



Operations at Nontowered Airports

Nontowered airports—those not served by an operating air traffic control (ATC) tower—are much more common than towered fields. In fact, nearly 20,000 airports in the United States are nontowered, compared to approximately 500 that have towers.

Millions of safe operations in all types of aircraft are conducted at nontowered airports in a variety of weather conditions. The process works because pilots put safety first and use recommended procedures.

A word about procedure: There are several sources of information that explain official FAA-recommended procedures at nontowered airports. FAR 91.113 cites basic right-of-way rules, and FARs 91.126 and 91.127 establish traffic-flow rules at nontowered airports. The *Aeronautical Information Manual (AIM)* and FAA Advisory Circular 90-66A expand on the regulations. Together, these documents define procedures for nontowered flight operations.

Regulations and procedures can't cover every conceivable situation, though, and the FAA has wisely avoided imposing rigid operating regulations at nontowered airports. What is appropriate at one airport may not work at the next. Some airports have special operating rules due to obstacles or hazards, while other rules may promote a smooth and efficient flow of traffic or keep aircraft from overflying unsympathetic airport neighbors.

Right-of-way rules, along with nontowered airport traffic patterns and procedures, exist to prevent collisions in the air and on the ground. There are other benefits to adhering to the rules, such as an orderly traffic flow, noise abatement, and defusing potential right-of-way conflicts. However, traffic separation is the prime concern. This Safety Advisor covers the “rules of the road” at nontowered airports.

Some people use the term “uncontrolled airport” to mean the same thing as “nontowered airport,” but nontowered airports are anything but “out of control.”

Things to Know Before You Go

The Traffic Pattern Structure

A standard traffic pattern is comprised of six legs to create a logical, safe flow of traffic at an airport. Turns are normally made to the left.

Let's Fly!

We'll begin a flight of takeoff and landing practice (closed traffic) in the runup area at the end of Runway 23 at Frederick, Maryland (see Figure 1). The before-takeoff checklist is complete and the aircraft is

We'll cover the following topics:

- Traffic pattern procedures and techniques
- Communication
- Collision avoidance
- VFR and IFR operations
- Nonstandard flight operations you're likely to encounter at nontowered airports with helicopters, gliders, and parachutists
- Courtesy and safety tips
- Information for flight instructors

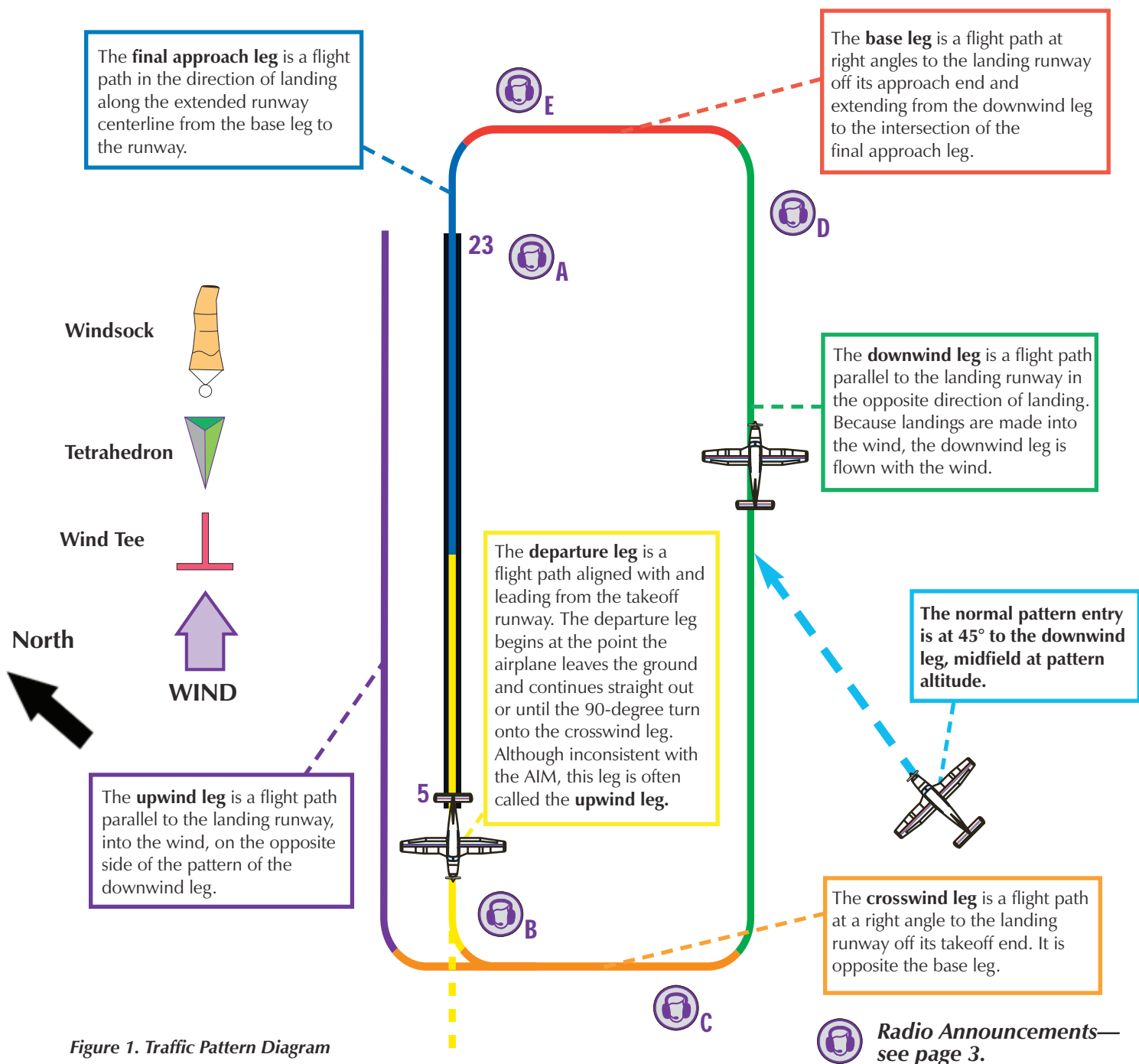



Figure 1. Traffic Pattern Diagram

positioned just short of the holding position (or hold short) line, where you can see the downwind, base, and final legs. The radio is tuned to the common traffic advisory frequency (CTAF), and you've heard traffic in the pattern.

◆ You scan the pattern for traffic and spot a Tampico on downwind. It looks like there'll be plenty of room, so to begin the takeoff you:

-  **A** • Announce *“Frederick traffic, Skyhawk Four Zulu Sierra departing Runway Two-Three, closed traffic, Frederick.”*
- Line up. Turn the landing and anticollision lights on. Taxi onto the runway, and **without stopping**, align the aircraft with the runway centerline and take off.

Safety Tip

The AOPA Air Safety Foundation (ASF) does NOT recommend the practice of taking position on the runway and holding at nontowered airports to wait for other traffic to clear. There may be a delay, and you are in an extremely vulnerable position with no way of seeing traffic behind you.

◆ Departure Leg

- Climb on the extended runway centerline beyond the departure end of the runway and to within 300 feet of traffic pattern altitude. Frederick's pattern altitude is 1,300 feet msl, so continue the departure leg until the altimeter registers 1,000 feet.
- At 1,000 feet, look to the left and right to be sure there is no traffic conflict and announce *“Frederick traffic, Skyhawk Four Zulu Sierra turning crosswind Runway Two-Three, Frederick.”*



B

◆ Crosswind Leg

- Climb to pattern altitude—1,300 feet msl in this case—level off, and reduce power to maintain a safe interval.
- Continue on crosswind until approximately 1/2 mile from the extended runway centerline.
 - To help visualize this distance, use the runway itself. For example, if the runway is approximately one mile long (5,280 feet), use half its length as a guide for the turn to downwind.
- As you approach the turn point, scan for traffic on downwind and announce *“Frederick traffic, Skyhawk Four Zulu Sierra turning downwind Runway Two-Three, Frederick.”*



C

◆ Downwind Leg

- Establish the downwind track and begin the before-landing checklist. Perform most of the landing configuration tasks while on this leg.
 - Retractable-gear airplane pilots should confirm the gear is down and locked while passing midfield on downwind.
 - All pilots should be especially vigilant, scanning and listening for traffic entering the pattern on the downwind leg. This could occur anywhere on downwind.
- Select a touchdown spot on the runway, and as you pass that spot, begin the descent for landing by:
 - Reducing power to maintain approach speed
 - Setting approach flaps
- Continue on downwind and plan the turn to base so as to achieve a 1/2 to 3/4-mile final approach leg.
 - Suggestion—turn base when the aircraft is 45 degrees to the approach end of the runway.
- Approaching the turn point, scan for conflicting traffic and announce *“Frederick traffic, Skyhawk Four Zulu Sierra turning base Runway Two-Three, Frederick.”*



D

◆ Base Leg

- This leg is flown perpendicular to the runway centerline, but if there is any wind, the airplane will be crabbed toward the wind.
 - If dealing with a left crosswind on final, lead the turn to final approach.
 - Right crosswinds will delay the turn to final.
- **Be especially careful to scan and listen for traffic on base or final.** Once turned toward the runway, it is difficult to see behind the aircraft.
- Continue airplane configuration tasks.
- Approaching the turn point, look out the right side to ensure the final approach path is clear, and then announce *“Frederick traffic, Skyhawk Four Zulu Sierra turning final, Runway Two-Three, full stop, Frederick.”*



E

◆ Final Approach Leg

- On final, verify airplane configuration and set landing flaps.
- There is a tendency for pilots to “lock on” to the touchdown zone. It's imperative to **continue scanning** and listening for traffic as we slide down final. Clear both sides of the final approach path.
- Maintain alignment, flare, and wait for that soul-satisfying squeak that says you've made another great landing.

- Be conscious of following traffic; don't dwell on success. Expeditiously taxi to the nearest taxiway and clear the runway for the next arrival.

Safety Tip

For additional clarity, some pilots include the direction of traffic (e.g., left or right) in their traffic pattern announcements. **Frederick traffic, Cessna Eight-One Tango Foxtrot, turning right downwind, Runway Five, full stop, Frederick.**

Safety Tip

Announcements made just before "turning the corners" give other pilots in the pattern a definite place to look for traffic. Banking airplanes are easier for other aircraft at the same altitude to spot. High-wing aircraft should always "pick up" a wing and look before turning.

One Size Doesn't Fit All

Although pattern nomenclature doesn't change, just about everything else can. Pilots should consult the **Airport/Facility Directory (A/FD)** published by the FAA, **AOPA's Airport Directory**, **sectional charts**, and other pilot information sources for pattern information on specific airports. Airport management has the final say on many pattern parameters. Here are a few of them:

- ◆ All turns are made to the left unless otherwise specified. "RP," listed on the last line of the airport data, designates a right pattern for runways 5 and 12 (see Figure 2).
 - Occasionally a right-hand traffic pattern will be established for terrain clearance or to avoid overflight of noise-sensitive areas.
 - It's not unusual to find a single runway served by a left-hand pattern when landing in one direction and a right-hand pattern when landing in the opposite direction.
- ◆ Landing aircraft have the right-of-way over aircraft on the ground.
- ◆ The speed of your aircraft determines the size of the traffic pattern.
 - ASF recommends that fixed-gear, single-engine airplanes fly downwind legs about 1/2 mile from the runway.
 - ASF recommends that pilots maneuver so as to be established on final approach 1/2 to 3/4 mile from the end of the runway.

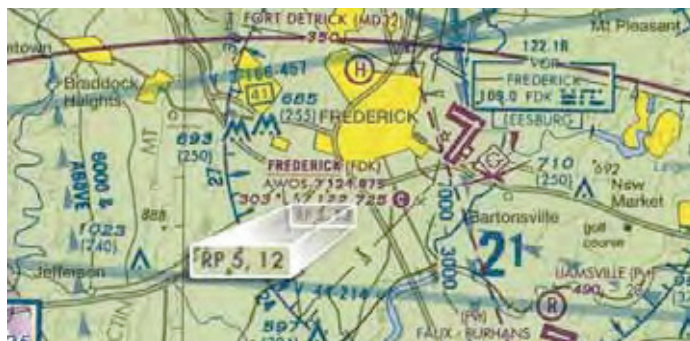


Figure 2. Sectional Chart

- Many single-engine airplanes fly at 70 to 80 knots during pattern operations. However, it's not unusual for high-performance singles and multiengine airplanes to fly the pattern at 120 knots or more. Obviously the faster aircraft will fly larger patterns.
- Many antique airplanes and some helicopters fly considerably slower than 70 knots. You'll often see these aircraft flying downwind legs closer than 1/2 mile from the runway.
- ◆ No matter what size pattern your aircraft requires, you should follow traffic ahead of you in the pattern. This means that faster aircraft may need to slow down and extend downwind slightly to allow sufficient clearance from slower traffic.
- ◆ To reduce the risk of a stall/spin at a low altitude, bank angles should not exceed 30 degrees in the pattern.
 - Flying a pattern of the recommended size will require bank angles of approximately 20 to 30 degrees.
- ◆ The recommended pattern altitude for piston single-engine aircraft is generally 1,000 feet agl. There may be local exceptions; check the A/FD for details.
- ◆ The recommended pattern altitude for twins, turboprops, and jets is generally 1,500 feet agl. Again, there may be local exceptions; check the A/FD for details.

Communication

VFR charts depict towered airports in blue, and nontowered airports are shown in magenta. The basic difference between operating at a tower-controlled airport and one without an operating control tower is the difference between instructions and advisories. Tower controllers issue taxi, departure, and arrival instructions for pilots to follow on specific ATC frequencies. At nontowered airports, you will hear advisories on a CTAF, but the responsibility for collision avoidance, sequencing, and knowing the local procedures lies solely with the pilot.

Safety Tip

All aircraft should monitor the CTAF when operating in the vicinity of nontowered airports.

The CTAF frequency can be found on **sectional charts**, in the **AF/D, AOPA's Airport Directory**, **instrument approach charts**, or other airport directories. Frequencies do change, so use current references.

Nontowered airports without a flight service station (FSS) generally will have a unicom frequency. These are usually staffed by fixed-base operation (FBO) employees who provide airport information. The unicom is usually the CTAF.

Note: Unicom operators are not required to communicate with pilots, and if they do, there are no standards for the information conveyed.

- Some airports have part-time control towers. When the tower is closed, usually at night, nontowered operating procedures apply. The tower frequency usually becomes the CTAF when the tower is closed.
- Other airports have part-time FSSs that advise pilots of the winds, weather, and known traffic. Usually the FSS advisory frequency will become the CTAF when the FSS is closed.

Nontowered communication is not always easy, especially in metropolitan areas where there never seem to be enough frequencies to go around. It's not unusual for several airports within radio range to share the same CTAF. Make sure to state the airport name at the beginning and end of each transmission for the sake of both clarity and safety. ***"Lake Elmo traffic, Warrior Five-Four Charlie entering downwind Runway Three-Two, Lake Elmo."***

Safety Tip

The CTAF should be used for two reasons only:

- Collision avoidance
- Airport advisory

Listening to a busy CTAF for only a few minutes will reveal too many long-winded conversationalists. Don't use this vital collision-avoidance resource for aircraft or lunch scheduling, formation flying, saying hello to friends on the ground, discussing sports scores, or expressing your displeasure at the pilot who just pulled out on the runway while you were on short final.

Courtesy Tip

Listen before you speak. When two aircraft transmit at the same time, the frequency is blocked, resulting in a loud squeal. Plus, you can gain valuable information from listening to other pilots' radio calls.

Safety Tip

ASF recommends that pilots of nonradio aircraft use a hand-held transceiver at busy nontowered airports. This is an essential piece of safety equipment.

There are two golden rules for nontowered airport communication:

1. Be Specific

- When you transmit, begin by stating the name of the airport, followed by the model of your aircraft (Skyhawk, Cherokee, Bonanza, etc.) and the last three alphanumeric of the aircraft N number.
- It's common practice for pilots of homebuilt and other aircraft certificated in the experimental category to identify their airplanes as "experimental." There is a tremendous performance differential between a Lancair and a Baby Ace. Likewise, an RV-4 silhouette is altogether different from an Acro Sport. In order to aid identification and predict performance, ASF recommends that all traffic-pattern announcements include the aircraft type.

2. Be Brief

- It's more important for pilots to know what kind of airplane you're flying than to know your complete call sign. Knowing the model of airplane will help other pilots plan their pattern flight relative to you. The abbreviated version of your call sign takes up less of valuable air time. It's also easier for other pilots to remember a short call sign if they need to request an update on your position.
- To prevent confusion, use your full call sign whenever you hear another aircraft with a similar call sign.

Courtesy Tip

These days, a lot of pilots wrap up their initial position announcements with a request: "Traffic in the area, please advise." Don't be one of them. The phrase is redundant (we're all supposed to be listening and self-announcing anyway), and it contributes to frequency congestion. In fact, according to the AIM, it is "not a recognized self-announce position and/or intention phrase, and should not be used under any condition."



Figure 3. AWOS on Sectional Chart

Automated Weather Information

Some nontowered airports are served by AWOS (Automated Weather Observing System) or ASOS (Automated Surface Observing System). Pilots should monitor these systems, if available, before takeoff and 20 to 30 miles out when approaching the airport to land. AWOS/ASOS frequencies are shown on sectional charts (see Figure 3). Obtaining airport information this way will decrease congestion on the CTAF and allow more time for those all-important traffic announcements. At airports without automated information, you'll need to contact unicom for information: *"Wings unicom, Conquest Three-Niner Alpha, 10 miles south, request airport advisory."*

Be Prepared

Familiarity breeds comfort and confidence. If you're not familiar with communication frequencies, pattern altitudes and procedures, or any other item at your departure or destination airport, look them up *before* becoming airborne.

Noise Note: Ask an instructor or FBO employee at your departure airport about special procedures such as noise-abatement departure routes or local protocols. You can telephone your destination field for the same information. **One inconsiderate act, even inadvertently, can undo months of good will by conscientious pilots.**

Carry current charts for the airport, and become familiar with the location of the airport with respect to landmarks and airspace. If it's your first flight to the airport, learn the orientation of the runways and the communications frequency. This will avoid a scramble to find information as you approach the airport.

Safety Tip

ASI recommends using instrument approach charts if they are available for the airports you are using.

With these useful charts, you'll:

- Have an airport diagram and CTAF frequency.
- Know where to expect inbound IFR aircraft.
- Know what ATC frequencies they will be monitoring.
- Know the location of significant obstacles.

If you cannot afford a set of instrument approach charts, consider acquiring an airport information guide or make a sketch of the airport diagram and other pertinent information. AOPA members may download and print free instrument approach procedure (IAP) charts from the *AOPA Airport Directory Online*, www.aopa.org/members/airports.

Collision Avoidance

At nontowered fields, it's possible that pilots in non-radio aircraft are practicing landings, IFR students and their instructors are practicing instrument approaches, helicopter pilots are perfecting their autorotation skills, or sailplanes are floating overhead. Not all pilots in the

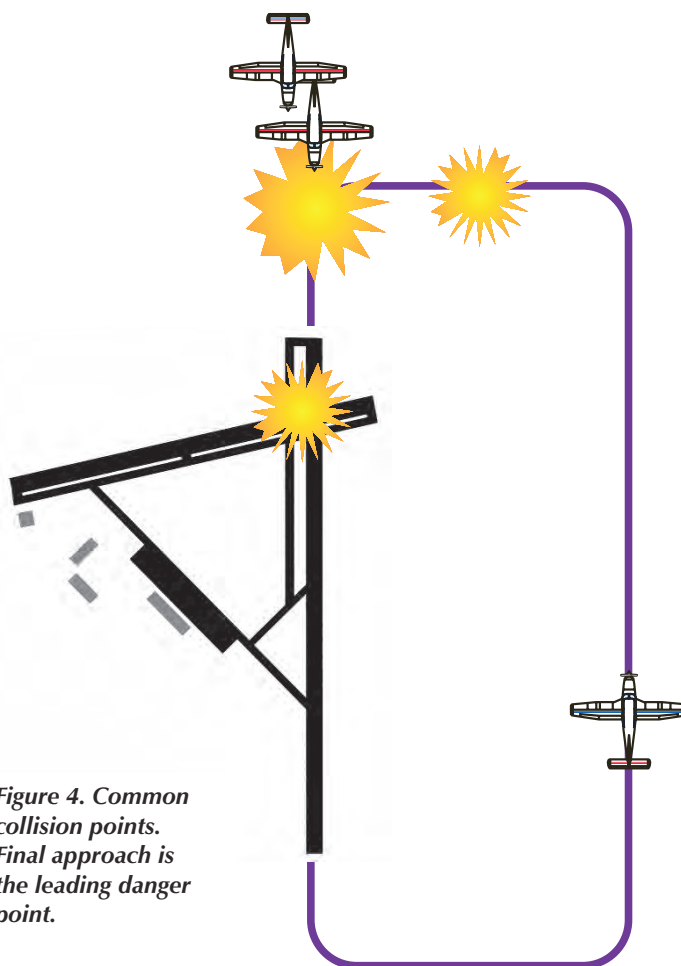


Figure 4. Common collision points. Final approach is the leading danger point.

area are announcing their positions and intentions on the CTAF, or even looking out the window!

Safety Tip

Use landing lights within 10 miles of the airport. Put it on your takeoff and descent checklists—it is the mark of a professional.

Midair collisions are the primary hazard associated with flying at nontowered airports. Most midair collisions occur in clear weather within five miles of an airport and below 3,000 feet, which is where aircraft congregate. Most collisions occur on final approach, generally when a faster aircraft overtakes a slower one (see Figure 4). For more ASI resources on collision avoidance, visit www.asf.org/ca.

Safety Tip

The airlines use the “sterile cockpit” concept to minimize distractions by restricting conversation to operationally pertinent topics. Brief your passengers or copilot that, within 10 miles of the airport, either inbound or outbound, they should not disturb you other than to point out traffic or significant aircraft-related items. It is not a time to answer general questions about the aircraft or sightseeing.

Takeoff and landing are the busiest times. There are many distractions—configuring the aircraft, checklists, setting equipment, and communicating—but this is precisely the time to be looking outside. Preset everything that can be done on the ground—navigation and communication frequencies, programming a GPS receiver, chart positioning, etc. Inbound, have the cockpit and your mind clear of distractions. Know the airport layout and have the frequencies set so **most of your attention can be directed outside.**

Managing Your Focus of Attention

Pattern flying requires pilots to focus their attention in several areas at once. When pilots concentrate on landing, they sometimes neglect collision avoidance tasks with disastrous results.

Items to consider:

Sequence

- Where is your place in the pattern?
- Who are you following?
- Are you faster or slower than the traffic ahead?
- Is someone overtaking or converging on you?

Airplane configuration

- Is the airplane set up for landing?

Track

- Are you following a ground track that conforms to the traffic pattern, and will it put you in a position for a stabilized approach?

Landing

- Are you aligned with the landing runway?
- Is the final approach leg clear?
- Is the runway clear?
- Have you verified airplane configuration?

Safety Tip

Stay alert all the way to the hangar. Final approach is the place where pilots narrow their focus to concentrate on landing. They “lock on” to the touchdown zone and stop scanning for traffic. This may be why most midair collisions occur on final approach to nontowered airports. Concentrating too much on landing may also contribute to landing with the gear up.



Figure 5. Blossom Effect

Safety Tip

An aircraft on a collision course will have no apparent movement relative to you, and the target will “blossom” just a few seconds before impact (see Figure 5). Survivors of midair collisions frequently have no recollection of seeing the other aircraft. In addition, it is easy to lose a target in the ground clutter—be at pattern altitude *before* entering the pattern.

Collisions also occur on the ground, both on runways and taxiways. This is especially a problem at dusk, night, or during periods of low visibility. Plan ahead: Download free airport/taxi diagrams from www.asf.org/taxi.

In calm or nearly calm wind conditions, be especially cautious. Another pilot may choose a different runway from the one you have selected. If the runway has a blind intersection or you cannot see the opposite end, be prepared. Remember that not everyone is on the CTAF.



Figure 6. Turn From Downwind to Base

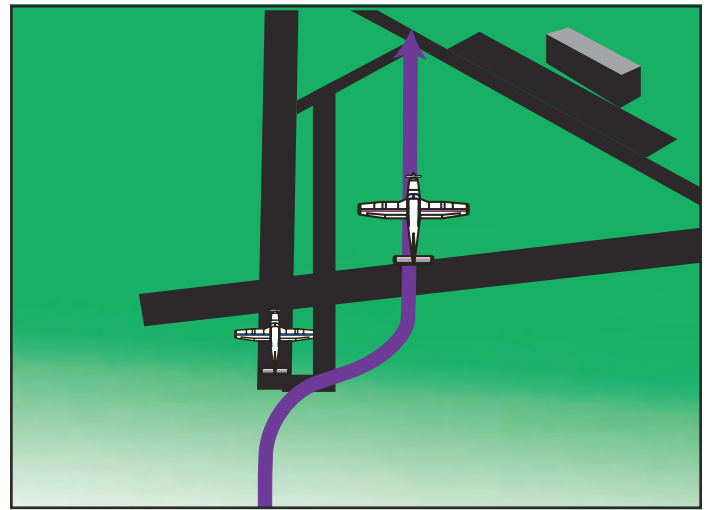


Figure 7. Aborted Landing on Short Final

Pattern Notes

- If an aircraft is ahead of you in the pattern, start your turn to base when you are abeam the other aircraft (see Figure 6). On final, use the approach slope guidance system (VASI, PAPI, etc.), if installed, to fly the proper glidepath.
- On short final, check that no other aircraft are on the runway. If you have to abort the landing because another aircraft is taking off, fly parallel to the runway on the opposite side of the pattern (an upwind leg) and keep the traffic in sight (see Figure 7). Maintain a safe distance from the other aircraft, and rejoin the pattern when it's safe.
- Announce your landing type on final. ***“Culpeper traffic, Warrior Eight-Six Uniform turning final, Runway Four, touch and go [or full stop], Culpeper.”*** This allows pilots behind to gauge how long you are likely to be on the runway.
- If you fly a retractable, make it a habit to double-check the gear-down selector and indicator on final approach.

Departing the Airport

When departing a nontowered airport, monitor and communicate on the CTAF from engine start until you're 10 miles from the airport, so you'll be aware of other traffic that could conflict with your route. The exception is if you need to switch frequencies after departure to talk to ATC or the FSS.

Safety Tip

Remember to scan for traffic while talking on the radio.

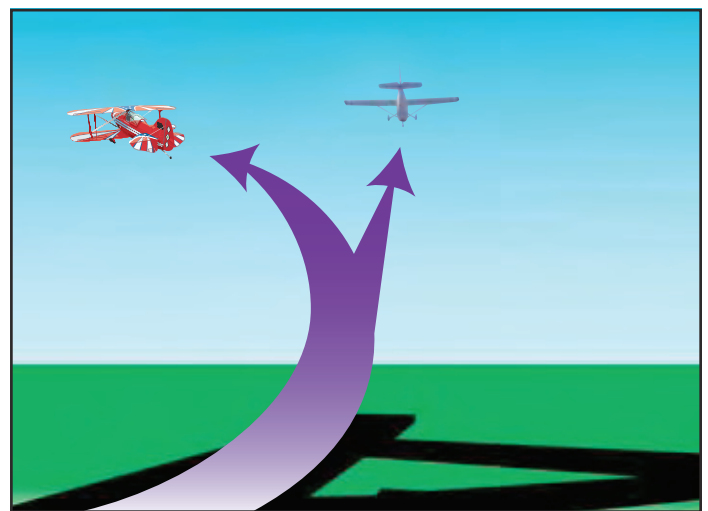


Figure 8. Departure

It's helpful to other pilots if you state what your intentions are after takeoff. For example: ***“Frederick traffic, Bonanza One-Three Charlie departing Runway Two-Three, to the west, Frederick”*** or ***“closed traffic,”*** as the case may be.

After takeoff, climb on the extended runway centerline beyond the departure end of the runway up to pattern altitude. At this point, you can continue straight ahead or make a 45-degree turn to the left (see Figure 8), or to the right if the airport has a right-hand pattern.

If you will be departing against the flow of the pattern, wait until you are at least at pattern altitude plus 500 feet before making a turn, and be sure to advise on the CTAF ***“Westco traffic, Arrow Four-Seven Romeo departing the pattern Runway One-Eight, right turn westbound, Westco.”***

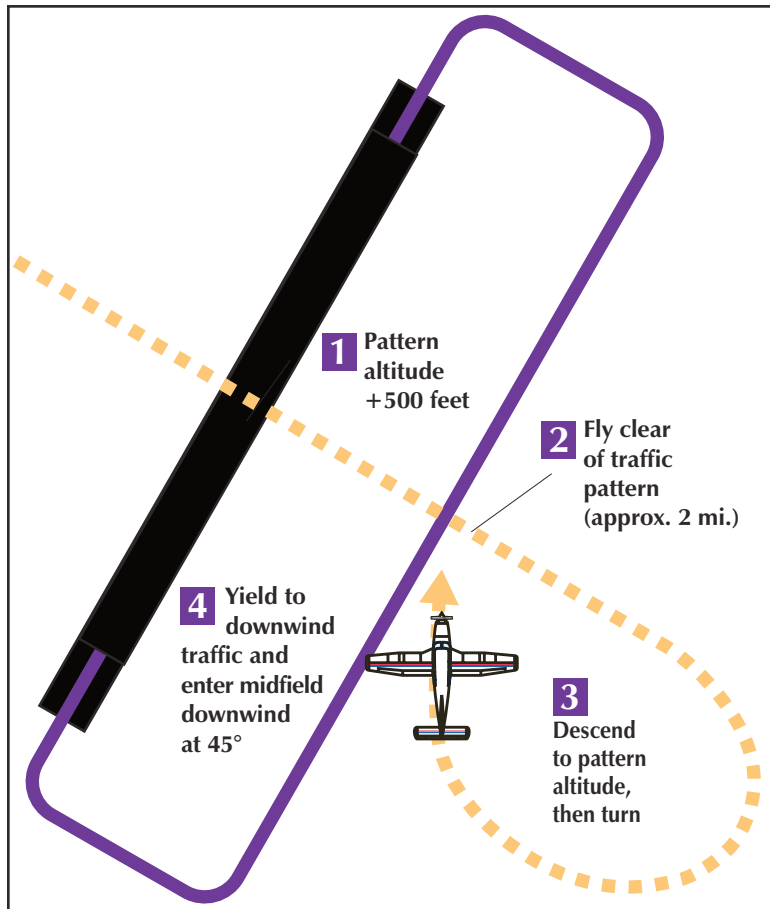


Figure 9. Preferred Entry from Upwind Leg Side of Airport

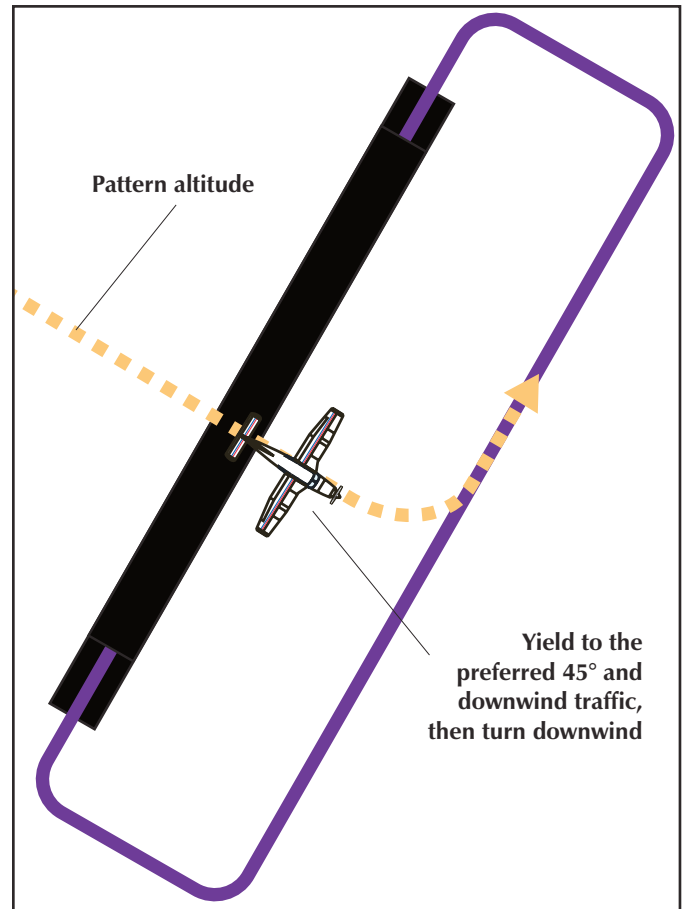


Figure 10. Alternate Midfield Entry from Upwind Leg Side of Airport

Noise Note: Use the full length of the runway and climb at V_Y to gain altitude as quickly as possible, unless an obstacle dictates the use of V_X . Upon reaching pattern altitude, reduce to climb power, or less if remaining in the pattern. This will help to decrease your noise footprint.

Safety Tip

The higher the angle of climb, the less visibility you'll have over the nose. Clear the area ahead by lowering the nose occasionally and/or turning slightly side-to-side as you climb.

Coming Home

Nontowered airport traffic patterns are always entered at pattern altitude. How you enter the pattern depends upon the direction of arrival.

- The preferred method for entering from the downwind leg side of the pattern is to approach the pattern on a course 45 degrees to the downwind leg and join the pattern at midfield (see Figure 1 on page 2).

There are several ways to enter the pattern if you're coming from the upwind leg side of the airport.

- One method of entry from the "opposite" side of the pattern is to cross over midfield at least 500 feet above pattern altitude (normally 1,500 feet agl). When well clear of the pattern—approximately two miles—descend to pattern altitude, then turn to enter at 45 degrees to the downwind leg at midfield (see Figure 9).
- Because large and turbine aircraft fly 1,500-foot-agl patterns, crossing 500 feet above the single-engine pattern altitude might place you in conflict with traffic. If large or turbine aircraft are operating into your airport, 2,000 feet agl is a safer crossing altitude.
- An alternate method is to enter on a midfield crosswind at pattern altitude, then turn downwind (see Figure 10). This technique should not be used if the pattern is busy. Give way to aircraft on the preferred 45-degree entry and to aircraft already established on downwind.

Again, aircraft using the alternate entry should yield to aircraft using the preferred entry and to aircraft on downwind. In either case, it's vital to announce your intentions, and remember to scan outside. Before joining the downwind leg, adjust your course or speed to blend into the traffic. Announce ***“Winfield traffic, Centurion Three-Six Yankee, midfield crosswind Runway One-Eight, Winfield.”***

Adjust power on the downwind leg, or sooner, to fit into the flow of traffic. Avoid flying too fast or too slow. Speeds recommended by the airplane manufacturer should be used. They will generally fall between 70 to 80 knots for fixed-gear singles, and 80 to 90 knots for high-performance retractables.

Safety Tip

Slower aircraft should fly a tighter traffic pattern. Practice until you are comfortable making up to 30-degree banks for base and final. Too close leads to a potential overshoot or a stall from an oversteep turn. Too wide leads to a greater noise footprint and a strung-out final, not a good place to be if the engine quits.

Nobody's Home

How do you find the active runway when there are no aircraft in the pattern and no one answers on the CTAF? Overfly the airport at least 500 feet above the traffic pattern, and look for a windsock, wind tee, or tetrahedron. Then fly clear of the pattern, descend to the traffic pattern altitude, and enter the downwind leg as shown in Figure 9.

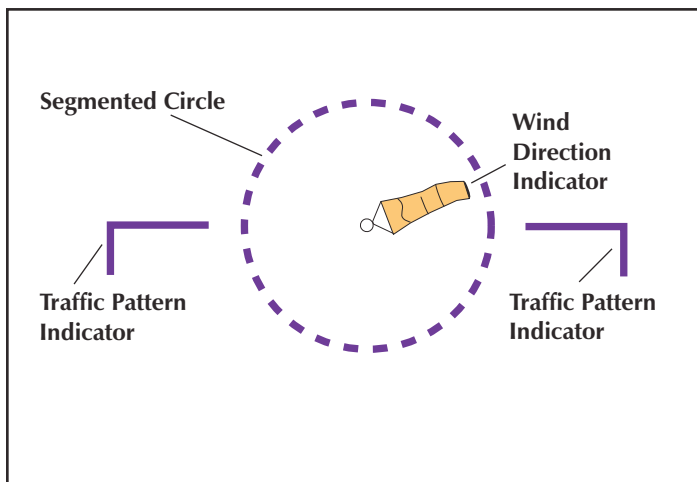


Figure 11. Traffic Pattern Indicator
(See AIM 4-3-4 for more information)

Going Straight

Occasionally you might be inbound to a nontowered airport on a heading that will allow a straight-in

approach. Though permissible, a **straight-in approach should only be used when you are certain there will be no conflict.** Straight-ins should yield to other aircraft in the pattern. If another aircraft is ahead of you on base and the spacing will not be sufficient, go around by altering course to the right (on a standard left pattern), enter the upwind leg, and turn crosswind when it's safe.

When straight-in, announce your position on a three-mile final and again on a one-mile final. Use landing lights and strobes to increase the visibility of your aircraft. Report ***“Dodge City traffic, Twin Cessna Three-Eight Golf, three-mile [one-mile] final Runway Three-One, Dodge City.”*** Nonradio aircraft should avoid straight-in approaches.

Safety Tip

Large, turbine-powered aircraft make more straight-in approaches than light singles. They frequently conduct instrument approaches, and their high traffic pattern speeds (120-plus knots) make it difficult for them to fit in with light aircraft. Remember that even though an aircraft may be required to yield the right-of-way, it might not always do so. Always announce your position on final, where you're most likely to be overtaken by a faster aircraft.

Courtesy Tip

If there are several aircraft waiting to take off, announce that you are extending downwind to let traffic depart. ***“Findlay traffic, Katana Five-Four Foxtrot, extending downwind Runway Two-One to allow departures, Findlay.”***

It's Instrumental

Instrument approaches present special challenges at nontowered airports. Pilots practicing instrument approaches frequently make straight-in approaches to the approach end of the active runway, the departure end, or even to a crossing runway. It all depends on which runway(s) at the airport are served by instrument approaches. This is a potentially confusing situation to VFR pilots flying a standard traffic pattern to the active runway. Add to this mix an unfamiliar IFR vocabulary heard over the CTAF—terms like “procedure turn outbound,” “outer marker inbound,” or “RICKE [the name of an intersection] inbound,” and you have the ingredients for a traffic conflict.

Pilots practicing instrument approaches at nontowered airports on a VFR day should announce their position in

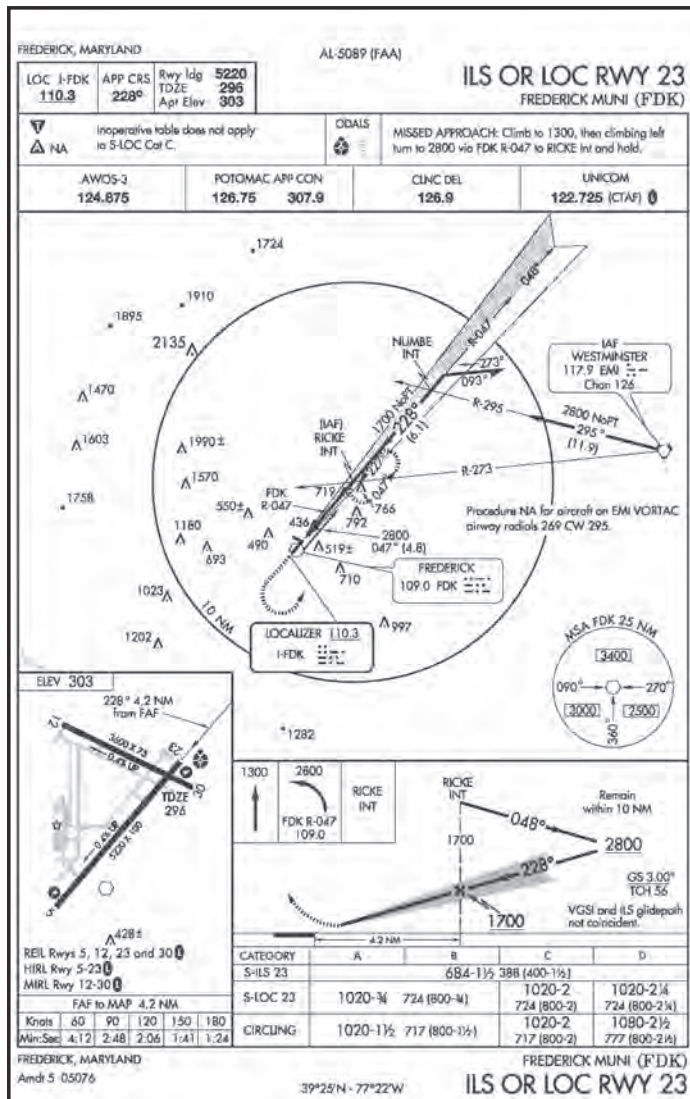


Figure 12. IFR Approach Chart—NOT FOR NAVIGATION

both IFR and VFR terms, “**Frederick traffic, Seminole Three-Six Lima, RICKE inbound, four-mile final, Runway Two-Three, Frederick.**”

VFR pilots will benefit from a little education about instrument operations at a nontowered airport. Learn if the airport has IFR approaches and, if so, to which runways by referencing the A/FD. Have an instrument-rated pilot or instructor describe the approach procedures and explain the phraseology IFR pilots use to announce their positions and intentions.

A situation that poses special risks is when a nontowered airport is blanketed by a broken or overcast ceiling or visibility is reduced—due to haze, for example—yet visual meteorological conditions (VMC) exist below the cloud layer. In that case, it’s possible for a pilot flying an actual IFR approach in the clouds to break out below the ceiling and encounter a VFR pilot turning base for a

practice touch and go. While ATC offers traffic advisories before terminating service, it helps if both pilots are diligent in communicating on the CTAF. But even that doesn’t guarantee against a conflict on the final approach, because they can’t see each other until the IFR aircraft has descended below the cloud layer.

Safety Tip

Instrument flight instructors should exercise particular vigilance during VFR conditions, when it is easy to get distracted by the student’s activities. Your primary responsibility is to see and avoid.

Under reduced visibility (but still VMC) and nearly calm conditions, many IFR pilots will opt for a straight-in approach, which may conflict with local VFR traffic. Recognize that the VFR pilot may have a greater level of situational awareness, a more maneuverable aircraft, and possibly a lower fatigue level, because he or she hasn’t been flying in the clouds for several hours.

If you know where the missed approach holding fixes are and how instrument traffic navigates to those fixes, you’ll know where IFR pilots are headed when they announce on the CTAF they are executing a practice missed approach. You also can calculate how long it will take an IFR aircraft to fly from an instrument approach fix to the runway. The pilot of a high-performance single, who reports crossing a fix five miles from the runway, will take a little more than three minutes to cover the distance to the runway at 90 knots. A 120-knot twin will take about two and 1/2 minutes. If you hear a pilot in a single report “procedure turn inbound,” add about a minute to the inbound time.

Once you get a mental picture of instrument operations at the field, you’ll be able to anticipate and monitor IFR traffic as you fly your VFR patterns.

Safety Tip

If there is heavy VFR traffic and you’re on an instrument approach to other than the active runway, break off the approach before a conflict develops and enter normal traffic. Announce your intentions on the CTAF.

For help in avoiding IFR traffic, ask ATC for radar advisories while en route. The controllers will be handling IFR traffic to and from the airport, and they will help keep you apprised of possible conflicts, but under VFR, you are still responsible to see and avoid.



Figure 13. Freefall Drop Zone

Courtesy Tip

If another aircraft is on a straight-in instrument approach in visual conditions and it will not greatly inconvenience you, consider extending your downwind to follow the aircraft. Be sure to announce your intentions.

Serving Two Masters

Instrument pilots approaching nontowered airports will usually be in radio contact with an air traffic control facility until they are quite close to landing. Many instrument approach procedures have reporting points where pilots must communicate with ATC. At the point the instrument flight breaks out of the clouds and the pilot sees the airport, ATC will generally approve switching to the CTAF for traffic announcements. In good weather, you may hear instrument pilots reporting approach waypoints and fixes on the CTAF. Following are some common calls you'll hear from instrument flights:

- "Outer marker inbound" or name of fix—the instrument flight is approximately three to seven miles out on final approach to land.
- "Procedure turn inbound"—the instrument flight has flown away from the airport, reversed course, and is headed toward the airport. The instrument traffic will be about five to seven miles from the airport and will often be within 30 degrees of the runway heading.
- "VOR [or NDB] inbound"—the instrument flight has passed over an off-airport VOR or NDB navigation aid and is headed toward the field. The distance will vary according to how far away the navigation aid is, but will generally be within 10 miles of the airport.
- You'll also hear calls that identify intersections that are part of instrument approach procedures. Intersection names will vary, but all are comprised of five

characters forming one word; e.g., "**Frederick traffic, Bonanza Three-Six Whiskey, SUSII inbound GPS 5 approach, Frederick.**"

Other Operations

Not everyone is, or can be, concerned with adhering to standard nontowered operating procedures. How is a glider pilot to fly a standard traffic pattern, or execute a go-around? Gliders and balloons have the right-of-way over powered aircraft. Sport parachutists maneuver to downwind, base, and final approach legs, but they don't bear much resemblance to a fixed-wing pattern. Helicopters scoot in and out of the airport, from various directions. Pilots of corporate jets and twins are reluctant to fall in behind a two-seat trainer on downwind, and may opt for a straight-in instead.

First, listen to the CTAF. Second, learn about the procedures the local helicopter pilots use (often a right-hand pattern), where the gliders operate and the approach procedure they use to get back on the ground, and where sport parachutists like to drop in for a visit. They usually have a well-defined drop zone.

Parachutists in freefall are virtually impossible to spot, so avoid overflying an airport with an active drop zone. The FSS may be able to tell you if a drop zone is active. Plan to pass five miles from the center of the drop zone. If you are landing at an airport with an active drop zone, descend to lower than 2,000 feet agl by the time you are within five miles of the destination field. Skydivers will have pulled their parachutes by the time they reach 2,500 feet agl, making them much easier to spot.

Safety Tip

Ask ATC for the coordination frequency for skydiving operations and monitor that frequency when you're in the area. This can be a more reliable way of hearing about jump operations than monitoring the CTAF.

You may not hear the altitude of the jump-plane, but you'll get a one-minute warning and a "jumpers away" call. Jumpers will be in freefall for a minute, plus or minus 30 seconds, before deploying their parachutes. They'll usually be on the ground five or six minutes after you hear that they've departed that perfectly good airplane. ASF works with and supports the U.S. Parachute Association in coordinating safe operations for all airspace users.

Common Courtesy

It helps to keep in mind that traffic procedures at nontowered airports are advisory in nature, not regulatory. There frequently is more than one way to fly a safe pattern, final approach, and landing. You'll see a lot of different interpretations of the traffic pattern.

- Taking other pilots to task because they don't exactly follow your interpretation of the local procedures is asking for trouble, especially if you lecture the pilot. If you feel the need to discuss a situation, do it on the ground—politely.
- Use courtesy and respect. There can be honest differences of opinion, and we should be far more courteous to one another than most automobile drivers.
- Give the other pilot the benefit of the doubt to compensate for the time when you were the one who may have made an inadvertent error.
- If all else fails, provide the erring pilot with a copy of this Safety Advisor and know that you have made a small contribution to safe pilots and safe skies.

Safety Tip

Think like an air traffic controller when you fly. Controllers try to maintain an orderly, efficient flow of traffic, meaning you'll slow down or extend to accommodate the traffic ahead or alter your normal pattern slightly to conform to the traffic situation.

Appendix

FAR 91.113 (b)-(g)—Right-of-Way Rules: Except Water Operations

(b) General. When weather conditions permit, regardless of whether an operation is conducted under instrument flight rules or visual flight rules, vigilance shall be maintained by each person operating an aircraft so as to see and avoid other aircraft. When a rule of this section gives another aircraft the right-of-way, the pilot shall give way to that aircraft and may not pass over, under, or ahead of it unless well clear.

(c) In distress. An aircraft in distress has the right-of-way over all other air traffic.

(d) Converging. When aircraft of the same category are converging at approximately the same altitude (except head-on, or nearly so), the aircraft to the other's right has the right-of-way. If the aircraft are of different categories—

- (1) A balloon has the right-of-way over any other category of aircraft;
- (2) A glider has the right-of-way over an airship, powered parachute, weight-shift-control aircraft, airplane, or rotorcraft.
- (3) An airship has the right-of-way over a powered parachute, weight-shift-control aircraft, airplane or rotorcraft.

However, an aircraft towing or refueling other aircraft has the right-of-way over all other engine-driven aircraft.

- (e) Approaching head-on. When aircraft are approaching each other head-on, or nearly so, each pilot of each aircraft shall alter course to the right.
- (f) Overtaking. Each aircraft that is being overtaken has the right-of-way and each pilot of an overtaking aircraft shall alter course to the right to pass well clear.

(g) Landing. Aircraft, while on final approach to land or while landing, have the right-of-way over other aircraft in flight or operating on the surface, except that they shall not take advantage of this rule to force an aircraft off the runway surface which has already landed and is attempting to make way for an aircraft on final approach. When two or more aircraft are approaching an airport for the purpose of landing, the aircraft at the lower altitude has the right-of-way, but it shall not take advantage of this rule to cut in front of another which is on final approach to land or to overtake that aircraft.

FAR 91.126 (b)

(b) Direction of turns. When approaching to land at an airport without an operating control tower in Class G airspace—

- (1) Each pilot of an airplane must make all turns of that airplane to the left, unless the airport displays approved light signals or visual markings indicating that turns should be made to the right, in which case the pilot must make all turns to the right; and
- (2) Each pilot of a helicopter or a powered parachute must avoid the flow of fixed-wing aircraft.

FAR 91.127 (b)

(b) Departures. Each pilot of an aircraft must comply with any traffic patterns established for that airport in part 93 of this chapter.

Tips for Airport Managers

- Spreading the word: Airport management is responsible for developing pattern and noise abatement procedures. As time passes, the needs of the airport and the surrounding community change, so it's a good idea to schedule a periodic review of these procedures. AOPA has printed reference materials for a variety of airport-related topics. Call 800/USA-AOPA for details.
- Many nontowered airports with heavy-to-moderate traffic have a "saturated pattern" policy; i.e., touch-and-go landings are not permitted when five or more airplanes are circulating in the pattern. This will help expedite departures.
- The best-laid plans won't succeed if they aren't available to the people who need them. Distribute your traffic pattern and noise-abatement procedures through as many outlets as possible, including:
 - Posters for FBOs on the field
 - Hand-outs for flight schools to distribute to their students
 - Notification of special procedures in *AOPA's Airport Directory*, the *A/FD*, and other sources
 - Participation in, or sponsoring of, pilot/community meetings and safety seminars

Tips for Instructors

- Quiz your students. Discuss:
 - Traffic pattern legs;
 - Traffic pattern entry and departure procedures;

- Use of proper phraseology; and
- Primary collision points.
- To see how the other half lives, you may want to pick a day when traffic is light and fly the pattern at 120 knots. This will give you and your student a better appreciation for what the twins and business jets have to contend with.
- Students emulate their instructors. That's a good thing, but it also means that they'll pick up any bad habits you may have, as well. Some common problem areas are:
 - Using the CTAF to check your schedule or attend to company business—Your boss may not like it, but if there's a need for radio communication, another frequency is definitely in order.
 - Shortcutting the pattern—If you don't want your students to fly straight-in, you must fly complete patterns yourself or at least instruct them in how to decide when nonstandard pattern flying is appropriate.
 - Chewing out another pilot on the CTAF—The end of a long day of instructing is not the best time to be uncharitable to the pilot who, either deliberately or inadvertently, cut you off in the pattern. If you vent your frustration here, you can be assured your student is just waiting for an opportunity to do the same.

Get more information on safe airport operations at www.airsafetyinstitute.org/spotlight/airportops

Summary

1. Look
2. Know before you go
3. Fly defensively
4. Fly the appropriate pattern
5. Use the CTAF
6. Use landing lights
7. Yield the right-of-way
8. Be courteous
9. Keep a sterile cockpit within 10 miles of an airport
10. Fly quietly

The way to fly safely at nontowered airports is to **REACT**.

Radio

Listen to the automated weather observations, if available, and the CTAF for airport information and traffic advisories.

Eyes

Use them! Look for other traffic. This is the top priority when operating in the vicinity of a nontowered airport. Use landing lights so other pilots can see you more easily.

Announce

Report your position and intentions using standard phraseology.

Courtesy

A little courtesy will smooth out most problems. The "me first" attitude is rude and can even be dangerous.

Traffic Pattern

Follow the recommended procedures. Before you fly, research the necessary information about your departure and destination airports.