



Easy Approach to Instrument Flying

by Butch Grafton

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The following story is one that has made instrument flying the easiest thing in the world for me to do. Having taught instrument flight training at Fort Rucker, AL, for 23 years, I have learned the technique that really makes a difference in pilots' attitudes regarding instrument flying. Here is how I present it to my Rotary Wing Instrument Flight Examiner Course (RWIFEC) students:



Question: If someone gives you a heading to fly, does that make your job easier?

The answer is a resounding "YES."

Question: So, if I am in the left seat and you are in the right seat and I say, "Fly heading zero-six-five, it will hold you on course." Does my giving you that heading make your job easier?

Again, the answer is always "yes."

How did I come up with the correct heading to fly? It's really very simple. What I did is exactly what has been in the Army's Instrument Flying and Navigation for Army Aviators manual, for all these years but, unfortunately, few of us know how to use. It's called "bracketing," and it works beautifully. Not only does bracketing work, but the moment you fully understand it, instrument flying becomes truly easy.

I know this because it has happened to me, and it happens to every student from initial entry rotary wing (IERW) to RWIFEC that I teach. It is amazing that something so simple can make such a big difference in instrument flight rules (IFR) flight, but it does. In every class I hear this same statement, "Why didn't someone teach me this 10 years ago?"

Prior to continuing I must ask another question: Is being off course a good thing or a bad thing? Everyone, without fail, says it is a bad thing. So, the first problem with track following is the inherent fear that being off course is a "bad" thing. This fear creates the majority of track following problems simply because pilots tend to stare at the course deviation bar and quit cross-checking the flight instruments. It's tough to control the aircraft looking at navigation instruments! I can tell you that being off course is not a bad thing; indeed, it is a good thing and an inherent part of good track following.

A simple chess game

My best analogy of bracketing is nothing more than a simple chess game, with one difference: I

allow my students to make only six moves. In other words, if done properly, the student will establish and maintain a course with six heading changes or less. I have had IERW students do instrument landing system (ILS) approaches on check rides with as few as two heading changes.

Here's how it works. Just as in chess, there is you and one live opponent. In the track following game, there is you and your opponent, the needle. Keep in mind that if you know what heading to fly, this business is MUCH easier. With bracketing, you always know what heading to fly.

To start any bracket, the first heading to fly is the course itself. You can't go wrong turning onto a course and rolling out on the course heading. How simple is that? Now, just as in a chess game, it is your opponent's move. Once he (the needle) moves, it then becomes your move, and so on until he is checkmated and has no more moves. Here is an example of the simplicity of this:

Our course is 120 degrees, so we turn on the course and roll out on 120 and relax. (see figure 1) Now, using the standard 20-degree bracket method, I already know my next heading will be either 100 degrees or 140 degrees. (We all agree that knowing the next heading sure makes our job easier!) For example, I am flying 120 and the needle is centered.



If the needle's first move is to the right, I already know I am moving to 140. (see figure 2)



Conversely, if the needle's first move is to the left, I know my move will be to 100. (see figure 3)



So, the needle starts to move to the right, and I allow that because it is a natural part of the bracketing process-hence, being off course really is a good thing because it must happen in order for you to work a good bracket. Now that the needle is moving right of 120, I will now turn to heading 140, which I already knew was the heading I needed to fly if the needle moved that direction. (see figure 4)

Now I wait. It is the needle's turn to make a move. While waiting I am contemplating my next move, and I know it will be a 10-degree one. If the needle moves to the right again, I will go to 150. (see figure 5)



If it moves back to centerline, I will go to 130. (see figure 6) I will continue this process until I have worked my bracket down to a 5-degree bracket for precision work or a 10-degree bracket for non-precision work.

In the end it should take six heading changes or less to find what you are looking for, a heading that holds you on course. If you work a good bracket you will know what heading corrects you right, what heading corrects you left, and what heading holds you. If you inadvertently turn and find yourself off the course line, you simply turn to the heading that corrects the direction you wish to go. Brackets seldom take all six heading changes.

I suggest you first try applying it on a long, en route leg. Once you have that working, attempt bracketing on a few non-precision approaches and finally on the ILS. Use 20 degrees for your first correction on an ILS unless you are very close to the outer marker. It works like a charm. You also can start with an initial heading change of 10, 20, or 30 degrees, depending on where you are and what you think the winds might be doing.

Lastly, bracketing is without a doubt the technique that removed all my fear of instrument flying. It released me from chasing needles constantly and allows me to sit back and fly simple basic instruments, which most of us could do in the first few days of our instrument flight training with little trouble. The one drawback to this is your natural tendency to quit bracketing and start chasing the needle. The moment you do this is the moment instrument flying becomes work again.

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