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NATIONAL TRANSPORTATION SAFETY BOARD WASHINGTON, D.C.

ISSUED: January 15, 1981

Forwarded to:

Honorable Langhorne M. Bond
Administrator
Federal Aviation Administration
Washington, D.C. 20591

SAFETY RECOMMENDATION(S)
A-81-6 and -7

The National Transportation Safety Board's aircraft accident data indicate that engine failures are a substantial initiating factor in general aviation accidents. One problem associated with engine failures is the separation of the throttle linkage. The results of these separations vary among models of aircraft; the variations include the fuel control commanding one of three settings: idle power, full power, or shutoff (no power) position.

Our records indicate that between 1964 and 1979 there were 148 reports of single-engine aircraft accidents initiated by throttle linkage failures. These accidents resulted in 5 deaths, 250 injuries, 15 destroyed aircraft, and 133 substantially damaged aircraft. The Safety Board believes that this type of accident can be reduced and that aggressive preventive action is needed.

A typical example of this kind of accident involved a Cessna 207 which was climbing in VFR conditions. Shortly after the flight was cleared to climb and to maintain 5,000 feet, the engine quit. The pilot could not return to the airport because the engine had stopped, so he landed the aircraft on a partially lighted city street. During the landing roll, the aircraft struck signs on both sides of the street when the pilot attempted to avoid automobile traffic. The aircraft received substantial damage, but the pilot escaped injury. Our investigation disclosed that the throttle linkage had separated. During the investigation the engine was started by operating the throttle control at the injector manually, and the engine operated normally at all speeds from idle to maximum power. When the throttle control was released, the engine immediately returned to idle and quit.

This mishap is representative of many accidents and incidents which evolve in approximately the same manner each year. The Safety Board's data indicate that this type of accident is increasing. Our investigations indicate that the causes of throttle linkage separation include such factors as design, maintenance and inspection practices, improper maintenance procedures, improper operation of powerplant controls, and inadequate preflight inspections.

In existing aircraft, when the throttle linkage separates, one of the following three things happens: the throttle closes and the engine idles or stops; the throttle remains at the power set at the time of failure; or the throttle goes to the full open position. If the throttle closes and the engine idles or quits, the pilot is committed to land without regard for weather or proximity to a suitable landing area. We believe this condition is unsatisfactory.

If the throttle goes to the full open position after linkage separation, the pilot has a different problem. It may be difficult to descend at a safe speed, particularly at night or in IFR conditions. This problem can be compounded when the available maneuvering area is restricted by terrain or other obstacles. It may take more than ordinary piloting ability to maintain control of an aircraft and its speed under those conditions.

The third condition--power remaining at the selected setting when separation occurs--is the best of the three in most cases. However, if the extremes of idle power for descent or maximum power for takeoff exist when separation occurs, the problems would be the same as those associated with the other two conditions.

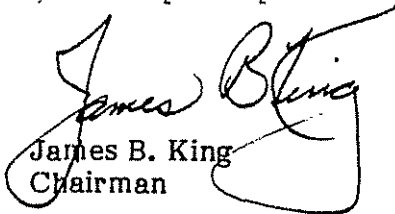
Considering these factors, we believe that the safest solution to this problem would be to establish a requirement that, when throttle linkage separation occurs, the fuel control would automatically travel to a setting which would allow the pilot to maintain level flight in a cruise configuration.

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

Establish a requirement that, when throttle linkage separation occurs in a small single engine aircraft the fuel control will go to a setting which will allow the pilot to maintain level flight in the cruise configuration. (Class II, Priority Action) (A-81-6)

Review the service experience of throttle linkage separations in single engine general aviation aircraft and issue an Airworthiness Alert to the owners and operators of such aircraft, to increase their awareness of the problems associated with such linkage separations. The alert should be worded to improve maintenance practices and inspection techniques. (Class II, Priority Action) (A-81-7)

KING, Chairman, McADAMS, GOLDMAN, and BURSLEY, Members, concurred in these recommendations. DRIVER, Vice Chairman, did not participate.

By: 
James B. King
Chairman