation itself, you are given access to the Pilot Menu. The Pilot Menu runs horizontally across the top of your screen. When playing the simulation in full screen mode, the Pilot Menu is hidden but still present. Moving your mouse to the the top of your screen causes the Pilot Menu text to appear. Each menu option has a corresponding letter key which, when pressed, activates the respective menu option. These letter keys are underlined in both the menu and the manual text below.

Mode

Pilot-in Command

Pilot-in-Command means that you have control over all of the radios, and you are responsible for maintaining the proper altitudes and headings assigned to you by air traffic control. You can select Pilot-in-Command from the Mode menu to cancel Dual Flight mode, or you can press **F2**.

Dual Flight

Copilot Onboard

Selecting this option allows you to automate many of the procedures involved in flying the aircraft. There are a number of factors the copilot can monitor, such as your airspeed and altitude. The copilot can also automatically set your NAV and COM radios to the next frequency when directed to do so by ATC.

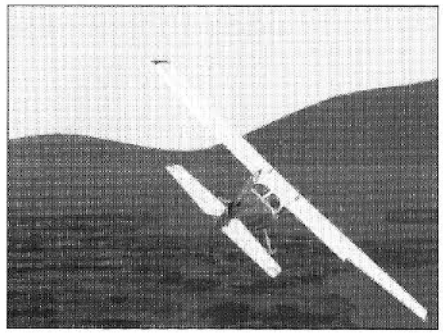
Instruction

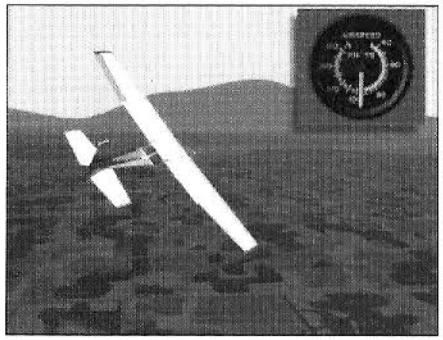
The Instruction options are only available when you are flying the Cessna Skyhawk 172P or 172R. While en-route, the co-pilot will assist you in making a cross-country flight by reminding you if you stray from your assigned heading or altitude. If the Gives Flight Advice box is checked, the instructor will warn you if your airspeed drops while on takeoff or final. He will also provide other alerts ranging from flap airspeed violation to improper pitch attitude during a climb.

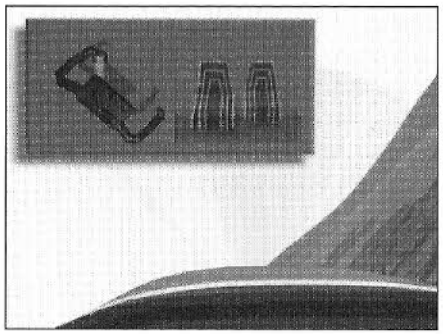
Ground Lesson...

Choosing this menu option allows you to access any of the thirty-one animated tutorials on *Pro Pilot '99* disk #2. These videos are very helpful for learning about all different aspects of flight. You can browse through them as you work your way through the manual. Here is a list of the available ground lessons:

1. Instruments
2. Controls
3. Communications
4. Primary Flight Controls
5. V_y Climb
6. Straight And Level Flight
7. Level Off From A Climb
8. Constant Altitude Turn
9. Constant Airspeed Descent
10. Level Off From Descent
11. Transition To Slow Flight
12. Slow Flight Turns
13. Slow Flight Climb
14. Slow Flight Descent
15. Power-Off Stall
16. Power-On Stall
17. Steep Turns
18. Normal Takeoff
19. Traffic Pattern
20. Final Approach
21. Normal Landing
22. Wind Effects
23. Scanning The Instruments
24. Standard Rate Turns
25. Straight And Level On A Partial Panel
26. Finding Position
27. NDBs
28. Tracking A VOR
29. Chandelles
30. Lazy Eights
31. Eights - On - Pylons







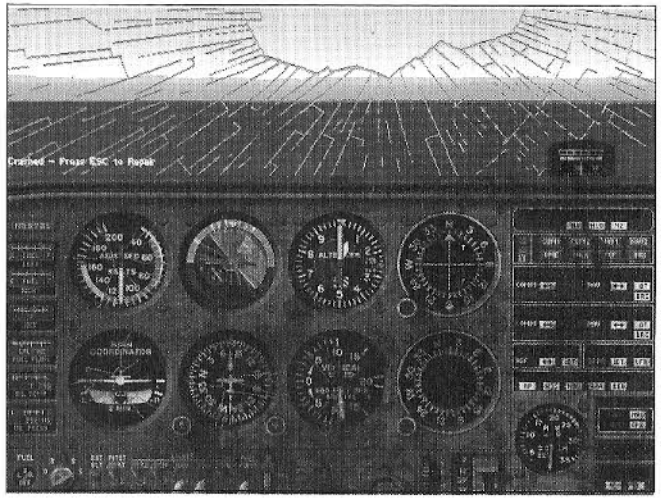
Restart

Selecting this option reloads your last loaded flight. If you are currently following a flight plan, you will be prompted to save it. You can also press **ALT-F2**.

Exit

Selecting this option exits *Pro Pilot '99*. You can also press **ALT-F4**.

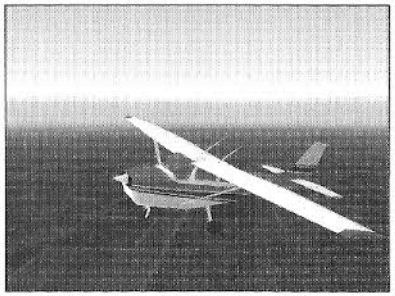
● **TIP:** If you crash, you can press **ESC** to instantly repair the aircraft.



AIRCRAFT

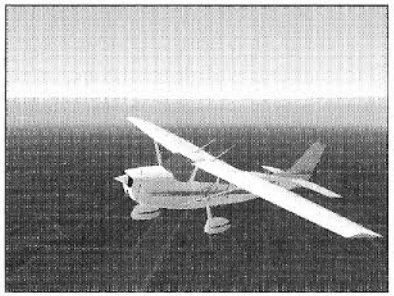
Select Aircraft

When you select this option, you will see a list of the six aircraft in *Pro Pilot '99*. You can change aircraft at any time, even in the middle of a flight, but switching aircraft will close your active flight plan.



Cessna 172 Skyhawk

This is a single engine trainer. Its gentle handling characteristics and slower approach and stall speeds make this a good student aircraft.



Cessna 172R Skyhawk

This is the newest Skyhawk model. It offers improved performance overall, as well as the addition of a fuel pump and EGT gauge. The autopilot on this aircraft can fly flight plan waypoints through the GPS.

Beechcraft V35 Bonanza

This is a low wing, high performance single-engine aircraft. It adds an HSI (Horizontal Situation Indicator) and retractable landing gear.

Beechcraft Baron 58

This is a low wing, light twin-engine aircraft. It is more powerful than any of the single-engine aircraft, has faster takeoff and landing speeds, and requires a longer runway.

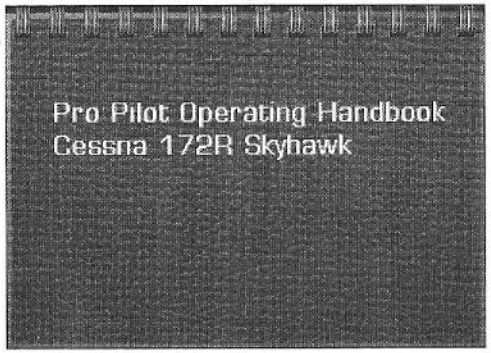
Beechcraft Super King Air B200

This is a twin-engine turbo-prop aircraft. Its high cruising speed and increased fuel capacity allow it to cover great distances quickly and efficiently. It has an RMI (Radio Magnetic Indicator) as well as an electronic HSI.

Cessna CitationJet

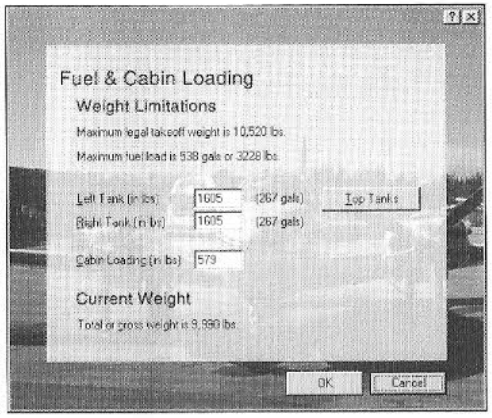
This aircraft has the highest cruising speed of any of the *Pro Pilot '99* aircraft, due to its twin turbine jet engines. Great for cross-country flights, the CitationJet is the ultimate challenge for the seasoned pilot.

Show Operating Handbook



Choosing this option (or pressing **F3**) will display the Pilot's Operating Handbook for the particular aircraft you are flying. The Pilot's Operating Handbook offers a step-by-step explanation of flight procedures, and provide details about a specific flight. You can customize your Pilot's Operating Handbook to display any information you wish. (See Chapter 2 for more information.)

Fuel and Cabin Loading



In this dialog box, you can set the amount of fuel in each tank before a flight. The Flight Plan Wizard will also display this box in the summary after you have created a flight plan. If you click the Top Tanks button, you will fill your tanks to their maximum fuel load. Watch your total or gross weight to ensure that you do not exceed the maximum weight limit.

Crash Detection

When you check this menu option, your aircraft will be vulnerable to collisions with objects such as mountains, water, and the ground. When this option does not have a check next to it, your aircraft is invulnerable.

Auto Coordination

Normally, to perform a coordinated turn, you must move the rudders in coordination with the ailerons. When Auto Coordination is checked, *Pro Pilot '99* will automatically coordinate the rudders with the ailerons. Note that for certain procedures, such as landing in a crosswind, you may want to turn auto coordination off. Press **/** to toggle this option on and off.

Synch Multiengine Controls

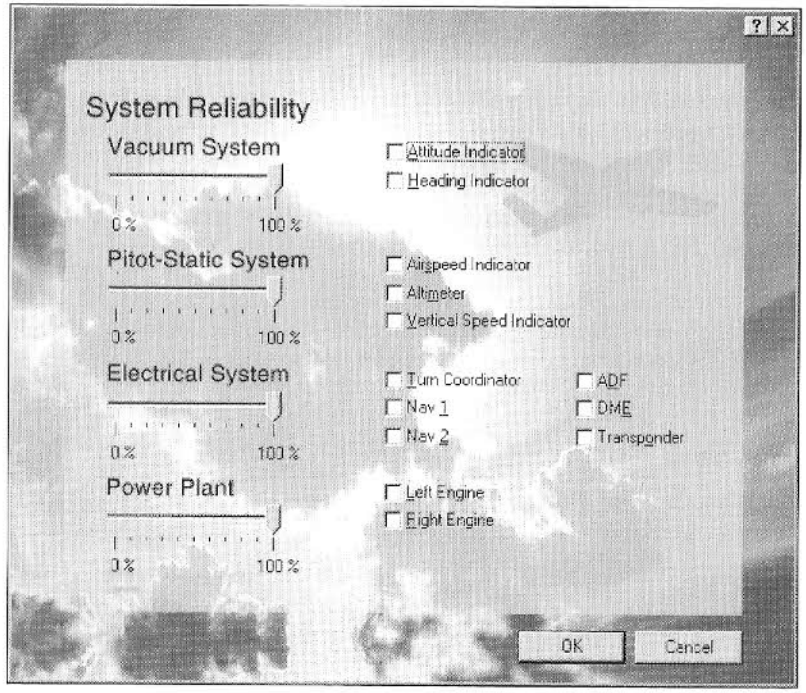
When this option is checked, your multiengine controls will operate in tandem— your throttle settings will affect both engines simultaneously. When this option is not checked, you will be able to control each engine separately from the other. Synch Multiengine Controls only pertains to multiengine aircraft. Press **ALT-L** to toggle this option on and off.

System Reliability

This menu option allows you to choose which instruments will malfunction, and how often. Your instruments are divided into their various systems: vacuum system, pitot-static system, electrical system, and power plant. Drag the slider to indicate what percentage of the time this system will fail, and check the specific instruments on the right to indicate which of these are susceptible to failure. When an instrument malfunctions, it will freeze at its current reading.

Show Magnetic Compass

When this menu option is checked, a magnetic compass will appear at the top of your instrument panel. Press **ALT-M** to toggle this option on and off.



Digital Instrument Readout

When this menu option is checked, you will see a line in all exterior views that lists the aircraft's heading, altitude, indicated airspeed, and vertical speed. Press **ALT-R** to toggle this option on and off.

Partial Panel

From this dialog box, you can cover any of the six primary flight instruments: the attitude indicator, heading indicator, airspeed indicator, altimeter, vertical speed indicator, or turn coordinator. This is most useful as a training tool, and is only available on the Cessna Skyhawk 172P and 172R.

● TIP: To make instruments malfunction at random, choose System Reliability from the Aircraft menu

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AIRSPACE

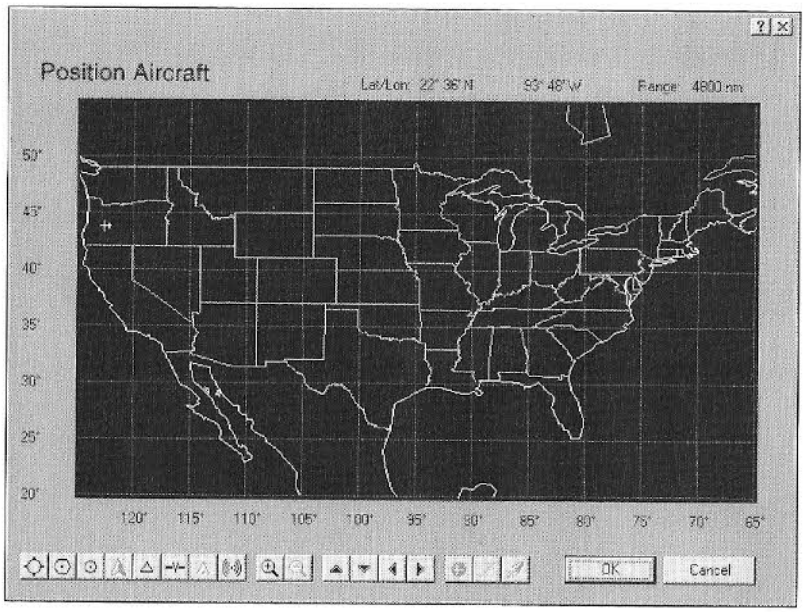
Position Aircraft

The Position Aircraft dialog box allows you to place yourself anywhere within the ProPilot world. When you select this option from the Airspace menu, you will see a map representing your current position. The buttons at the bottom of the map control which map features are visible, and you can move your aircraft within the map view by clicking and dragging the icon with the mouse. You can also access this option by pressing **F4**.

● TIP: There are three primary ways to position your aircraft in *Pro Pilot '99*. To go to a specific airport, you can use the Airports option. To go to a specific area, you can use the Position Aircraft option. To precisely place your aircraft within a given area, you can use the Slew feature.

The Show Buttons

These buttons allow you to display various types of information on the Position Aircraft screen. If the display starts to look too crowded, you can click on individual buttons to hide certain details.



Display Frequencies

This button displays radio frequencies for all visible navigational aids. Note that you must be zoomed in to a range of at least 160 nautical miles in order to see these frequencies.

The Zoom Buttons

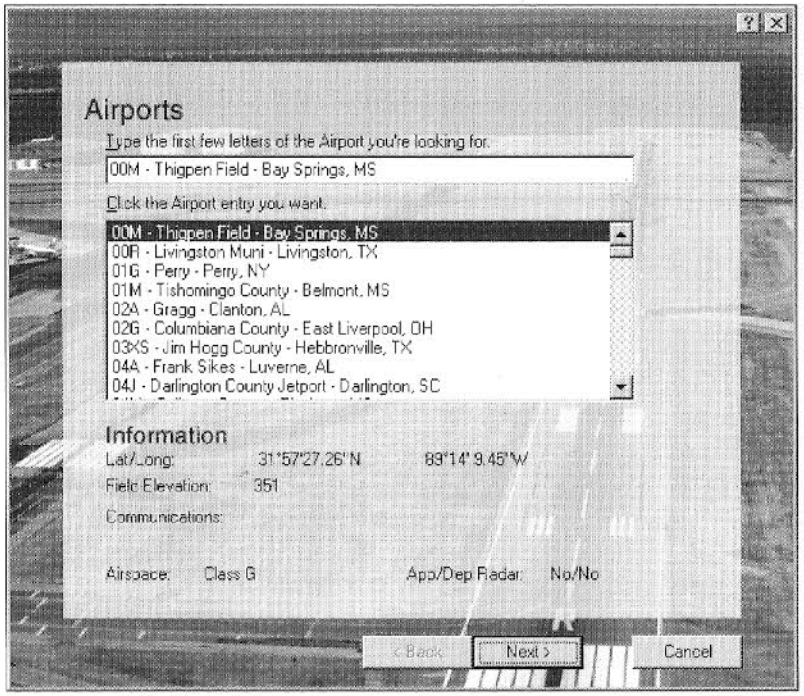
These buttons allow you to change the range displayed on the map, down to a range of 4 nautical miles. Click on the Zoom In or Zoom Out button, then click near your aircraft in order to change the range of the map. If you use these buttons to zoom in on other areas of the map, you need to turn the zoom feature off by clicking on the button again before you can move the airplane icon.

The Move Buttons

These buttons scroll the map up down, left, or right. Simply click on the appropriate button to scroll the map.

The ILS Approach button

When the Show ILSs button is active, you can click on the ILS Approach button, then click near the ILS path on the runway (you need to be zoomed in all the way to see it). You will then be presented with the Setup ILS Approach box. See later in this section for details on setting up an ILS approach.



Airports

The Airports dialog box allows you to select an airport and runway placement, and place your aircraft on the runway or on a landing approach. In order to select an airport, click and drag across all of the text in the box to select it. Next, choose an airport from the list below by typing in the airport's name or three-letter identification code. The Information section will list important details about the airport such as its field elevation and any relevant radio frequencies, such as ATIS.

Runways

When you press the Next button, you will see a list of all available runways at the selected airport. You will also be able to see which runways are ILS-equipped by noting which runways have an I- prefix (example: ILS: I-SFO).

Aircraft Placement

This pull-down menu lets you specify the position of your aircraft in relation to the runway. If you choose Runway, you will be placed on the selected runway in position to take off. If you choose Final, Base, or Downwind, you will be placed at that specific point in the landing

pattern. You can also choose 20-mile Inbound, to put you on an inbound course, 20 miles from the landing pattern. Note that if you want to practice an ILS approach, you can also choose Setup ILS Approach from the Navigational Aids dialog box.

Enable ATC Radar Vectoring

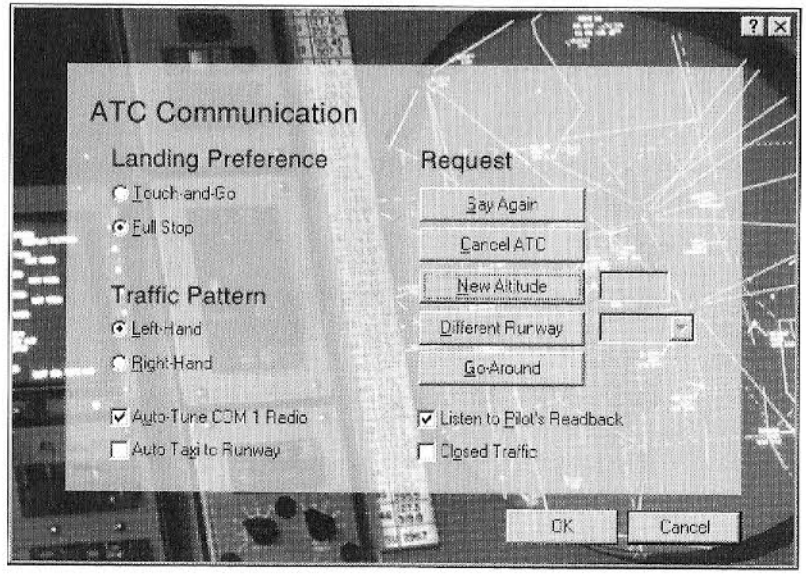
ATC radar vectoring will allow you to hear spoken commands from ATC directing you to various approach and departure points. If this box is not checked, you will not receive these instructions from ATC. Note that this option is only available at airports that have an air traffic control tower.

ATC Communication

This option allows you to send commands or requests to ATC as you approach. Even if you haven't filed a flight plan, you can communicate with ATC at any airport that has a tower by listening to the ATIS broadcast on the appropriate frequency. You can access this option by pressing **shift-F4**.

Landing Preference

You have two options for landing: Touch-and-Go, which clears you for takeoff again right after touching down, and Full Stop, which assumes you will be turning on any taxiway directly after landing. Pilots might use the touch-and-go option to practice takeoffs and landings. For example, after you touch down, simply take off again, and make a 90-degree turn to start the crosswind leg of the landing pattern..



Traffic Pattern

At most airports, you would follow a left- hand traffic pattern, but if you would like to change the direction, you can check right- hand in the Traffic Pattern field.

Request

This box provides you with a way to communicate with ATC. You can hit **shift-F4** to bring the box up, then click on the button to send the request. You can also use a keyboard shortcut for most of these commands.

Request	What it Does	Keyboard Shortcut (if available)
Say Again	Repeats the last command	[[ctrl - R]]
Cancel ATC	Terminates the ATC sequence	[[ctrl – Q]]
New Altitude	Requests that ATC assign you a different altitude	[[ctrl – A]]
Different Runway	Requests a different runway assignment	[[ctrl - /]]
Go-Around	Requests ATC to cancel landing clearance and vector you around for another try	[[ctrl – G]]

Auto-Tune COM 1 Radio

Choosing this option will automatically tune the appropriate frequency on your COM radio during your flight.

Listen to Pilot's Readback

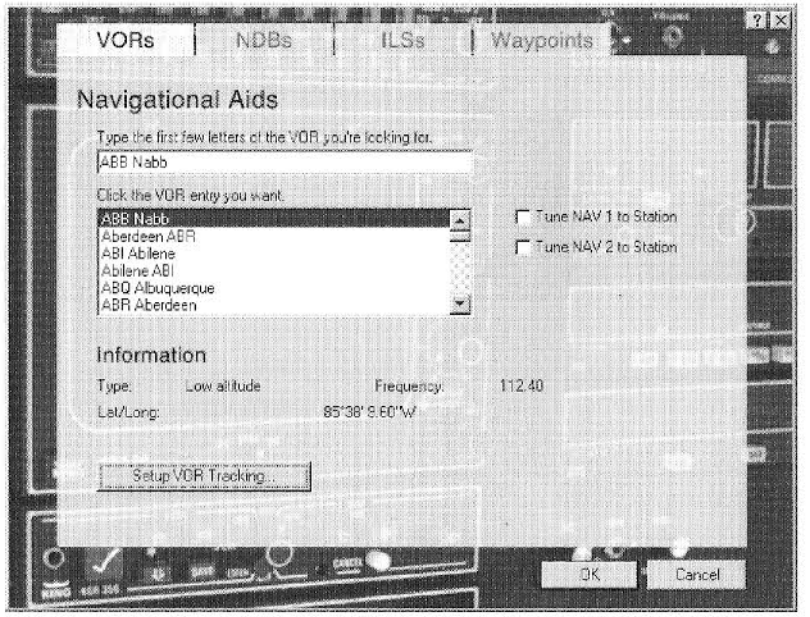
Pilots are required to read instructions back to ATC to acknowledge them. If you check this box, you will hear the co-pilot (or your own voice, if you have installed it) read back each instruction to ATC.

Closed Traffic

When this option is checked, you will not be given vectors out of the traffic pattern after takeoff. This is most useful when practicing touch-and-go landings.

Air Traffic

This box allows you to listen to other pilots and see other aircraft. If these options are checked, make sure that you listen for your call sign so that you know which instructions are meant for you!



Navigational Aids

ProPilot contains an extensive database of navigational aids all across the United States and Europe. This dialog box allows you to choose from lists of VORs, NDBs, ILS's, and other waypoints. You can also set up an approach or departure from any of these navigational aids by clicking the Setup button.

VORs

A VOR is a navigational beacon that transmits a signal that your NAV 1 radio can pick up. Your VOR/LOC Indicator displays the location of your aircraft relative to the VOR signal. VOR stations are often located near airports and along flight routes. The VOR station phases the frequency in 360 different increments, emulating 360 spokes on a wheel. These are called radials. The VOR/LOC Indicator can display which radial you are currently intercepting, or you can dial in a specific radial and the VOR/LOC Indicator will tell you which path to fly to intercept it. Once you find the radial and fly over the VOR station, the TO/FROM flag on the VOR/LOC Indicator will change to reflect the fact that you are now traveling the opposing course of the specified radial.

When you click on the VORs tab of the Navigational aids dialog box, you will see a list of all the VORs that *Pro Pilot '99* supports, identified by

their names and three-letter identification codes. Select all of the text in the box, then type in the name or code of the VOR to select it. If you check the box labeled "Tune NAV 1 to Station" or "Tune NAV 2 to Station", the appropriate NAV radio will automatically be tuned to the VOR that you have selected.

Setup VOR Tracking...

This box allows you to set up an approach to a specific VOR. You can choose to follow the inbound or outbound course by clicking on the appropriate button.

Differences between tracking Outbound and Inbound Courses

When you are approaching a VOR station on a particular radial, the white triangle will point up, indicating that you are heading toward the station along the radial selected in the VOR/LOC Indicator. This is the inbound course. As you pass over the VOR station, the white triangle will point down, indicating that you are now heading away from the VOR station, on the outbound course of the radial selected in the VOR/LOC Indicator. In general, if you want to head TO a VOR station, make sure you are lined up facing the station, the proper radial is selected on the VOR/LOC Indicator, and the white triangle points up.

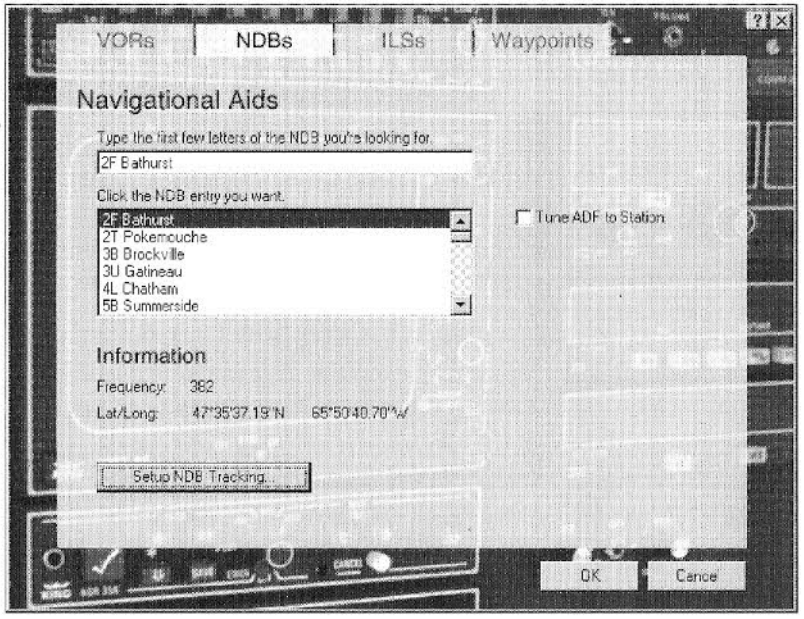
● TIP: The VOR/LOC Indicator doesn't keep track of your heading. It is possible to center the needle on an inbound radial (white triangle points up) and still be headed away from the station! Make sure you are facing the VOR station, and not 180 degrees from it.

Adjusting OBS (keyboard shortcuts)

You can choose which radial is selected on the VOR/LOC Indicator by turning the course selector knob, or OBS (omni-bearing selector). Watch the numbers on the face of the VOR/LOC Indicator until you have dialed in the appropriate radial. You can also use the keyboard to adjust the OBS by pressing **shift-1** to select VOR/LOC 1 or **shift-2** to select VOR/LOC 2. Then, press **shift-0** and **shift-9** to rotate the dial.

Distance to/from VOR, heading, altitude

Finally, you can select the distance you would like to start out from the VOR, as well as your heading and altitude. Click "Go To" to start tracking the selected VOR.



NDBs

An NDB is a non-directional radio beacon that transmits a signal you can pick up on your ADF receiver. Instead of navigating to or from a particular radial, you simply follow the arrow on your ADF indicator, which always points toward the NDB. The course you track toward a particular NDB simply refers to the magnetic course or bearing to the NDB.

When you click on the NDBs tab of the Navigational aids dialog box, you will see a list of all the NDBs that *Pro Pilot '99* supports, identified by their names and abbreviated identification codes. Select all of the text in the box, then type in the name or code of the NDB to select it. If you check the box labeled "Tune ADF to Station", your ADF receiver will automatically be tuned to the NDB that you have selected.

Setup NDB Tracking

This box allows you to track a specific bearing to or from the NDB that was specified on the NDBs tab of the Navigational Aids dialog box. You can set yourself up at a specified distance, heading, and altitude from the NDB. You can also select "Auto-Align Compass Card of ADF", which will start you out at the proper heading to intercept the NDB.

Weather

Pro Pilot '99 offers a number of ways to customize the weather conditions. You can configure up to three cloud layers, nine wind layers, and request a weather briefing along your assigned route. All of these options are available under the Weather menu.

Surface Conditions

In the Surface Conditions dialog box, you can configure the wind direction and speed on the ground. You could, for example, practice cross-wind landings by specifying a surface wind direction 90 degrees off the runway heading. You can also specify an outside temperature in this dialog box; hotter temperatures reduce the amount of lift generated by airflow over the wings.

● TIP: To find out what heading a runway faces, simply add a zero to the runway number. For example, runway 3 actually faces 30 degrees.

Winds Aloft

In this dialog box, you can set the wind direction and speed for up to 9 layers of winds at various altitudes. You can also cause the wind to gust greater than the assigned wind speed by entering a value in the Gusting to: field. To add turbulence, select the severity of the turbulence and its duration. Note that you need to click on the wind layer you wish to edit, then change the wind characteristics below and click the Set Layer button to apply your changes. Wind changes are global.

Clouds

In the Clouds dialog box, you can set a range of conditions for VFR flight, or you can select IMC and set the overall visibility. If you click on VFR, you can set up to three separate layers of clouds along your flight route. Each layer of cloud cover allows you to set a base layer and a height. If you choose a coverage of "Overcast" in the Low-Level layer, you can create a patch of ground fog that obscures your view of the runway and test your ILS landing abilities to their fullest. If you click on IMC, you can create a uniform bank of fog that limits visibility to the range specified on the slider.

Weather Briefing

This allows you to receive a weather update along your flight route. This option is only available when you have filed a flight plan.

Planning

Create Flight Plan

Choosing this option enables you to create and file a flight plan. ATC will radio the appropriate instructions and hand you off to the next controller once you have left their airspace. Note that you need to choose the ATC communication option from the Airspace menu in order to hear these instructions.

Flight Log

Once you have loaded a flight plan, you can choose this menu option to display the same summary screen that was displayed when the flight was created. On this screen, you can see your point of departure, your destination, and all of the waypoints in between. You can also see an estimate of your fuel consumption, the trip distance and estimated trip time, and the distances between waypoints. You can also press **F6** to access the flight log.

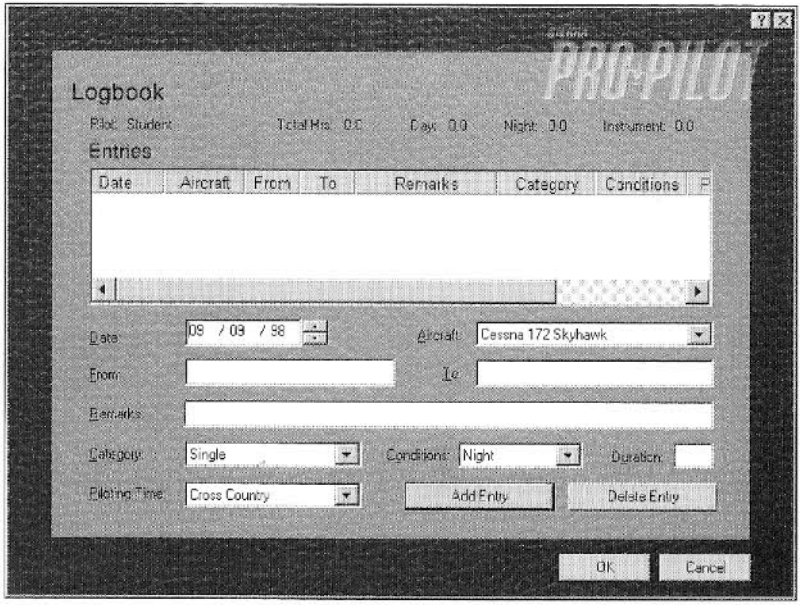
Save Flight

This allows you to save a flight once you have created it. When you choose this option, you will be presented with the Open/Save dialog box. It's a good idea to use the three-letter abbreviations for the departure and destination airports in the filename so that you can easily keep track of the different flight plans you have saved. Note that if you are saving a flight plan for use in the Pilot's Operating Handbook, your flight plan must be saved in the ProPilot99/flight/flight plans/USA directory.

● TIP: You can use the Save Flight option to save a default flight that the program will load each time you start ProPilot. You can place yourself in a different airport or even start out on the runway, with the engine running. Simply save your flight as startup.flt (make a copy of the original first) in the ProPilot99/flight/flights/USA directory.

Resume Flight

This menu option allows you to load a saved flight.

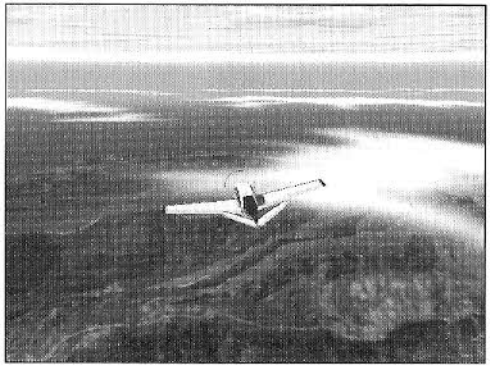


Logbook

The logbook allows you to keep track of your flight hours in each aircraft, as well as any notes you might have about your performance. Note that you can click and drag the columns to make them wider or narrower. When you choose Select Pilot from the Options menu, you automatically load an individual logbook for that pilot.

Views

Full Screen



Pro Pilot '99 supports most 3Dfx based accelerator cards, providing smoother, enhanced graphics, and a faster frame rate. In order to take advantage of the accelerator card's capabilities. Press **alt-ENTER** to switch to full screen.

Cockpit View

When you select this menu option from the Views menu, you can access a sub-menu that includes the various views of the cockpit. Panel View 1 shows you the entire cockpit with all instrumentation. Panel View 2 hides the lower portion of the cockpit, which can give you a better view outside. Cowl only simulates the view out the front window, over the engine cowling. See the ground school lesson "Straight and Level Flight" for more information on flying using the cowl view. Scenery only hides the engine cowling, and only shows the outside view. Note that the Scenery Only and Cowl Only views can cause the frame rate to drop on slower systems, so experiment with the different views until you find one that best suits your needs. Press **F7** to toggle between the various views of the panel and the engine cowling. Press **ctrl-F7** to toggle between Panel View 1 and Panel View 2, or choose Switch Panel View from the Views menu.

- TIP: Select Digital Instrument Readout from the Aircraft menu (or press **alt-R**) to display your heading, altitude, airspeed, and rate of descent when flying using the Cowl or Scenery Only views.

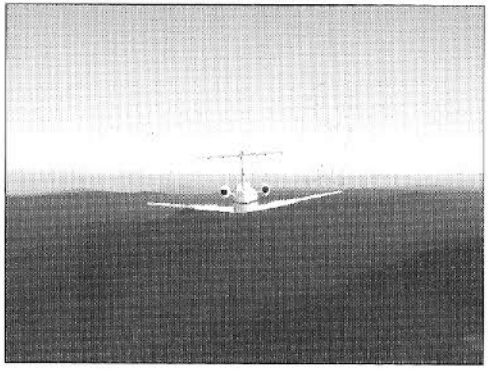
Tower Cam

The Tower Cam gives you a view of your aircraft from the nearest air traffic control tower. This view works best when you are directly over the airport, or when you are buzzing the tower.

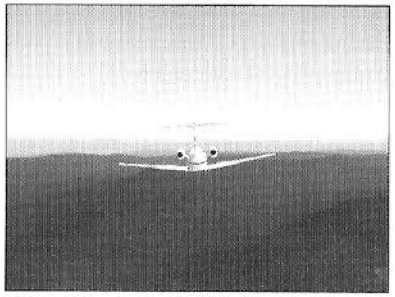
- TIP: Try taking off from the Tower view. Then, for an added challenge, try landing the plane using the same view. **Shift-F7** also toggles the Tower view.

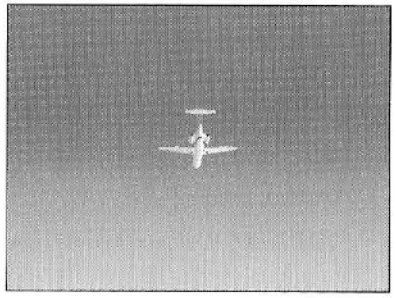
Outside Cam

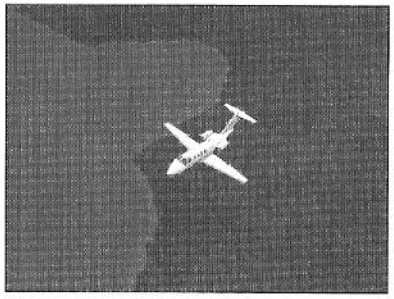
These are four different starting views from outside your aircraft. You can move the camera around in each outside view by using **shift** and the **arrow** keys:

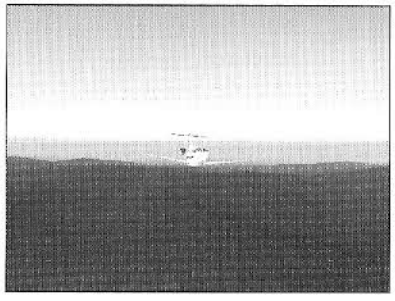


Key Combination	Result
[[shift-up arrow]]	Zoom camera in
[[shift-down arrow]]	Zoom camera out
[[shift-left arrow]]	Pan camera left
[[shift-right arrow]]	Pan camera right
[[shift-page up]]	Increase camera altitude
[[shift-page down]]	Decrease camera altitude









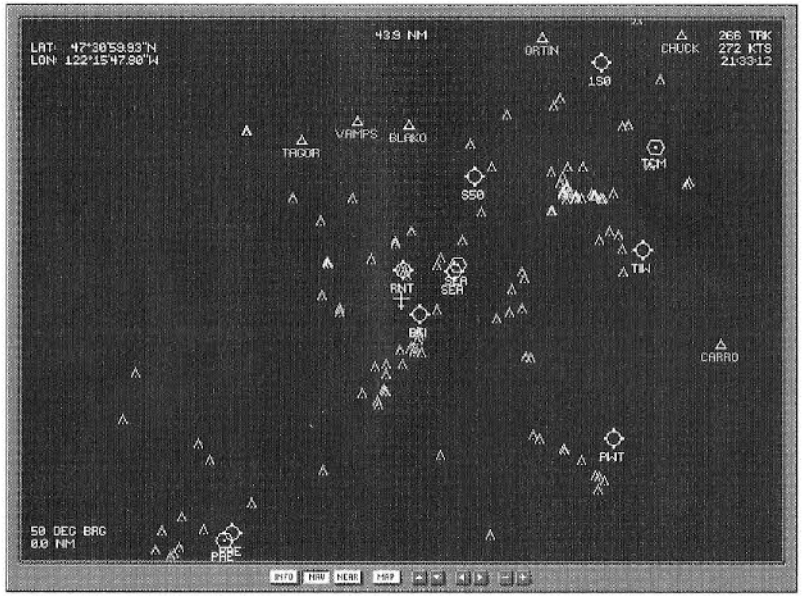
Panoramic Transitions

When this option is selected, the camera will zoom dramatically to the next viewpoint when you change exterior views. To change immediately to the next view with no transition, deselect this option.

Show GPS Display

The GPS, or Global Positioning (Satellite) System, displays your location anywhere in the *Pro Pilot* world. The GPS also contains an extensive database of navigational beacons and airport frequencies. Finally, the GPS can project an overhead view of your flight plan.

Choose Show GPS Display from the Views menu, or press the **F8** key to access the GPS. The GPS display can be moved to a convenient location by clicking and dragging the display. You can also resize the display by clicking and dragging any of the corners.



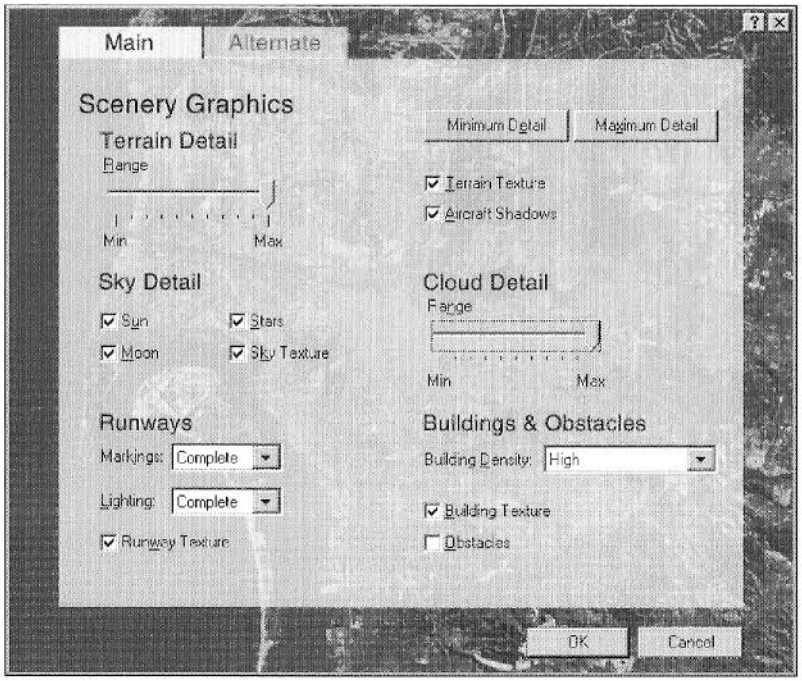
Options

Select Pilot

A logbook is an invaluable record of any pilot's flight time. This option allows you to maintain a separate logbook for each user. To create a new pilot, simply select the text in the box and type in a new name. That pilot will automatically be added to the menu.

Auto Complexity

If ProPilot's frame rate seems sluggish, you can select this option to let the computer manage the detail level for you. If you have a slower computer, some of the scenery details will be minimized as you enter busy areas. This will maintain an acceptable frame rate. If you prefer to manage your own settings, you can set the detail options under Scenery Graphics. Note that if you want to adjust Scenery Graphics yourself, Auto Complexity must not be checked.



Scenery Graphics

To maintain an acceptable frame rate, you can increase or decrease the detail level here. The Alternate tab allows you to switch between two different settings, so you can adjust the detail level as you fly. The hot key for this is **F9**. Note that Auto Complexity needs to be turned off in order to access this menu.

- TIP: Hitting the Maximum detail button automatically turns on all the scenery features. Start by hitting this button, then turn down certain features until you find a setting that is an acceptable compromise between scenery graphics and ideal frame rate.

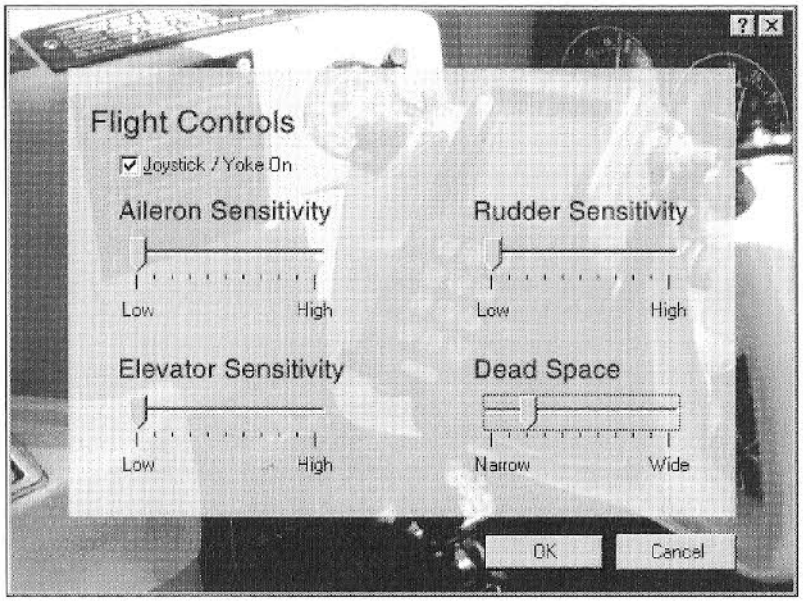
Brightness

This menu option allows you to change the overall brightness of the display. This works in both 3D- and non-accelerated graphics modes. Note that you must click OK in order to see the results of your changes.

Sound

This menu option allows you to control the volume of the Engine, the Voices of your copilot and air traffic control, and Effects such as the landing gear and wind noise. You can also selectively mute some or all of these sounds.

- TIP: If you're having trouble hearing ATC or the instructor, you can choose Sound from the Options menu, and turn down the other sound effects.



Flight Controls

This menu option allows you to configure a joystick or flight yoke for use with *Pro Pilot '99*. Check Joystick/Yoke On to enable the joystick, or press **alt-J**. You can drag the sliders to set the Sensitivity of your ailerons, rudder, and elevator. The farther the sliders are to the right, the greater the effect of your joystick input. You can also drag the slider to set the Dead Space of your joystick. The farther the slider is to the right, the farther you have to move your joystick in order to see an effect. Note that if Joystick/Yoke On is not checked, *Pro Pilot '99* defaults to keyboard control. You can also press **alt-K** to enable the keyboard.

Daylight

This menu option allows you to choose from any of four times of day: Dawn, Day, Dusk, and Night. As time goes by, you will see the time of day change slowly, from dawn to daylight, or from dusk into night. Each time of day offers different lighting conditions, which in turn offers a very different view of the outside scenery. Try flying the same scenic flight at Dusk or at Night to see some dramatic changes in scenery.

Date and Time

This menu option allows you to choose a time and date for your flight, as well as a Time Mode and Time Zone. When you select UTC Mode, the cockpit clock is set to Universal Coordinated Time, or Greenwich Mean time. If you choose Manual Local Time, you will be able to select from the submenu any time zone in the United States. If you select Automatic Local Time, you will automatically set the clock to your own time zone.

Time Acceleration

This feature is handy for long flights. Make sure the aircraft is level before selecting this option, because you can find yourself gaining or losing altitude very quickly. It's often a good idea to use Time Acceleration with the autopilot engaged, and use the GPS display to monitor your progress.

Slew Control

Slewing is a great way to transport yourself great distances. Choose this option from the menu, then use your joystick or flight yoke to change the position of your aircraft. Your latitude, longitude, and altitude are displayed at the top of the screen. You can also use the keyboard to slew. Press **alt-x** to engage slew, then use the keypad to quickly move your aircraft around. Press **q** and **a** to gain or lose altitude.

Pause

This menu option pauses the simulation. You can still access the radio, adjust nav. instruments or toggle switches when the simulation is paused, so it is sometimes helpful to choose this option when you change radio frequencies after passing one waypoint, or if you need to take a break. You can also press **p** to pause the simulation.

Freeze

When you choose Freeze from the Options menu, your aircraft "freezes" in space and doesn't change its coordinates. You can also press **shift-F** to freeze the aircraft. Although your aircraft does not move when Freeze is enabled, you can change throttle settings, pitch attitude, and even stall the airplane. This option can be useful when making an approach into an airport. You can enable Freeze, trim the aircraft and adjust your throttle so that your rate of descent is under control, then resume normal flight.

Chapter 2
The Pilot's Operating Handbook

How to Customize the Pilot's Operating Handbook

One of the strongest features of *Pro Pilot '99* is your ability to customize the text in the Pilot's Operating Handbook. You might wish to abbreviate or elaborate upon an aircraft's checklists, make notes to yourself about certain procedures related to that particular aircraft, or create online narration for your favorite scenic flights that you can send to friends or post online. Customizing the POH is easy. All you need to do is modify the appropriate text file with a text editor. Press the **F3** key to access the Pilot's Operating Handbook.

Aircraft Type	Filename Abbreviation
Cessna 172R Skyhawk	172r
Cessna 172P Skyhawk	172p
Beechcraft v35 Bonanza	v35
Beechcraft Baron 58	b58
Beechcraft Super King Air B200	b200
Cessna CitationJet	cj

Pro Pilot '99 files and their extensions

*.txt Readme file, or page in the POH
*.pln Saved flight plan file. When loaded, this file starts you out on the ground at the originating airport in your flight plan.
*.flt Saved flight file. These files can be saved at any time during a flight, even in mid-air. When loaded, this file places you back at the exact moment the flight was saved.
*.ini file. This file is a configuration file.

You can customize the following sections:

Checklists

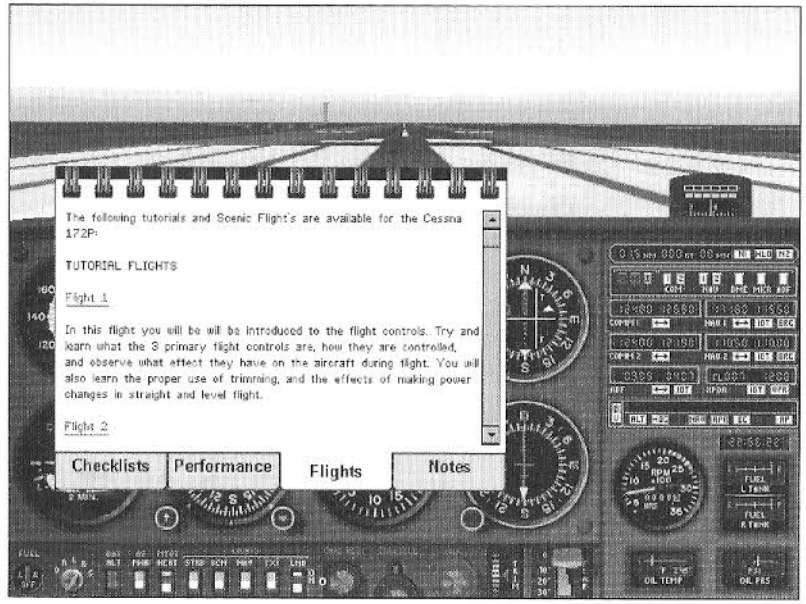
The checklist file for each aircraft is located in your ProPilot99/Flight/English directory. You can add or modify text as you wish, then close and save the text file under the same name. Note that you cannot use the TAB key when modifying the checklists. You also need to press ENTER after the last sentence in the file. The checklists are named as Aircraft type_checklist.txt. For example, the checklist for the Cessna 172R is called 172r_checklist.txt.

Performance Data

The performance data file is located in your ProPilot99/Flight/English directory. You can add or modify text as you wish, then close and save the text file under the same name. Note that you cannot use the TAB key when modifying the performance data. You also need to press ENTER after the last sentence. The performance data files are named as Aircraft type_performance.txt. For example, the file containing performance data for the Beechcraft Baron is called b58_performance.txt. Note that your changes do not affect the aircraft's actual flight performance in the simulation.

Flights

When you click on the Flights tab of the POH, you will see the Table of Contents for the various flights available to you for that particular aircraft.



When you click on the title of a flight, *Pro Pilot '99* automatically loads the corresponding text for that flight. To return to the Table of Contents page, right click the **Contents** button. There are three types of flights, and they all can be created, modified, and shared with friends or over the Internet.

Tutorials

How do you perform a power-off stall? Or, more importantly, how do you recover from one? Tutorials are step-by-step guides to performing specific flight maneuvers or sequences of maneuvers. You can create tutorial files to take someone step-by-step through some of your own maneuvers. The POH tutorials have been developed in cooperation with the National Association of Flight Instructors.

Scenic Flights

Try a flight around Mt. Rainier in Washington state. Explore the glitter of the Las Vegas strip, or take a tour of our nation's capitol. *Pro Pilot '99* features some wonderful examples of scenery. You can create a scenic flight that takes you over some of your favorite areas, or jump in and explore some of the built-in scenic flights. Along the way, you can add comments or interesting details about the area over which you are flying.

Challenges

Have you ever tried to fly through the Eiffel Tower? How about landing a Cessna in a strong crosswind? A Challenge flight challenges you to perform a specific flight objective. You can try out any of the built-in challenges, or create your own to challenge your friends (or enemies).

Notes

When you click on the Notes tab, you will see a page of notes about your selected aircraft. To edit these notes, you would modify and save the file called Aircraft type_notes.txt in your ProPilot99/Flight/English directory. For example, the notes file for the CitationJet is called cj_notes.txt.

CREATING A CUSTOM FLIGHT

Overview

You can create or modify a Tutorial, Scenic Flight, or Challenge in basically the same way. In general, the process is as follows:

1. From within *Pro Pilot '99*, save your flight or flight plan.
2. Using a text editor, create a text file that contains all of the text you want the Pilot's Operating Handbook to display during the flight.
3. Using a text editor, create a linking file that links your text file with the flight that you have saved.

4. Using a text editor, create an automated file to automatically update your logbook with the right information at the end of your flight.
5. Finally, edit the Flights page to add a link to your flight in the table of contents.

● TIP: You cannot have two flights that are numbered the same for any given aircraft. For example, if "Flight 1" is your first tutorial flight and there are twelve tutorials, then your next Flight should be called "Flight 13".

File Structure

Here is a list of the various types of files that *Pro Pilot '99* accesses when displaying the Pilot's Operating Handbook.

Aircraft type_contents.txt (example: b200_contents.txt)

This contains the text that appears when you click on the Flights tab of the Pilot's Operating Handbook. It is a table of contents for the various flights available for that aircraft. Every time you create a tutorial, scenic flight, or challenge, you must add a line to this file to provide a link to the appropriate flight.

Flights_template.txt

This file is the template for creating the file that links your description of the flight to the saved flight file itself. Once you open this template, be sure to save it as a different file according to the following format:

- Aircraft typeft#.txt (example: 172pft1.txt): Format for tutorials. (# represents the next sequential number.)
- Aircraft typefs#.txt (example: b58fs1.txt): Format for scenic flights. (# represents the next sequential number.)
- Aircraft typefc#.txt (example: v35fc1.txt): Format for challenges. (# represents the next sequential number.)

Tutorials_template.txt

This is the template for creating tutorials. Once you open this template, be sure to save it as a different file called Aircraft type_t#.txt (example: b200_t2.txt).

Scenic flight_template.txt

This is the template for creating scenic flights. Once you open this template, be sure to save it as a different file called Aircraft type_s#.txt (example: cj_s3.txt)

Challenge_template.txt

This is the template for creating challenges. Once you open this template, be sure to save it as a different file called Aircraft type_c#.txt (example: 172p_c2.txt)

Ini_template.ini

This file ensures that the proper entry is logged in your logbook when you click on "End Flight" in the Pilot's Operating Handbook. Use this template to create a new.ini file with the same filename as your saved.flt or.pln file.

Creating a Flight

Here are some detailed instructions for setting up a tutorial flight in the Cessna Skyhawk 172 trainer. The flight will be called "Flight 13" and will appear in the Tutorials section of the Flights tab in the Pilot's Operating Handbook. You would follow the same process for creating a scenic flight or challenge for any other aircraft—just make sure you change the filenames to reflect the aircraft type, type of flight, and the number of the flight.

1. In *Pro Pilot '99*, save your flight or flight plan. If you are creating a Challenge such as buzzing the Statue of Liberty, for example, you might want to take off and fly within sight of the monument, then choose "Save Flight" from the Planning menu so that your pilot starts out already in the air. If you are creating a Scenic Flight from San Francisco to Oakland, for example, you might want to choose "Save Flight Plan" from the Planning menu so that the pilot starts out on the ground at the originating airport. In this case, we'll start out in the air, so save the flight as 172p_t13.flt in the ProPilot99/flight/flights/USA directory. If you had saved a flight plan, you would put it in the ProPilot99/flight/flight plans/USA directory. If it's a European flight or flight plan, make sure it goes in the EUROPE directory rather than the USA directory.
2. Next, go into your ProPilot99/Flight/English directory, and open the template called Tutorials_template.txt.
3. Enter all of the text for the tutorial. This information will be visible in the Pilot's Operating Handbook while the student flies the aircraft. Remember not to use the TAB key while you are entering text.
4. Hit the RETURN or ENTER key at the end of the last line.
5. Save this file as 172p_t13.txt.
6. Next, we'll create a file that links your description with the saved flight. Open the Flights_template.txt file.
7. On the first line, enter the name of the saved flight (.flt) or flight plan (.pln). In this case, use 172p_t13.flt.

8. On the second line, enter the name of the file containing all of the text for the tutorial. In this case, use 172p_t13.txt.
9. Hit the RETURN or ENTER key.
10. Save this file as 172pft13.txt in the ProPilot99/Flight/English directory.
11. Next, we'll create an.ini file to ensure that the proper data is entered in the logbook when you end your flight.
12. Open the Ini_template.ini file.
13. Enter the proper information for the logbook entry and save the file with a.ini extension. The filename should match your saved flight or flight plan; in this case, save it as 172p_t13.ini.
14. Finally, we'll add a line to the list of Flights in the Pilot's Operating Handbook that links to your tutorial. In the ProPilot99/Flight/English directory, open the 172p_contents.txt file.
15. Under the Tutorials section, add the following line: <172pft13.txt>Flight 13<>.
16. On the next line, add a short description of the tutorial you have saved.
17. Hit the RETURN or ENTER key at the end of the last line.
18. Save the file.

● TIP: Choose "Save as..." from the File menu as soon as you open the template, to prevent you from accidentally overwriting the master copy.

Sharing files with someone else

If you wanted to share a tutorial, scenic flight, or challenge that you have created with someone else, you would need to send them all of the files you have created, with the exception of the contents file. The people receiving the flight would need to edit their own contents file to add your flight into their Pilot's Operating Handbook. They would also need to make sure they don't already have a tutorial, scenic challenge, or flight with the same number. If this is the case, then the files would need to be renamed with a unique number.

Appendix A

USING THE AUTOPILOT

The autopilot is one of the most useful features of your aircraft. When engaged, the autopilot will hold a set heading or altitude, which can take much of the tedium out of flying long distances. The autopilot can also be used to track the approach or back course of an ILS signal, or stay on course with whatever navigational aid is tuned in on NAV 1. To engage the autopilot, simply click on the AP button, and specify which aspects you want the autopilot to track by pressing the appropriate buttons.

Autopilot Functions

D/U	Trims up or down
ALT	Holds the current altitude
HDG	Holds a specified heading
NAV	Tracks a VOR tuned into NAV 1.
APR	Tracks an ILS approach
BC	Tracks the back course of an ILS approach
REV	Tracks the back course of an ILS approach (172R)
AP	Turns autopilot on or off

How to use the ALT function

Climb or descend to the desired altitude, then press the AP button to engage the autopilot. Click on the ALT button to hold your current altitude. You can trim the aircraft using the D/U rocker switch. Note that the autopilot will hold both altitude and heading if both the ALT and HDG buttons are pressed.

How to use the HDG function

1. On the heading indicator, click the heading bug knob to move the red triangular indicator to the desired heading. You can also use the keyboard to change the heading bug. Select the heading bug by pressing **shift 7,** then decrease or increase the bug setting by pressing **shift -** or **shift +** . Press **shift [** or **shift]** to make fine adjustments.
2. Press the AP button to engage the autopilot and click on the HDG button. The autopilot will turn the aircraft, if necessary, to the proper heading, and will hold that heading until the autopilot is disengaged. This function is active when the HDG light is on.

How to use the NAV function

1. Tune your NAV 1 radio to a VOR frequency.
2. On your NAV 1 radio, press the BRG button.
3. Using the OBS knob on your VOR/LOC Indicator or HSI, tune in a desired bearing to or from the VOR station. Notice how the numbers on the NAV 1 radio change, indicating the course selected on your VOR/LOC Indicator. If you want to fly directly toward the VOR station, center the needle with the TO flag showing.
4. Once you have tuned in a radial, engage the autopilot by pressing the AP button, and press NAV. The autopilot will turn the aircraft, if necessary, to intercept the radial at a 45° angle, and will track that radial until the autopilot is disengaged. This function is active when the NAV light is on.

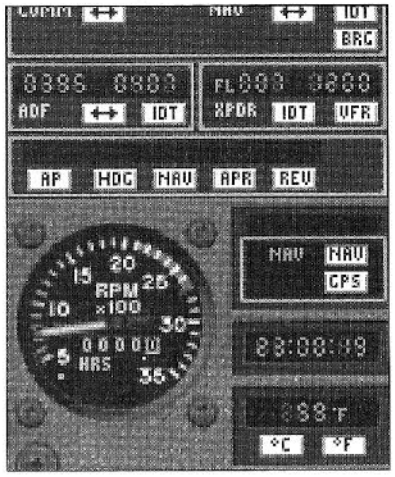
How to use the APR function

1. Tune your NAV 1 radio to an ILS frequency.
2. Engage the autopilot by pressing the AP button, and press APR. The autopilot will turn the aircraft, if necessary, to intercept the localizer beacon. This function is active when the APR light is on.
3. Once the localizer has been intercepted, use the D/U rocker switch on the autopilot console to intercept the glide slope. The autopilot is tracking the glide slope when the GS light is on. The autopilot will not manage the throttle, so you should watch your airspeed and adjust the throttle accordingly.
4. The APR function works best as far as the middle marker, after which point you should turn off the autopilot and fly the glide slope yourself.

How to use the BC function (REV in the 172R)

1. Tune your NAV 1 radio to an ILS frequency.
2. Engage the autopilot by pressing the AP button, and press BC (or REV in the Cessna 172R Skyhawk). The autopilot will turn the aircraft, if necessary, to intercept the back course, which is 180° opposite the ILS approach. Note that you cannot track the glide slope on a back course approach. This function is active when the BC light is on.

The Cessna 172R Skyhawk Autopilot



The autopilot on the Cessna 172R Skyhawk is able to fly between waypoints on your flight plan. If you are following a flight plan, all you need to do is click GPS on the GPS controller, climb to your desired cruising altitude, and engage the autopilot by pressing the AP and NAV buttons. The autopilot will automatically follow each waypoint in your flight plan. Note that the autopilot will only follow waypoints in the GPS when you are flying a flight plan.

A Sample Flight

Let's try a sample flight in the Cessna 172R Skyhawk, with the autopilot set to follow a flight plan on the GPS.

1. First, select a saved flight plan by going to the Planning menu and choosing Load Flight Plan (or create one on your own).
2. Next, start a normal takeoff procedure. Once you are airborne, locate the GPS controller in the lower right portion of the instrument panel. Since you are flying a flight plan, click the GPS button on the GPS controller. If you were flying without a flight plan, you would leave the GPS controller on NAV, and the autopilot would track whatever transmitter is currently tuned in on NAV 1.
3. The GPS screen is automatically displayed when the GPS controller is in GPS mode. Press the NAV button on the GPS display. You will see a top-down representation of the path to the next waypoint, and a green icon representing your current position.
4. Next, engage the autopilot by clicking on the AP button, and press NAV to direct the autopilot to follow the path to your next waypoint. On your VOR/LOC Indicator, turn the OBS (course selector knob) to center the needle with the TO flag showing. The autopilot will turn the aircraft, if necessary, to intercept the proper radial and will hold the aircraft on its course until you pass over the VOR station.

1. After you pass the first waypoint, the GPS will automatically switch to the next waypoint. Turn the OBS again to center the needle with the TO flag showing, and the aircraft should track the next radial. Continue in this manner until you have proceeded through all of the waypoints in your flight plan.

● TIP: The 172R autopilot does not have an ALT function. You must manually maintain your altitude while the autopilot tracks a waypoint. Note that there is no D/U rocker switch on the 172R autopilot.

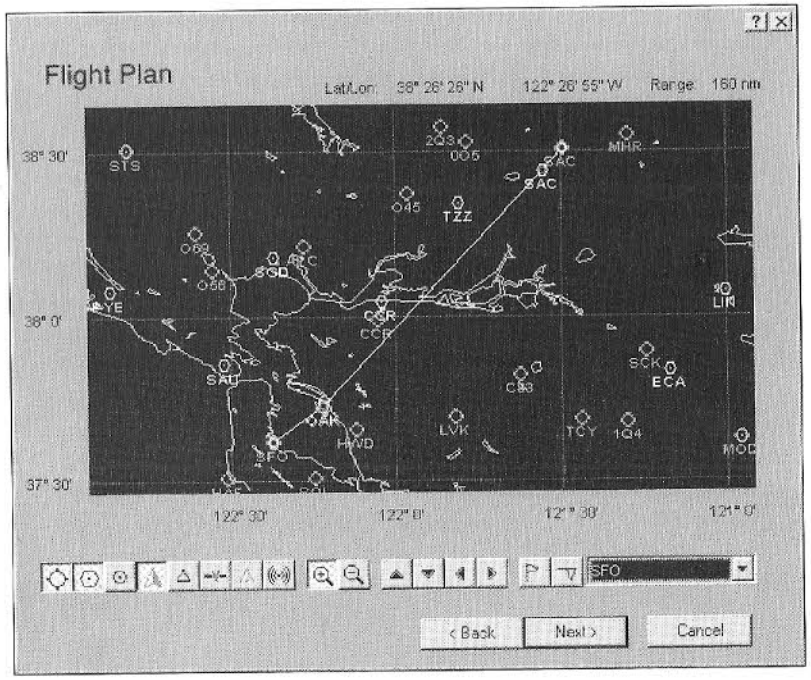
Appendix B

INSTRUCTIONS FOR CREATING A FLIGHT PLAN

You can use the Flight Plan Wizard to create a flight plan. Let's try a sample flight from Morris to Flying Cloud, Minnesota. For this flight, we will be taking off from an uncontrolled airport in Morris, Minnesota. We'll use the Add Fix and Remove Fix buttons to adjust our route, which takes us to the Benson NDB, then continue on to the Willmar VOR. From there, we will find our way to the Hutchinson-Butler airport VOR just outside of Minneapolis-St. Paul, descend to 1,900 feet, and make an ILS-assisted landing at Flying Cloud.

The Flight Plan Wizard

Under the Planning menu, select Create Flight Plan. Under Route Selection, specify the Cessna 172R Skyhawk, IFR flight, Cruise Settings at 5,000 feet and 70% power.



Hit the Next button. As your starting point, highlight all the text in the Airport box and type in MOX, which is the identifier code for Morris Airport, in Morris, Minnesota.

Press the Next button, and enter a destination point of FCM, which is the identifier code for Flying Cloud Airport. You might want to note the ATIS, Approach, Ground, and Tower frequencies now, or look them up on the GPS as you approach Flying Cloud.

Using the Map View

After you press the Next button, *ProPilot '99's* Route Generator will automatically display a flight plan that takes you through selected waypoints along your flight route. You can also customize your route to take you over different navigational aids or waypoints.

● TIP: You cannot remove a fix from your flight plan unless that waypoint type is displayed. For example, if your flight plan includes the Alexandria VOR (AXN) you will see it even if the Show VORs button at the bottom of the screen is not pressed and no other VORs are displayed. However, you will not be able to remove the Alexandria fix until you press the Show VORs button and display all VORs.

Removing a Fix

The yellow segmented line that appears on the map indicates your flight path from Morris to Flying Cloud, a distance of about 110 miles. Click the buttons at the bottom of the screen to Show Airports, Show VORs, and Show NDBs. Next, click the Zoom In button and click near MOX to give us a better view of the navaids in that area. You can click on the triangles to scroll the map around. To remove a fix from your flight plan, click on the Remove Fix button, then click on the waypoint you want to remove. In this case, we're going to remove AXN, a VOR station that takes us somewhat out of our way. (Since the route generation may differ, your particular route may take you through ILL or GHW instead of AXN).

Next, click on the Remove Fix button at the bottom of the screen. Click on the waypoint in between MOX and FCM to remove it. Notice that your flight plan is automatically updated to reflect a direct path from Morris to Flying Cloud. You have just removed a fix from the flight plan.

Overlapping waypoints

Sometimes, you may not be able to remove a waypoint by clicking on it if another waypoint is very close or is overlapping it. If this is the case, you must turn off some of the display options or zoom in far enough so that you can distinguish the waypoint you are trying to remove.

Adding a Fix

Next, we are going to add some waypoints in between these two points, in order to keep ourselves on course.

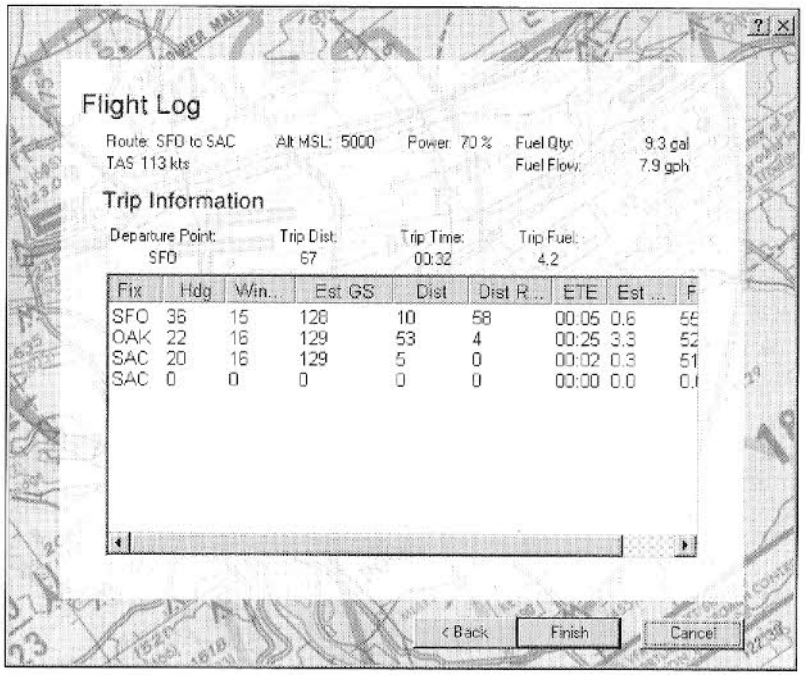
The Waypoint Menu

To the right of the Create Flight Plan map, you will see a pull-down menu indicating your departure and destination airports, along with all of the waypoints on your current flight plan. Select the waypoint just before the fix you want to add (in this case, MOX, your departure airport). This indicates that your flight plan up to that point is correct. If you don't select a waypoint from this menu, any waypoints you add may end up out of sequence.

Click the Add Fix button and click on BBB, which is an NDB in Benson, Minnesota. Notice how your flight route changes to reflect this addition to your flight plan. Next, click the Add Fix button again, and click on ILL to add it to your flight plan. ILL is the Willmar VOR-DME beacon. You can use the DME on your instrument panel to tell you exactly how far you are from Willmar once you have passed Benson. Finally, add a fix at HCD, Hutchinson-Butler Airport, just outside of Minneapolis. These navigational aids have now become part of your official flight plan and will be computed as part of your route. On a longer route, you could add other fixes to your flight plan in the same way. For now, though, you are cleared directly from MOX through BBB, ILL, and HCD to FCM.

Weather Briefing

Press "Next" to get to the enroute weather briefing, which is dynamically generated every time you create a new flight plan. If you don't like the weather you see, you can press the "Generate Weather" button to randomly create new weather. Also, take note of the wind direction and speed, both on the ground and aloft. Click Next when you are ready to continue.



Flight Log

This is where you can see the results of *Pro Pilot '99's* calculations. Based on your estimated altitude and power settings, *Pro Pilot '99* takes into consideration the length of your trip and gives you trip information at the top of the log. You will see the trip distance, an estimated trip duration time, and an estimate of how much fuel you will need to complete the flight. Click Finish to complete your flight plan.

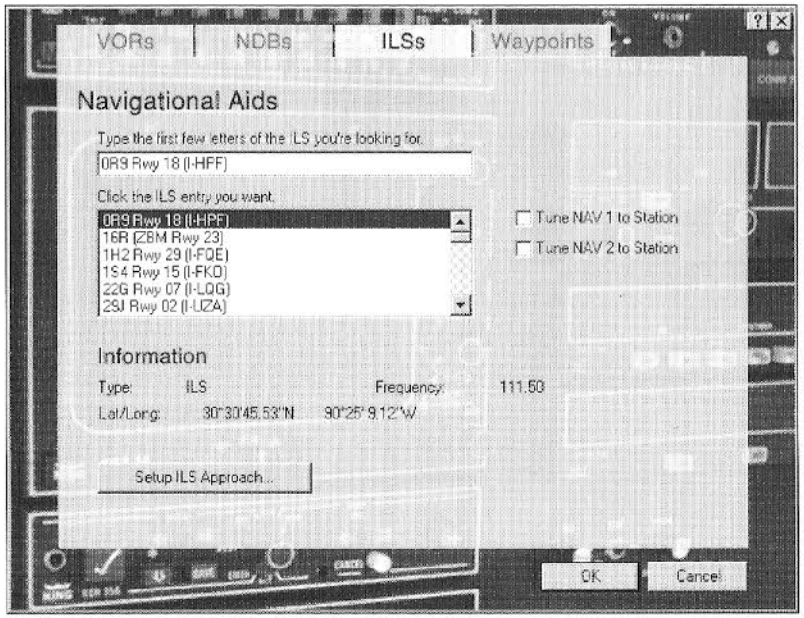
Flying the Plan

Now that you have successfully created a flight plan, it's time to take to the air! More details on flying this particular flight plan, from Morris to Flying Cloud, Minnesota, can be found in the back of the *Pro Pilot '99* Flight Companion.

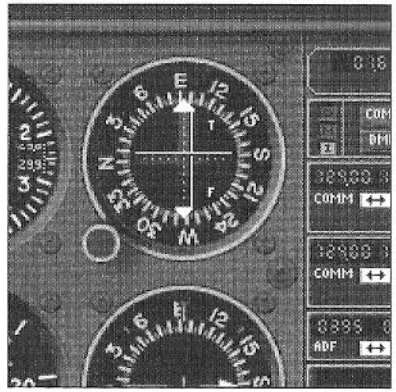
Appendix C
The Instrument Landing System

The Instrument Landing System (or ILS), assists a pilot in landing by allowing the pilot to see the proper glide slope and extended runway centerline on his/her VOR/LOC indicator. When making an ILS approach, the needles on the HSI (horizontal situation indicator) or VOR/LOC Indicator indicate your position relative to the glide slope and final approach course. You can place yourself directly on an ILS approach in the Setup ILS approach dialog box, which can be accessed in two different ways:

1. From the Position Aircraft map, click on the ILS approach button (the Show ILS button must be pressed), then click the appropriate ILS icon on the runway.
2. From the Aircraft menu, choose Navigational Aids, select the ILS tab, then select a runway and click the Setup ILS Approach button.



Setup ILS Approach



When you click on the Setup ILS approach button, you will see a screen that allows you to set up an ILS approach to the runway that you selected in the ILSs tab of the Navigational Aids dialog box. The heading shown in the Inbound Course field is automatically set to the runway heading. You can specify your distance from the touchdown point or outer marker, and your position relative to the ILS path in terms of altitude and heading.

A Sample ILS Approach

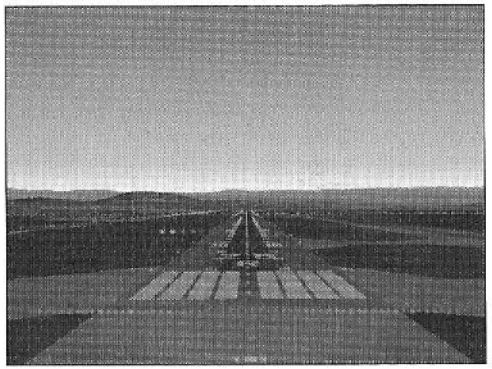
Let's fly through a sample ILS approach. We'll start ourselves out on an approach into San Francisco International Airport, about 10 nm from the outer marker.

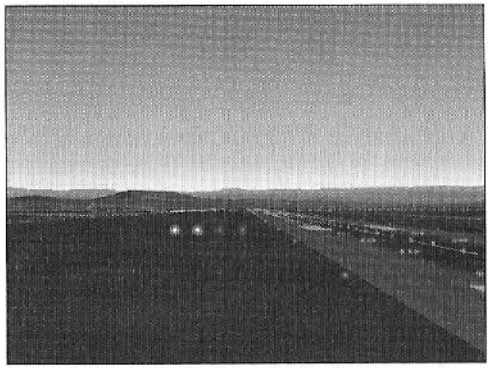
Setting up the flight

1. Go to the Aircraft menu and choose "Select Aircraft". Choose the Cessna 172R Skyhawk. Click OK to close this box.
2. Go to the Airspace menu and choose "Navigational Aids".
3. Click on the ILS tab.
4. Type in SFO for San Francisco International Airport.
5. Choose SFO Rwy 28R (I-GWQ) and place a check mark in the box labeled "Tune NAV 1 to Station".
6. Click the Setup ILS Approach... button.
7. Specify a distance of 5 NM and select From Outer Marker. Enter an altitude of 3,000 feet.
8. Make sure your heading matches your inbound course, and click Go To to close this box.

Flying the approach

When your NAV 1 radio is tuned into an ILS frequency, your VOR/LOC Indicator displays information that helps you stay on course. By observing the horizontal and vertical needles on the VOR/LOC Indicator, you will know if you are above or below the glide slope, and if you are left or right of the runway.





The needles will drift in the direction you need to steer; if the needle drifts to the right, turn the joystick/yoke to the right or apply right rudder until the needle centers. If the needle drifts low, then pitch down (for small changes) or decrease the throttle a little (for larger changes) to increase your rate of descent. If the needle on the VOR/LOC Indicator drifts high, then you are below the glide slope. In this case, rather than trying to climb, simply fly straight and level, continuing to track the runway centerline. Soon, you'll see the needle drift back down again as you intercept the glide slope. Try to keep a nice, steady descent at around 500 feet per minute on the VSI.

Runway 28R at San Francisco features a PAPI (Precision Approach Path Indicator) approach lighting system. It's a horizontal series of four red or white lights to the left of the runway. The more white lights there are, the higher you are in relation to the glide slope, and the more red lights there are, the lower you are. Two white lights and two red lights mean you are right on the glide slope. This can be particularly helpful at night.

As you get within view of the runway, make small adjustments to your course. Rather than making large banking turns with the joystick/yoke to stay on course, use the rudder to make small adjustments if you drift from the runway heading, or throttle back up and perform a go-around if you get too far off course.

Waypoints

When you click on the Waypoints tab of the Navigational aids dialog box, you will see a list of all the waypoints that *Pro Pilot '99* supports, identified by their abbreviated identification codes. A waypoint is generally identified with a five-letter abbreviation and can be selected from the universal list by scrolling to it or selecting all of the text in the box, then typing the name.

Setup Waypoint

In this box, you can place yourself anywhere along an assigned flight route. You can set yourself up at a specified distance, heading, and altitude from the waypoint that you selected in the previous screen. Click "Go To" to place yourself at the specified distance from the waypoint.

● TIP: When you are flying the Cessna 172R Skyhawk, you can use the GPS in coordination with the autopilot to fly from waypoint to waypoint along a flight plan.

NEAR Mode

Near Information

This page allows you to choose the one type of navaid that you will see in the overhead view page. NEAR mode only displays one type of navaid.

Overhead View

This page allows you to see an overhead view of your aircraft in relation to one type of navaid. If you wanted to see your location relative to the nearest airport, for example, choosing the Overhead View in NEAR mode is simpler than turning everything off in the NAV mode. You can also see your bearing and distance to each navaid displayed as two numbers separated by a slash.

Using the GPS with the Cessna 172R Skyhawk

The *Pro Pilot '99* Cessna 172R is outfitted with a GPS that is linked to the autopilot. This means that the autopilot will automatically fly to each successive waypoint in your flight plan. This feature is unique to the 172R. On other aircraft, you will need to manually switch the NAV radio over to the next navigational aid, then engage the autopilot again.

Appendix D
THE GLOBAL POSITIONING SYSTEM

The GPS operates in three modes: INFO, NAV, or NEAR. You can change the mode by clicking on the appropriate button. Each mode has two or three different pages of information, accessed by clicking on the Map button. You can scroll the map around by clicking on the directional buttons, and you can zoom in or out by clicking on the plus or minus buttons. Like a real GPS, you can only access data by clicking the buttons on the display itself. You cannot use the keyboard to enter data.

INFO Mode

The Info mode allows you to access *Pro Pilot '99's* extensive database of information on every airport and navigational aid in the U.S. and Europe. Clicking on the Map button switches between two pages: The Waypoint Information page, and the Overhead view.

Waypoint Information

The Waypoint Information page provides radio frequencies and other useful information on any type of navigational aid you choose. Click on the up and down arrows to move from field to field, and the left and right arrows to make selections. In the Waypoint Type field, you can specify an airport or navaid, then enter the three-character identifier code in the Waypoint ID field.

Overhead View

When you click on the MAP button while in INFO mode, you will see an overhead view of the navaid or airport you have selected. By clicking the plus and minus buttons, you can zoom in or out of the overhead view.

NAV Mode

Overhead View

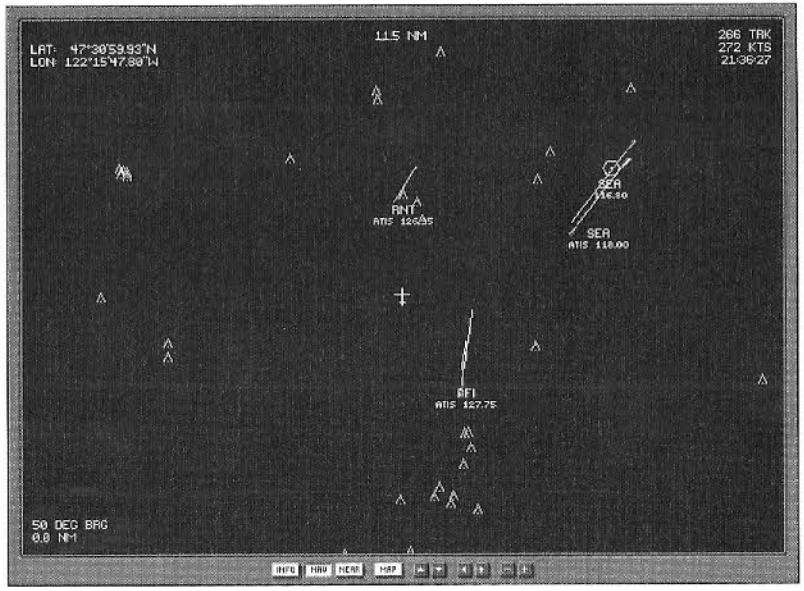
When you click on the MAP button while in NAV mode, you will see an overhead view of your aircraft, with your flight plan highlighted. This map always rotates so that your aircraft points straight ahead, so to follow your flight plan all you need to do is keep the yellow line pointed straight up with relation to the display. The Overhead View uses a white triangle at the bottom of the screen to represent your course deviation. As long as the triangle is at the center of the screen, you are on course.

Navigation Info

This page allows you to "de-clutter" your display by toggling different types of information on or off, depending on what you are most interested in seeing. You might consider turning off obstructions, for example, so you can read the ATIS and VOR information under a particular navaid.

Flight Plan Info

This page provides information about your current flight plan. You can find out which leg of your flight plan you are currently on, as well as find information about the navaid you are currently flying to.



Appendix E
NAFI Tutorial Descriptions

This appendix contains brief descriptions of the NAFI tutorial missions contained in your Pilot's Operating Handbook.

Cessna 172P and 172R:

Flight 1 In this flight you will be introduced to the flight controls. Try and learn what the three primary flight controls are, how they are controlled, and observe what effect they have on the aircraft during flight. You will also learn the proper use of trimming, and the effects of making power changes in straight and level flight.

Flight 2 This flight is an introduction to the engine start, taxi and takeoff phase of flight. You will learn the proper way to Taxi, Takeoff, perform a V_y climb and level off from a climb.

Flight 3 This flight you will learn how to fly straight and level using visual references, the effects of using flaps, the use of carburetor heat, how to perform a glide and a climbing turn.

Flight 4 This flight you will learn turns to headings, descents, use of flaps in a descent and steep turns.

Flight 5 This flight you will learn how to maneuver the aircraft while in slow flight.

Flight 6 In this lesson you will learn how to recover from different types of stalls.

Flight 7 This lesson will introduce you to flying the pattern, approach and landing.

Flight 8 In this tutorial you will learn how to select, tune and track a VOR.

Flight 9 In this flight, you will experience what it is like to find yourself in IFR conditions by mistake. Once in the clouds, you will also learn how you should get out of them.

Flight 10 In this flight, you will learn how to use the uncoordinated slip to counteract a crosswind in the landing sequence.

Flight 11 Learn the proper procedures for executing short field takeoffs and landings.

Flight 12 Perform your first solo flight.

V35 Bonanza

Flight 1 Learn about the Auxiliary fuel pump, cowl flaps and retractable landing gear.

Flight 2 Learn about the constant speed prop, and how to taxi and takeoff with the *Pro Pilot '99* V35 Bonanza.

Flight 3 Vy climbs, slow flight, steep turns and descents in the *Pro Pilot '99* V35 Bonanza.

Flight 4 Unusual Attitude recoveries, stalls and steep turns in the *Pro Pilot '99* V35 Bonanza.

Flight 5 G.U.M.P.'s, pattern, approach and landings for the *Pro Pilot '99* V35 Bonanza

Flight 6 Short field takeoffs and Landings for the *Pro Pilot '99* V35 Bonanza.

B58 Baron

Flight 1 Taxi and takeoff in the *Pro Pilot '99* Baron B58

Flight 2 Learn the proper procedures for climbs and descents in the *Pro Pilot '99* Baron B58

Flight 3 Steep turns and slow flight in the *Pro Pilot '99* Baron B58

Flight 4 Stalls in the *Pro Pilot '99* Baron B58

Flight 5 Pattern, approach, landing and go-arounds in the *Pro Pilot '99* Baron B58

Flight 6 Short field takeoff, climb, approach and landing in the *Pro Pilot '99* Baron B58

B200 King Air

Flight 1 Instrument intro, and takeoff in the *Pro Pilot '99* King Air

Flight 2 Descent, approach, landing and go-arounds in the *Pro Pilot '99* King Air

Flight 3 Vx and Vy climbs in the *Pro Pilot '99* King Air

Flight 4 Slow flight and emergency descents in the *Pro Pilot '99* King Air

Flight 5 Stalls in the *Pro Pilot '99* King Air

Flight 6 Single engine landing and go-arounds in the *Pro Pilot '99* King Air

Cessna CitationJet

Flight 1 Introduction to jet engines, engine start, and takeoff in the *Pro Pilot '99* CitationJet

Flight 2 Vy climb and cruise in the *Pro Pilot '99* CitationJet

Flight 3 Landings and go-arounds in the *Pro Pilot '99* CitationJet

Flight 4 Short field takeoffs and landings in the *Pro Pilot '99* CitationJet

Flight 5 Stalls in the *Pro Pilot '99* CitationJet

Flight 6 Single engine approach in the *Pro Pilot '99* CitationJet

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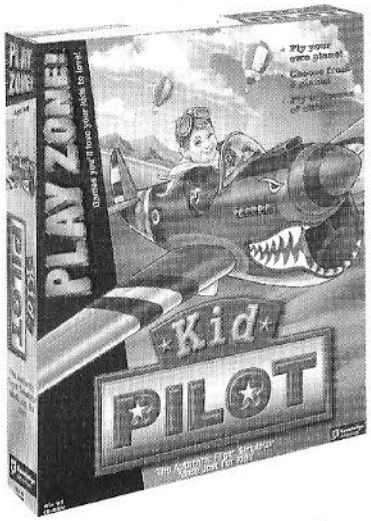

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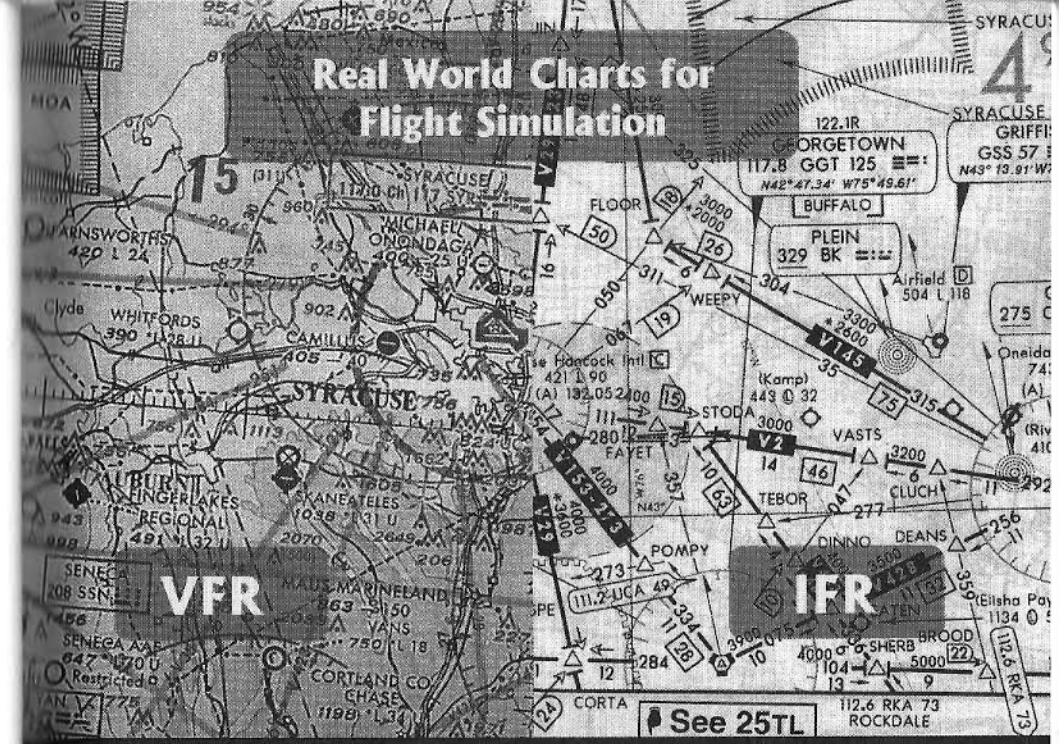

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