



Interagency Aviation SAFETY ALERT



No. IA SA 20-02

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Subject: Aircraft Fuel – Sampling Quality Assurance

Area of Concern: All Aircraft Fueling Operations

Distribution: All Aviation Managers

Discussion: Recent contract compliance visits have revealed a noticeable trend regarding contaminated fuel samples throughout all geographic areas. A lack of familiarity with how, where, and when fuel samples should be taken has become evident. Filter vessel sump and tank sump samples may have small amounts of contamination. Some of the discoveries have found significant amounts of water, dirt or other unidentified particles in the fuel samples. The required sample locations per contract language include: fuel truck sump, fuel truck filter, fuel truck nozzle. Fuel samples containing any form of contaminant are not acceptable and can cause significant damage to the aircraft and engine(s). Damage can range from fuel system corrosion, clogging of fuel filtration components, failure of aircraft fuel system instrumentation, and even stopping the fuel supply to the engine(s) during flight.

How to verify and check for clean fuel samples: color and clarity



Clear, clean Jet A Fuel Sample

- Proper fuel can be verified by color; best practice is for the pilot to oversee the fueling process.

The three main types of contamination to be aware of:

- Water
- Microbial growth
- Particulate—dirt, grit, rubber particles, etc

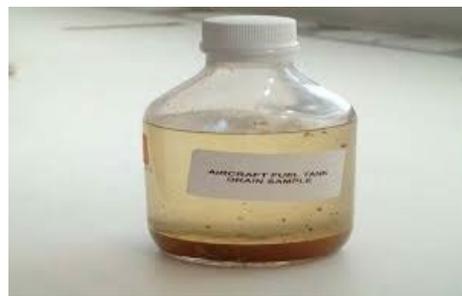
Water: Water has a higher specific gravity than aircraft fuel and therefore tends to settle at the bottom of a sample. Jet A or AVGAS is usually suspended on top of the water layer, however, water can present in the form of suspended “bubbles” as well.

Microbial growth: Three factors drive rapid microbial growth: presence of water (contamination or condensation), food source (a suitable fuel), and warmer temps btw 10-40C. The by-product of microbial contamination is the presence of a sludge-like substance.

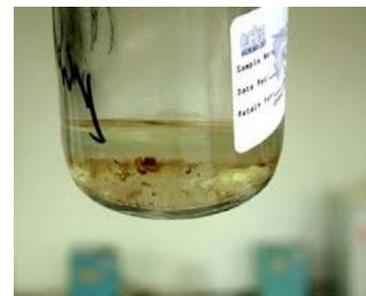
Particulates: There are many foreign items that can cause particulate contamination. These include: rags, bugs, and deterioration of fuel system components like corrosion of metal parts or deterioration of rubber fuel cells and lines. Rust may also be introduced through pipelines, storage tanks, fuel trucks, and drum containers. Dust and sand can be introduced through openings in tanks and from the use of fueling equipment that is not clean.



100LL AVGAS with water contamination



Jet A with microbial growth



Jet A with particulates

Recommendations: The ultimate responsibility rests with the aircraft operators to ensure proper fuel sampling and that contamination issues are addressed. However, agency aviation managers should ensure that contract personnel are aware of contract language specifying fuel sample requirements and encourage open communication. For the USFS/BLM, Helicopter contract information can be referenced in Exhibit 8 in both the Exclusive-Use and Call When Needed aircraft agreements. Aircraft managers can assist by not only ensuring that fuel sampling is being completed per contract requirements, but also incorporating the viewing of the fuel samples into daily routines to provide assurance that the samples meet the quality expected. In situations where fuel contamination is observed, please refer to the contract language for further guidance. This process will provide an extra level of quality assurance for all involved in aviation operations. Questions pertaining to the fuel sampling requirements should be directed to Bureau, or Forest Service Airworthiness personnel.

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