

Log 1369

NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C.

ISSUED: February 8, 1984

Forwarded to:
Honorable Michael J. Fenello
Acting Administrator
Federal Aviation Administration
Washington, D.C. 20591

SAFETY RECOMMENDATION(S)
A-84-10 and -11

On February 2, 1981, about 17 minutes after takeoff, a Piper PA-28R-201, N4542Q, crashed into a wooded area near the Houghton County Airport, Houghton, Michigan. The pilot and two of the passengers on board the airplane were seriously injured. One other passenger received minor injuries, and the airplane was destroyed. The weather at the time of the accident was 2,000 feet overcast, 1/4-mile visibility with light snow, and a temperature of minus 5° F.

While in flight, the airplane's engine stopped suddenly. The investigation disclosed that the stoppage was the consequence of oil starvation. The engine was a Lycoming IO-360-C1C6, S/N L-17137A, and it had not been overhauled during its 1,919 hours of operation.

The investigation into the cause of the oil starvation revealed that the front crankcase oil seal for the crankshaft was displaced outward. It was found also that the crankcase breather line contained several pieces of ice about 1/2 inch in diameter. It was concluded that the crankcase breather line had been blocked with ice, which resulted in excessive pressure in the crankcase. The excessive pressure displaced the oil seal and forced the oil overboard.

The crankcase breather tube on the PA-28 airplane contains two holes to vent crankcase pressure in the event the tube is blocked by frozen moisture. One vent hole is about 18 inches from the engine accessory case outlet, and the other vent hole is about 4 inches from the breather tube outlet. The engine on the accident airplane was not otherwise equipped with any form of winterization devices to prevent ice from blocking the crankcase breather line.

From January 1, 1977, to September 30, 1983, there were five recorded entries in the FAA Service Difficulty Reporting System of frozen crankcase breather lines on Piper model PA-28 airplanes. The greatest probability of these occurrences exists when an engine has accumulated relatively high numbers of flight hours and an airplane is operated in a cold environment without winterization devices in engines. Engines with high numbers of hours since new or since overhaul allow greater quantities of combustion byproducts including water to bypass the pistons and enter the crankcase, thereby increasing the quantities of moisture that can freeze before being vented overboard through the crankcase breather line.

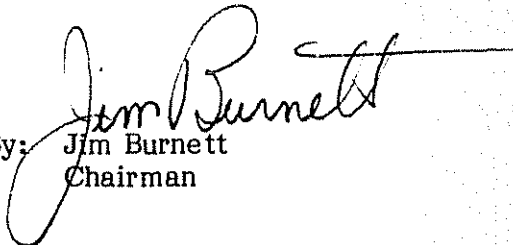
The Safety Board is concerned that the PA-28 and certain other Piper airplane models with similar engine installations may not have enough anti-icing protection for the crankcase breather lines when an airplane is operated in cold ambient temperature conditions and the temperature beneath the engine cowling is reduced to subfreezing levels. The Board believes that the possible hazard should be brought to the attention of PA-28 owner/operators and that action should be taken to evaluate the potential for the freezing of crankcase breather lines on PA-28 and other Piper airplane models with engine installations similar to the PA-28 installation.

Consequently, the National Transportation Safety Board recommends that the Federal Aviation Administration:

Issue an Airworthiness Alert (Advisory Circular 43-16) to operators of Piper model PA-28 airplanes advising of the hazard of operating high-time engines in very cold weather conditions without winterization kits on crankcase breather lines. (Class II, Priority Action) (A-84-10)

Evaluate the design of crankcase breather line installations of all Piper model 28 airplanes and Piper models with similar engine installations to determine the need to provide icing protection on crankcase breather tubes for cold weather operations, and take appropriate action to initiate a retrofit of those models of airplanes that need such protection. (Class II, Priority Action) (A-84-11)

BURNETT, Chairman, GOLDMAN, Vice Chairman, and McADAMS, BURSLEY, and ENGEN, Members, concurred in these recommendations.

By: 
Jim Burnett
Chairman