

Engines Work Best With Clean Fuel

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WHAT CAUSES FUEL CONTAMINATION?

Under certain conditions, all aviation fuels absorb moisture from the air and contain water in dissolved and liquid form. The amount of dissolved water contained varies with the temperature of the fuel. Whenever the temperature of the fuel is decreased, some of the dissolved water comes out of the solution and slowly falls to the bottom of the tank. Whenever the temperature of the fuel increases and atmospheric conditions are correct, water is taken into the fuel and, under proper conditions, a saturated solution can be achieved. Changes in fuel temperature can therefore result in a continuous accumulation of water. During freezing temperatures, this can turn to ice, effectively restricting fuel flow and can stop the engine.

TESTS

Three gallons of water were added to the half full fuel tank of a popular make high-wing monoplane. After several minutes, the fuel strainer (gascolator) was checked for water. It was necessary to drain 10 liquid ounces of fuel before any water appeared. This is considerably more than most pilots drain when checking for water.

Laboratory and field tests have demonstrated that when water was introduced into the gasoline tanks, it eventually settled to the bottom. Fuel tanks should be constructed with sumps to trap this water. It is practically impossible to drain all water from the tanks through the fuel lines, so it becomes necessary to provide a sump and drain fuel regularly to remove all water from the system. It may be necessary to gently rock the wings of some aircraft while draining the sump to completely drain all the water. On certain types of aircraft, raising the tail to level flight position may result in additional flow of water to the gascolator or fuel strainer. If left undrained, the water accumulates and will pass through the fuel line to the engine. Complete elimination of water from aviation fuel may not be possible, but we can control it by the application of good habits. Infrequently used fuel tanks should have their sumps drained before filling the tank. Agitation action of fuel entering the tank may suspend or trap water which can remain suspended for



many minutes and may not settle out until after the aircraft is in flight.

PRE-FLIGHT ACTION

Drain a generous sample of fuel . . . considerably more than just a trickle . . . into a transparent container from the sump and from the fuel strainer. Remember that it was necessary to drain 10 ounces in field tests. On certain aircraft having multiple tanks, positioning of the fuel-selector valve to "both on" position may not adequately drain the system, since liquid takes the path of least resistance. The fuel selector valve should be positioned at each tank in turn. Examine the sample for water or dirt. If present, they will collect in the bottom of the container. If so, continue to drain until certain the system is clean. The use of quick-drain valves in the sump and gascolator makes it practical to keep the system free of significant quantities of water and other contaminants. An effective method to prevent condensation would be to completely fill the tank at the end of each day's flying.

Here is a simple test to detect contamination of fuel. This procedure has proved to be both effective and inexpensive. Obtain a spotlessly clean white enamel bucket, and drain four to five inches of fuel into it. With a clean mixing paddle, stir the fuel into a whirlpool shaped cone. As the swirling stops, any solids will gather at the center of the bucket bottom. Add several drops of a household red food dye. This will mix with any water or solids, but will not mix with fuel. If no water is present, the dye will settle to the bottom.

So that your fuel system will not let you down when you want to stay up, remember that the best insurance is to practice good housekeeping in your routine maintenance.



GETTING EAA PUBLICITY . . .

(Continued from page 28)

various types of aircraft construction and demonstrations of the skills employed by the homebuilders. Also included were crowd attracting hot air balloon ascensions, soaring demonstrations, parachute jumps, R/C model airplane flying demonstrations and for the homebuilt and vintage airplane drivers, flour bombing, short field take-off and spot landing contests.

The large crowds and hopefully, significant number of converts to the ranks of the sport aviation movement, were due to the untiring efforts of the many Chapter 166 members who worked to publicize the fair. In addition to the usual notices appearing in aviation magazines, flyers, billboards, etc., the very active publicity committee, headed by Stanley Ring, arranged for a 30 minute color TV show about sport aviation. Club photographer, Dick Patenaude, was on hand to record the activities during this rather unusual promotional venture.



The opportunity for "good" publicity for sport aviation was most welcome; however, the logistics of getting an aircraft into a TV studio in downtown Hartford proved to be a challenge. The plane was flown into a nearby airport, the wings removed and towed through the city streets to the studio.