Log 1910A

National Transportation Safety Board

Washington, D.C. 20594

Safety Recommendation

Date: September 3, 1986
In reply refer to: A-86-76 through -78

Honorable Donald D. Engen
Administrator
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Washington, D. C. 20591

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On August 2, 1985, at 1805:52 central daylight time, Delta Air Lines (Delta) flight 191, a Lockheed L-1011-385-1, N726DA, crashed while approaching to land on runway 17L at the Dallas/Fort Worth International (DFW) Airport, Texas. While passing through the rain shaft beneath a thunderstorm, flight 191 entered a microburst which the pilot was unable to traverse successfully. The airplane struck the ground about 6,300 feet north of the approach end of runway 17L, hit a car on a highway north of the runway killing the driver, struck two water tanks on the airport, and broke apart. Except for a section of the airplane containing the aft fuselage and empennage, the remainder of the airplane disintegrated during the impact sequence, and a severe fire erupted during the impact sequence. Of the 163 persons aboard, 134 passengers and crewmembers were killed; 26 passengers and 3 cabin attendants survived. 1/

On the day of the accident, a Center Weather Service Unit (CWSU) was in operation at the Fort Worth Air Route Traffic Control Center (ARTCC). There are 20 CWSUs throughout the contiguous United States and one CWSU in Alaska. The Federal Aviation Administration (FAA) established the CWSUs as the focal point for professional meteorological services within the ARTCC. National Weather Service (NWS) meteorologists are assigned to detect hazardous weather conditions and disseminate information on the hazard to the appropriate position and facilities within the ARTCC's area of responsibility. Each CWSU is staffed with four NWS meteorologists. The CWSU generally is operated 7 days a week from 0600 to 2200 local time. The FAA and NWS jointly develop procedures for operation of the CWSUs.

1/ For more detailed information, read Aircraft Accident Report--"Delta Air Lines, Inc., Lockheed L-1011-385-1, N726DA, Dallas/Fort Worth International Airport, Texas, August 2, 1985" (NTSB/AAR-86/05).

On August 2, 1985, one meteorologist was working the evening shift at the Fort Worth CWSU. Having only one meteorologist on the evening shift is normal procedure. One of the duties of the meteorologist is to issue Center Weather Advisories (CWA) to keep FAA personnel at the Dallas/Fort Worth Terminal Radar Approach Control (TRACON) and tower apprised of significant weather conditions expected to affect their operations. Although the meteorologist is required to maintain a continuous weather watch as noted in his Station Duty Manual and to provide a continuous real-time depiction of weather conditions as specified in FAA Order 7210.38A, Center Weather Service Unit, this is not practical when only one meteorologist is on duty. During the shift, the meteorologist is allowed personal breaks away from his position, such as meal breaks. The meteorologist was on a meal break before and after the crash of Delta 191. Consequently, the CWSU meteorologist did not issue to the DFW Tower and TRACON a CWA for the very strong (VIP level 4) weather echo that contained the thunderstorm and heavy rain showers located over the approach to runway 17L before the crash of Delta 191. Testimony of the meteorologist at the public hearing indicated that he would have issued a CWA for this weather echo at about 1800 if he had been at his position. Although the Safety Board does not know whether the issuance of a CWA in this instance would have reached the crew of flight 191 in time to provide significant information regarding the weather along the approach to runway 17L, it believes that procedures should be developed by the NWS and FAA to require that the CWSU is attended constantly so that CWAs and other advisories concerning significant weather conditions are provided to FAA personnel for dissemination to flightcrews.

Testimony of the Fort Worth CWSU meteorologist at the public hearing into the flight 191 accident indicated that it normally takes 5 to 10 minutes for a written CWA disseminated through the ARTCC's computer system to reach the FAA facilities at DFW Airport. Although the meteorologist testified that, given the circumstances of the weather, i.e., the cell development north of the airport on August 2, he would have called these facilities directly to call their attention to the weather development, there are no procedures outlined in his Station Duty Manual or in the NWS Operations Manual Chapter 25 Part D to require this form of immediate dissemination. Given the rapid development of convective cells and the impact on aircraft operations, the Safety Board believes that information regarding rapidly developing hazardous weather conditions, such as thunderstorms and low-altitude windshear, should be disseminated by the most expeditious means available to FAA positions and facilities.

The investigation also revealed that the CWSUs are currently faced with obsolete graphics, satellite, and radar capabilities. The Safety Board is aware that a new meteorological data and display package is currently being evaluated at the Houston Center CWSU and that additional evaluations are planned for the Boston Center CWSU and Kansas City Center CWSU. The Safety Board supports these efforts and, based upon these evaluations, urges the FAA to expedite the implementation of such equipment in all ARTCCs.

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

> Develop procedures to require that Center Weather Service Units are attended constantly during operation so that information concerning hazardous weather conditions, such as thunderstorms, windshear, icing, and turbulence, either occurring or expected to occur, receives prompt, appropriate dissemination. (Class II, Priority Action) (A-86-76)

Develop procedures to require the Center Weather Service Unit meteorologist to disseminate information on rapidly developing hazardous weather conditions, such as thunderstorms and low-altitude windshear, to Federal Aviation Administration Terminal Radar Approach Control and/or tower facilities immediately upon detection of the conditions. (Class II, Priority Action) (A-86-77)

Expedite the implementation of equipment to upgrade all Center Weather Service Units to the state of the technology in data acquisition and display capability. (Class II, Priority Action) (A-86-78)

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

By: Jim Burnett
Chairman