Instrument Flying

Richard L. Taylor

Fourth Edition

McGraw-Hill

New York San Francisco Washington, D.C. Auckland Bogotá
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The Complete Instrument Pilot

Put a foot-wide steel beam flat on the ground and walk across it; a "no sweat" situation for anyone with normal balance and eyesight. Now put that steel beam between two buildings 10 stories above the street, and anyone less than an experienced steelworker or a professional highwire performer would panic at the prospect of negotiating the same narrow path that presented no problem at ground level. The difference? Knowledge, experience, and practice.

Much the same reasoning applies to instrument flying; you know that you can handle your airplane when you can see the ground, but getting from here to there in the clouds is something else. And no matter how well you fly the machine, there's always Air Traffic Control (ATC), giving you sometimes confusing instructions, asking you to maintain cruise airspeed on an approach, clearing you to an altitude you don't want, and on and on and on. But basic principles always apply, and if you are well grounded in the "nuts and bolts" of instrument flying, there's no reason why you can't adjust to changes and involved procedures *if you know what to expect, and how to handle yourself in the IFR system.* There's nothing heartstopping about flying an airplane on instruments, nor does it take a superman to do the job well. Good instrument training plus a thorough understanding of the *total* system can make it just as easy as walking that steel beam when it's flat on the ground. When you know what you're doing, you can walk it confidently and safely 10 stories high.

More than 40 years of military and civilian flying in many parts of the world, and in all kinds of weather, have convinced me that once past the fundamentals, safe and efficient instrument flight is a happy

combination of knowing yourself, your airplane, and the system. When you accept a clearance from ATC to fly in the nation's airspace, you are considered just as qualified, just as capable as the airplane captain who flies every day. This is not to imply that controllers are so unrealistic that they expect your approaches to be as exquisitely precise as the "pros," but all IFR pilots *are* expected to conform to the same rules and procedures because they become part of a *system*—a combination of parts into a whole, an orderly arrangement. The principal parts of this system—controllers and pilots—must work together if the system is to accomplish its goal of safe separation and efficient management of the thousands of instrument flights conducted every day.

The key to the whole process is knowledge; it has been proven that the average pilot can be taught to fly an airplane by referring only to the attitude instruments (indeed, it's a required part of the practical examination for the private pilot certificate). But throw in the complications of electronic navigation and rapid-fire communication, and average pilots can come unglued...unless they know what the system is all about. "You learn something every day" is a bromide perhaps more meaningful in instrument flying than in any other endeavor, for regulations, procedures, and techniques change almost daily. The aviation community suffers plenty of "understanding gaps" which derogate pilot performance, efficiency, and sometimes compromise safety.

Years ago, I was involved in programs designed to refresh the knowledge of instrument-rated pilots and to prepare candidates for written examinations relative to IFR and ATP operations. That experience convinced me that the surface of pilot education has barely been scratched and that there is a profound need to continue the training *after* pilots obtain their instrument ratings. *Instrument Flying* is intended to help put a real gouge in that surface; it has been developed with the philosophy that knowledge, added to practice and experience, will pave the way to safer and more efficient instrument flight.

This book can be used to its greatest advantage as a source of information for understanding the *total* system in which we fly IFR. In addition to some basic techniques of aircraft control, you will find detailed explanations of every phase of instrument flight, from Airways to Zulu time. To help you increase the efficiency and utility of your airplane, *Instrument Flying* contains techniques and procedures for practical, legal methods of cutting down the elapsed time between point A and point B; isn't that the real reason for using an airplane in the first place?

The chapters are strung on a common thread of increased usefulness, of maximizing the dollars you spend to transport people and

things through the air. Chapters dealing with attitude instrument flying are not there to teach you how to fly instruments, for that is your flight instructor's job; however, you can and should use this material as a guide for practicing and polishing your flying skills. "Good" instrument pilots are the ones who fly their airplanes without conscious effort, conserving the major portion of their thought processes for navigation, communication, and staying at least one step ahead of the airplane at all times.

An Instrument Book with No Chapter on Weather?

When you can't beat 'em, join 'em! Robert N. Buck, now retired from his position as senior captain with Trans World Airlines, has put together the ultimate interpretation of aviation meteorology for the instrument pilot, so I defer to his work in this vital area, which has more to do with IFR operations than anything else. If you do not own a copy of Buck's *Weather Flying* (4th ed.; McGraw-Hill), I strongly recommend that you add it to your aviation library. Seldom do we have the opportunity to share in, and profit from, the vast experience of one so eminent in his field.

Be a *Legal* Eagle

When the sands at Kitty Hawk were brushed by the skids of the Wright brothers' airplane, when theirs was the only powered flying machine in the entire country, there was no need for rules of the air—the laws of gravity kept Wilbur and Orville busy enough. But soon there were two airplanes, and then more and more and more; just like the increased traffic on rivers and roads, a burgeoning aircraft population eventually had to come under regulation and control. Safety of flight has been uppermost in the minds of rule-writers from the very beginning (check the aviation regulations—almost all of them are intended to make flying safer), with a secondary purpose of helping to establish who's at fault when an accident *does* occur.

The regulations are therefore either restrictive or mandatory in nature, letting us know those things we may *not* do or the things we *must* do. Although the intent remains steadfast, the language and

scope of aviation regulations change constantly, as the nature of flying itself changes. It would be a fool's task to list all the rules that apply to instrument flying because some of them will change before the ink on these pages is dry. The regulations (and revisions thereto) are available to all, and so smart instrument flyers (or smart *any*-kind-of-flyers, for that matter) will subscribe to those that apply to their operations, and moreover will keep their books right up to date. For noncommercial pilots (VFR *and* IFR types), Part 91 of the Federal Aviation Regulations is a bare minimum, and the *Aeronautical Information Manual (AIM)* will help you stay current in regard to changes in procedure and technique. Jeppesen's "J-AID" combines the several parts of the regulations, all the information contained in Part I of the *AIM,* and a great deal of additional information you may find worthwhile—IFR and VFR.

"But," you protest, "I haven't time to spend going through regs and manuals—I fly good instruments, do what ATC says, keep my medical current and my nose clean." That's fine as far as it goes, but do you have the time or the resources to contend with a judgment against you as the result of a violation? As in any court action, ignorance of the law is never an excuse, especially when one of the very first parts of our aviation rules says that the pilot in command will, in effect, be familiar with *everything* that may affect the operation of an aircraft before a flight begins. It takes only one small slip on your part to render yourself defenseless—there is normally no way to be involved in an accident or incident with an airplane and not be in violation of some part of the aviation regulations. Unfortunately, everyone else in the world figures that a person who can afford to own or operate an airplane can also afford a huge settlement. And after you lose all your money in a court action, the government may step in and relieve you of your flying privileges—sometimes permanently.

There's a practical side to knowing the regulations, too. With the ever-increasing variety of instrument approaches and other system options that we can put to use, less-than-current IFR pilots will sooner or later come up against a situation that could be avoided by knowing just what they may or may not do. Current knowledge and complete understanding make the difference between pilots who stumble through the airspace confused and bewildered and those who make things happen for their benefit, efficiency, and safety.

The point of all this is that you *must* know the rules of the flying business, you *must* stay abreast of changes as they are effected, and it's *more* important when you are IFR. VFR-only flyers can get by with less regulation reading because they can always rely on the see-and-

avoid rule. But when you are accepted into the IFR system, you must play in the same key as everyone else; from Ercoupes to airliners, instrument pilots must operate on a common base of regulation and control. Now that you sometimes can't see where you're going, it's comforting to know that all the other pilots up there in the clouds with you are flying by the same set of guidelines.

And what about the controllers' rules? While you can't be held responsible for knowing all the hoops they must jump through, the chances are excellent that you'll become a more understanding and system-oriented pilot once you've observed the conditions in an Air Route Traffic Control Center or Approach Control facililty. They sponsor periodic public-training sessions (usually known as "Operation Raincheck") which include an extensive tour of the facility and a series of classes aimed at developing better cooperation between controllers and pilots. The local Flight Standards Office or any handy FAA facility should have a schedule of such programs.

✢ Your Choice of Charts

There are two popular sources of IFR charts: one is the federal government; the other is the Jeppesen Company, a commercial supplier. Both services include a wide range of publications, from SIDs to STARs and everything in between. You can purchase charts for the whole world, or only for the area in which you fly; it's entirely up to you. Which service is best? That's an impossible question because pilot preferences vary so widely. Get a sample of each, and try them—that's the only way you'll be able to decide which is best for you.

No matter what your choice, there is one common denominator: IFR charts cannot fulfill their ultimate purpose unless you know what every mark thereon means. New symbols are added, airway courses are adjusted, and radio frequencies are changed, so it becomes nothing short of mandatory that you keep yourself up to date with current charts and full knowledge of those charts. One small, seemingly inconsequential bit of information might just save your neck some day.

Realizing the same out-of-date-before-the-ink-is-dry problem that exists with regulations, *Instrument Flying* does not include a chapter on IFR charts. On occasion, it is necessary to illustrate a particular point with symbols or numbers that are expected to remain in use indefinitely—but you must realize that you are expected to know the sometimes restrictive, sometimes permissive, sometimes directive

nature of all the chart symbols and markings. Get *very* familiar with the legend pages supplied with your charts. The Jeppesen Company treats this problem thoroughly in the respective sections of its IFR chart publications. If you use the government charts, you would do well to get a copy of "Civil Use of U.S. Government Instrument Approach Procedure Charts" (an FAA Advisory Circular) and learn it inside out.

Whenever you receive revisions to your charts, *insert them right now,* and do it yourself—don't trust anyone else. Allowing 3 or 4 weeks' revision notices and new charts to pile up on your desk has two bad features: First, it's very frustrating to replace the same chart several times at one sitting; second, anytime you're flying IFR with outdated charts, you're asking for trouble. And when you insert those revisions, pay attention to the changes that caused the revision; you'll learn a great deal about the system by taking note of the new procedures.

✝ Advisory Circulars

Periodically, the FAA issues information of a nonregulatory nature in the form of Advisory Circulars. A subscription to the appropriate parts of this information system will help keep you up to date on the latest official thinking in several areas of interest. For starters, you might consider these four (each subject area is followed by the number that identifies it in the FAA system): Aircraft (20), Airmen (60), Airspace (70), Air Traffic Control and General Operations (90). Advisory Circulars can be ordered from the U.S. Government Printing Office, Washington, D.C. 20402, or any one of the government bookstores around the nation—and saving the best for last, most of them are *free!*

✝ That Still, Small Voice

There's really not much that can get you into serious trouble on an instrument flight except weather and the consequences that develop around it. If your airplane is properly maintained, checked, and operated, chances are excellent that it will get you where you want to go. But sometimes, when "get-home-itis" is coming on strong, and your IFR capability is bolstering a "nothing-can-stop-me" frame of mind, listen to that still, small voice of reason that reminds you to back off and take another look at the situation. The temptation

to press on in the face of bad weather has led many a pilot down the garden path; if you've worked out a Plan B to take care of nonflyable weather, you can make the decision well ahead of time, still get your business accomplished, and come back to fly another day.

There will be times when you cancel a flight only to have the weather gods make a fool of you with a beautiful day—those are the breaks of the game. But when you've left yourself no way out and make a forced decision to take off into marginal weather that turns out *worse* than expected, you're in the wringer. If you're lucky, you may get by with nothing more than a harrowing experience and a monumental resolve never to do that again. It's a lot more comfortable to be on the ground wishing you were in the air than to be up there wishing you were on the ground! Professional pilots earn their pay, and amateurs earn the respect of their passengers, on those occasions when they overcome pride with good sense and say, "The weather looks worse than I want to tackle today—we're not going by air."

✈ Have at It!

There is no recommended order for reading *Instrument Flying*; dig right in wherever you feel your knowledge is a bit rusty or when you come across a situation you don't understand thoroughly. Each section is functionally complete in itself and does not depend on previous study of some other part of the book; other chapters may be consulted for more detail, and the Glossary in Chap. 2 is available for definition of terms.

Now I have your clearance; are you ready to copy? You are cleared from here to the end of this book, via 21 chapters packed with instrument flying information. Climb to and maintain a higher level of efficiency and safety; expect further clearance as you work through these pages and become a *complete* instrument pilot. Have a good flight!

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