



# EAA Chapter 100 October 2020 Newsletter

<http://eaa100.org>

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EAA Chapter 100 is a nonprofit association involved in the promotion of aviation through adult and youth education, hands-on training, building and maintenance of experimental aircraft, and through community awareness programs.

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Reader submissions and comments are strongly encouraged.



## BASIC VFR

-- Wally Miller, AOPA

### HOW TO KNOW IT WHEN YOU SEE IT

April 5, 2008, By [Wally Miller](#)

Unless you're just getting started, you're familiar with the term VFR--visual flight rules. But what do VFR conditions look like? How do you know whether that scene out the hangar door equals visual meteorological conditions, or the one through your windscreen allows flight under VFR rules?

To most pilots, VFR means three statute miles' visibility and far enough away from the clouds that they don't hassle you, you don't interfere with aircraft flying under instrument rules that are coming out of the clouds, and you can see where you're going and spot other airplanes. That's pretty close--but there's more.

VFR means very different things at different times and places, and it's important to know that. Knowing the rules is more than just an academic exercise.

Until you draw a line on a sectional chart and check to see how many different kinds of airspace you will fly through while following that line, you can't appreciate how often your visibility and cloud clearance requirements will change to remain under VFR.

*(Continued on page 2)*

## Secretary Comments

-- Jeff Hanson

### EAA Chapter 100

#### Chapter 100 meeting 9-12-20

*Editor:* No business meeting last month. The Fly-in chapter meeting had no fly-ins because of the weather. We had approximately 13 members at the Saturday meeting. There was plenty of donuts, bananas, and apples for members to eat. The round table discussion was great. Brad had good stories of his Minnesota Passport Stamp airports adventures. Everyone else in attendance had their stories to tell. A good meeting.

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*(Continued from page 1) - Basic VFR*

Pull out your local sectional. Draw a straight line (or any other reasonable route). Imagine you're flying at 1,000 feet above ground level (agl); look at various points along your route, note the required visibility and clearance from clouds to remain VFR, and then think about what you've discovered.

Every time you cross the boundary into a new category of airspace, ask yourself, "What visibility and clearance from clouds must I need here to remain under VFR?"

#### SO WHAT DOES VFR MEAN?

Let's start with the *visibility* part of VFR. Below 10,000 feet mean sea level, basic VFR visibility is three statute miles. I say "basic" because, under certain conditions (in Class G airspace during the day, for instance), you only need one mile of visibility to operate under VFR. But if you're flying above 10,000 feet msl, you need five (not three) statute miles visibility to be able to fly VFR.

Why is that? You need two additional miles of visibility above 10,000 feet because airplanes at the same indicated airspeed are actually flying faster above 10,000

*(Continued on page 3)*

## Aircraft Building

-- EAA

The world of homebuilt aircraft — officially known in the United States as Experimental Amateur-Built Aircraft — has existed as long as powered flight. Even the Wright brothers were homebuilders, since they didn't rely on a factory to construct their airplanes. They, like the homebuilders of today, used their own abilities and craftsmanship to construct safe and efficient flying machines.

EAA was founded in 1953 by a group of airplane enthusiasts mostly comprised of airplane builders, although anyone with an aviation interest has always been welcome in the organization. EAA has been the organization of record as the homebuilt movement moved from simple, single-place tube-and-fabric airplanes 60 years ago to today's wide spectrum of aircraft that feature plans- and kit-built models. No matter the airplane project, one thing remains constant – homebuilt aircraft provide a path where nearly anyone can pursue their personal dream of flight.

Experimental amateur-built aircraft, often called “homebuilts” because they are typically built in people's garages and basements, are the fastest growing segment of new aircraft in the United States. Amateur-built aircraft are built by individuals and certificated by the Federal Aviation Administration (FAA) as “experimental amateur-built” (E-AB).

[Download EAA's Intro to Homebuilding Sourcebook](#)

EAA's extensive resources, available through the EAA members' area or the association's staff, can help any aircraft builder or restorer to create a safe, efficient aircraft that provides recreation and education.

#### TAPE MEASURE ACCURACY

EAA website for [checking tape measure accuracy](#).

Timm Bogenhagen from the EAA staff demonstrates how to check the accuracy for a tape measure using a steel ruler.

*Editor:* Take from EAA [Website](#).

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(Continued from page 2) - Basic VFR

feet than they are at lower altitudes. So the rules do make a difference. It's true airspeed that counts, and true airspeed increases over indicated airspeed at about 2 percent per 1,000 feet as you climb in standard atmospheric conditions. So you're actually flying about 20 percent faster at 10,000 feet than you are at sea level for the same indicated airspeed. That 20 percent could mean the difference between whether or not you can see an airplane or obstacle in time to avoid it.

Now for *cloud clearance*. Check out Federal Aviation Regulation 91.155, which outlines the basic VFR weather minimums. Airspace is designed with safety in mind. The type of airspace you're flying in determines the visibility and clearance from clouds you must have to fly under VFR.

## VFR VERSUS VMC

VFR is an abbreviation for visual flight rules (as opposed to VMC, which stands for *visual meteorological conditions*). Expanded VFR info is found in FARs 91.151 through 159, under the heading "Visual Flight Rules." They specify weather minimums, fuel required, flight plans, when it's legal to fly VFR, and when you are able to fly under VMC.

## HOW AIRSPACE AFFECTS VFR

To determine what VFR is, you have to know the existing conditions, whether it's day or night, your altitude, the airspace you'll encounter, and the airspace you are in. Airspace is designated Class A, B, C, D, E, or G (there is no F in the United States). Let's consider them in reverse order, because VFR pilots fly in a lot more in Class G airspace than they do in Class A.

- **Class G:** You can remember Class G (uncontrolled airspace) because it's just like the *good old days* at the dawn of aviation. Very few rules. One mile visibility and "clear of clouds" is the daytime requirement. At night, requirements jump to three miles visibility and from merely "clear of clouds" to 500 feet below, 2,000 feet horizontal, and 1,000 feet above clouds. Some identify it as "G for general aviation."

- **Class E:** Any time you cross the boundary from Class G into Class E airspace, the visibility requirement to remain VFR automatically jumps from one mile to three miles. Why? Because you have crossed over onto a federal airway, entered an instrument approach zone (which could start at the surface, 700 feet agl, or 1,200 feet agl), or ventured someplace else where other airplanes are likely to be operating.
- **Class D:** This is airspace *directly* above and around an operating control tower. Cloud clearance and visibility requirements for Class D airspace are three statute miles, 500 feet below clouds, 2,000 feet horizontal, and 1,000 feet above.
- **Class C:** Although there is radar *control* within the airspace surrounding Class C airports, it's usually much busier than Class D. A transponder and radio contact are required before entering Class C airspace. Still, three miles and cloud separation required.
- **Class B:** This is controlled airspace surrounding the very *busiest* U.S. airports with the highest traffic counts. But why is only three miles of visibility and clear of clouds required to fly VFR here? Specifically, it's because all aircraft must be under positive ATC control.
- **Class A:** This requires (almost) all airplanes to have IFR clearances before they climb above Flight Level 180 (around 18,000 feet)—unless you have special permission. Gliders sometimes get waivers to fly VFR in Class A airspace.

It doesn't do any good for you to know what the VFR rules are unless you can apply them. To do that, you've got to know the visibility. How do you determine that?

## GROUND VISIBILITY

Here are some techniques to determine ground visibility:

1. Get a good briefing from Flight Service or check official sources on the Internet. More importantly, listen or read carefully to *specifically* note cloud and visibility information before you fly.

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2. Listen to the automated surface observation system, automated weather observation system, or automatic terminal information service. Visibility on the airfield is always noted. As a practical matter, I always call ahead and get actual airport conditions before beginning my one-hour drive to the airport.
3. Using your sectional chart, pick easily identified, prominent landmarks—towers, buildings and terrain features—near the airport. Measure how far away they are. Use them to evaluate pretakeoff visibility. Sectional chart mileage scales are depicted for both nautical and statute miles, but keep in mind that most visibility requirements are measured in statute miles. When visibility is reduced, use those predetermined checkpoints.
4. Pay attention to runway length(s) and use the info to estimate visibility. "That checkpoint is four runway lengths (of 6,000 feet, for example) away, so visibility must be about four and one-half statute miles."

## IN-FLIGHT VISIBILITY

Once you're airborne, the challenge then becomes to know the rules, apply them, maintain adequate separation from clouds –and be able to estimate in-flight visibility.

As you progress along your planned route, compare your airplane's position with landmarks to estimate flight visibility.

Here's another way to estimate flight visibility: Look over the nose of your airplane at normal cruise speed. The point on the ground that you can barely see over the nose of the aircraft as it disappears is about the same distance ahead as your airplane is above the ground. At an altitude of 5,000 feet agl, for instance, the "vanishing point" just over the nose of the airplane is about 5,000 feet—or slightly less than a mile—ahead.

If you have runways of known length available, take time to really *look* at them. Extrapolate from where you are to estimate what the visibility is. Just over three

times the length of a 5,000-foot runway would be about three miles—legal VFR.

You can also use normal traffic pattern spacing as a guide. Downwind should be three-quarters of a mile to a mile away from the runway. That can be used as a guide as well.

A simple term like VFR has a *lot* of different meanings. If you know them and practice estimating, you'll be able to have fun while simultaneously staying legal.

But here's the real payoff for thinking about VFR: When you're flying VFR and the clouds start closing in or the visibility decreases uncomfortably, think about what you're doing; call time out—and check it out. If you don't like what you see, do a one-eighty and get out of there.

*Wally Miller is president of an aviation training, consulting, and marketing firm in Monument, Colorado. He is a Gold Seal CFI who has been instructing for more than 30 years and flying for more than 40.*

## Want to know more?

Links to additional resources about the topics discussed in this article are available [at AOPA Flight Training Online](#).

*Editor:* This article was written in 2008. ADS-B and 1090 ES was not deployed at that time. Keep that in mind and use the diagram of airspace on the last page of this newsletter for additional information regarding Class A, B, and C airspace.

This article can be found on the [AOPA website](#).

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Two very nice airplanes nose to nose on the ramp at Dodge Center airport. Must need more fuel?

# Newsletter Editor

-- Art Howard

Two of our chapter members have been flying to Minnesota Passport airports during the summer and fall. Who will finish first? It really does not make any difference. This is not a race but just fun flying with lots of experiences and new airports to fly into and out of.

My last trip up north was with a lot of fall colors. A very pretty flight! This has left me with 9 empty spaces for a MN Passport Stamp. One of them is closed, Silver Bay (BFW) up along the Superior Lake Shore, north of Duluth. Three of them have closed runways (NOTAMS) because of runway work. Even with these 4 airports out of the picture for now, there are 131 airports available.

The Prize Levels are Gold, Silver, and Bronze. With the Gold Level you need to visit 130 airports, six aviation museums and attend six safety seminars, all in Minnesota. The Silver Level is visit 68 airports, four aviation museums, and attend four safety seminars, all in Minnesota. The Bronze Level is visit 34 airports, visit two aviation museums, and attend two safety seminar in Minnesota.

Gold gets a leather flight jacket, Silver a flight bag, and bronze a cap and pin. One of us will show this at a future Chapter 100 meeting. Brad, how close are you?

Submissions to this newsletter are welcome from EAA Chapter 100 members. Please send articles and pictures to [newsletter@eaa100.org](mailto:newsletter@eaa100.org).

Your newsletter editor, Art Howard

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Basic VFR Weather Minimums			
Airspace		Flight Visibility	Distance from Clouds
Class A		Not applicable	Not applicable
Class B		3 statute miles	Clear of clouds
Class C		3 statute miles	1,000 feet above 500 feet below 2,000 feet horizontal
Class D		3 statute miles	1,000 feet above 500 feet below 2,000 feet horizontal
Class E	At or above 10,000 feet MSL	5 statute miles	1,000 feet above 1,000 feet below 1 statute mile horizontal
	Less than 10,000 feet MSL	3 statute miles	1,000 feet above 500 feet below 2,000 feet horizontal
Class G	1,200 feet or less above the surface (regardless of MSL altitude).	Day, except as provided in section 91.155(b)	1 statute mile
		Night, except as provided in section 91.155(b)	3 statute miles
	More than 1,200 feet above the surface but less than 10,000 feet MSL.	Day	1 statute mile
		Night	3 statute miles
	More than 1,200 feet above the surface and at or above 10,000 feet MSL.		5 statute miles
			1,000 feet above 1,000 feet below 1 statute mile horizontal

Figure 15-8. Visual flight rule weather minimums.

This was taken from the FAA Pilot's Handbook of Aeronautical Knowledge, 2016, FAA-H-8083-25B, Chapter 15, page 15-8. The URL is: [https://www.faa.gov/regulations\\_policies/handbooks\\_manuals/aviation/phak/media/17\\_phak\\_ch15.pdf](https://www.faa.gov/regulations_policies/handbooks_manuals/aviation/phak/media/17_phak_ch15.pdf)

# Items for Sale

**Note:** The following e-mail was received for inclusion in our Newsletter:

**From:** "aabebay@evertek.net" <aabebay@evertek.net>

**Sent:** Friday, December 6, 2019, 10:20:33 AM CST

**Subject:** Long EZ Project For Sale

Please forward this information to anyone that may be interested in purchasing a Project. I will no longer be able to get my pilot's license due to medical issues. The URL below will take you to my website that shows most of the components included in the sale. The price is \$3000, but I am open to partial or complete trades (looking for enclosed trailer or SCCA project car), open to all offers, the worst I can do is say no. I can store this project until spring if needed. Please email with any questions, or use the reply box on the website.

<https://longezforsale.godaddysites.com/>

Thank You,

Allen

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*Editor:* The airspace depicted below shows where you need ADS-B out. There is a lot of airspace where you **do not need** ADS-B out, including **KRST** and **KTOB**. ([FAA](#))

*Editor:* This is from the EAA Young Eagles **Pilot Guidelines** brochure: **Pilot Requirements**

The Young Eagles pilot requirements are basic, but **MUST** be followed.

- ◆ Be a current EAA® member and hold an appropriate airman's certificate (sport pilot or greater)
- ◆ Possess a current medical certificate (if applicable)
- ◆ Be current to carry passengers in the aircraft you plan to use
- ◆ Have a current flight review
- ◆ Complete the Young Eagles registration form before the flight, including parent or legal guardian signature, and pilot signature
- ◆ Conduct flights in an aircraft that is in airworthy condition
- ◆ Have aircraft passenger liability insurance for the aircraft used (owned, rented, or borrowed)
- ◆ Adhere to all applicable Federal Air Rules (FARs)
- ◆ Complete both the online training and basic background check as a part of EAA's Youth Protection Policy. For more information, visit [EAA.org/YouthProtection](http://EAA.org/YouthProtection).

*Editor:* Make sure you are current to fly Young Eagles at the EAA Chapter 100 Young Eagles events next summer in 2021. Hopefully, this event will occur next year.

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