

Continuing Airworthiness Notice – 28-004



Fuel Contamination due to Fuel Filler Cap Failure

03 March 2008

Issued by the Civil Aviation Authority of New Zealand in the interests of aviation safety. A Continuing Airworthiness Notice (CAN) is intended to alert, educate, and make recommendations to the aviation community. A CAN contains non-regulatory information and guidance that does not meet the criteria for an Airworthiness Directive (AD). The inspections and practices described in this CAN must still be carried out in accordance with the applicable NZCAR Parts 21, 43 and 91. CAN numbering is by ATA Chapter and a serial number for the next CAN in that ATA Chapter.

The contents of this notice are ADVISORY ONLY and are NOT MANDATORY.

Applicability:

All aircraft fitted with upward facing or side facing fuel filler openings.

Purpose:

This Continuing Airworthiness Notice (CAN) alerts operators of the possibility of water contamination of the aircraft fuel if fuel filler caps and the fuel filler neck area are not correctly maintained.

Background:

This CAN is prompted by a report of an engine failure shortly after take-off which was attributed to water in the fuel. A fuel cap seal had failed and allowed rain water to enter the aircraft wing tank. With the pre-flight inspection, the fuel drain sample was reported to be "clear and bright" indicating that it was possibly all water.

In another incident in the UK, the engine on a Piper PA-38-112 'Tomahawk' aircraft failed during initial climb-out which was probably caused by water contamination of the fuel. The aircraft had been parked outside during heavy rain. Due to deterioration of the fuel cap locking mechanism rain water leaked into the fuel tank.

Many general aviation aircraft are parked outside for extended periods and water contamination of fuel can occur due to problems with the filler caps by design, production and maintenance.

Recommendation:

The CAA recommends that operators and maintenance providers accomplish the manufacturer's inspection requirements specified for fuel filler caps and the fuel filler neck area. These inspections are usually described in the scheduled maintenance requirements of the aircraft maintenance manual (AMM).

Similarly, pilots should take note of the relevant pre-flight inspections requirements for fuel filler caps which are usually described in detail in the aircraft flight manual (AFM) or the pilot operating handbook (POH).

If requirements for such inspections are not addressed in the AMM, AFM or POH, this CAN provides recommendations for the maintenance and pre-flight inspections of fuel filler caps and the fuel filler neck area.

Maintenance Inspection Requirements:

1. Inspect the fuel cap seals/ gaskets/ o-rings for deterioration, cracks, correct P/N, position and size.
2. Inspect the fuel cap and fuel filler seal surfaces. Surfaces should be smooth with any nicks and marks within specified limits.
3. Inspect the condition of the fuel cap locking mechanism. Bayonets, locking tabs and lugs should be in good condition and not unduly worn. Also inspect the through bolt o-ring sealing, including key lock seals.
4. Check the adjustment of the fuel cap locking mechanism. Make sure the fuel cap seals properly and tight in the closed/locked position.
5. Confirm the drains of recessed fuel filler compartments are not blocked. Drain lines should have a steady slope to allow water to drain.
6. Confirm the sealing in the area around the fuel filler neck is in good condition.
7. The fuel filler assembly attachment screws should be tight and properly sealed.

Note: If any defects are found which might compromise the fuel filler/cap sealing and locking function, rectify before further flight.

Pre-Flight Inspection Requirements:

1. Inspect fuel filler cap gaskets, seals and o-rings. Are these in place and not obviously damaged?
2. Is the fuel filler neck and fuel cap not damaged?
3. Does the fuel level in the tanks correspond to the fuel gauge reading(s) in the cockpit?
4. Is the fuel cap tight and secure when closed/locked? If a fuel cap is found loose or rocking an engineer should be consulted.
5. Fuel tank drain samples should be taken at every pre-flight, after refuelling, or after the aircraft has been parked in precipitation.
6. Visually inspect the fuel sample for correct fuel grade colour and contamination (such as water, sand, dirt, other fluids, etc.). If the fuel tank drains are filled with large amounts of water the sample cup might be all water. Colour and smell can help to identify if the sample consists of fuel or water.

Note: If any defects are found during a pre-flight inspection (regarding the fuel cap/filler condition or fuel contamination), consult an engineer and have the defect corrected before further flight.

Enquiries:

This CAN is based on EASA Safety Information Notice No. 2008-08 dated 07 February 2008 and United Kingdom Aircraft Accident Investigation Board (AAIB) Bulletin No. EW/C2005/10/04.

Enquiries with regard to the content of this Continued Airworthiness Notice should be sent to:

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