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COMMENTARY / LEFT SEAT

Traffic Pattern Tactics

What's allowed near a runway, and what works best

BY J. MAC MCCLELLAN

SOME SAFETY EXPERTS have recently recommended that pilots consider flying a steady turn from downwind to final in the traffic pattern. The theory is that a constant turn is easier to fly than a squared-off downwind to base followed by another squared base to final turn.

That's not a new idea. In fact, it's old. But for many pilots the traffic pattern is a rectangle around the runway, and any deviation from that three- or four-leg pattern is probably illegal, or at least unsafe. That's not true.

Jeff Skiles took on the traffic pattern in his Contrails column in the March issue. Clearly Jeff is in the big majority that backs the rectangular pattern most of us think of as "standard." But I think the issue is not as standardized as one may think.

First, let's consider the rules that require us to fly a standard, or any, traffic pattern: There aren't any.

Under FAR 91, the rules that govern overall flight operations, there is no definition of what a traffic pattern is, or any requirement to fly a traffic pattern when approaching an airport to land.

The only FAR that comes close to requiring a traffic pattern is 91.126 that says pilots approaching to land at an airport without an operating control tower must make all turns in the vicinity of the airport to the left. If the markings on the airport — segmented circle and such — indicate a right traffic pattern, all turns must be made to the right.


The rule doesn't say we must fly a downwind, or base, or any other component of a traffic pattern. The rule doesn't even say we have to turn at all when approaching to land so straight-in approaches from any distance are legal. Even more confusing, the

rule uses the word "vicinity" of the airport without defining what that means. Is "vicinity" the 4-nm radius around an airport under which we must establish radio contact if there is an operating control tower? I don't think so. Is "vicinity" a mile, or half mile, or maybe a few hundred yards? It depends, I guess.

The FAR Part 91 rules do, however, give right of way to an airplane on final approach to land over other airplanes in the area and airplanes waiting to take off. If two airplanes are approaching at the same time, the lower altitude airplane has right of way over the higher altitude airplane. That's pretty much it for regulatory traffic pattern flying.

What we think of as the standard traffic pattern is described in the *Aeronautical Information Manual (AIM)*. For pilots as old as me that's the book we used to call the *Airman's Information Manual*.

The AIM is not strictly a regulatory document, but it does describe what the FAA believes are best practices. You can't be busted for not following a recommendation in the AIM, but if you ignore its advice and come to grief, your defense will be more difficult, at least.



I'll be the first to say we need traffic patterns at both towered and nontowered airports. The most obvious reason for traffic patterns is to standardize traffic flow making it more likely we will see and avoid other traffic. The other reason is the traffic pattern helps us orient ourselves and prepare for a safe landing.

In the *AIM* is the description and diagrams of the standard pattern with entry, downwind, base, final, upwind, crosswind, and departure legs. It's all very tidy on the page with nice square turns from one leg to another. Altitudes for the traffic pattern are proscribed by the airport operator, but the distance of the downwind from the runway, for example, is not.

One thing that always makes me chuckle when looking at the standard traffic pattern is the recommended entry leg onto the downwind. So, according to the chart in the *AIM*, how do you join the left downwind leg when approaching the airport? Turn right. So, to fly the recommended pattern we break the only pattern rule, which is to make all turns to the left. Just one more example of why using words like all, never, always, and other exclusives is so problematic.

All of that aside, I'll be the first to say we need traffic patterns at both towered and nontowered airports. The most obvious reason for traffic patterns is to standardize

traffic flow making it more likely we will see and avoid other traffic. The other reason is the traffic pattern helps us orient ourselves and prepare for a safe landing.

At towered airports we need a traffic pattern, and pilots need to know what it is, because that's how controllers issue instructions. When a controller tells you to "report the left downwind" for the active runway, you need to know what that means. No matter what the FARs say about the requirement for flying a traffic pattern, an instruction from a controller is a requirement unless some emergency situation demands that we deviate from that instruction.

TRAFFIC PATTERN AS KEY

The military emphasizes the standard traffic pattern less and "key" positions more. I think that makes sense.

In military flying parlance the "key" positions, such as high key or low key, help to standardize an approach and landing, particularly in high-performance airplanes.

The key position is a location over or near the airport at which the pilot knows he should be at a specific altitude and airspeed, and configuration in terms of flaps and landing gear.

By flying to the key position at the specified altitude and airspeed, a pilot can know with very good precision what power setting, flap setting, bank angle in the turn, and so on will put the airplane on final approach at the proper altitude, speed, and configuration.

It's the same for civilian pilots, especially pilots just learning to fly, or transitioning to a new type. If we just wandered onto final approach from some random distance from the airport, judging when to slow down, when to extend flaps, and what power setting to use would all be difficult, at least until you had hundreds or more likely thousands of hours of experience in that airplane.

But by entering a downwind leg our situation looks familiar. We quickly learn what power setting is going to yield the target

airspeeds for base leg to arrive on the desired glide path and airspeed for final. Instructors or pilots checking you out in a new type know and can recommend the power setting and configurations that work from downwind, while that would be very hard to do if every approach was a random run to final.

The other common military flying technique I like and think works well is the overhead break, which calls for the pilot to fly directly over the runway and then "break" into a turn to downwind and continuing the turn onto final.

When approaching a nontowered airport — particularly one I'm not familiar with — I find that flying directly over the runway works great. Overhead you can look for markings and the windsock on the airport. You can see traffic in all directions. And other airplanes are most likely to be below you taking off or landing, and others on a downwind or upwind pattern leg are crossing in front of you. When you announce on

UNICOM that you are overhead the runway, everybody on the frequency knows where to look.

DRAGGING IT IN

I learned to fly more than 45 years ago at a tiny airport east of Cleveland — Concord Airpark — where the single runway is barely more than 2,000 feet long and there are trees all around and a big hump in the middle of the strip. Because the runway was short and the trees were tall, the airplanes there were nearly all basic singles. A Bonanza was an exotic machine, and its pilot who took on the challenge was clearly an ace to be admired.

The mantra at Concord and thousands of other small airports around the country back then was to always be in a position to make the runway if the engine quit suddenly while flying the pattern. That meant that you stayed close on downwind, turned a short final, and usually had to employ some slipping on short final to get rid of the extra altitude you carried just in case.

For whatever reason, we don't seem to have the same fear of engines quitting that dominated years ago. And in my Cessna 140 I did have the engine quit a few times in the pattern during the winter. You couldn't get that light-wing-loaded Cessna down in the dense air of winter with power anything above idle. But at idle the carburetor and induction tubes hanging down in the cold below the barely warm Continental C85 engine would simply stop providing a useful fuel mixture, even with carb heat on, and the engine would quit.

I learned to blip the power every 15 or 20 seconds on those cold days to keep the engine turning. Better still I learned that duct tape over about half the cowling cooling air inlets, and two other openings just below the prop hub, kept the engine warm enough to run virtually every time.

Any pilot who strayed too far away from the runway, out of engine-out glide distance, was "dragging it in." In those days dragging it in was a mark of poor airmanship and much scorn from the local experts who gathered at the airport routinely to critique all approaches and landings.

Today we call dragging it in a stabilized approach. Traffic patterns at airports with even modest amounts of activity stretch out over miles making it unlikely any pilot who loses power suddenly while in the pattern can glide to the runway. But except for old-timers — who now have to be older than me to have earned the title — I don't hear a lot of concern about the size of a traffic pattern or even much worry about an engine quitting.

What's happened is that a stabilized approach in larger airplanes at a distance from the runway is essential for safety. A pilot rolling onto a quarter-mile final in a jet would be drummed out of the corps. So at airports with a mix of traffic the pattern must expand to accommodate heavier and faster airplanes that require a stabilized final approach at least for the last 1,000 feet or more of descent to landing.

So sometimes at some airports we will all be dragging it in, no matter what we fly. But when you have the airport to yourself, I still think staying close enough to make the runway if you suddenly lose power makes sense.

SQUARE TURN?

Back to the original question — would a curved more or less steady turn from downwind to final approach be safer? I believe the answer is yes. When you make square turns you have to level the wings, and that means you need to lower the nose or add power to maintain airspeed. When a pilot is distracted by traffic or wind or whatever the record shows we don't always do that, and a stall and spin is the too-often tragic result.

For all the reasons I discussed, and more, we don't always have control of how we fly the traffic pattern. Making a continuous turn to final in a low-wing airplane blocks your view of other traffic that may already be on final. That means there is no simple solution to the stall-spin loss of control in the pattern. All we can do is work on our basic airmanship, fly turning patterns when we can, and be ready for whatever surprises the traffic pattern may hold. **EAA**