

NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C.

ISSUED: June 11, 1974

Forwarded to:
Honorable Alexander P. Butterfield
Administrator
Federal Aviation Administration
Washington, D. C. 20591

SAFETY RECOMMENDATION(S)

A-74-54

On May 17, 1973, a Cessna 402B, N4527Q, was involved in an incident while en route from Prescott, Arizona, to Lake Havasu City, Arizona. The National Transportation Safety Board's investigation indicates that corrective action is needed to reduce the possibility of similar incidents.

During a scheduled air taxi flight, the aircraft made an unscheduled landing at Prescott, Arizona. About 5 minutes after departing Prescott, the pilot noticed that flames were streaming from the louvers in the turbocharger area of the left engine. He shut the left engine off, and the flight returned to Prescott without further difficulty.

Maintenance personnel inspected the aircraft and found that the fire had originated in the area of the manifold pressure relief valve. After the relief valve was removed, it was discovered that the valve poppet had been displaced on its seat. The valve was replaced with a modified valve, and the aircraft was returned to service. The modified valve has a longer pin in the relief valve bellows assembly. The purpose of the longer pin is to prevent the valve seat from separating from the bellows. The modified valve, however, only partially solves the problem by sealing the oil in the intake manifold. It does not eliminate the problem of oil leakage. The problem of oil leakage through the turbocharger shaft seals was discussed in Safety Recommendations A-73-47 and A-73-48, which were submitted to the FAA on July 12, 1973.

Internal oil leakage and oil loss are still problems with the turbocharged engines that are installed on Cessna aircraft. Cessna engineering personnel believe that extended periods of low r.p.m. and power settings also contribute to oil leakage through the turbocharger compressor shaft oil seals. Cessna and AiResearch have introduced three modifications to alleviate the problem, and are installing those modifications on recycled engines and engines installed on aircraft presently

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on the production line.

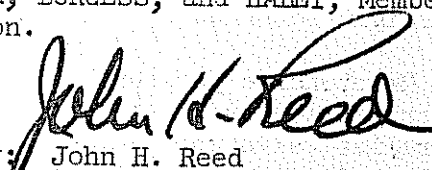
Therefore, to eliminate oil loss through seal leakage and displaced valves, and to make the modifications mandatory, the National Transportation Safety Board recommends that the Federal Aviation Administration:

Issue an Airworthiness Directive to require the following modifications on or before the next 100-hour inspection to unmodified turbocharged powerplants used on Cessna series aircraft:

- a. Cooling oil jet to eliminate coking.
- b. Dual port scavenge pump to provide better scavange of the turbocharger system.
- c. Redesign^{sol} relief valve (AiResearch Drawing No. 470930) to assure that the poppet will remain impaled on the guide pin.

Members of our Bureau of Aviation Safety will be available for consultation in the above matter if desired.

REED, Chairman, McADAMS, THAYER, BURGESS, and HALFY, Members, concurred in the above recommendation.


By: John H. Reed
Chairman

THIS RECOMMENDATION WILL BE RELEASED TO THE PUBLIC ON THE ISSUE DATE SHOWN ABOVE. NO PUBLIC DISSEMINATION OF THE CONTENTS OF THIS DOCUMENT SHOULD BE MADE PRIOR TO THAT DATE.