FAA
Aviation Safety

SPECIAL AIRWORTHINESS INFORMATION BULLETIN

SAIB: HQ-18-28

SUBJ: Engine Fuel and Control – Operation with Contaminated Jet Fuel **Date:** September 13, 2018

This is information only. Recommendations aren't mandatory.

Introduction

This Special Airworthiness Information Bulletin (SAIB) advises airplane operators, fixed base operators (FBOs), FAA repair stations, Flight Standards District Offices (FSDOs), and foreign civil aviation authorities of certain airplanes that uplifted jet fuel contaminated with diesel exhaust fluid (DEF), or uplifted jet fuel using refueling equipment that was exposed to DEF. This SAIB also requests feedback regarding any service difficulties or operational anomalies of the identified airplanes and recommends that the owners of those airplanes consult with the original equipment manufacturers (OEMs) of their airplane, engine, and auxiliary power unit (APU) to determine the appropriate inspection and corrective maintenance actions on their airplane.

At this time, the airworthiness concern is not considered an unsafe condition that would warrant airworthiness directive (AD) action under Title 14 of the Code of Federal Aviation Regulations (14 CFR) part 39.

Background

During the period between August 12 and August 16, 2018, five airplanes identified in Table 1 were serviced with jet fuel containing DEF at Miami-Opa Locka Executive Airport, Opa-locka, Florida (KOPF). During the same time period, an additional nine airplanes identified in Table 2 were serviced using refueling equipment that had been exposed to DEF. The DEF was inadvertently used instead of fuel system icing inhibitor (FSII) on a refueling truck at KOPF and injected into the fuel with the truck's FSII injection system. Only those airplanes identified in Table 1 received the contaminated fuel, and only those airplanes identified in Table 2 were serviced with refueling equipment that had been exposed to DEF.

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. Airplanes identified in Table 1 have experienced clogged fuel filters and fuel nozzle deposits that led to service difficulties and unplanned diversions. Airplanes identified in Table 2 were exposed to trace amounts of DEF from residual fuel remaining in the refueling hoses and equipment, and we have not received any service difficulty reports from these aircraft.

The crystalline deposits are not soluble in fuel, so they cannot be removed by flushing the airplane fuel system with jet fuel. The deposits are soluble in methanol and other polar solvents, but use of these chemicals may have adverse consequences on airplanes and engine fuel system materials. Consequently, OEMs should be contacted to develop inspection techniques and corrective maintenance actions appropriate for each specific aircraft model type and its level of exposure.

Jet fuel that has been contaminated with DEF no longer meets the aviation fuel operating limitations of airplanes certificated to operate on Jet A fuel, and therefore, cannot be used on those airplanes. Jet fuel that has been removed from airplanes listed in Table 1 or Table 2 should be discarded and not used on airplanes or any other vehicles in the future.

We have sent this SAIB directly to each of the registered owners of the airplanes listed in the Tables 1 and 2. The FAA is monitoring the situation to determine if additional action is required. We are requesting that any service difficulties and maintenance and inspection findings on the aircraft identified in Table 1 or Table 2 be reported to us in support of this effort.

Recommendations

The FAA recommends the following:

1. Owners or operators of airplanes identified in Tables 1 and 2 contact their airplane, engine, and APU OEMs to determine the appropriate inspection techniques and corrective maintenance actions to remove urea-based crystalline deposits from the fuel system. This may include removing and replacing fuel system parts or components affected by exposure to these deposits.

2. Owners or operators of airplanes identified in Tables 1 and 2 report to the FAA any service difficulties (including fuel filter bypass and clogging incidents), fuel system repairs, and fuel system inspection results related to the presence of these urea-based crystalline deposits.

3. Jet fuel suspected of being contaminated with DEF that has been removed from the airplanes listed in Tables 1 and 2 should be discarded and not be used on airplanes or other vehicles.

Table 1
Aircraft that Uplifted Jet Fuel Contaminated with DEF

DATE	AIRCRAFT REGISTRATION	AIRCRAFT MAKE, MODEL SERIES	S/N	FUEL QTY (gals)
08/12/18	N324BK	PILATUS AIRCRAFT LTD, PC-12/47E	1021	152
08/12/18	N561PA	CESSNA, 560	560-0116	500
08/12/18	N49KW	CESSNA, 550	550-1021	469
08/14/18	N50NU	DASSAULT, FALCON 900 EX	137	1326
08/16/18	N778XJ	CESSNA, 750	750-0278	1102

Table 2
Aircraft that Uplifted Jet Fuel Using Refueling Equipment that was Exposed to DEF

DATE	AIRCRAFT REGISTRATION	AIRCRAFT MAKE, MODEL SERIES	S/N	FUEL QTY (gals)
08/12/18	N676GH	RAYTHEON AIRCRAFT COMPANY, HAWKER 800XP	258676	319
08/12/18	N319GB	DASSAULT AVIATION, MYSTERE-FALCON 50	204	704
08/12/18	XA-NIC	HAWKER 800XP	258552	847
08/12/18	M-SVGN	CESSNA 680	680-0198	582
08/12/18	XA-XTR	GULFSTREAM G450	4008	577
08/12/18	N127VL	LEARJET INC, 31A	036	229
08/14/18	N47NS	DASSAULT-BREGUET, FALCON 50	40	268
08/16/18	N444CZ	CANADAIR LTD, CL-600-2B16	5363	507
08/16/18	N818JH	ISRAEL AIRCRAFT INDUSTRIES, 1124A	341	987

Under the provisions of the Paperwork Reduction Act (44 U.S.C. 3501 et seq.), the OMB has approved the information collection contained in this SAIB, and assigned OMB Control Number 2120-0731.

For Further Information Contact

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