Operations at Nontowered Airports

Nontowered airports—it's a shorthand way to refer to airports not served by operating air traffic control towers, and that includes most of the airports in the United States. At present, some 12,000 airports are nontowered, compared to approximately 400 that have FAA towers.

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

A word about procedure: There are several sources of information that explain official FAA-recommended procedures at nontowered airports. CFR 91.113 cites basic right-of-way rules, and CFR 91.126 and 91.127 establish traffic-flow rules at nontowered airports. The *Aeronautical Information Manual* and Advisory Circular 91-66A 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.

The reason: When you think about it, you realize that control towers, radar controllers, right-of-way rules, and nontowered airport traffic patterns and procedures exist for only one purpose—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, but traffic separation is the prime concern.

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

This *Safety Advisor* is about "rules of the road" at nontowered airports. We'll cover the following topics:

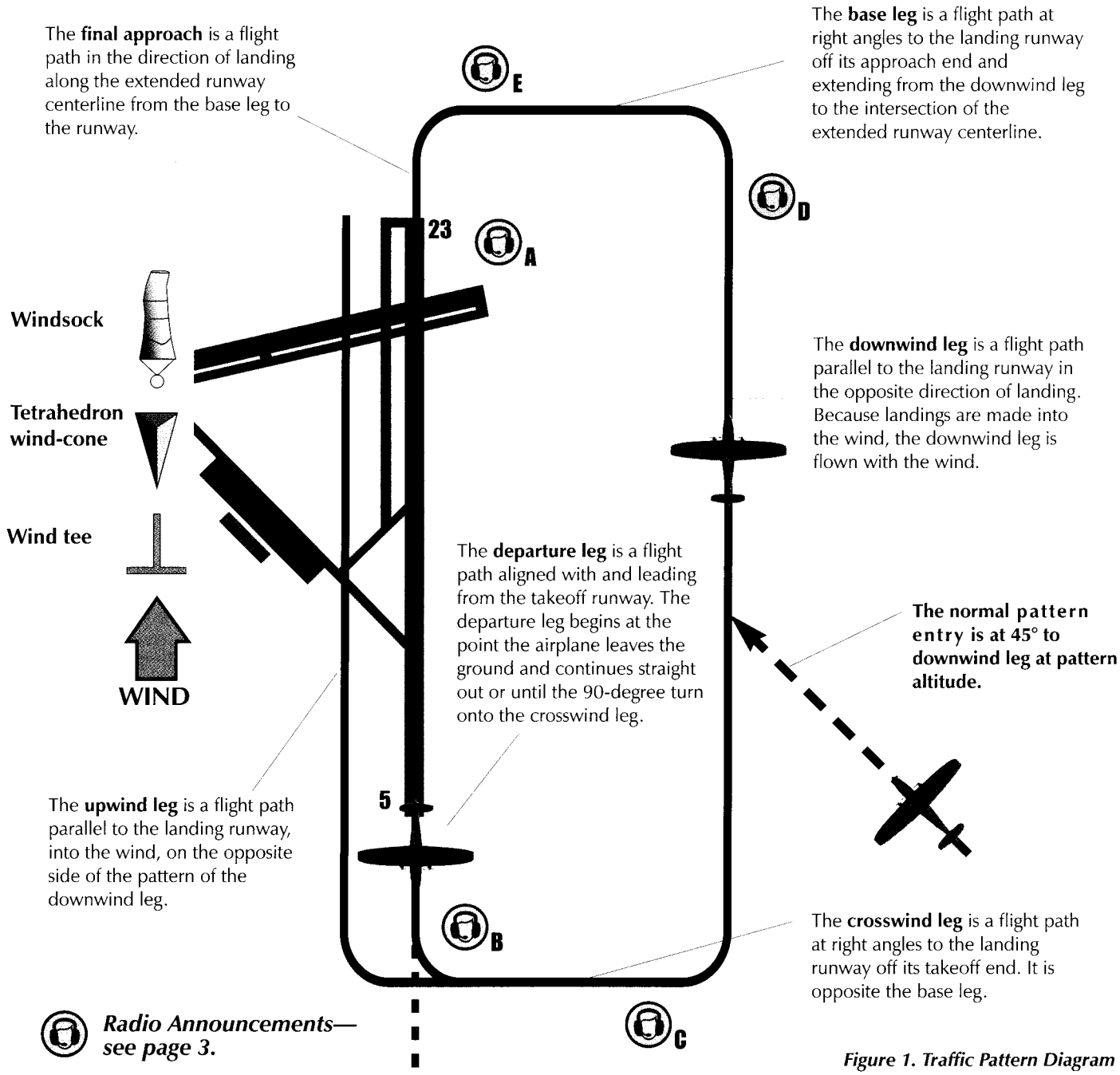
- Things you should know before you go;
- Communications;
- A trip around the traffic pattern to review procedures and techniques;
- The "C" word—courtesy; and
- Nonstandard flight operations you're likely to encounter at nontowered airports with helicopters, gliders, and parachutists.

We'll also include appendices for flight instructors and airport operators, as well as useful tips to help you fly with safety and courtesy.

Things to Know Before You Go

The Traffic Pattern

Safe flight operation begins with knowing the structure of a standard traffic pattern. A standard pattern is comprised of six legs to create a logical, safe flow at a nontowered airport .



Radio Announcements—see page 3.

Figure 1. Traffic Pattern Diagram

Let's Fly!

Now that you're briefed, let's take a trip around the pattern. We'll begin in the runup area at the end of Runway 23 at Frederick, Maryland (see Figure 1). The pre-takeoff check list is complete and the aircraft is positioned just short of the hold line, where we can see the downwind, base, and final legs. The radio is tuned to the CTAF, and we've heard traffic in the pattern.

- We 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, we:
  - Announce—***"Frederick traffic, Skyhawk Four Zulu Sierra departing Runway Two-Three, remaining in the pattern—Frederick."***
  - Line up—landing and anticollision lights are on. Taxi onto the runway, and **without stopping**, align the aircraft with the runway centerline.
  - Take off—increase to takeoff power, accelerate, and rotate to an attitude that will yield best-rate-of-climb speed.

Safety Tip

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 to within 300 feet of traffic pattern altitude. Frederick's pattern altitude is 1,300 feet msl, so we'll continue the departure leg until our 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."***

- **Crosswind Leg**
  - Climb to pattern altitude—1,300 feet msl—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, you can use the runway itself. Many general aviation runways are approximately 1 mile long, so use half the runway 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."***

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

- **Base Leg**
  - This leg is flown perpendicular to the runway centerline, but if there is any wind, the airplane will be crabbed toward the runway.
    - If dealing with a left crosswind, we'll have to 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, we won't be able to see behind the aircraft.
  - We'll continue configuration tasks by setting flaps.
  - Approaching the turn point, we announce ***"Frederick traffic, Skyhawk Four Zulu Sierra turning final, full stop Runway Two-Three Frederick."***

- **Final Approach**
  - On final, check configuration one more time 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.
  - Maintain alignment, flare, and wait for that soul-satisfying squeak that says we've made another great landing.
  - Conscious of following traffic, don't dwell on success. Expeditiously taxi to the nearest turnoff and clear the runway for the next arrival.

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*** **(AFD)** published by the FAA, ***AOPA's Airport Directory***, 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.
  - 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.

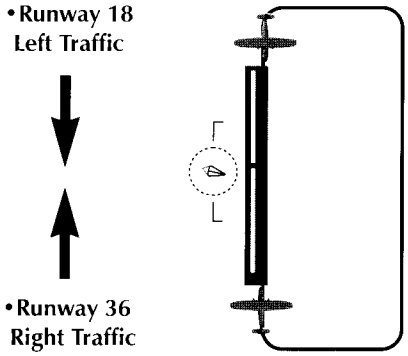


Figure 2. Traffic Pattern Diagram

- Landing aircraft have the right of way over aircraft on the ground.
- The speed of your aircraft determines the size of the traffic pattern.
  - The AOPA Air Safety Foundation (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 1/2-3/4 mile from the end of the runway.
    - Many single-engine airplanes fly at 70 to 80 knots during pattern operations, but 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 extend downwind slightly to allow sufficient clearance from slower traffic.
- Bank angles should not exceed 30 degrees in the pattern.
  - Flying a pattern of the size recommended above will require banks of approximately 30 degrees.
- The recommended pattern altitude for piston single-engine aircraft is generally 1,000 feet agl—there may be local exceptions.
- The recommended pattern altitude for twins, turboprops, and jets is generally 1,500 feet agl—there may be local exceptions.

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 air traffic control frequencies. At nontowered airports, you will hear advisories on a common traffic advisory frequency (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 may be found on sectional charts, in the *Airport/Facility Directory, 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 usually are 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, though, 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. The result is an aeronautical party line traveling at more than 100 knots. Let's take a look at some basic communication precepts:

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 date scheduling, formation flying, saying hello to old friends on the ground, discussing sports scores, or expressing your displeasure at the guy 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 and a loud squeal results.

Safety Tip
ASF recommends that pilots of no-radio aircraft use a hand-held transceiver at busy nontowered airports. This is an essential piece of safety gear.

- Be Specific
  - When you transmit, begin by stating the name of the airport, followed by the model of your aircraft (Skyhawk, Cherokee, Bonanza) and the last three alphanumerics of the aircraft N number. State your intentions and end by repeating the name of the airport; i.e., ***"Frederick traffic, Warrior Five-Four Charlie entering downwind Runway Two-Three, Frederick."***
  - 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 RV4 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.

- 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 that valuable party line time, and it's easier for other pilots to remember your 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 call sign similar to yours.

Automated Weather Information

Some nontowered airports are served by AWOS (Automated Weather Observing System) or ASOS

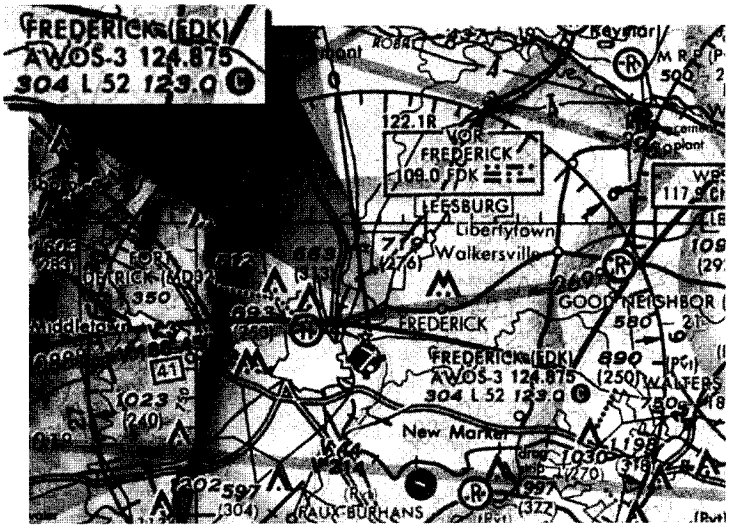


Figure 3. AWOS on Sectional Chart

(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. 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-Nine Alpha, ten miles south, landing, airport advisory please."***

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.

Noise Note: Ask an instructor or FBO 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 concerned 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. The airlines route-check their crews into ***every*** airport, simply because airport familiarization is so important.

Safety Tip

ASF recommends using instrument approach charts, if they are available for the airports you are using. With these useful charts, you'll:

- **Have a runway/taxiway diagram and CTAF;**
- **Know where to expect inbound IFR aircraft;**
- **Know what ATC frequencies they will be monitoring; and**
- **Know the location of significant obstacles.**

If you cannot afford a set of approach charts, consider acquiring an airport information guide or make a sketch of the airport diagram and other pertinent information.

Collision Avoidance

At nontowered fields, it's possible that pilots in no-radio aircraft are shooting 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 area are announcing their positions and intentions on the CTAF, or even looking out the window!

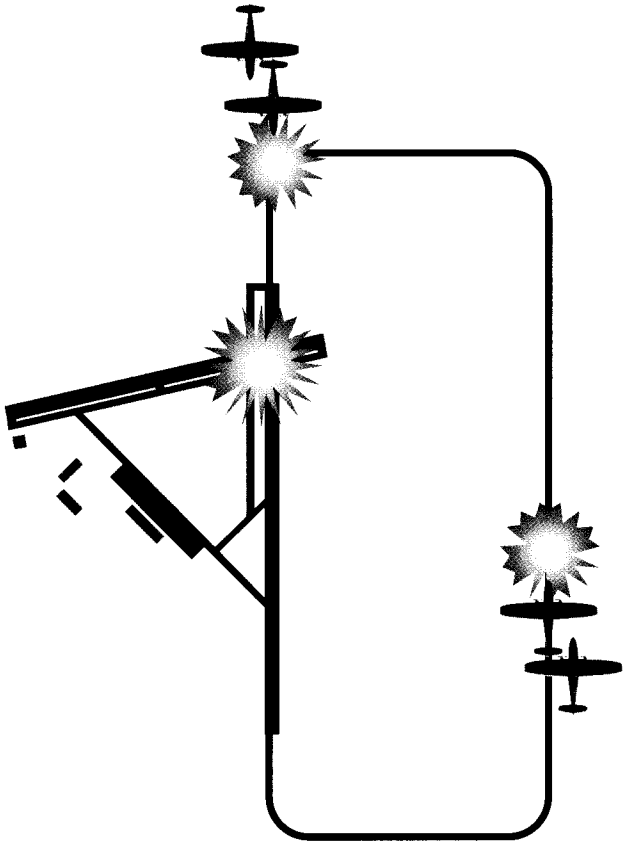


Figure 4. Common Collision Points

Midair collisions are the primary hazard associated with flying at nontowered airports. Most midair collisions occur in clear weather within 5 miles of an airport and below 3,000 feet, which is where aircraft congregate. Most collisions occur on the downwind leg or on final approach, generally with a faster aircraft overtaking a slower one.

Safety Tip
Use landing lights within 10 miles of a nontowered airport. Put it on your takeoff and descent check lists—it is the mark of a professional.

Safety Tip
The airlines use a "sterile cockpit" concept to minimize distractions. Conversation is restricted 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, check lists, setting equipment, and communicating—but this is precisely the time to be looking outside. Preset everything that can be done on the ground—navigation/communication frequencies, programming GPS and loran receivers, 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, and 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?

- **Airplane configuration**
  - Is the airplane set up for landing?
    - Flaps
    - Propeller
    - Power
    - Gear

- **Track**
  - Are you following a ground track that conforms to the traffic pattern, and will it put you in a position to land?

- **Landing**
  - Are you aligned with the landing runway?
  - Is the final approach clear?
  - Is the landing area clear?
  - Have you double-checked airplane configuration?

Safety Tip
Manage your attention 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.

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. Survivors of midair collisions frequently have no recollection of seeing the other aircraft. It is easy to lose a target in the ground clutter—be at pattern altitude before entering the pattern.

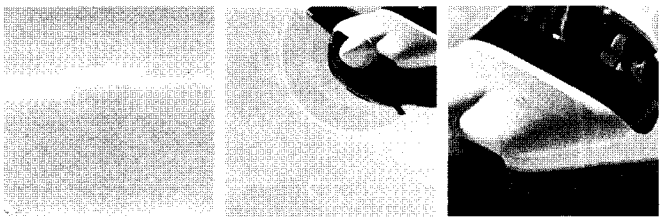


Figure 5. Blossom Effect

Collisions also occur on the ground, both on taxiways and runways. This is a problem at dusk, night, or during periods of low visibility. ***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.

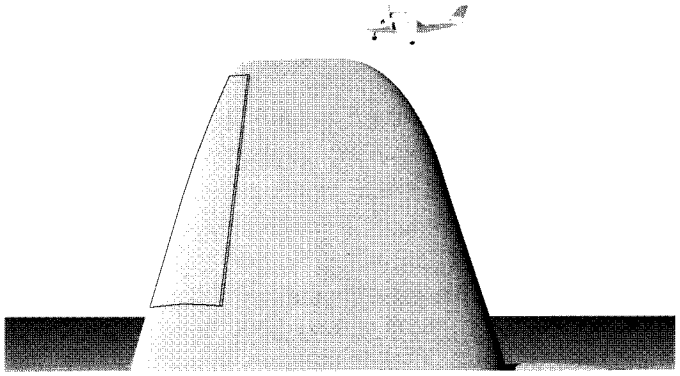


Figure 6. Turn From Downwind to Base

Pattern Notes

- If an aircraft is ahead of you in the pattern, start your turn to base when you are abeam the other aircraft. 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 in takeoff position. If you have to abort the landing because another aircraft is taking off, fly parallel to the right of the runway (left traffic) to keep the traffic in sight. Maintain a safe distance from the other aircraft, and rejoin the pattern when it's safe.

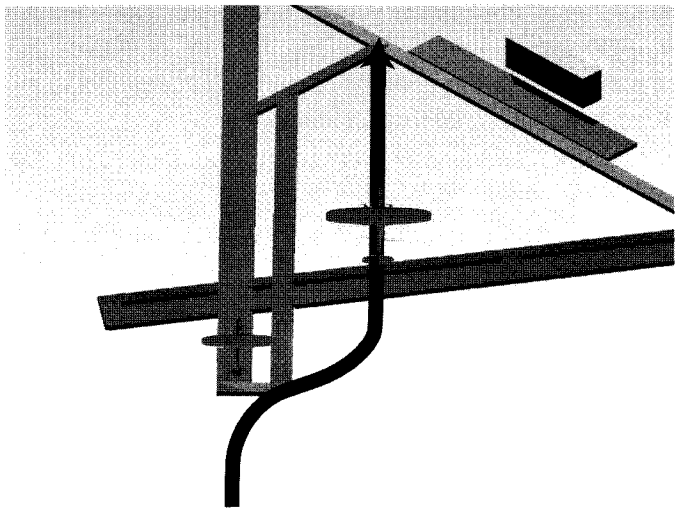


Figure 7. Aborted Landing on Short Final

- If practicing touch and goes, announce your intention on final. ***"Culpeper traffic, Warrior Eight-Nine Uniform turning final for touch and go [or full stop] Runway Four 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- and triple-check the gear-down selector and indicator before crossing the airport boundary on the 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 an FSS specialist.

Safety Tip
Remember to scan for traffic while talking on the radio.

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 ***"remaining in the pattern,"*** as the case may be.

After takeoff, climb on the extended runway centerline to within 300 feet of pattern altitude. At this point, you can continue straight ahead or make a 45-degree turn to the left (to the right if the airport has a right-hand pattern).

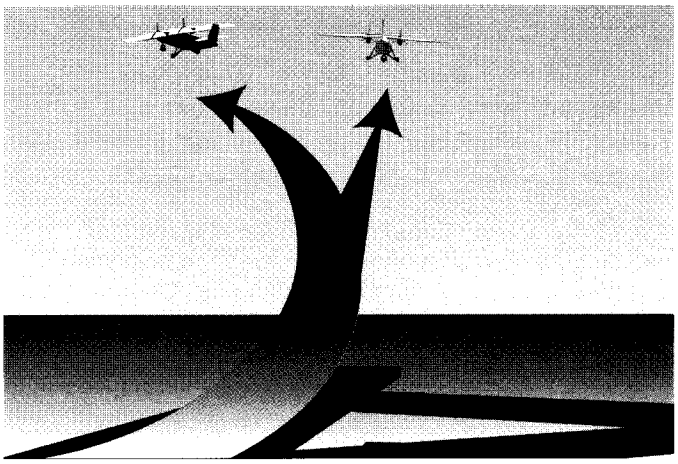


Figure 8. Straight-Away Departure

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

Noise Note: Use the full length of the runway and climb at Vy to gain altitude as quickly as possible, unless an obstacle dictates the use of Vx. 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.

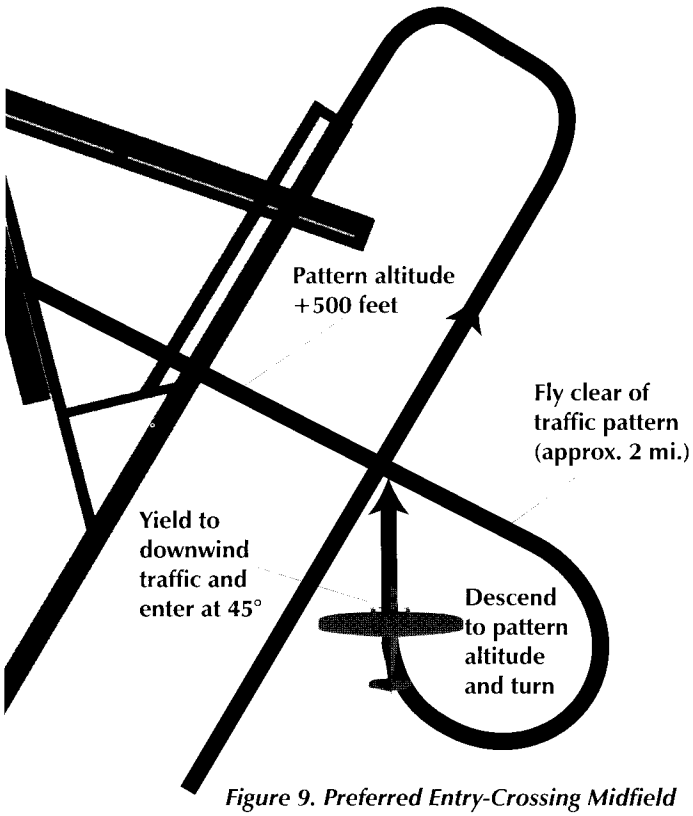


Figure 9. Preferred Entry-Crossing Midfield

Coming Home

Nontowered airport traffic patterns are always entered at pattern altitude. How you enter the pattern depends upon the direction you're coming from.

- The preferred method for entering from the downwind 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 9).

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

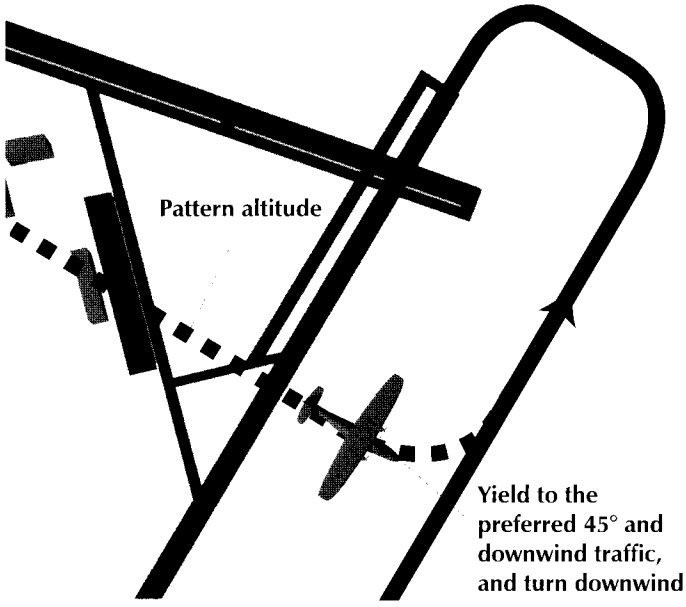


Figure 10. Alternate Midfield Entry

- AC 90-66 A describes the preferred entry from the "opposite" side of the pattern. Cross over at least 500 feet above pattern altitude (normally 1,500 feet). When well clear of the pattern—approximately 2 miles—descend to pattern altitude and enter at 45 degrees to the downwind leg.
  - 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 upwind at pattern altitude and turn crosswind between midfield and the departure end of runway. Give way to aircraft on the preferred 45-degree entry and to aircraft on downwind (see Figure 10).

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. ***"Winfield traffic, Centurion Nine-Nine Yankee is midfield crosswind Runway One-Eight, Winfield."***

Safety and Courtesy Note
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.

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 (80 to 92 mph) for fixed-gear singles, and 80 to 90 knots (92 to 103 mph) for high-performance retractables.

Nobody's Home

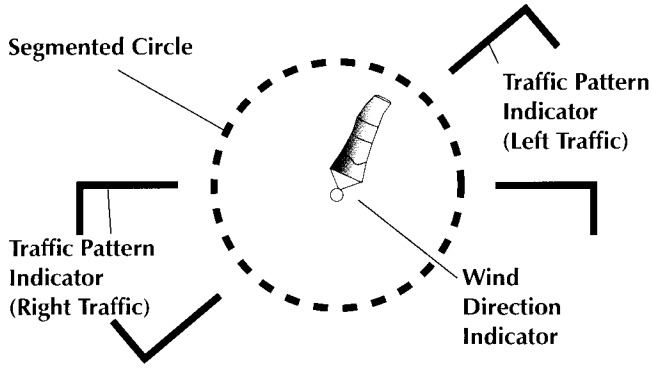


Figure 11. Traffic Pattern Indicator (See AIM for more information)

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 described previously.

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 3-mile final and on a 1-mile final. Use landing lights and strobes. ***"Dodge City traffic, Twin Cessna Three-Eight Gulf is three-mile [one-mile] final Runway Three-One, Dodge City."*** Non-radio aircraft should avoid straight-in approaches.

Safety Tip

Air carrier aircraft and many larger aircraft seem to make more straight-in approaches than light singles. In many cases, they cannot fly a pattern much slower than 120 knots, which is faster than the cruise speed of most trainers. They might not see you, and although there may be cases where they should yield right of way, they sometimes don't. Pursue the discussion on the ground, not on the radio.

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 is 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 or runways at the airport are served by

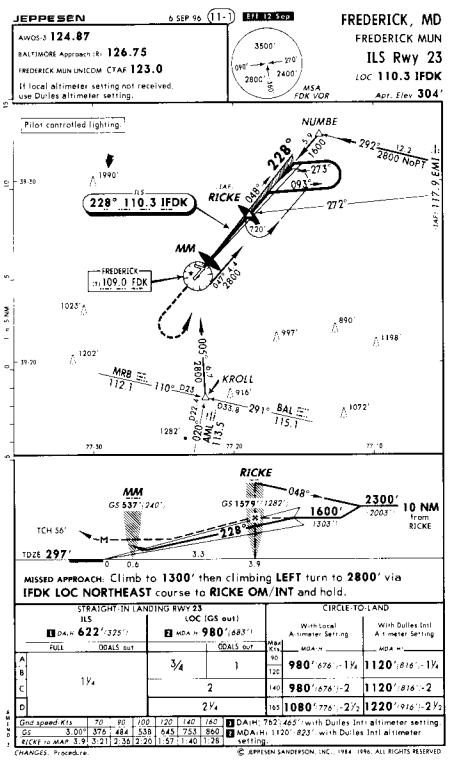


Figure 12. IFR Approach Chart. Copyright 1997 Jeppesen Sanderson, Inc. Not for navigation.

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

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.

A situation that poses special risks is when a nontowered airport is blanketed by a broken or overcast cloud ceiling or visibility is reduced—due to haze, for example—yet VFR conditions 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 suddenly encounter a VFR pilot turning base for a practice touch and go. 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
If possible, monitor the IFR approach frequency simultaneously with the CTAF, if your aircraft has more than one radio. It can provide valuable warning as to when an IFR inbound is about to pop out of the clouds.

Under reduced visibility (but still VFR) 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 5 miles from the runway, will take a little more than 3 minutes to cover the distance to the runway at 90 knots. A 120-knot twin will take about 2 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. When flying to a destination nontowered airport, find out if it is served by instrument approaches and to which runways.

Safety Tip
If there is heavy VFR traffic and you're approaching 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 enroute. 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.

Safety 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 and 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 3 to 7 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 5 to 7 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; i.e., "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. What's a law-abiding private pilot to do?

Listen to the CTAF. Second, learn about the procedures the local helo 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 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 5 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 5 miles of the destination field. Skydivers will be under canopy by the time they reach 2,500 feet agl and, therefore, 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 is 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 "jumper's away" warning. 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 miscreant, using the CTAF as your bully pulpit. If you feel the need to discuss a situation, do it on the ground—politely.
- Use the courtesy and respect you expect from others. There can be honest differences of opinion,

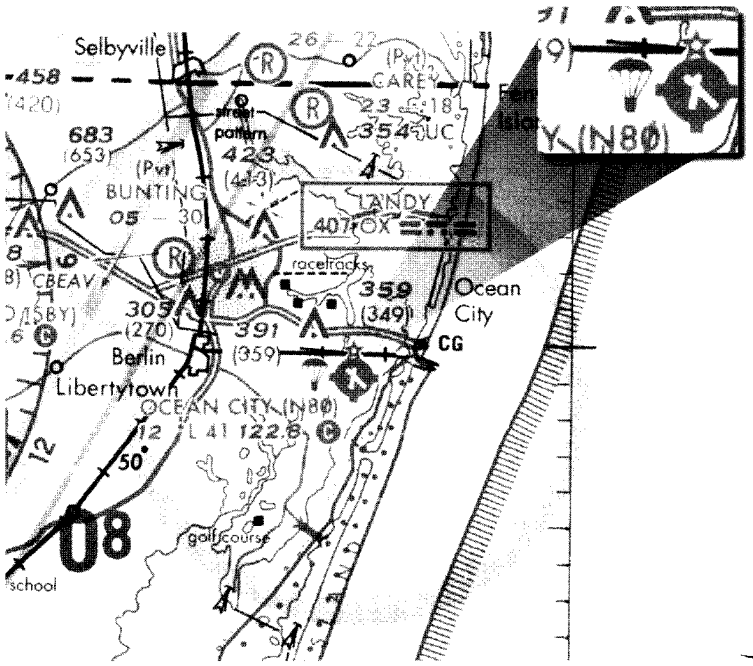


Figure 13. Freefall Drop Zone

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 are the one who may have made an inadvertent error.

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.

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.

Appendices

CFR 91.113 (b)-(g)—Right of Way Rules

(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, airplane, or rotorcraft; and

(3) An airship has the right-of-way over an 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.

CFR 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 must avoid the flow of fixed-wing aircraft.

CFR 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.

Manager's Tips

- 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 can offer assistance in developing plans that will work for a wide range of needs. 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** ***Airport/Facility Directory,*** and other sources; and
  - Participation in or sponsoring of pilot/community meetings and safety seminars.

Instructor's Tips

- Students emulate their instructors as closely as possible. 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. There are advantages to this added expense, of course. Chief among them is the fact that everyone on the CTAF won't be privy to company business.
  - Shortcutting the pattern—If you don't want your students to fly straight-in, you must fly complete patterns yourself or 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 jerk 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.

- 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.

- Quiz your students. Have them define:
  - Pattern legs
  - Entry and exit points
  - Use of proper phraseology
  - Primary collision points

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 in the pattern.**
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 common traffic advisory frequency (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 can be dangerous and rude.

Traffic Pattern—Follow the recommended procedures. Prepare before you fly. Research the necessary information about your departure and destination airports.

Safe Pilots. Safe Skies.

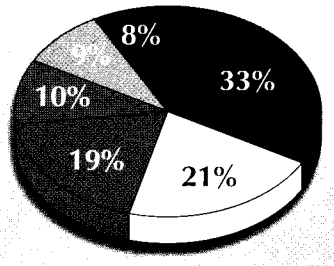
AOPA Air Safety Foundation

Chartered in 1950, the AOPA Air Safety Foundation is the nation's largest nonprofit organization providing aviation safety education and programs to the general aviation community.

The mission of the Foundation is to save lives and promote accident prevention through pilot education. To serve the nation's 622,000 general aviation pilots, the Foundation:

- Maintains a national aviation safety database that contains NTSB reports on general aviation accidents since 1982.
- Performs accident-trend research to focus Foundation resources on the principal causes of accidents.
- Produces and disseminates aviation education and training videos, pamphlets, books, and newsletters to increase safety awareness.
- Conducts specialized aviation training courses for students and instructors.
- Provides free public-service aviation safety seminars.

Where the money goes—



- **Aviation Courses**
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An annual report is readily available by writing or calling the Foundation at:

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