

Log 2023



National Transportation Safety Board

Washington, D.C. 20594
Safety Recommendation

Date: March 14, 1988

In reply refer to: A-88-41

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

On November 23, 1987, at 6:25 p.m., Alaskan standard time, Ryan Air Service, Inc., (Ryan Air) flight 103, a Beechcraft 1900C, N401RA, with 2 flight crewmembers and 19 passengers on board, crashed short of runway 3 at Homer Airport, Homer, Alaska. Flight 103 was a regularly scheduled 14 CFR Part 135 flight operating between Kodiak and Anchorage, Alaska, with intermediate stops at Homer and Kenai, Alaska. Sixteen passengers and the two flight crewmembers were fatally injured. Three passengers received serious injuries.

While the National Transportation Safety Board's investigation of the accident is continuing, preliminary evidence indicates that the airplane was being operated above its maximum takeoff and landing weight limits, and with its center of gravity (CG) well beyond the allowable aft limit. During its investigation, the Safety Board focused on the requirements of Title 14 CFR 135.63(c) regarding the load manifest documentation. That section requires, in effect, that a load manifest must be prepared before each takeoff. This manifest must be kept for at least 30 days by the certificate holder and, among other things, must record the location of the airplane's CG and the total weight of the loaded airplane. Ryan Air provides its pilots with forms on which to calculate the airplane weight and CG. The form is covered with plastic to facilitate the use of "grease pencil" entries, which are subsequently erased so that the same form can be used again for the next flight in the airplane. Total weight of the loaded airplane is calculated by entering "empty weight," "fuel," "cargo," etc., on the plastic form. Entries are also to be made for individual moments so that, ultimately, a CG location can be calculated. Such a form was recovered in the wreckage of flight 103; the only entry for "cargo" was 250 pounds and there was no entry concerning CG location.

The airplane arrived empty at Kodiak after its flight from Anchorage, and all the baggage and cargo was loaded in Kodiak. The load manifest for flight 103 from Kodiak to Homer was examined. The load manifest prepared by the flightcrew indicated the total weight of the airplane was 15,700 pounds, with 1,450 pounds of total cargo weight, and a CG location 299.5 inches aft of reference. (The aft CG limit for the airplane was 299.9 inches aft of reference.) Investigators

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weighed all of the cargo after the accident and determined that approximately 2,283 pounds of cargo was aboard the airplane, which included approximately 150 pounds of carry-on items and 795 pounds of venison in the aft cargo compartment. It was determined that the rear cargo compartment contained approximately 1,800 pounds of cargo when, in fact, any load greater than about 850 pounds would move the CG beyond the aft limit. In fact, investigators calculated that the CG location was between 9 and 11 inches aft of the allowable limit. This represents a value 50 to 62 percent greater than the entire allowable CG range (282.2 to 299.9 inches). Investigators calculated that the actual takeoff weight from Kodiak was 17,100 pounds--9 percent higher than the weight shown in the load manifest, and 3 percent greater than the maximum allowable takeoff weight of 16,600 pounds.

The Safety Board is concerned that 14 CFR Part 135 does not require that a document supporting weight and CG calculations be maintained at the principal operating base of the company--the same requirement that is imposed for the load manifest. The Safety Board believes that effective Federal Aviation Administration (FAA) surveillance of weight and balance practices cannot be accomplished unless such documentation is available to FAA inspectors. Maintaining complete weight and balance data for at least 3 months is currently required of Part 121 operators, and the Safety Board can find no reason why it should not also be required of Part 135 commuter air carrier certificate holders. The present requirement of maintaining only a load manifest recording the total airplane weight and CG location allows Part 135 operators to easily bypass the maintenance of accurate and complete weight and balance documentation that supports the calculated CG location and total airplane weight that are entered onto the load manifest.

The Safety Board believes that the weight and balance documentation that should be required of Part 135 commuter air carrier operators could easily be accomplished on one page--with entries made for basic airplane empty weight, passenger weight, fuel weight, and cargo weight. The corresponding moments should also be entered so that, ultimately, total airplane weight and CG location can be derived and recorded in a manner similar to that provided for in 14 CFR Part 121. As required by 14 CFR Part 121, copies of the weight and balance documentation should be maintained by the pilot-in-command and at the station of departure.

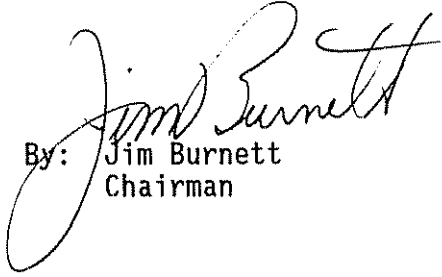
The investigation of the Ryan Air accident revealed that the flightcrew of flight 103, as well as the station agents in Kodiak, were aware that the airplane had an approximate 1,100-pound cargo capacity due to CG limitations with a full passenger load. Despite this knowledge, the copilot asked the station agent for "1,500 pounds" of cargo, and assisted in the airplane's loading. The Safety Board is gravely concerned that the copilot, who was the company's director of training, a company check airman, and an FAA-designated examiner, knowingly overloaded the airplane and entered a false airplane weight and CG location on the load manifest. Similarly, the captain of flight 103 cannot be excused of knowledge of these practices since the accuracy of the weight and balance data was ultimately his responsibility and was available for his review. The fact that the company's director of training and a captain engaged in such actions raises concern about other operating personnel's intentions to comply with safe operating practices prescribed by Federal air regulations.

The Safety Board believes that this was not an isolated occurrence, but a practice that may have been repeated many times. The Safety Board's investigation determined that the FAA monitored Ryan Air's operations between February 18 and 25, 1987, and that a random sampling of multiengine load manifests determined that approximately 25 percent (involving 127 specific manifests) were not complete or accurate with respect to 14 CFR 135.63(c), "Recordkeeping Requirements."

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

Amend 14 CFR Part 135 to require that commuter air carrier certificate holders maintain, for at least 90 days, copies of the completed load manifest and the weight and balance documentation that support the calculated total weight of the aircraft and its center of gravity location. (Class II, Priority Action) (A-88-41)

BURNETT, Chairman, and LAUBER, NALL, and KOLSTAD, Members, concurred in this recommendation.


By: Jim Burnett
Chairman