



EAA Chapter 100

January 2014 Newsletter

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Chapter Website / Forum:

<http://www.100.eaachapter.org>
<http://groups.yahoo.com/group/eaa100/>

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.

January Hangar Flying Event

This month's meeting will be at the Dodge Center airport terminal building this Friday, January 10th, at 7:30 PM.

Go to the following link to download a Chapter Member profile form, fill it out, and bring it along. We are trying to get member's views about the direction the chapter should go in 2014. We tried a number of new things in 2013 and would like your feedback. Let us know what you thought and bring your ideas for 2014.

<http://www.eaa100.44rf.com/membership/forms/membership%20profile%20form.pdf>

2014 Chapter Dues

2014 chapter dues (\$10.00) are now being collected.

2014 Meeting Locations Needed

2014 is here and we are in need of meeting locations and hosts. Please sign up. If you don't have a location to host the meeting, the terminal building at Dodge Center is always available.

Chapter 2014 Officer Elections

Elections were held at the December hangar flying event for the 2014 chapter officers. The results are as follows:

President : Dwayne Hora
Vice President : Dan Crandal
Secretary/Treasurer : Tom Hall
Newsletter/Web Editor : Jeff Hanson
Program Director : Dick Fechter
Young Eagles Director : Gregg Edlund

2014 Chapter Banquet

We will once again be teaming up with the SE MN Flying Club for this year's banquet. The date will be Saturday, March 8th and it will be held at Willow Creek Golf Course Club House.

Details on the menu and speaker will follow soon.

Self-Fueling: Legalities and Risks

Source: <http://www.avweb.com/eletter/archives/101/2712-full.html?ET=avweb:e2712:270164a:&st=email#221179>

It used to be self-fueling just referred to the aircraft owner who brought mogas to her airplane in five-gallon cans and upset the airport manager or FBO because of lost fuel sales. While that's still the case, over the last decade, it's also come to mean putting avgas into your airplane from a self-service pump.

Watching both sorts of self-fueling has caused us concern on two levels. First, even now, a lot of aircraft owners and airport operators don't know that it's perfectly legal for an aircraft owner to bring fuel onto an airport to fuel his or her own airplane (subject to reasonable safety rules) and, second, that the process of fueling an airplane, no

matter what the method, has safety concerns that need to be considered. No matter what type of self-fueling you're doing, it isn't just filling up your car at the convenience store.

Supplying Your Own Fuel

For decades, some aircraft owners have opted to seek their own supply of fuel. On some airports, it's a necessity, because there is no fuel concession. In other cases STCs for automotive fuel (mogas) meant an owner could cut a nice chunk out of the operating costs of his or her airplane by buying ethanol-free mogas and transporting it to the airport in five-gallon containers or the classic tank in the bed of a pickup truck. In other cases, corporate owners of airplanes decided they wanted their own tank or fuel farm near their hangar—so they could buy in bulk and keep costs down.

Naturally, aircraft owners who supply their own fuel are not going to be popular with the fuel concession on the airport. It's not unusual for an airport sponsor—the entity that owns the airport—to pass rules to prohibit this type of self-fueling or put onerous restrictions on it.

The good news is that federal law clearly allows self-fueling by aircraft owners—subject to reasonable safety rules. If the airport sponsor has accepted federal funds under the airport Improvement Plan established under 49 USC §47101 (most have), it signed a contract, known as grant assurances. It is obligated to take certain actions in running the airport—one of which is allow an aircraft owner to provide fuel for his or her own (but not anyone else's) airplane. The airport sponsor can impose reasonable safety rules, but they cannot be so onerous as to effectively deny self-fueling.

Given the danger of hangar fires, reasonable rules on the type of container required for storing fuel in a hangar are sensible (there are five-gallon gas cans safely stored in hundreds of thousands of American garages). A ban on storing flammable fluids in hangars is probably unreasonable because no one could keep cans of oil or cleaning materials in a hangar—something done routinely and safely.

If you want to read a detailed discussion of self-fueling, there is an FAA Director's Determination in the case of Brown Transport Co. v. City of Holland, Michigan (FAA Docket 16-05-09). The airport sponsor required a \$1 million cash bond on top of liability insurance for an airplane owner to self-fuel. The FAA made it clear that the bond requirement was unreasonable.

Self-Fueling Safety

We've been self-fueling our cars for a lot of years. We generally do pretty well—unless we are smoking or leave the engine running, the two most common causes of fires at self-serve service stations. Yes, those signs by the pumps are there for a reason. Cars do get crispy-crittered when incredibly basic cautions are ignored.

Airplane self-fueling presents a slightly different risk. We did not find evidence that pilots had managed to set

airplanes on fire via cigarette or leaving the engine running while self-fueling.

Vapor

The risk in any refueling exercise is a spark that ignites fuel vapor—and it's the vapor part of fuel that explodes in the cylinder to provide the power we need to fly. We'll not go into the sheer energy locked up in avgas and jet fuel, but will point out that avgas has a flash point—temperature above which the liquid produces ignitable vapor—of -40 degrees F. Therefore, you're dealing with vapors that will blow up just about any time you're dealing with avgas. For jet fuel the temperature is 100 degrees F.

If there is liquid fuel on the ground—say after a spill—and the vapors ignite, the flame front for jet fuel moves at a paltry 100 feet per minute. Avgas is much faster, just over eight MPH. What kind of shape are you in?

Jet fuel will auto-ignite at something between 410 and 475 degrees F. That means if it spills on something that hot, it will start burning. Avgas auto-ignites at 842 degrees F—the temperature of an exhaust pipe or turbocharger after it has cooled down a bit. (Do you really want to hot fuel?)

With all of that background, the big risk for sparking off a fire while fueling is static electricity. Airplanes build up a static charge flying through the air. A liquid, such as fuel, builds up a static charge when flowing through a hose or tube. Let's keep that in mind as we think about what we do when we taxi up to the self-service fuel facility on our airport.

Take a Moment

Rather than anxiously hustle up to the credit card machine, wondering if you can make the thing work or if it will take your card, take a few moments to eyeball the ramp and facilities. Which way is the wind blowing? That's your exit route if something goes wrong. Is there a way to get away upwind, or is there a fence or something else blocking the route. Is there a comfortable place, upwind, for your passengers to wait while you fuel the airplane?

Where is the emergency fuel shutoff? The deadman that is supposed to shut off the fuel at the nozzle has been known to fail. Where is the fire extinguisher? It may not be big enough to put out a fire, but it can be a good emergency exit maker if you need to smash out a window.

Is the airplane level? If not, you may not be able to fill all the tanks completely. That may be a big deal in determining how much fuel you really have on board on airplanes with long, slender fuel tanks in wings with little dihedral, such a Cessna 210. In some airplanes you'll need to position the fuel selector to the left or right tank to avoid draining fuel from one tank to another and then onto the ramp during fueling.

Bond It

The next step is to hook up the grounding or bonding wire (it's the same thing, the name varies by whether you are electrically grounding the airplane or bonding it to the fuel delivery unit). Remember where it is, as it could trip you if you are trying to boogey out of there in the event of a fire.

Then go wrestle with the credit card machine and get the pump activated.

With the fuel hose and nozzle in hand, touch some portion of the airplane before you touch the fuel cap. The bonding wire should have taken care of things, but this is just extra protection against a static discharge and spark—and there may be fuel vapor in the vicinity of the fuel cap.

When fueling, keep the nozzle in contact with the airplane. This helps keep the fuel delivery system and airplane electrically bonded.

Because aircraft fuel systems deliver fuel at a much higher rate than the system for your car at the convenience store, static buildup is a concern as the fuel scoots through the hose and nozzle. The condition is made worse in conditions of low humidity.

Back in the 1970s when nobody seemed to either understand or care about fueling safety, a close friend was working as a lineman at an FBO. Of course he didn't hook up the grounding wire from the truck before starting to fill up a Cessna I. After putting about 80 gallons into the airplane, the static electricity buildup between the airplane and truck discharged, blowing him off the truck. He landed about 10 feet away, with injuries. Fortunately, the wind was blowing the vapors that were escaping from the filler opening away from the spot where the discharge occurred and there was no ignition.

Nylon

You can aggravate the risk of static discharge by wearing nylon or polyester clothing due to its propensity for static buildup. We have heard anecdotal evidence of fires caused by pilots using plastic fuel tank dip sticks, wiping them on their nylon flight jackets, then starting to insert them into the tank and having the static discharge, spark and ignite the fumes coming out of the filler opening.

As an aside—because nylon melts and sticks to the skin, exacerbating burns during a fire—don't wear nylon when flying. If you have a nylon flight jacket, we suggest you give it to someone who doesn't fly or simply don't wear it during flight. There is a reason leather flight jackets have remained popular beyond their good looks.

When fueling directly from fuel containers, plastic or metal, it's a good idea to keep the spout in contact with the fuel filler opening. Airplanes have safely been fueled from portable fuel containers for over 100 years, so it puzzles us when airport operators get worked up about them. The relatively small, five-gallon container doesn't

hold enough fuel to create a high risk of static buildup while it's flowing, but it doesn't hurt to be careful.

If something goes wrong and you have a spill resulting in a puddle of fuel, don't start the airplane. It's an invitation to a Darwin Award. Follow the contact instructions that should be on the sign giving instructions for fueling and get help to clean up your mess.

Otherwise, once you've got the fuel level desired in the tanks, confirm you've secured the caps, stow the fuel hose and nozzle (so water won't get in it) and grounding wire, gasp at the charge on the credit card receipt and press on.

Oh, and please, don't blow gravel all over the airplane behind you when you start up.

Good Links

Ketchikan... The Bush Pilots – fascinating and beautiful.

<http://vimeo.com/79908357>

Spitfire XV Restoration – what I wouldn't give to be able to be part of a project like this.

<http://www.youtube.com/v/TneYPcyGbbY&autoplay=1&rel=0>

**If you have problems with the links, just copy/paste the address into your web browser.



Air racing may not be better than your wedding night, but it's better than the second night.

-Mickey Rupp, air racer and former Indianapolis 500 driver.