

Microsoft® Flight Simulator as a Training Aid

This document provides details about the book, the VFR and IFR Practice Flights for Flight Simulator 2004 and Flight Simulator X, and up-to-date resources to help you get the most out of Flight Simulator.

Note: If you have questions about Microsoft Flight Simulator (e.g., system requirements, sources for technical support, improving performance on your system, updates, add-ons, etc.) please see the Flight Simulator page at BruceAir and the official Flight Simulator Insider site at Microsoft.

Installing the Practice Flights: The simplest method for copying the Practice Flights from the companion CD to your hard disk is explained in Installing the Practice Flights (.pdf), a document on the included CD (see the guide to the contents of the CD below) that supplements the instructions in Chapter 7.

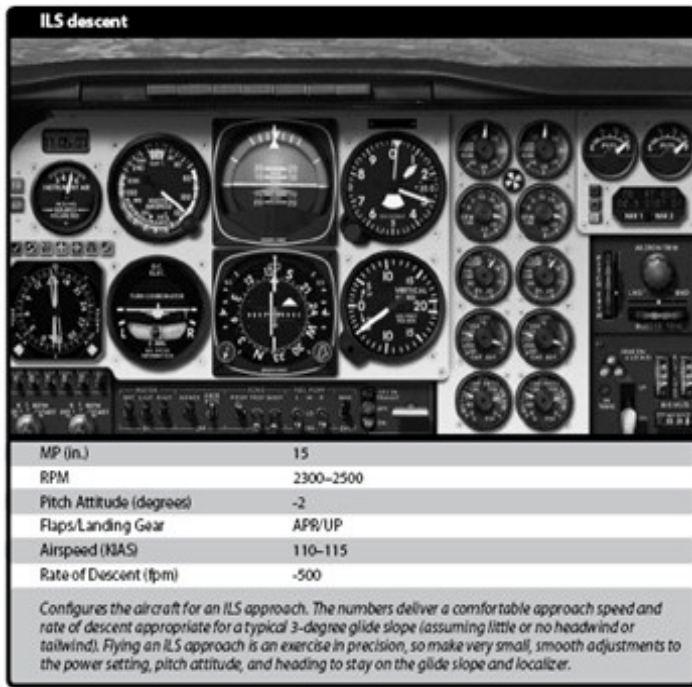
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Here's a quick look inside the book:

Foreword by Rod Machado

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Sample illustration from Microsoft Flight Simulator as a Training Aid.

Using Flight Simulator Effectively

As you can see from the Table of Contents above, the book addresses many topics, including details about how to use the Practice Flights on the companion CD.

It's worth noting here, however, that Chapters 2 and 3 address many general questions that the aviation community often raises about the use of PC-based simulations, and they offer detailed answers, advice, and suggestions based on my experience working with training organizations and my own students.

Chapter 2, "Using Flight Simulator as a Training Aid," discusses the following topics:



- The Flight Simulator Learning Curve

- Deconstructing Flight Simulator
- The Flight Simulator Paradox
- The Mental Game
- Obstacles to Learning
- Flight Simulator: A "Swiss Army Knife"
- Interactive Chair Flying
- Concerns About Using PC-Based Simulations
- Negative Transfer
- The Learning Environment and Virtual Aviators
- Realism: Flight Models and Controls
- Stalls, Spins, and Other Maneuvers
- Flying "My Airplane"
- Self Instruction
- Instrument Panel Fixation
- Mouse and Keyboard vs. Real Controls
- The Flight Simulator Database and IFR Procedures

Chapter 3, "Best Practices for Using Flight Simulator," provides specific advice and examples to help pilots and instructors use Flight Simulator effectively, including detailed discussions of the following topics:

- Benefits of and Advice for Using Flight Simulator
- Flight Simulator and VFR Flying Skills
- Using Flight Simulator in the Classroom
- Flight Simulator as a Tool for the Graphically Challenged
- Using the Autopilot in Flight Simulator
- The ATC Feature in Flight Simulator



- Using Flight Simulator to Develop 'The Numbers' for Aircraft
- Flight Simulator Challenges
- Benefits for Instructors Who Use Flight Simulator
- Other Uses for the Practice Flights

Who Should Use This Book

Here's a short list of those who can benefit from reading the book and from using the Practice Flights and other resources designed to work with it:

- Student pilots (pre-private pilot) who want to enhance book-learning and review specific concepts and skills.
- Certificated pilots hoping to complement their real-world flying with additional hours in the virtual skies, upgrading their navigation skills, and learning about advanced aircraft and procedures.
- IFR students looking for ways to add interactivity to their study of IFR theory, to preview lessons, and to polish specific IFR flying skills, such as the use of advanced avionics and instruments (e.g., the HSI and RMI).
- Flight instructors looking for new teaching tools to use in ground school classes and pre-flight and post-flight briefings.
- Virtual aviators (Flight Simulator hobbyists) who want to learn more about real-world flying to enhance their enjoyment of virtual aviation
- Kids and adults who want to prepare themselves before they begin formal flight instruction
- Teachers using Flight Simulator in the classroom to complement aviation-related lessons or programs



What You Need To Get the Most out of the Book

Although many of the general recommendations described in the book could apply to other PC-based flight simulations and training devices, I assume you have *Microsoft Flight Simulator*, specifically either:

- *Microsoft Flight Simulator 2004: A Century of Flight* (Version 9); for system requirements, see *Flight Simulator 2004: Minimum system requirements*.
- *Microsoft Flight Simulator X* (Version 10); for system requirements, see the FAQ on the *Flight Simulator Insider* Web site.



You should be running either Windows XP or Windows Vista.

To fly Practice Flights that use the Garmin G1000 "glass cockpit," you must have the deluxe version of Flight Simulator X. No add-on aircraft, additional scenery, or other enhancements are required to use the Practice Flights discussed in the book.

You also need an appropriate computer, a mouse, and a joystick or yoke. For more information about PCs, joysticks, and yokes, see the Microsoft Flight Simulator page here at BruceAir and the Game Controller Buyer's Guide on the Microsoft Web site.

To view the documents (which are in .pdf format) on the companion CD you need the free Adobe Reader utility.

Resources for Pilots and Virtual Aviators

Chapter 9, "Supplemental Information and Web Links," is an annotated guide to my favorite (and mostly free) online resources for pilots and virtual aviators. You can find the complete (updated) set of links on the Aviation Resources page at BruceAir.

Practice Flights

Microsoft® Flight Simulator as a Training Aid: A Guide for Pilots, Instructors, and Virtual Aviators includes a companion CD with more than 150 VFR and IFR Practice Flights for Microsoft Flight Simulator to help you use the simulation easily and efficiently. As explained in Chapter 6, "About the Practice Flights":

The goal of each Practice Flight is to make it easy to learn about and practice a *specific skill or task*, such as basic attitude instrument flying, VOR navigation, entering and flying traffic patterns, entering and maintaining a holding pattern, or flying a particular type of instrument approach procedure. The Practice Flights provide starting points for a wide range of situations useful in training for VFR and IFR flying. In fact, the Practice Flights are designed to complement training syllabi typically used in formal flight training.



Most of the Practice Flights begin the air, with the airplane in position to fly an approach, practice basic flight maneuvers, rehearse VOR navigation skills, and so forth.

All of the Practice Flights use the Cessna 172 Skyhawk or the Beechcraft BE58 Baron, but you can switch to any airplane in the Flight Simulator hangar before you start "flying."

Loading and using a Practice Flight is as easy as opening a Word document or visiting a Web page, regardless of whether you use Flight Simulator X or Flight Simulator 2004.

The Practice Flights use a consistent file-naming convention so that they sort together in the list of flights and are easy to distinguish. The list of Practice Flights (see below) includes the names of the preflight briefings and charts associated with each Practice Flight, and it also suggests categories of lessons and drills that each Practice Flight can support.

BruceAir-IFR--HOLDING-OLM-C172-01
BruceAir-IFR--HOLDING-OLM-C172-02
BruceAir-IFR--HSI-RMI-ALW-PSC-BE58-01
BruceAir-IFR--HSI-RMI-ALW-PSC-BE58-02
BruceAir-IFR--KALW-VOR-Rwy16-ALW-BE58-01
BruceAir-IFR--KALW-VOR-Rwy16-ALW-BE58-02
BruceAir-IFR--KALW-VOR-Rwy16-ALW-C172-01
BruceAir-IFR--KALW-VOR-Rwy16-ALW-C172-02
BruceAir-IFR--KCVO-CV01.CVO-BE58-01
BruceAir-IFR--KCVO-CV01.CVO-BE58-02
BruceAir-IFR--KCVO-CV01.CVO-C172-01
BruceAir-IFR--KCVO-CV01.CVO-C172-02

Each Practice Flight name begins with “BruceAir” and an abbreviation indicating whether it is a VFR or IFR Practice Flight. The identifier for the nearest airport or navaid follows. If the goal of a Practice Flight is to learn about an instrument procedure, the procedure title and transition come next. Finally, the file name includes the type of aircraft and an index number to distinguish among Practice Flights that share the same purpose, location, and aircraft, but differ in time of day, weather, or other factors. The list of Practice Flights provides more information about each flight, plus the names of the preflight briefing and charts associated with that flight.

You can find more BruceAir IFR Practice Flights for *Microsoft Flight Simulator* at BruceAir.

Samples from the Companion CD

The companion CD includes charts, preflight briefings, and other resources to enhance the Practice Flights. To view the documents (which are in .pdf format) you need the free Adobe Reader utility.

- List of Practice Flights (.pdf)
- Installing the Practice Flights (.pdf)
- Sample preflight briefings
- Practice Flights for FSX
- Practice Flights for FS2004
- Microsoft Flight Simulator Essentials.pdf
- A list of Microsoft Flight Simulator key commands (.pdf)
- Using Flight Simulator Fundamentals, a .pdf version of a self-paced PowerPoint show that highlights key features of Flight Simulator

Other Resources on the Companion CD



The companion CD includes (in .pdf format) excerpts from or complete editions of FAA training handbooks and official references, such as the *Aeronautical Information Manual*, the *Pilot/Controller Glossary*, the *Aeronautical Chart User's Guide*, *Air Traffic Control*, and *Contractions*. Each preflight briefing lists the excerpts relevant to a specific set of Practice Flights. The CD also includes glossaries of aviation terminology from the training handbooks. You can use the links in the following list to download the complete training handbooks in .pdf format from the FAA Web site. If you prefer real books, ASA offers reprints of many titles.

- *Aeronautical Information Manual*/ASA-07-FR-AM-BK
- *Pilot's Handbook of Aeronautical Knowledge* (FAA-H-8083-25)/ASA-8083-25
- *Airplane Flying Handbook* (FAA-H-8083-3A)/ASA-8083-3A
- *Instrument Flying Handbook* (FAA-H-8083-15)/ASA-8083-15
- *Instrument Procedures Handbook* (FAA-H-8261-1)/ASA-8261-1
- *NACO Aeronautical Chart User's Guide*/ASA-CUG-7
- *Air Traffic Control* (Order 7110.65R)
- *Contractions* (Order 7340.1Y)
- *Crew Resource Management Training* (AC120-51e)
- FAA Practical Test Standards for the private and commercial certificates and the instrument rating. /ASA reprints

Microsoft Flight Simulator Essentials



The companion CD includes a self-paced Microsoft PowerPoint show, "Using Flight Simulator Essentials," that explains key features and offers tips to help you get the most out of Flight Simulator.

The CD includes the Microsoft PowerPoint Viewer that lets you view the interactive presentation even if you don't have PowerPoint installed on your system.

If you prefer to hold paper in your hands, the CD also includes a .pdf version of the presentation that you can print for reference.

You can download that .pdf version from this Web site. On the CD you will also find Microsoft Flight Simulator Essentials.pdf (right-click to save the .pdf file to your hard drive), and a list of key commands (.pdf), references to essential Flight Simulator commands and features that you can print and keep handy as you fly.

Errata and Corrections

The first copies of *Microsoft® Flight Simulator as a Training Aid: A Guide for Pilots, Instructors, and Virtual Aviators* appeared in early January 2007. Inevitably, the first printing contains a few glitches, which I note below.

- Introduction, p. x: A phrase in the last sentence of paragraph 4 should read "...navigating with the VOR system...."
- Chapter 2, p. 19: The last sentence in the second paragraph should read: "...why do we so often insist on encumbering an inexpensive, multipurpose, portable, PC-based simulator with costly, complicated accessories and then use it only as if it were a complete cockpit?"
- Chapter 4, p. 78: In the section "Using the Autopilot with the Practice Flights," the second paragraph should read "...point to the heading knob for the heading indicator or HSI and roll the mouse wheel forward or back...."
- Chapter 4, p. 83: The discussion of flight videos on this page does not include information about an undocumented feature in Flight Simulator X. For more information about this new video feature, see the documentRecording FSX Videos.pdf at BruceAir.
- Chapter 8, p. 140: The "Flaps/Landing Gear" row in the table accompanying the ILS descent screen capture should read "APR/DN" to match the configuration shown.
- Some of the "Understanding Airspace" Practice Flights described on p. 175 begin the air near the Pierce County/Thun Field airport south of Seattle. As the book was being written, the official identifier for the airport was 1S0, and that identifier is used in the file names for some of the Practice Flights. The airport identifier was recently changed to KPLU.
- Chapter 12, p. 190: The text in the last paragraph ("Use the Practice Flights in this section...") should appear after the heading "VOR navigation" at the top of p. 191.