



**YOU CAN FLY**  
**AOPA FOUNDATION**  
**BACK TO YOUR ROOTS**

# RESOURCE GUIDE

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## WELCOME BACK TO YOUR ROOTS!

### A Change of Pace from the Flight Deck

- Remember back then when you first starting flying? Most likely it was in a Cessna or Piper product. Or maybe it was a Champ or T-Craft. Regardless, we all shared the same excitement... that first solo, that first cross country, that check ride where you first earned your wings. Now, you've moved on to bigger, faster, more sophisticated equipment. And, while burning Jet A has its perks, there's still nothing quite like those little bug smashers that got you started on the path to becoming a professional pilot. Back to Your Roots was designed to reacquaint you with the 'non-pressurized' flight levels. So, sit back, relax, and let's get you back to your general aviation roots!

### Don't Forget that AOPA is Here for You!

- Have you returned to flying general aviation, actively again (not for hire or compensation)? We want to know! Just fill out the short online survey that you'll receive by email in about a month or contact us at [BackToYourRoots@AOPA.org](mailto:BackToYourRoots@AOPA.org).
- Flying Clubs are a great way to experience GA and share the costs with other like-minded folks. We can help you find, or start, a flying club in your area. Interested? Just email [FlyingClubNetwork@AOPA.org](mailto:FlyingClubNetwork@AOPA.org) or visit [youcanfly.aopa.org/flying-clubs](http://youcanfly.aopa.org/flying-clubs).
- Is your AOPA membership current? If not, we'd love to have you join our organization. You'll be able to enjoy a wealth of aviation resources, award-winning magazines, and more! Give our membership team a call at **1-800-USA-AOPA**.
- Do you need help with medical or other GA issues or topics? Call our Pilot Information Center Monday through Friday from 8:30 a.m. – 6:00 p.m. Eastern time at **1-800-USA-AOPA**.

# PRE-FLIGHT PREPARATION



## Pilot Documents

- Pilot Certificate (14 CFR 61.19(g))
- Government-issued photo ID (14 CFR 61.3)
- Flight review (14 CFR 61.56) – Every 24 calendar months
- 90-day landing currency (14 CFR 61.57)
  - Day = 3 takeoffs and 3 landings
  - Night = 3 takeoffs and 3 landings to a full stop  
(Between 1 hour after sunset and 1 hour before sunrise)
- Medical Certificate (14 CFR 61.23) – Your First or Second Class medical has the following duration when exercising Third Class privileges:
  - Under 40 years old = 60 months
  - 40 years or older = 24 months

## Physical Condition: I'M SAFE Checklist

- **I**llness (14 CFR 61.53) – May not operate an aircraft as PIC or required crewmember if unable to meet requirements of medical certificate
- **M**edication (14 CFR 61.53) – Are you taking any prescriptions or over-the-counter medications? Are they FAA approved? See the AOPA Medication Database:  
[aopa.org/Pilot-Resources/Medical/Medications-Database](https://aopa.org/Pilot-Resources/Medical/Medications-Database).
- **S**tress
- **A**lcohol (14 CFR 91.17) – At least 8 hours from bottle to throttle
- **F**atigue
- **E**motion



### BASICMED

Are you retired, or about to retire? BasicMed may be for you. For more information, continue reading.

#### Can I fly under BasicMed?

- Yes, BasicMed became effective on May 1, 2017. Pilots can now visit their personal physician and complete an online course to become qualified under BasicMed. Get started at: [AOPA.org/FitToFly](https://www.faa.gov/BasicMed).

#### How can I qualify for BasicMed?

- Hold a valid U.S. driver's license and comply with any restrictions.
- Have held a valid FAA medical certificate, regular or special issuance, on or after July 15, 2006.
- If you've never held a medical certificate, you will need to get an FAA medical certificate, regular or special issuance, from an AME one time only.
- If your regular or special issuance medical certificate lapsed before July 15, 2006, you will need to get a medical certificate from an AME one time only.
- If you have a medical history or diagnosis of certain cardiac, neurological, or mental health conditions, you will need a one-time only special issuance for each condition.
- If your most recent medical certificate has been suspended at any point in time or revoked, your most recent authorization for special issuance was withdrawn, or your most recent medical application was denied, you will need to obtain a new medical certificate before you can operate under BasicMed.

## PRE-FLIGHT PREPARATION



### What will I have to do to take advantage of BasicMed?

- At least every 48 calendar months, visit a state licensed physician where he or she will perform an examination to complete the FAA's BasicMed comprehensive medical examination checklist (CMEC). The completed checklist is retained with your logbook or kept in an electronic format, and only made available to the FAA upon request.
- Every 24 calendar months, take a free online medical education course. AOPA's online medical education course is available to all individuals, free of charge. When you complete the course, you will receive a certificate to be retained with your logbook or kept in an electronic format.

### What are the aircraft and operating restrictions under BasicMed?

- You must fly an aircraft with a maximum certificated takeoff weight of not more than 12,500 pounds that is authorized to carry no more than 7 occupants; fly with no more than 6 passengers; conduct flights within the United States (unless authorized by the country in which the flight is conducted); fly at an indicated airspeed of 250 knots or less; and fly at an altitude at or below 18,000 feet mean sea level.
- You will not be able to fly for compensation or hire, except in limited situations as permitted by FAR 61.113 such as charitable flying, sharing costs of flights with passengers, and flying in connection with a business only if the flight is incidental to that business and does not carry any passengers or property for compensation or hire.

### Does BasicMed apply to flight instructors?

- Yes. The FAA has stated that "flight instructors meeting the requirements of this rule may act as PIC while giving flight training without holding a medical certificate, regardless of whether the person receiving flight training holds a medical certificate."



### What if I want to operate outside the BasicMed limitations?

- If you are BasicMed qualified but also hold a current FAA medical certificate, you may elect to exercise the privileges of your medical certificate as appropriate. However, if a pilot exercises BasicMed privileges while acting as pilot in command during any portion of a flight, then the entire flight must be conducted under BasicMed limitations.

### What if I still have questions?

- Check AOPA's online Fit to Fly Resources for pilots and physicians at [AOPA.org/FitToFly](https://www.aopa.org/FitToFly).
- Call the AOPA Pilot Information Center BasicMed number at **888-462-3976**.
- You can also enroll in AOPA's Pilot Protection Services to access our Legal Services Plan attorneys and medical certification specialists who can evaluate the facts of your individual circumstances to help you determine your eligibility to fly under BasicMed. Enroll today at [AOPA.org/pps](https://www.aopa.org/pps).



### AERONAUTICAL DECISION-MAKING

#### AOPA Air Safety Institute's Do the Right Thing Course and Safety Advisor

Most accidents that stem from bad decisions include at least one of the following factors:

**Utility:** Attempting to squeeze too much utility out of the airplane.

**Ability:** Pushing the limits of pilot skill or experience.

**Fun:** Trying to have too much fun in the airplane. This shows up in accident reports as buzzing, low-level flight, improper aerobatics, etc.

Good decision-making is about avoiding the circumstances that lead to tough choices.

**Go/No-Go?** It may seem obvious, but some of the best aeronautical decisions are made on the ground. A prudent preflight choice can eliminate the need to make a much more difficult in-flight decision.

**Beyond Go/No-Go:** So you've decided to go. Once in the air, you should enter a continuous decision-making cycle. Take the knowledge and information you already have, combine it with the new information you're gathering as you fly, and actively decide how to proceed.

- **Anticipate:** What could go wrong? Effective decision-making begins with anticipation—thinking about what could go wrong before it actually does.
- **Recognize:** Has something gone wrong? Avoid problems in flight by paying attention! The sooner you recognize a problem (or potential problem) and start thinking about how to handle it, the better.



## PRE-FLIGHT PREPARATION



- **Act:** Evaluate your options and choose one. Here's where many pilots fail. They recognize the problem, but don't do anything to confront it. Why? It's inconvenient. Be prepared to act without delay, should the situation warrant it. Pilots sometimes tend to enter a state of denial when faced with a problem. At the risk of oversimplifying, the basic options available when a problem arises are as follows:
  1. Continue the flight as planned, paying very close attention to whatever is causing the problem;
  2. Continue the flight, deviating from the plan as necessary; or
  3. Get the airplane on the ground as soon as practical.
- **Evaluate:** After implementing a solution, evaluate the decision to see if you're getting the desired results. If not, repeat the process.

The AOPA Air Safety Institute's Do the Right Thing course can be accessed here: [aopa.org/training-and-safety/online-learning/online-courses/do-the-right-thing-decision-making-for-pilots](https://aopa.org/training-and-safety/online-learning/online-courses/do-the-right-thing-decision-making-for-pilots).

# PRE-FLIGHT PREPARATION



## ASI VFR PILOT PERSONAL MINIMUMS CONTRACT

Personal minimums and decision-making criteria are best defined on the ground, free of external pressure and the workload of flying the aircraft. Writing them down makes it much easier to resist the temptation to “mentally negotiate” yourself into a tight spot, allowing your decision making to be clouded in the heat of the moment by emotion and hope.

This document defines the contract you make with yourself, your passengers, and your family.

Remember to update your personal minimums regularly to reflect your current proficiency in the aircraft you’ll be flying.

### Instructions

- 1 Review all sections and determine your personal minimums specific to the type of aircraft you fly. If you’re a new or rusty pilot, consider asking a CFI for help.
- 2 Fill in the information for each item.
- 3 Keep this contract with your flight bag for quick reference.
- 4 For a more detailed assessment of the potential risks before your next flight, download and use the FAA’s Flight Risk Assessment Tool at [bit.ly/faaflightrisk](https://bit.ly/faaflightrisk).

### PILOT

MIN. HOURS (LAST 30/90 DAYS) \_\_\_\_\_/\_\_\_\_\_  
MIN. HOURS IN TYPE (LAST 30/90 DAYS) \_\_\_\_\_/\_\_\_\_\_  
MIN. LANDINGS (LAST 30/90 DAYS) \_\_\_\_\_/\_\_\_\_\_  
NIGHT HOURS (LAST 30/90 DAYS) \_\_\_\_\_/\_\_\_\_\_

VFR INTO IMC TRAINING COMPLETED WITHIN LAST 12 MONTHS

MIN. RECURRENT TRAINING COMPLETED

☐ PAST 6 MONTHS ☐ PAST 12 MONTHS ☐ PAST 24 MONTHS

*ASI recommends recurrent training every 12 months with a CFI who is familiar with the aircraft make, model, and equipment.*

# PRE-FLIGHT PREPARATION



AT A MINIMUM, MY OVERALL WELLNESS SHOULD BE

ADEQUATE

☐

OK

☐

WELL

☐

VERY WELL

☐

*ASI recommends considering sleep, medications, alcohol, stress, and other factors that could affect the safety of flight.*

## WEATHER

MAX. WIND VELOCITY AND GUST \_\_\_\_\_

MAX. CROSSWIND \_\_\_\_\_

MIN. CEILING DAY \_\_\_\_\_ NIGHT \_\_\_\_\_

MIN. VISIBILITY DAY \_\_\_\_\_ NIGHT \_\_\_\_\_

## AIRPORT

RUNWAY MIN. LENGTH \_\_\_\_\_

RUNWAY MIN. WIDTH \_\_\_\_\_

*Aircraft performance degrades when density altitude is above 1,000 feet. As a result, ASI recommends adding 50 percent to the POH takeoff or landing distance over a 50-foot obstacle.*

## AIRCRAFT

MIN. FUEL RESERVES (hours : minutes)

DAY \_\_\_\_ : \_\_\_\_

NIGHT \_\_\_\_ : \_\_\_\_

*ASI recommends landing with at least one hour of fuel remaining.*

NIGHT FLIGHT IN A SINGLE-ENGINE AIRCRAFT ☐ YES ☐ NO

IF YES, LIST LIMITATIONS (e.g., no mountainous terrain, no over-water flights, will reach cruise altitude before sunset).

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# PRE-FLIGHT PREPARATION



## I WILL

- Only fly when I am proficient with the aircraft limitations, performance, normal and emergency procedures, systems, and avionics.
- Use precautions when transitioning to different aircraft/ avionics/systems.
- Consider the risks of flying over mountainous terrain.
- Fly with a current GPS database, charts (or EFB), and a backup (as required).
- Consider increasing my personal minimums if friends and family are on board.
- Always get a recorded FAA weather briefing and file/activate a flight plan for flights away from home base.
- Request flight following if services are available.
- Fly with a qualified pilot or CFI (or postpone the flight) if my personal minimums are not met.

Pilot signature \_\_\_\_\_

CFI/Witness \_\_\_\_\_

Last updated \_\_\_\_/\_\_\_\_/\_\_\_\_

The IFR PILOT PERSONAL MINIMUMS CONTRACT is available online [airsafetyinstitute.org/ifrcontract](https://airsafetyinstitute.org/ifrcontract).

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## AIRCRAFT AIRWORTHINESS REQUIREMENTS

### Aircraft Documents (ARROW PC)

Airworthiness Certificate

Registration Certificate (re-registration every 7 years)

Radio Station License (only for international flights)

Operating Limitations (*Pilot Operating Handbook* or *Aircraft Flight Manual*) (N# or SN#)

Weight and Balance

Placards

Compass Correction Card

### Required Maintenance & Inspections (AVIATE)

**Note: IFR inspections marked with an \***

Airworthiness Directives (one time vs. recurring)

VOR Check (every 30 days)\*

Inspections (Annual & 100 hour [if used for instruction or hire])

Altimeter/Pitot-Static system (every 24 calendar months)\*

Transponder (every 24 calendar months)

ELT inspection (12 calendar months; plus half useful life of battery or 1 hour of cumulative use)

### Preventive Maintenance

According to 14 CFR Part 43, Maintenance, Preventive Maintenance, Rebuilding, and Alteration, the holder of a pilot certificate issued under 14 CFR Part 61 may perform specified preventive maintenance on any aircraft owned or operated by that pilot, as long as the aircraft is not used under 14 CFR Part 121, 127, 129, or 135. See FAA pamphlet (FAA-P-8740-15) for more information.

## PRE-FLIGHT PREPARATION



Here are several important points to understand before you attempt to perform your own preventive maintenance:

- You need to understand that authorized preventive maintenance cannot involve complex assembly operations.
- You should carefully review 14 CFR Part 43, Appendix A, Subpart C (Preventive Maintenance), which provides a list of the authorized preventive maintenance work that an owner pilot may perform.
- You should conduct a self-analysis as to whether you have the ability to perform the work satisfactorily and safely.
- If you do any of the preventive maintenance authorized in 14 CFR Part 43, you will need to make an entry in the appropriate logbook or record system to document the work done. The entry must include the following information:
  - A description of the work performed, or references to data that are acceptable to the Administrator.
  - The date of completion.
  - The signature, certificate number, and kind of certificate held by the person performing the work. Note: The signature constitutes approval for return to service only for work performed.

### 14 CFR 91.7 (PIC Responsibility for Airworthiness)

As a certificated pilot, you can perform preventive maintenance subject, of course, to some limitations. CFR 43.3(g) says so. Before doing so, however, it would be wise to review the bullet points below:

- No person may operate a civil aircraft unless it is in an airworthy condition.
- The pilot in command of a civil aircraft is responsible for determining whether that aircraft is in condition for safe flight. The pilot in command shall discontinue the flight when unairworthy mechanical, electrical, or structural conditions occur.

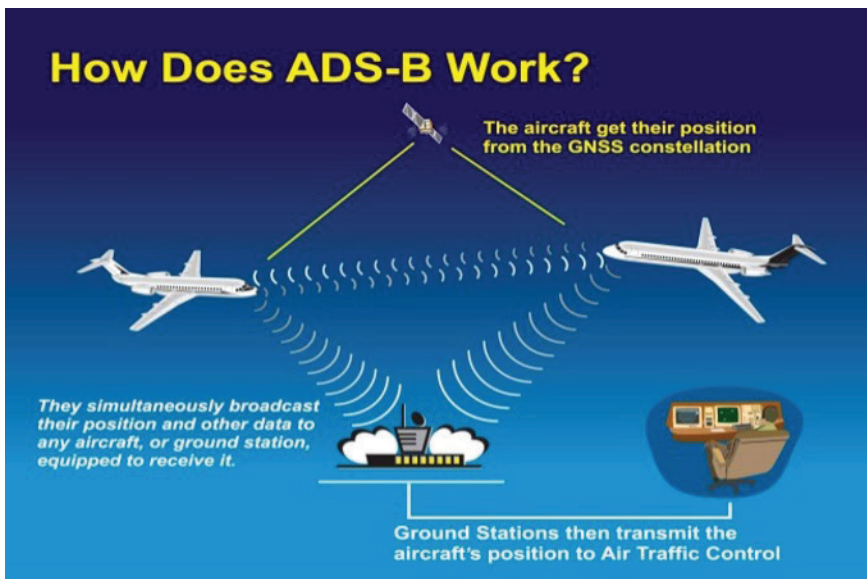


### ADS-B OUT (AUTOMATIC DEPENDENT SURVEILLANCE - BROADCAST)

#### What is Automatic Dependent Surveillance – Broadcast?

- A primary technology supporting the FAA's Next Generation Air Transportation System (NextGen).
- Shifts aircraft separation and air traffic control from ground-based radar to satellite-derived positions.
- Required in the continental U.S. since January 2, 2020, under FAR 91.225.

#### How Does Automatic Dependent Surveillance – Broadcast Work?



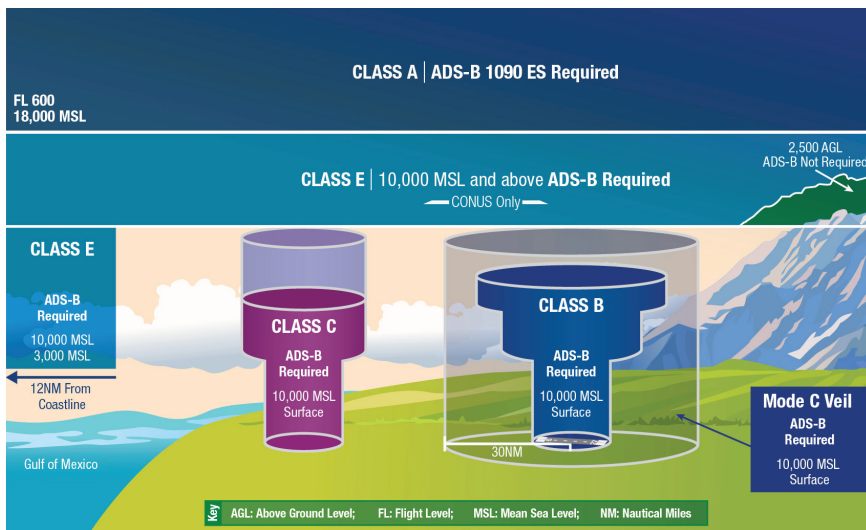
ADS-B Technologies Illustration

- Broadcasts an aircraft's WAAS-enhanced GPS position to the ground where it is displayed to air traffic controllers.
- It is also transmitted to aircraft with ADS-B receivers either directly or relayed by ground stations.

# PRE-FLIGHT PREPARATION



## Where is Automatic Dependent Surveillance – Broadcast required?



- Class A, B and C airspace.
- Class E at or above 10,000' MSL excluding airspace below 2500' AGL.
- Within 30 nm of a Class B primary airport (the Mode C veil).
- Above the ceiling and within the lateral boundaries of Class B or C airspace up to 10,000' MSL.
- Class E airspace over the Gulf of Mexico, at and above 3,000 feet MSL, within 12 nm of the U.S. coast.
- Except for the airspace over the Gulf, this is the same airspace where a transponder is required today.

## What if my airplane doesn't have ADS-B?

- If you're not equipped with ADS-B Out, you're not necessarily shut out of the airspace—but you'll have some extra work to do. Google, "FAA What if I don't have ADS-B out?"





### What are the benefits of flying with ADS-B?

- The ability to fly in ADS-B airspace at any time if the need arises.
- Enhanced safety and additional situational awareness from traffic and free weather information (if you also opt for ADS-B In or have a portable ADS-B receiver).
- Maintain airframe value. Aircraft that are not ADS-B equipped are likely to decline in value.
- More efficient search and rescue. ADS-B's GPS-based surveillance provides more accurate information about an aircraft's last reported position. This is because ADS-B Out avionics transmit data approximately once every second, compared to a ground-based radar's sweep rate of 3-15 seconds.
- More efficient spacing and optimal IFR routing in nonradar environments, including the Gulf of Mexico, mountainous regions of Colorado, and lower altitudes in some parts of Alaska.

### Where can I find more information?

- AOPA – What You Need to Know About ADS-B:  
[aopa.org/go-fly/aircraft-and-ownership/ads-b](https://aopa.org/go-fly/aircraft-and-ownership/ads-b)
- FAA ADS-B FAQs:  
[faa.gov/air\\_traffic/technology/equipadsb/resources/faq](https://faa.gov/air_traffic/technology/equipadsb/resources/faq)

# PRE-FLIGHT PREPARATION



## WEATHER: METAR & TAF DECODER

### Key to TAF and METAR (Front)

**TAF** KPIT 091730Z 0918/1024 15005KT 5SM HZ FEW020  
WS010/31022KT FM091930 30015G25KT 3SM SHRA  
OVC015 TEMPO 0920/0922 1/2SM +TSRA OVC008CB  
FM100100 27008KT 5SM SHRA BKN020 OVC040  
PROB30 1004/1007 1SM -RA BR FM101015 18005KT  
6SM -SHRA OVC020 BECMG 1013/1015 P6SM NSW SKC

**NOTE:** Users are cautioned to confirm DATE and TIME of the TAF. For example, FM100000 is 0000Z on the 10th. Do not confuse with 1000Z!

**METAR** KPIT 091955Z COR 22015G25KT 3/4SM R28L/2600FT  
TSRA OVC010CB 18/16 A2992 RMK SLPO45 T01820159

| Forecast                  | Explanation   | Report             |
|---------------------------|---|--------------------|
| <b>TAF</b>                | Message type: <u>TAF</u> -routine or <u>TAF AMD</u> -amended forecast, <u>METAR</u> -hourly, <u>SPECI</u> -special or <u>TESTM</u> -non-commissioned ASOS report  | <b>METAR</b>       |
| <b>KPIT</b>               | ICAO location indicator   | <b>KPIT</b>        |
| <b>091730Z</b>            | Issuance time: ALL times in UTC "Z", 2-digit date, 4-digit time   | <b>091955Z</b>     |
| <b>0918/1024</b>          | Valid period, either 24 hours or 30 hours. The first two digits of EACH four digit number indicate the date of the valid period, the final two digits indicate the time (valid from 18Z on the 9th to 24Z on the 10th).   |                    |
|                           | In U.S. METAR: <u>CO</u> Rected of; or <u>AU</u> TOMated ob for automated report with no human intervention; omitted when observer logs on.   | <b>COR</b>         |
| <b>15005KT</b>            | Wind: 3 digit true-north direction , nearest 10 degrees (or <u>Var</u> iaBle); next 2-3 digits for speed and unit, <u>KT</u> (KMH or MPS); as needed, <u>G</u> ust and maximum speed; 00000KT for calm; for METAR, if direction varies 60 degrees or more, <u>V</u> ariability appended, e.g., 180V260  | <b>22015G25KT</b>  |
| <b>5SM</b>                | Prevailing visibility; in U.S., <u>S</u> tatute <u>M</u> iles & fractions; above 6 miles in TAF <u>P</u> lus6 <u>S</u> M. (Or, 4-digit minimum visibility in meters and as required, lowest value with direction)   | <b>3/4SM</b>       |
|                           | Runway Visual Range: <u>R</u> ; 2-digit runway designator <u>L</u> eft, <u>C</u> enter, or <u>R</u> ight as needed; " <u>L</u> ", Minus or Plus in U.S., 4-digit value, <u>F</u> ee <u>I</u> in U.S., (usually meters elsewhere); 4-digit value <u>V</u> ariability 4-digit value (and tendency <u>D</u> own, <u>U</u> p or No change)  | <b>R28L/2600FT</b> |
| <b>HZ</b>                 | Significant present, forecast and recent weather: see table (on back)   | <b>TSRA</b>        |
| <b>FEW020</b>             | Cloud amount, height and type: <u>S</u> ky Clear 0/8, <u>FEW</u> >0/8-2/8, <u>SC</u> attered 3/8- 4/8, <u>BR</u> ok <u>E</u> N 5/8-7/8, <u>O</u> ver <u>C</u> ast 8/8; 3-digit height in hundreds of ft; <u>T</u> owering <u>C</u> umulus or <u>C</u> umuloni <u>m</u> Bus in METAR; in TAF, only <u>CB</u> . <u>V</u> ertical <u>V</u> isibility for obscured sky and height "V004". More than 1 layer may be reported or forecast. In automated METAR reports only, <u>C</u> lea <u>R</u> for "clear below 12,000 feet" | <b>OVC 010CB</b>   |
|                           | Temperature: degrees Celsius; first 2 digits; temperature " <u>L</u> " last 2 digits, dew- point temperature; <u>M</u> inus for below zero, e.g., M06   | <b>18/16</b>       |
|                           | Altimeter setting: indicator and 4 digits; in U.S., <u>A</u> -inches and hundredths; (Q- hectoPascals, e.g., Q1013)   | <b>A2992</b>       |
| <b>WS010/<br/>31022KT</b> | In U.S. TAF, non-convective low-level (≤2,000 ft) Wind Shear; 3-digit height (hundreds of ft); " <u>M</u> "; 3-digit wind direction and 2-3 digit wind speed above the indicated height, and unit, <u>KT</u>  |                    |

# PRE-FLIGHT PREPARATION



## Key to TAF and METAR (Back)

| Forecast                    | Explanation   | Report                          |
|-----------------------------|---|---------------------------------|
|                             | In METAR, ReMark indicator & remarks. For example: Sea-Level Pressure in hectoPascals & tenths, as shown: 1004.5 hPa; Temp/dew-point in tenths _C, as shown: temp. 18.2_C, dew-point 15.9_C | <b>RMK SLP045<br/>T01820159</b> |
| <b>FM091930</b>             | From: changes are expected at: 2-digit date, 2-digit hour, and 2-digit minute beginning time; indicates significant change. Each FM starts on a new line, indented 5 spaces                 |                                 |
| <b>TEMPO<br/>0920/0922</b>  | TEMPOrary: changes expected for <1 hour and in total, < half of the period between the 2-digit date and 2-digit hour beginning, and 2-digit date and 2-digit hour ending time               |                                 |
| <b>PROB30<br/>1004/1007</b> | PROBability and 2-digit percent (30 or 40): probable condition in the period between the 2-digit date & 2-digit hour beginning time, and the 2- digit date and 2-digit hour ending time     |                                 |
| <b>BECMG<br/>1013/1015</b>  | BECoMinG: change expected in the period between the 2-digit date and 2-digit hour beginning time, and the 2-digit date and 2-digit hour ending time   |                                 |

### Table of Significant Present, Forecast and Recent Weather - Grouped in categories and used in the order listed below; or as needed in TAF, No Significant Weather.

#### Qualifiers

##### Intensity or Proximity

|   |                    |             |
|---|--------------------|-------------|
| "-" = light   | No sign = Moderate | "+" = Heavy |
| "VC" = Vicinity, but not at aerodrome. In the US METAR, 5 to 10 SM from the point of observation. In the US TAF, 5 to 10 SM from the center of the runway complex. Elsewhere, within 8000m. |                    |             |

#### Descriptor

|                     |                     |                      |                          |
|---------------------|---------------------|----------------------|--------------------------|
| <b>BC</b> – Patches | <b>BL</b> – Blowing | <b>DR</b> – Drifting | <b>FZ</b> – Freezing     |
| <b>MI</b> – Shallow | <b>PR</b> – Partial | <b>SH</b> – Showers  | <b>TS</b> – Thunderstorm |

#### Weather Phenomena

##### Precipitation

|                          |   |                                     |                         |
|--------------------------|---|-------------------------------------|-------------------------|
| <b>DZ</b> – Drizzle      | <b>GR</b> – Hail  | <b>GS</b> – Small Hail/Snow Pellets |                         |
| <b>IC</b> – Ice Crystals | <b>PL</b> – Ice Pellets                                     | <b>RA</b> – Rain                    | <b>SG</b> – Snow Grains |
| <b>SN</b> – Snow         | <b>UP</b> – Unknown Precipitation in automated observations |                                     |                         |

##### Obscuration

|                           |                             |                          |                          |
|---------------------------|-----------------------------|--------------------------|--------------------------|
| <b>BR</b> – Mist (≥5/8SM) | <b>DU</b> – Widespread Dust | <b>FG</b> – Fog (<5/8SM) | <b>FU</b> – Smoke        |
| <b>HZ</b> – Haze          | <b>PY</b> – Spray           | <b>SA</b> – Sand         | <b>VA</b> – Volcanic Ash |

##### Other

|  |                          |                                    |
|--|--------------------------|------------------------------------|
| <b>DS</b> – Dust Storm                         | <b>FC</b> – Funnel Cloud | <b>+FC</b> – Tornado or Waterspout |
| <b>PO</b> – Well developed dust or sand whirls | <b>SQ</b> – Squall       | <b>SS</b> – Sandstorm              |

Explanations in parentheses "()" indicate different worldwide practices.

Ceiling is not specified; defined as the lowest broken or overcast layer, or the vertical visibility.

NWS TAFs exclude BECMG groups and temperature forecasts; NWS TAFs do not use PROB in the first 9 hours of a TAF; NWS METARs exclude trend forecasts. US Military TAFs include Turbulence and Icing groups.

# PRE-FLIGHT PREPARATION



## WEATHER INFORMATION

### **1800WXBrief.com** and **1-800-WX-Brief**

Whether you log on or call, this service will record your transaction providing proof of your briefing.

### **AviationWeather.gov**

This website is for information purposes only and does not record your transaction.

If you are getting your briefing on an EFB (electronic flight bag), you'll want to check with the provider to learn whether they are recording your transaction or not. You want proof that you received a thorough and complete briefing.

## WEATHER BRIEFING OVER THE PHONE:

### **1-800-WX Brief (1-800-992-7433)**

Information you will need to provide once they answer:

- Certificate you hold: Private pilot, Commercial pilot, etc.
- Type of flight: VFR or IFR
- Aircraft number: N\_\_\_\_\_
- Type of aircraft: Make / Model
- Departure point
- Route of flight
- Arrival point
- Altitude
- Estimated time of departure (specify local or Zulu)
- Estimated time en route
- Type of briefing requested: Standard Briefing, Outlook Briefing, Abbreviated Briefing

When a human comes on the line, say all the information at once. Do not pause in between each item for them to respond.

**Example:** *Good morning. I am a private pilot and will be making a VFR flight in N14GA which is a Cessna Skyhawk. I'll be departing out of SRQ direct to ISM at 3500'. Time of departure will be 2:00pm local and time en route will be approximately 45 minutes. I would like a Standard Briefing.*

## PRE-FLIGHT PREPARATION



Remember, you are talking to a person and not a computer. If you forget something, they will ask about it. At any time, you can ask for additional information as well.

The briefer will respond with the following information:

- Adverse conditions
- VFR not recommended (if applicable)
- Synopsis
- Current conditions
- En route forecast
- Destination forecast
- Forecast winds and temperatures aloft
- Notices to Air Missions (NOTAM)
- Other information

Search online for “FAA Weather Briefing Form” and you’ll find an easy-to-use form. For more information about weather briefings, refer to Advisory Circular 91-92, *Pilot’s Guide to a Preflight Briefing*: [faa.gov/regulations\\_policies/advisory\\_circulars/index.cfm/go/document.information/documentID/1036892](https://www.faa.gov/regulations_policies/advisory_circulars/index.cfm/go/document.information/documentID/1036892).

## SUMMARY OF TYPES OF NOTAMS

### FDC NOTAMS

Flight Data Center NOTAMS are NOTAMs that are regulatory in nature such as changes to an instrument approach procedure or airway. Temporary Flight Restrictions (TFRs) are also issued as FDC NOTAMS.

### NOTAM (D)

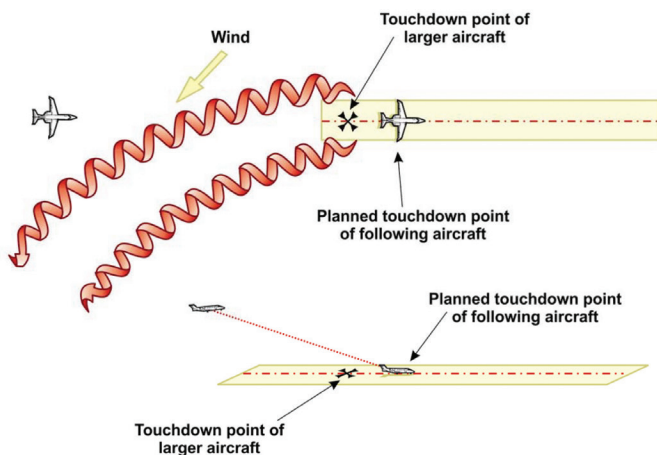
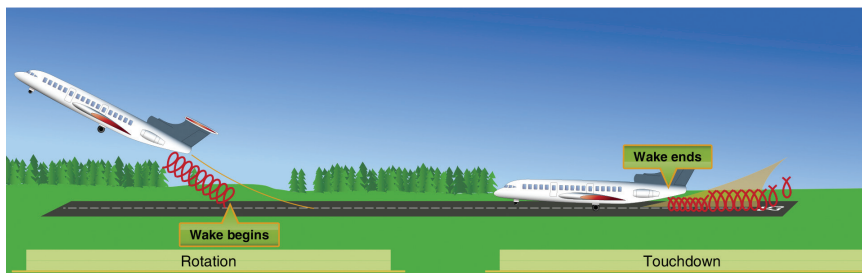
A NOTAM (D) is a NOTAM given (in addition to local dissemination) distant dissemination beyond the area of responsibility of the Flight Service Station. This type of NOTAM now includes (U) NOTAMs and (O) NOTAMs. (U) NOTAMs are unverified NOTAMs which are those that are received from a source other than airport management and have not yet been confirmed by management personnel. This is allowed only at those airports where airport management has authorized it by Letter of Agreement. (O) NOTAMs are other aeronautical information which does not meet NOTAM criteria but may be beneficial to aircraft operations.

# AIRPORT OPERATIONS



## WAKE TURBULENCE AVOIDANCE

Images adapted from *Pilot's Handbook of Aeronautical Knowledge* (Chapter 13).



## Vortex Avoidance Procedures

- **Landing behind a larger aircraft on the same runway**—stay at or above the larger aircraft's approach flightpath and land beyond its touch down point.
- **Landing behind a larger aircraft on a parallel runway closer than 2,500 feet**—consider the possibility of drift and stay at or above the larger aircraft's final approach flightpath and note its touch down point.
- **Landing behind a larger aircraft on crossing runway**—cross above the larger aircraft's flightpath.



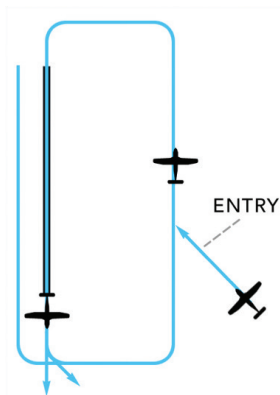
- **Landing behind a departing aircraft on the same runway**—land prior to the departing aircraft's rotating point.
- **Landing behind a larger aircraft on a crossing runway**—note the aircraft's rotation point and, if that point is past the intersection, continue and land prior to the intersection. If the larger aircraft rotates prior to the intersection, avoid flight below its flightpath. Abandon the approach unless a landing is ensured well before reaching the intersection.
- **Departing behind a large aircraft**—rotate prior to the large aircraft's rotation point and climb above its climb path until turning clear of the wake.
- **For intersection takeoffs on the same runway**—be alert to adjacent larger aircraft operations, particularly upwind of the runway of intended use. If an intersection takeoff clearance is received, avoid headings that cross below the larger aircraft's path.
- If departing or landing after a large aircraft executing a low approach, missed approach, or touch and go landing (since vortices settle and move laterally near the ground, the vortex hazard may exist along the runway and in the flightpath, particularly in a quartering tailwind), it is prudent to wait at least 2 minutes prior to a takeoff or landing.
- En route it is advisable to avoid a path below and behind a large aircraft, and if a large aircraft is observed above on the same track, change the aircraft position laterally and preferably upwind.
- See *Pilot's Handbook of Aeronautical Knowledge* and AC 90-23G for full description.



## Recommended Traffic Pattern Procedures

### Approach and Landing

1. The recommended pattern entry is to join the downwind leg at a 45-degree angle abeam the midpoint of the runway to be used for landing. Aircraft should enter the pattern at pattern altitude (1,000' AGL unless otherwise noted in the current *Chart Supplement*). The traffic pattern altitude should be maintained until the aircraft is at least abeam the approach end of the landing runway on the downwind leg, when the descent should be started.
2. The base leg turn should commence when the aircraft is at a point approximately 45 degrees relative bearing from the approach end of the runway. The Aircraft's attitude at the start of the turn to base depends upon many factors including aircraft performance. Consult your aircrafts Pilot Operating Handbook for recommended procedures.
3. Taking wind into account, plan your turn to final so that you won't feel the need to make a steep turn to be aligned with the runway. Remember, you are low and slow, and a go around is always an acceptable option.



### Takeoff

1. Once airborne, you should continue straight ahead on the departure leg. The pilot should maintain awareness of other traffic so as not to conflict with those established in the pattern.
2. If departing the traffic pattern, continue until at least  $\frac{1}{2}$  mile beyond the departure end of the runway. At that point, you either continue straight out, or exit with a 45-degree turn in the direction of the traffic pattern, after reaching pattern altitude.
3. Aircraft remaining in the traffic pattern should not commence a turn to the crosswind leg until at least  $\frac{1}{2}$  mile beyond the departure end of the runway and within 300 feet below traffic pattern altitude.
4. The turn to the downwind leg should be made at traffic pattern altitude and so that the downwind leg is parallel to and between  $\frac{1}{2}$  to 1 mile away from the landing runway.

**References:** AIM 4-3-3, *Airplane Flying Handbook Chapter 7 (FAA-H-8083-3B)*, *Pilot Handbook of Aeronautical Knowledge, Chapter 14 (FAA-H-8083-25B)*, AC 90-66C.





## CLEARANCE COMPONENTS

Most IFR clearances consist of five basic components (“CRAFT”):

- **Clearance limit:** Your destination airport or an intermediate fix.
- **Route of flight:** Hopefully the route you filed, unless traffic conditions dictate otherwise.
- **Altitude:** If not as requested, typically followed by when to expect climb or descent clearance.
- **Frequency:** The radio frequency for departure control.
- **Transponder:** Your four-digit squawk code.

For VFR clearances, you’ll typically receive the last 4 (“Raft”).

## SAMPLE RADIO CALLS

The following will help you frame various types of radio calls. When in doubt, remember the four Ws:

- **Who** you are calling
- **Who** you are
- **Where** you are
- **What** you want

## Communications at a Non-Towered Airport

Be Specific. When you transmit, begin by stating:

- The name of the airport, followed by the word “traffic,”
- followed by the model of your aircraft (Skyhawk, Cherokee, Bonanza, etc.) and the alphanumeric of the aircraft N number,
- state your intentions, and
- end by repeating the name of the airport.

**Example:** *Sebring traffic, Skyhawk 14GA entering left downwind Runway 19 Sebring.*

# RADIO COMMUNICATIONS



## When to make calls at a Non-Towered Airport

### Inbound:

- 10 miles out stating position relative to airport and your intentions
- Crossing mid-field (if appropriate) with altitude
- Entering downwind
- Turning base
- Turning final
- Exiting the runway

### Outbound:

- Prior to taxiing onto the runway (with intentions i.e.: departing to the north, remaining in the pattern, etc.)

Note: All radio calls use the above format noted in the example.







## Class D Lost Communications Procedure

- Squawk 7600
- Remain outside or above the Class D
- Determine the traffic flow and operation
- Enter the pattern and look for light signals from the tower

# RADIO COMMUNICATIONS



## ATC LIGHT GUN SIGNALS

| COLOR<br>AND TYPE<br>OF SIGNAL   | MEANING   |   |   |
|--|---|---|---|
|  | AIRCRAFT<br>ON THE GROUND                         | AIRCRAFT<br>IN FLIGHT                             | MOVEMENT OF<br>VEHICLES, EQUIPMENT<br>AND PERSONNEL |
|  <b>STEADY GREEN</b>              | Cleared for takeoff                               | Cleared to land                                   | Cleared to cross; proceed; go                       |
|  <b>FLASHING GREEN</b>            | Cleared to taxi                                   | Return for landing (followed by steady green)     | Not applicable                                      |
|  <b>STEADY RED</b>                | Stop  | Give way to other aircraft and continue circling  | Stop  |
|  <b>FLASHING RED</b>              | Taxi clear of landing area of runway in use       | Airport unsafe - do not land                      | Clear the taxiway/runway                            |
|  <b>FLASHING WHITE</b>            | Return to starting point on airport               | Not applicable                                    | Return to starting point on airport                 |
|  <b>ALTERNATING RED AND GREEN</b> | General warning signal - exercise extreme caution | General warning signal - exercise extreme caution | General warning signal - exercise extreme caution   |

## Requesting/Canceling Flight Following

### Requesting Flight Following:

**Pilot:** *Miami Center, Skyhawk 14GA.*

**ATC:** *Skyhawk 14GA, Miami Center.*

**Pilot:** *Skyhawk 14GA over Lakeland VOR at 6,500, en route Sebring, request flight following.*

**ATC:** *Skyhawk 14GA, squawk 3314.*

**Pilot:** *Squawk 3314, Skyhawk 14GA.*

### Canceling Flight Following:

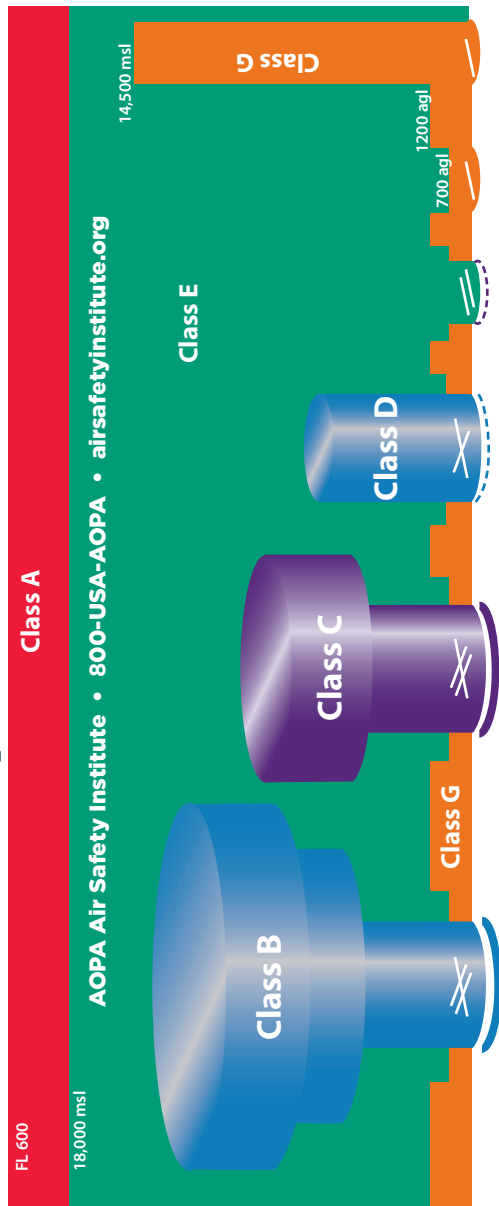
**Pilot:** *Miami Center, Skyhawk 14GA would like to cancel flight following.*

**ATC:** *Skyhawk 14GA, radar service terminated, squawk VFR, frequency change approved.*

**Pilot:** *Squawk VFR, Skyhawk 14GA.*



## Airspace-at-a-Glance





## Communication Requirements and Weather Minimums

| Features                                    | Class A   | Class B                                 | Class C  | Class D  | Class E   | Class G   |
|---|---|---|--|--|---|---|
| Minimum Pilot Qualifications                | Instrument Rating                                 | Student*                                | Student*   | Student*   | Student*  | Student   |
| Entry Requirements                          | IFR-ATC Clearance<br>VFR Operations<br>Prohibited | ATC Clearance                           | IFR-ATC Clearance<br>VFR- Two-Way<br>Communication<br>w/ ATC | IFR-ATC Clearance<br>VFR- Two-Way<br>Communication<br>w/ ATC | IFR-ATC Clearance<br>VFR- None                          | None  |
| Equipment Requirements                      | IFR Equipped                                      | Two-Way Radio,<br>Transponder w/ Mode C | Two-Way Radio,<br>Transponder w/ Mode C                      | Two-Way Radio  | No Specific<br>Requirement                              | No Specific<br>Requirement                              |
| VFR Visibility<br>Below 10,000 msl**        | N/A   | 3 Statute Miles                         | 3 Statute Miles  | 3 Statute Miles  | 3 Statute Miles   | Day: 1 Statute Mile<br>Night: 3 Statute Miles           |
| VFR Cloud Clearance<br>Below 10,000 msl***  | N/A   | Clear of Clouds                         | 500 Below<br>1,000 Above<br>2,000 Horizontal                 | 500 Below<br>1,000 Above<br>2,000 Horizontal                 | 500 Below<br>1,000 Above<br>2,000 Horizontal            | 500 Below***<br>1,000 Above***<br>2,000 Horizontal***   |
| VFR Visibility<br>10,000 msl and Above**    | N/A   | N/A                                     | N/A  | N/A  | 5 Statute Miles   | 5 Statute Miles   |
| VFR Cloud Clearance<br>10,000 msl and Above | N/A   | N/A                                     | N/A  | N/A  | 1,000 Below<br>1,000 Above<br>1 Statute Mile Horizontal | 1,000 Below<br>1,000 Above<br>1 Statute Mile Horizontal |

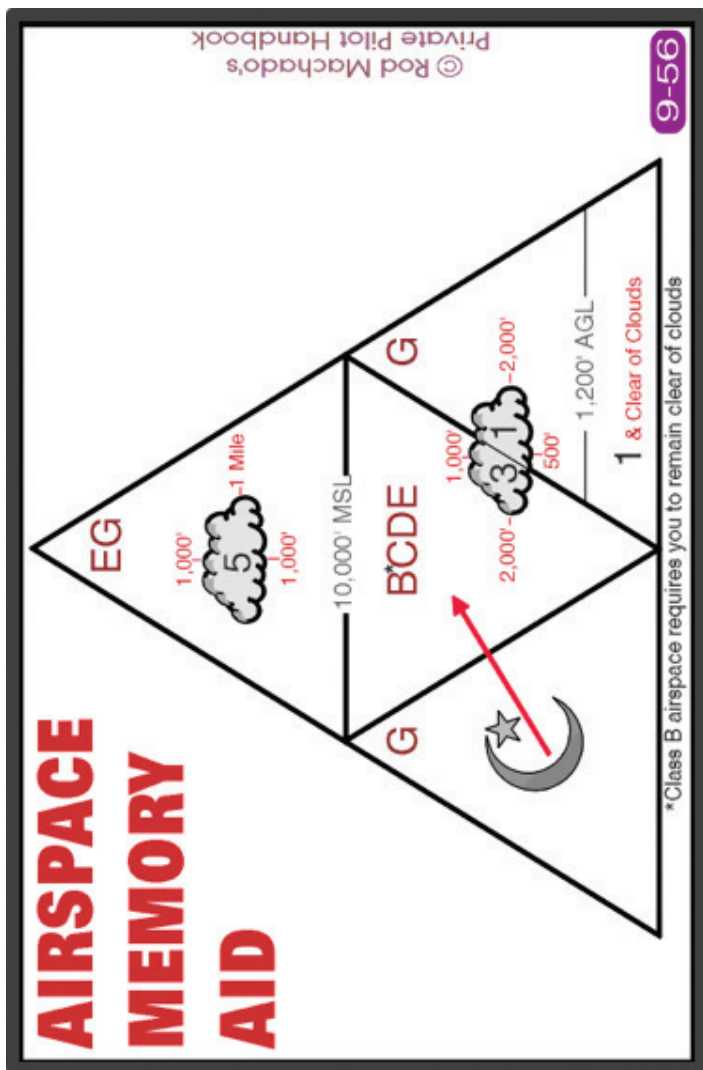
\* Prior to operating within Class B, C, or D airspace (or Class E airspace with an operating control tower), student, sport, and recreational pilots must meet the applicable FAR Part 61 training and endorsement requirements. Solo student, sport, and recreational pilot operations are prohibited at those airports listed in FAR Part 91, appendix D, section 4.

\*\* Student pilot operations require at least 3 statute miles during the day and 5 statute miles visibility at night.

\*\*\* Class G VFR cloud clearance at 1,200 agl and below (day): clear of clouds. Refer to 91.155(b) through (e) for additional regulations.

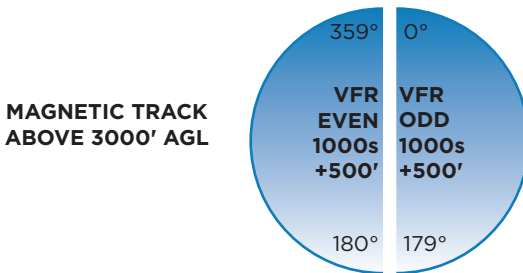
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Source: *Rod Machado's Private Pilot Handbook*  
[rodmachado.com](http://rodmachado.com)





## VFR Cruising Altitudes



## Military Training Routes (e.g., VR123 or IR1234)

- VR = Visual operations
- IR = Instrument operations
- Altitudes of operations
  - 3 Digits = higher than 1500' AGL\*
  - 4 Digits = at or below 1500' AGL\*
- Best practices to avoid conflicting with military traffic:
  - Cross the MTR at a 90° angle to minimize conflicts
  - Be extra vigilant due to high speeds

\* This is not always the case. They can be higher, lower, faster, or slower, large, or small aircraft.

## Special Use Airspace ([SUA.FAA.gov](https://www.faa.gov/uas/sua))

### Military Operations Areas (MOAs)

- Marked by magenta hashed lines and labeled as MOA preceded by the name, these areas separate high speed military traffic from commercial and general aviation.
- Refer to the side panel of the sectional chart for applicable altitudes, effective times, and contact information for controlling agencies.
- While VFR pilots are not prohibited from entering MOAs, they are cautioned to keep a watchful eye out for military operations such as aerial refueling, air combat training, and formation flying.

# AIRSPACE AND CHARTS



- A pilot may contact a flight service station or ATC center within 100 miles of the MOA to determine if it is active and, if so, may request traffic advisories from the controlling agency prior to entry.

## Restricted Areas

- These are marked by blue hashed lines and are identified on charts with a “R” followed by a number.
- Though not entirely prohibited to flight activity, are areas in which unauthorized penetration is not only illegal, but also extremely dangerous.
- Altitudes and times differ for each restricted area and can be determined by consulting sectional chart legends.
- Restricted areas generally contain operations that do not mix well with aircraft such as artillery firing, guided missiles, or aerial gunnery.
- Permission to fly in restricted areas can be given by ATC.

## Prohibited Areas

- These are marked by blue hashed lines and are identified on charts with a “P” followed by a number.
- They are established for security reasons or for national welfare.
- Prohibited areas are for all intents and purposes permanently off limits.
- An example of a prohibited area is the White House or Camp David.
- Although these areas are charted, it is imperative to check Notices to Air Missions (NOTAMs) before you fly since some can change in size.





## Temporary Flight Restrictions (TFRs)

### ■ What is a TFR?

A type of Notices to Air Mission (NOTAM). A TFR defines an area restricted to air travel due to a hazardous condition, a special event, or a general warning for the entire FAA airspace. The text of the actual TFR contains the fine points of the restriction.

It is an area where the FAA has determined that in the interest of safety or national security, aircraft should not be flying.

### ■ TFRs are established by NOTAM

For natural or human-caused disasters & relief operations, presidential or other VIPs, space operations, and other events that could draw a lot of public attention for sightseeing (sporting events, amusement parks, etc).

### ■ How do I find out about them?

- Pre-flight weather briefing (phone or online)
- FAA's TFR site: [tfr.faa.gov](http://tfr.faa.gov)
- Inflight talk to ATC or FSS for possible pop-up TFRs
- TFR Map: [aopa.org/tfrs](http://aopa.org/tfrs)

### ■ You are responsible for avoiding TFRs!

Remember that TFRs over areas like sporting events are under a published TFR and each individual game is not included in your briefing. You need to be aware of the game schedule or just avoid the area—these TFRs go from the surface to 3000 AGL out to 3 nm radius.

Many of the EFB products will highlight these for the games (check your software to see).

On the Sectional, Terminal Area Chart, and many electronic versions, stadiums are identified with the ♦ symbol.

### ■ If it's a TFR, how can you fly through it?

ATC can authorize you to fly through most TFRs (if written in NOTAM).

## BONUS! Air Safety Institute's Airspace Online Resources:

- [Airspace Flashcards](#)
- ["Know Before You Go" online course](#)
- [See the Back to Your Roots Safety Resources on AOPA.org](#)



### BACK TO YOUR ROOTS RESOURCE LIST

- Aircraft Spruce ([aircraftspruce.com](http://aircraftspruce.com))  
Everything your airplane might need.  
Check out their Flight Training section for review materials.
- AOPA Air Safety Institute ([aopa.org/BTYRsafety](http://aopa.org/BTYRsafety))  
ASI Back to Your Roots Safety Resources
- ASA ([asa2fly.com](http://asa2fly.com))  
Offers mobile and online courses and has a huge selection of aviation books and training materials.
- FAA Safety Team ([faasafety.gov](http://faasafety.gov))  
Tons of free online courses and resources. Also your HQ for Wings credit.
- Gleim Aviation ([gleimaviation.com](http://gleimaviation.com))  
Has an online flight review refresher course.  
Multiple online ground schools and online courses.
- Jeppesen ([jeppesen.com](http://jeppesen.com))  
Offers a series of e-books, online and mobile training.
- King Schools ([kingschools.com](http://kingschools.com))  
Check out their Return to Flying series with both VFR and IFR reviews.
- MZeroA.com ([m0a.com](http://m0a.com))  
Check out the “Flying Again” video and book made about rusty pilots.  
Offers online ground schools and great instructional videos.
- Rod Machado’s Aviation Learning Center ([rodmachado.com](http://rodmachado.com))  
Excellent learning materials with a fun sense of humor.  
Features some of the best aviation education graphics in the industry.
- SiriusXM Aviation ([siriusxm.com/daretocompare](http://siriusxm.com/daretocompare))  
There are differences between SiriusXM and ADS-B weather. Watch the Air Safety Institute video on Datalink Weather Choices & Capabilities at [aopa.org/safetyvideos/dlweather](http://aopa.org/safetyvideos/dlweather) to decide which is right for you.
- Sporty’s ([sportys.com](http://sportys.com))  
Stocks everything you need for the cockpit.  
Offers mobile and online ground school and training courses.



## AOPA Air Safety Institute

The AOPA Air Safety Institute (ASI) offers free online safety education to help pilots of all skill levels increase their knowledge and proficiency. From online videos and safety quizzes to seminars and electronic flight instructor refresher courses (eFIRC's), ASI keeps pilots thinking and actively engaged. Visit [airsafetyinstitute.org](https://airsafetyinstitute.org) for a complete listing of online programs and a schedule of in-person courses.

## AOPA Foundation

AOPA's Air Safety Institute and the AOPA Foundation, You Can Fly program, including the Rusty Pilots/Back to Your Roots initiatives, are entirely funded by charitable donations to the AOPA Foundation, a 501(c)(3) organization. These programs are making general aviation more accessible, more affordable, and safer. To join the community of pilots dedicated to being a part of the solution, visit [aopafoundation.org/donate](https://aopafoundation.org/donate).

## AOPA Pilot Information Center

From insights on flight training, advice on buying and maintaining aircraft, flying internationally, to medical certification, digital product support and more, our staff of experienced pilots and CFIs are only a phone call away; standing by Monday through Friday 8:30 a.m.- 6:00 p.m. (ET). Call our toll-free hotline at **800.USA.AOPA (872.2672)** today.

## Affordable Flying

Looking for economical flying options after you get back into flying? Then join—or form—a flying club! Flying clubs not only make flying affordable and accessible, but they offer social activities that will keep you active, engaged, and part of the aviation community. Visit the Flying Clubs website at [aopa.org/flyingclubs](https://aopa.org/flyingclubs).

## IFLIGHTPLANNER for AOPA

iFlightPlanner for AOPA is a powerful web interface for AOPA members to plan flights using hi-res charts and weather imagery, retrieve weather briefs, file flight plans, and much more! Find out more at [aopa.org/iflightplanner](https://aopa.org/iflightplanner).

## Renter Insurance

Insurance is the last thing you want to think about while getting back into the left seat. Protect yourself and your family with a renter insurance policy from AssuredPartners Aerospace, AOPA's preferred provider of aviation insurance. This insurance covers you when the owner's primary policy does not. Learn more at [ap-aerospace.com](https://ap-aerospace.com).



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