



# National Transportation Safety Board

Washington, D. C. 20594

Safety Recommendation

*Log 2074*

Date: July 28, 1988

In reply refer to: A-88-78 through -80

Honorable T. Allan McArtor  
Administrator  
Federal Aviation Administration  
Washington, D.C. 20591

On December 23, 1987, at approximately 6:11 a.m. Alaska standard time, South Central Air, Inc., flight 2001, a Piper PA-31-350 (Navajo Chieftan), N496SC, with one pilot, six passengers, and one infant on board, crashed shortly after takeoff from runway 01 at the Kenai Municipal Airport, Kenai, Alaska. Flight 2001 was a single piloted, regularly scheduled Title 14 Code of Federal Regulations Part 135 flight from Kenai to the Anchorage International Airport, Anchorage, Alaska. The pilot, four passengers, and the infant were fatally injured. The two remaining passengers received serious injuries.

While the National Transportation Safety Board's investigation of the accident is continuing, preliminary evidence indicates that the pilot reported to the flight service station a power loss from an engine and that he intended to circle to land. Several witnesses stated that the airplane attained an altitude of approximately 300 to 500 feet above ground level while on a left downwind; however, the airplane descended and crashed into a residential neighborhood. The Safety Board's investigation determined that the airplane's wing flaps were almost in the fully extended (down) position at the time of impact.

One of the surviving passengers stated that, seconds after liftoff, he heard "popping" noises coming from an engine. He stated when he looked outside, he saw that the flaps were down. He was unable to say specifically how far the flaps were extended, and the Safety Board has not been able to determine the flap position at the time of liftoff.

The fact that the flaps were extended at all during the takeoff or climbout is significant in that the airplane's single-engine climb performance is very limited if the flaps are extended to any degree. In fact, the Piper Aircraft Corporation issued Service Bulletin 684 in April 1980 that directed that the Airplane Flight Manuals of PA-31-350 airplanes be amended to reflect that all takeoffs be made with 0°-flaps. Subsequently, in August 1984, the Federal Aviation Administration (FAA) issued Air Carrier Operations Bulletin Part 135 No. 84-21, "Takeoff and Climb Procedures; Piper PA-31-350." This bulletin reiterated the use of 0°-flaps for all takeoffs, cited the Piper Service Bulletin, and instructed principal operations inspectors (POI) to ensure that their respective air carriers comply with the Service Bulletin.

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During the on-scene investigation, Safety Board investigators entered the cockpits of several South Central Air PA-31-350 airplanes. Three different normal operating checklists were found. One checklist contained the item "Flaps" on its Pretakeoff Checklist with the response -- "Set 0." This was the proper checklist; however, it was contained in the Airplane Flight Manual that was stowed behind the pilot's seat. A second checklist (of unknown origin) was found above the pilot's sun visor. In regard to "flaps" on the Takeoff Checklist, the response was--"Set." The third checklist, prepared by the company and carried by the flightcrews, was the one that was used most frequently. This checklist omitted any reference to flaps, and in fact, it contained the stamp of the FAA Flight Standards District Office 63, dated April 14, 1986.

The Safety Board believes that the FAA's POI assigned to South Central Air should have been aware of the ambiguity created by having three different checklists in the cockpit of the PA-31-350. Further, he did not comply with the Air Carrier Operations Bulletin that instructed him to ensure compliance with the Service Bulletin. Also, the Safety Board is concerned that other air carriers might be using checklists other than those prescribed. The Safety Board believes that the FAA should ensure that only the checklist prescribed by the manufacturer in the FAA-approved Airplane Flight Manual be used in the cockpits of Part 135 operators' aircraft.

During the examination of South Central Air's Operations Manual, the Safety Board discovered that the FAA permits South Central Air to use average passenger weights for calculating the weight and balance of its PA-31-350 airplanes. The Safety Board had previously issued Safety Recommendation A-80-68 to the FAA that addressed the subject of weight and balance computations for reciprocating-engine aircraft used in Part 135 flights that are certified for nine or fewer passengers. The FAA responded, in part, by stating that Advisory Circular (AC) 120-27A "Aircraft Weight and Balance Control," dated May 14, 1980, would satisfy the intent of Safety Recommendation A-80-68. AC 120-27A states, "Actual or average weights may be used to compute passenger loads over any segment of a certificate holder's operation except that actual weights should be used for operations with reciprocating powered aircraft of 9 or less seats. . . ." The Safety Board, therefore, classified this recommendation "Closed--Acceptable Alternative Action."

Weight and balance calculations performed on South Central Flight 2001 by Safety Board investigators indicated that the actual passenger weight (not including carry-on items) averaged approximately 186 pounds. The average passenger weight used by South Central Air for winter operations is 165 pounds and includes carry-on baggage items. In spite of this disparity, the airplane remained within allowable weight and center of gravity (c.g.) limitations, and the Safety Board believes that this disparity was not related to the cause of the accident. However, the Safety Board believes that South Central Air, Inc.; as well as any other Part 135 operators that use reciprocating-engine airplanes designed for nine passengers or fewer, should comply with AC 120-27A. Interestingly, the POI of South Central Air stated that of the 18 air carriers assigned to him, only South Central Air was permitted to use average passenger weights on this type of operation. He was unable to provide a reason why South Central Air was permitted to use average passenger weights.

During the examination of the weight and balance documentation performed by the captain of the accident flight, it was noticed that the computations accounted for one passenger being seated in the right front (co-pilot) seat. However, the Safety Board determined that this seat was unoccupied during flight. The Safety Board

calculated the weight and balance to determine the effect of this change on c.g. location. These calculations indicated that the c.g. was displaced from 127.9 inches aft of reference to 131.3 inches aft of reference. The allowable c.g. range for the airplane was 124.5 to 135.0 inches aft of reference. The Safety Board believes that this disparity illustrates the sensitivity of this type of airplane to proper load control and the importance of seating passengers according to the planned weight and balance data. For 14 CFR Part 135 operations, it is the pilot-in-command's responsibility to ensure proper aircraft loading. As a result, the Safety Board believes that the FAA should issue an Air Carrier Operations Bulletin to POIs assigned to Part 135 operators of reciprocating-engine airplanes that carry nine or fewer passengers. The bulletin should stress the importance of informing pilots of these airplanes about ensuring passenger seat assignment in accordance with planned weight and balance data.

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

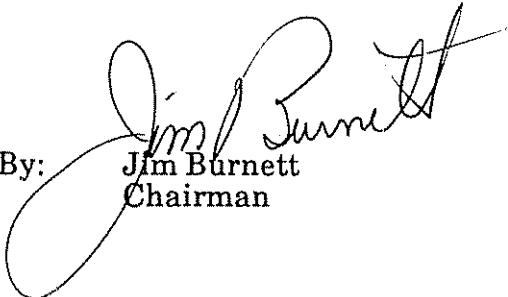
Verify that all Title 14 Code of Federal Regulations Part 135 operators carry only the prescribed checklists in the cockpits of their aircraft. (Class II, Priority Action) (A-88-78)

Require that the principal operations inspectors assigned to Title 14 Code of Federal Regulations Part 135 operators of reciprocating-engine aircraft that carry nine or fewer passengers verify that the operator complies with Advisory Circular 120-27A concerning the use of actual passenger weight. (Class II, Priority Action) (A-88-79)

Issue an Air Carrier Operations Bulletin to principal operations inspectors assigned to Title 14 Code of Federal Regulations Part 135 operators of reciprocating-engine aircraft which carry nine or fewer passengers; the bulletin should stress the importance of informing pilots of these airplanes about ensuring passenger seat assignments in accordance to planned weight and balance data. (Class II, Priority Action) (A-88-80)

BURNETT, Chairman, KOLSTAD, Vice Chairman, and LAUBER, NALL, and DICKINSON, Members, concurred in these recommendations.

By:

  
Jim Burnett  
Chairman