

NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C.

ISSUED: September 24, 1981

Forwarded to:
Honorable John V. Byrne
Administrator
National Oceanic and Atmospheric
Administration
Department of Commerce
Washington, D.C. 20230

SAFETY RECOMMENDATION(S)
A-81-103

At 1205 e.d.t. on May 19, 1980, Northeast Jet Company Learjet 25D, N125NE, crashed in the Gulf of Mexico while en route to New Orleans, Louisiana, from West Palm Beach, Florida. About 2 1/2 minutes after the aircraft was reported at Flight Level 430 in the vicinity of the Covia Intersection on Airway J58, the Jacksonville, Florida, Air Route Traffic Control Center received an unusual staccato sound transmission over the frequency, followed 18 seconds later by a report from the copilot, "Can't get it up... it's in a spin..." About 33 seconds after the first staccato sounds, radio and radar contact with N125NE was lost about 104 miles west of Sarasota, Florida. Floating debris was located by a search aircraft and later recovered; the pilot and copilot were not found. There were no known witnesses to the crash. 1/

Before departing West Palm Beach, the crew of N125NE had received a weather briefing from the Miami, Florida, International Flight Service Station. No clear air turbulence was mentioned in the briefing nor was clear air turbulence forecast.

A Learjet 24D, N51J, had departed West Palm Beach about 7 minutes after the accident aircraft and was en route to Houston, Texas. The pilot stated that in the vicinity of the Covia Intersection, "I noticed that our Mach number suddenly rose from 0.77 to nearly 0.80 and simultaneously our altitude increased and I felt the most severe turbulence I have ever encountered in a Learjet."

An investigation of the weather situation at the time of the accident by Safety Board meteorologists revealed that two criteria considered to be indicative of clear air turbulence were present based upon rawinsonde soundings valid at 0800: horizontal and vertical wind shear of a magnitude sufficient to cause turbulence, and the presence of an upper front. A review of the procedures utilized by the National Weather Service in preparing clear air turbulence forecasts revealed that they were primarily based upon synoptic patterns and the character of winds aloft, with relatively little emphasis upon vertical structures.

1/ For more detailed information, read Aircraft Accident Report-"Northeast Jet Company Gates Learjet 25D, N125NE, Gulf of Mexico, May 19, 1980" (NTSB-AAR-81-15).

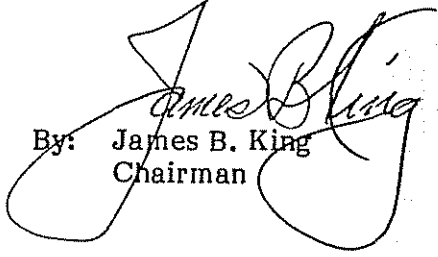
The World Meteorological Organization Technical Note No. 135 "Forecasting Techniques of Clear Air Turbulence Including That Associated With Mountain Waves" by Robert H. Hopkins, states that wind shear induced clear air turbulence tends to occur most often in "internal fronts." The Federal Aviation Administration-National Oceanic and Atmospheric Administration publication, "Aviation Weather Services," AC 00-45B, lists "upper fronts" as a criteria for turbulence. Both publications list similar wind speed differentials as criteria for turbulence.

The Safety Board believes that an emphasis on vertical structures of the atmosphere in both the troposphere and lower stratosphere, particularly in the analysis of upper fronts, may lead to a significant improvement in clear air turbulence forecasts and believes that the National Oceanic and Atmospheric Administration should conduct a research program to verify this relationship.

Therefore, as a result of its investigation, the National Transportation Safety Board recommends that the National Oceanic and Atmospheric Administration:

Define the relationship between clear air turbulence and upper fronts as analyzed by soundings and develop forecasting techniques to utilize the information to improve clear air turbulence forecasts. (Class II, Priority Action) (A-81-103)

KING, Chairman, DRIVER, Vice Chairman, and GOLDMAN and BURSLEY, Members, concurred in this recommendation. McADAMS, Member, did not participate.


By: James B. King
Chairman