



Operational Safety Notice OSN2019-003

Issued: June 2019

DEF and Jet Fuel Contamination

Diesel exhaust fluid, or DEF, is used to reduce harmful emissions from diesel engines and the vehicles they power. DEF is a clear, colorless liquid injected directly into the catalytic converter of a diesel engine in order to reduce nitrogen oxides (NOx) and meet EPA emission standards.

On November 13, 2018, the FAA issued a Safety Alert for Operators (SAFO 18015) that stated: “Between August 12 and August 16, 2018, five aircraft were identified as being serviced with jet fuel containing DEF.... An investigation revealed that diesel exhaust fluid was inadvertently used instead of fuel system icing inhibitor (FSII) on a refueling truck...and injected into the fuel with the truck’s FSII injection system.”

In addition, on May 9, 2019, a Cessna C550 experienced a total loss of engine power to both engines during an air medical flight and had to divert; the aircraft landed without further incident. As stated in the preliminary NTSB report (ERA19IA178): “Fuel samples, fuel system filters, and fuel screens from the airplane were obtained and sent for laboratory testing. Analysis of the fuel contaminants indicated the presence of urea, the primary chemical found in DEF.”

According to the FAA, “DEF is a urea-based chemical that is not approved for use in jet fuel. When mixed with jet fuel, DEF will react with certain jet fuel chemical components to form crystalline deposits in the fuel system. These deposits will flow through the aircraft fuel system and may accumulate on filters, fuel metering components, other fuel system components, or engine fuel nozzles. The deposits may also settle in the fuel tanks or other areas of the aircraft fuel system where they may potentially become dislodged over time and accumulate downstream in the fuel system as described above.”

If a fuel filter light should come on in flight, follow the procedures in the RFM. Once safely on the ground, look for the possibility of DEF contamination.

To learn more, please refer to the report produced by the industry-led Aircraft Diesel Exhaust Fluid Contamination Working Group, which can be found on the AOPA website at:

https://download.aopa.org/advocacy/2019/2019_06_11_Aircraft_DEF_Contamination_Working_Group_Report_FINAL.pdf

Fly safe!

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