Australian Government
Australian Transport Safety Bureau

Safety Advisory Notice

To maintainers of piston-engine aircraft

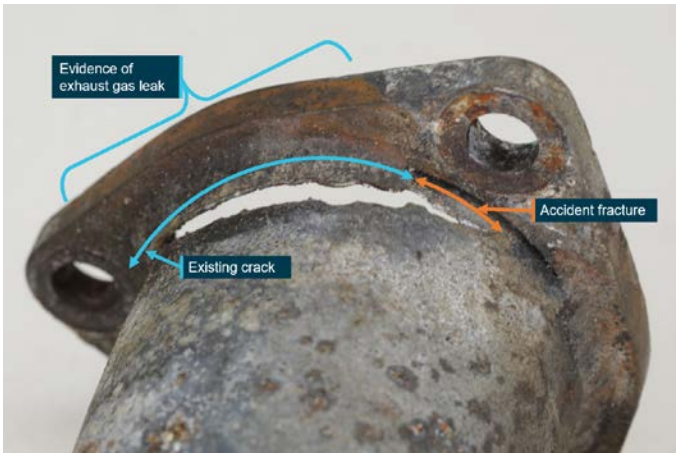
Number: AO-2017-118-SAN-001

Inspection of exhaust systems and engine firewalls: are they carbon monoxide safe?

The primary mechanism for the prevention of carbon monoxide exposure to aircraft occupants is to carry out regular inspections of piston-engine exhaust systems to identify and repair holes and cracks, and to detect breaches in the firewall between the engine compartment and the cabin.

What happened

On the afternoon of 31 December 2017, the pilot and five passengers of a DHC-2 Beaver floatplane, registered VH-NOO, boarded the aircraft for a charter flight from Cottage Point to Rose Bay, New South Wales. The aircraft taxied for about 7 minutes. Shortly after take-off, the aircraft deviated from the standard flight path, stopped climbing, and entered a confined area (Jerusalem Bay) below the height of the terrain. The aircraft continued along the bay before making a very steep right turn and colliding with the water. All on board were fatally injured and the aircraft destroyed.



VH-NOO engine exhaust crack. Note pre-existing crack spread and widened during the impact. (Source: ATSB)

Why did it happen

Toxicological testing found that the pilot and two of the passengers had elevated levels of carbon monoxide (CO) in their blood. The levels detected were likely to have adversely affected the pilot's ability to control the aircraft during the flight. Carbon monoxide is a colourless, odourless and tasteless by-product found in the exhaust gases of piston-engines.

The ATSB conducted a detailed examination of the engine exhaust collector-ring and found evidence of pre-existing cracking and exhaust leakage into the engine bay.

In addition, three out of eight bolts used to secure the magneto access panels in the firewall under the instrument panel in the cabin were also found to be missing. Any breach in the firewall can allow gases to enter the cabin from the engine bay.

Safety advisory notice

AO-2017-118-SAN-001: The thorough inspection of piston-engine exhaust systems and the timely repair or replacement of deteriorated components is the primary mechanism for preventing carbon monoxide exposure. This, in combination with the assured integrity of the firewall, decreases the possibility of carbon monoxide entering the cabin. The ATSB reminds maintainers of the importance of conducting detailed inspections of exhaust systems and firewalls, with consideration for potential carbon monoxide exposure.

Read more about this ATSB investigation: **AO-2017-118**

Read more about this Civil Aviation Safety Authority airworthiness bulletin: **AWB 02-064 Issue 1**

Released: July 2020