

## Proper fueling methods make for safer airports

Fuel-related accidents occur across the country at the rate of more than one per week. Fuel exhaustion, fuel starvation, or the failure to switch tanks at the correct time caused 120 accidents in 2002, according to the Aircraft Owners and Pilots Association (AOPA) Air Safety Foundation. Fortunately, these and other problems can be avoided with proper fueling procedures.

### RESPONSIBILITY STARTS WITH THE AIRPORT OPERATOR

Fueling operations should be checked daily as part of an airport's self-inspection process to ensure compliance with local fire safety codes. The inspection should also include a check of security, fire protection, general housekeeping, and fuel dispensing facilities.

Self-inspection is the primary responsibility of the airport owner, operator, or authorized representative. During this daily check of aircraft fueling operations, the airport inspector should:

- Determine if the fuel operator is permitting any unsafe fueling practices or is violating local fire code, such as failing to ground aircraft with mobile fuelers or allowing fueling personnel to smoke during aircraft fueling.
- Report and monitor any unsafe fueling practices and violation of local fire codes.
- Ensure that appropriate signs for the fuel farm are installed and that all gates are locked except when the facility is occupied by an authorized user.  
(From FAA AC 150/5200-18C)

At most airports, the fixed-base operator (FBO) controls the fuel system, and so it conducts the daily fuel inspections; however, the fuel system is still the responsibility of the airport operator. To help ensure that the proper checks and inspections are followed every day, a Letter of Agreement should be drawn up between the airport owner and the FBO or any other company that oversees the fueling system. This Letter of Agreement can be included in the lease between the airport and the FBO or it can be a separate docu-

ment. A Letter of Agreement protects the airport from liability if environmental issues or other problems result from the FBO's failure to check the fuel system daily.

Additionally, certain areas at an airport must be checked by the local fire authority inspector rather than the airport operator or FBO. The airport operator will need to coordinate with the local fire authority to ensure regular inspection of these areas.

The airport operator or owner must also make sure that fuel is safe and usable for pilots based at the airfield and those arriving from other locations. These pilots count on the fuel system to be safe and in proper working order.

### WHAT PILOTS NEED TO KNOW

Although the airport operator is responsible for the fuel system, pilots are equally responsible for their aircraft during fueling operations. According to Federal Aviation Regulation (FAR) Part 91.3, the pilot in command of an aircraft is directly responsible for, and is the final authority on, the operation of that aircraft.

Of the 160 airports in Minnesota, 126 provide aircraft fuel. Larger airfields have trained personnel fueling aircraft, while at

smaller airfields pilots often encounter self-serve fueling systems. Pilots fueling at these self-serve systems must be aware of current safety procedures. Following are guidelines for airport personnel and pilots to consider when piloting and/or fueling aircraft.

### Always have adequate reserve fuel

FAR Part 91.151 specifies the minimum fuel requirements for flight in visual flight rule (VFR) conditions:

No person may begin a flight in an airplane under VFR conditions unless (considering wind and forecast weather conditions) there is enough fuel to fly to the first point of intended landing, and assuming normal cruising speed (1) during the day, to fly after that for at least 30 minutes; or (2) at night, to fly after that for at least 45 minutes.

FAR 91.167 specifies the fuel requirements for instrument flight rule (IFR) conditions:

No person may operate a civil aircraft in IFR conditions unless it carries enough fuel (considering weather reports and forecasts and weather conditions) to (1) complete the flight to the first airport of intended landing; (2) fly from that airport to the alternate airport; and (3) fly after

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Congressman Collin Peterson will kick off the two-day event, which will also feature Transportation Security Administration personnel discussing general aviation security, and a demonstration of a new interactive Web-based tool for assessing the economic impact of your airport.

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others are doing to attract businesses to their airports, control wildlife, set rates and charges, implement zoning, keep runways safe, and much more!

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The event will be held at the Radisson Hotel, 404 W. St. Germain Street, St. Cloud. To view the complete program, register, or download a copy of the forum brochure, visit [www.airtap.umn.edu](http://www.airtap.umn.edu).



Photo courtesy of South St. Paul Airport

that for 24 minutes at normal cruising speed or, for helicopters, fly after that for 30 minutes at normal cruising speed.

### Know how much fuel is left every hour during the flight

Judging the amount of fuel in an aircraft is not always easy. The first step is to think of fuel not in gallons or pounds but hours and minutes. Fuel burn is a constant – the engine, barring a malfunction, will always burn the same amount at any given combination of altitude, power setting, and mixture setting, but range will vary constantly due to changing winds and ground speeds.

In order for pilots to know how much time they have until the tank is empty, they must know the rate at which the fuel is being consumed. This requires an intimate knowledge of the engine's fuel consumption. Figures in the *Pilot's Operating Handbook* (POH) will approximate the amount, but only experience will tell for certain. Pilots unfamiliar with the airplane they are flying should add one or two gallons per hour to their computed fuel consumption until they see how much that airplane actually burns.

Next, a pilot must ascertain how much usable fuel is actually on board. Fuel computers show how much the aircraft is burning and how much is left, but pilots must input the fuel quantity.

### Fly with a lean mixture

The AOPA Safety Advisor on the topic of fuel awareness recommends that pilots learn how to lean their airplanes, and then make leaning a habit on every flight.

The performance, range, and endurance figures for your airplane, listed in the POH, are based on a properly leaned engine flying in optimum conditions. The POH can't tell you how fast you'll fly, how far, or how long, unless you lean. Many pilots think that leaning is only for high altitude; however, the truth is that leaning is appropriate at any altitude as long as the engine is operating at less than 75 percent power.

### Stay with the airplane

If someone from the airport is fueling the aircraft, a pilot should stay with his or her airplane during the fueling process to ensure the right fuel and correct quantity are used. That means a pilot should avoid running to the snack machine or the restrooms during refueling.

### Ground the airplane before removing the fuel cap

It is important to ground the aircraft before fueling by connecting the grounding wire to unpainted metal on the aircraft. If it's not brittle, the engine exhaust is often a good choice for grounding; otherwise, the metal lugs on the nosewheel strut where the towbar attaches can be used. Fuel passing through the hose builds up static electricity. If not grounded, the resulting discharge can be explosive. (In addition, because of the static electricity, metal, not plastic, containers should be used if needed for refueling.) A pilot should also make sure the grounding wires were removed before trying to taxi away.

The pilot should double-check the fuel approximately 15 minutes after refueling to make sure things have settled and an accurate check can be taken.

### Avoid careless "sumping and dumping"

The Environmental Protection Agency (EPA) is cracking down on the habit of randomly sumping and dumping fuel. Sumping—draining fuel from an airplane to check for water, debris, and other contaminants—and dumping—disposing of the samples by pouring the fuel onto the ramp—have been common practices for many years. The problem is that fuel is toxic, flammable, and corrosive, and pouring even a small sump sample on the ground constitutes illegal disposal of hazardous waste in some places.

As a pilot, fixed-base operator, or aviation maintenance technician, you are required by law to dispose of your "sumped" fuel properly. Only a clean fuel sample should be returned to the aircraft tank. Several specially designed sample jars on the market filter out impurities and allow good fuel to be safely poured back into the tank. Also, most FBOs now have sample collection dumps located near their fuel tanks or self-fueling pumps. These practices involve a little extra work, but might help avoid a big fine from the EPA. ✕

### Resources:

AOPA Safety Advisor, Operations and Proficiency No. 5, "Fuel Awareness"  
[www.aopa.org/asf/publications/sa16.pdf](http://www.aopa.org/asf/publications/sa16.pdf)

AOPA August 2003, "Think Tank: Be well grounded in proper fueling procedures"

[www.aopa.org/members/ftmag/article.cfm?article=4720](http://www.aopa.org/members/ftmag/article.cfm?article=4720)

(Note: This archived article is available online to AOPA members only)

AOPA Pilot magazine, "Sumping and Dumping," February 2003

[www.aopa.org/members/files/pilot/2003/mrt0302.html](http://www.aopa.org/members/files/pilot/2003/mrt0302.html)

(Note: This archived article is available online to AOPA members only)

FAA Advisory Circular 150/5190-5: Exclusive Rights and Minimum Standards for Commercial Aeronautical Activities

[www.faa.gov/arp/150acs.cfm?ARPnav=acs](http://www.faa.gov/arp/150acs.cfm?ARPnav=acs)

FAA Advisory Circular 150/5200-18C: Airport Safety Self-Inspection

[www.faa.gov/arp/150acs.cfm?ARPnav=acs](http://www.faa.gov/arp/150acs.cfm?ARPnav=acs)

Federal Aviation Regulations Part 91.151 and Part 91.167

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