



Interagency Aviation Accident Prevention Bulletin



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Subject: Aircraft Fuel Sampling During Preflight Inspections

Area of Concern: Flight Safety

Distribution: All Fire and Aviation Operations.

A recent SAFECOM detailed a flight in a King Air that resulted in a precautionary landing due to loss of power and fluctuations on both engines.

During cruise flight at altitude, the pilot-in-command (PIC) noticed that the aircraft was no longer in trim. Adjusting the rudder trim, the pilot observed that a power difference in torque settings between the engines had developed. The left engine was slowly losing power. The PIC adjusted the RPM, but the power in the left engine continued to decrease. Although the PIC requested a lower altitude, the decrease in engine power continued. When the left engine generator failed and the left engine fuel pressure warning light illuminated, the PIC shut down the left engine.

The PIC initially suspected fuel ice but was then able to restart the left engine without any abnormal indications. After climbing back to a higher altitude to aid in radio communication, the right engine began to surge. At this point, the pilot diverted to a nearby airport and landed with no further complications. On the ground, the PIC performed a successful ground run without any abnormal normal engine indications.



The completed [SAFECOM #24-0021](#) is available on [SAFECOM.gov](#).

This investigation is ongoing, but initial findings revealed that fuel contamination clogged the fuel system and contributed to the power decrease. The results of the fuel and filter testing showed contamination by Diesel Exhaust Fluid (DEF). DEF is a water-based chemical used to capture nitrous oxides in exhaust from diesel engines. It is a clear solution and difficult to detect in jet fuel.

If you encounter or suspect any DEF contamination, ground the aircraft immediately and let maintenance inspect the aircraft. Notify the Fixed Base Operator where fuel was obtained as soon as possible. Document the incident and report it to the local FAA FSDO and file a [SAFECOM](#) immediately.

Pilots and managers should check with fuel providers and ask if they use DEF in ground equipment. If so, inquire about what procedures are used to ensure the appropriate additives are used for jet fuel. This

should include storage, labeling, confirmation of correct additives at the time of insertion, and training for personnel.

Both the DOI and the USFS have published many Safety Alerts and Accident Prevention Bulletins covering the topic of fuel sampling and thorough preflight inspections.

- [Interagency Aviation Safety Alert No. 20-02](#), “Aircraft Fuel – Sampling Quality Assurance”
- [USFS Aviation Safety Alert No. 03-11](#) “Aircraft Pre-Flight Inspections”
- [Interagency Accident Prevention Bulletin No. APB 18-07](#) “Fuel Contamination and Aircraft Refueling”

These lessons learned provide clear examples to why we need to remain vigilant during one of the most basic elements of preflight activities (fueling) that can seriously impact safety of flight. These preflight activities are to be performed in accordance with the Pilot’s Operating Handbook (POH) or Airplane Flight Manual (AFM) based on the most restrictive direction.

This incident provides an additional, important lesson in that fuel contamination is a hazard that can manifest f in a variety of ways. And depending on the regime of flight, terrain, and mission possesses the potential to be catastrophic.

The best way to identify water or excessive debris in the fuel system is to adequately perform preflight fuel tank sump in accordance with the aircraft POH/ARM. Although this will not prove contaminations beyond visual assessment, it will narrow the probability of aircraft fuel contamination.

The USDA-FS has purchased equipment and is finalizing pilot training in accordance with the POH/AFM of the leadplane fleet which includes 16 aircraft (15 Leased and 1 Agency Owned) that will provide the PIC with the tools to perform fuel samples and provide standardized training in accordance with the Make/Model/Series of aircraft flown in the ASM Leadplane mission areas for the agency fleet.

Regional Aviation Officers, Regional Aviation Safety Managers, Regional Aviation Safety Inspectors, and pilots should ensure that agency and contract pilots receive this or equivalent training so that they are comfortable and proficient in this requirement.

Agency Quality Assurance (QA) and Contract Compliance (CC) reviews will contain elements that quantify the understanding and methodology of Pilot in Command (PIC) understanding of procedure and adequate equipment availability to acknowledge the importance of this process as part of the entire POH/AFM preflight for the aircraft they are operating.

For further information please contact the following:

For USFS: Scott Smyth at Scott.Smyth@usda.gov, 208-720-7660.

For OAS: Jake Mitchem, jacob_mitchem@ios.doi.gov, 208-484-1762.

/s/ Keith Raley

Keith Raley
Chief, Aviation Safety, Training, Program
Evaluation, and Quality Management
DOI, Office of Aviation Services

/s/ Lori Clark

Lori Clark
Branch Chief
Aviation Safety Management Systems
USDA, Forest Service