

NATIONAL TRANSPORTATION SAFETY BOARD
Office of Aviation Safety
Washington, D.C. 20594

AIRPORTS/ARFF GROUP CHAIRMAN'S
FACTUAL REPORT OF INVESTIGATION

A. ACCIDENT: DCA-94-MA-065

Operator: USAir Inc.
Aircraft: Douglas DC-9-35, N954VJ
Location: Charlotte/Douglas International Airport
Charlotte, NC
Date: July 2, 1994
Time: 1845 Eastern Daylight Time (EDT) ¹

B. AIRPORTS/ARFF GROUP

Group Chairman:

Lawrence D. Roman
Senior Investigator, Airports/ARFF
National Transportation Safety Board
Washington, D.C.

Members:

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Charlotte Fire Department
Charlotte, NC

David W. Nowlan
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USAir Inc.
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Tom Phillips
Airline Pilots Association
Herndon, VA

Gary Zindars
National Air Traffic Controllers
Association
New Hope, GA

¹ All times herein are eastern daylight time (EDT) based on the 24 hour clock unless otherwise noted.

Tricia Kline
Federal Aviation Administration
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Charlotte, NC

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USAir Inc.
Charlotte, NC

C. SUMMARY

On July 2, 1994, at about 1843, a Douglas DC-9-31, N954VJ, owned by USAir Inc. and operated as USAir Flight 1016, collided with trees and a private residence while executing the missed-approach procedure for the instrument landing system (ILS) approach to runway 18R at the Charlotte/Douglas International Airport in Charlotte, North Carolina. The captain and one flight attendant received minor injuries; the first officer, two flight attendants and 18 passengers sustained serious injuries; and 37 passengers received fatal injuries. The airplane was destroyed by impact forces and a post-accident fire. Instrument meteorological conditions prevailed, and an instrument flight rules (IFR) flight plan had been filed. Flight 1016 was being conducted under Title 14 Code of Federal Regulations (CFR), Part 121, as a domestic, scheduled passenger service flight from Columbia, South Carolina, to Charlotte.

D. DETAILS OF THE INVESTIGATION

1. Airport Information

Charlotte/Douglas International Airport (CLT), elevation - 749 feet (runway 18R elevation - 743 feet), is owned and operated by the City of Charlotte, and is located in Mecklenburg County, approximately 4 nautical miles west of downtown Charlotte. The Airport consists of three 150 foot wide runways, runway 5-23, that is 7501 feet long, 18L-36R, that is 7,845 feet long, and 18R-36L, that is 10,000 feet long. Runway 18R is wire-combed concrete and is equipped with high intensity runway lights (HIRL), threshold lights, runway centerline lights (RCLS), runway visual range (RVR), visual approach slope indicator (VASI), a medium intensity approach lighting system with runway alignment indicator lights (MALSR), and an instrument landing system (ILS). (See Exhibit 15B)

Charlotte/Douglas International Airport is certificated at aircraft rescue and fire fighting (ARFF) index D ² and has a FAA approved emergency plan in accordance with Title 14 CFR 139. The last disaster exercise was conducted on November 6, 1993 near Old Dowd Road near the Berry Hill Baptist Church, a short distance from the USAir Flight 1016 crash site.

2. Emergency Response

2.1. Notification and Response

At about 1845 ³ the CLT Air Traffic Control Tower (ATCT) activated the crash phone to the airport fire station (Station 17) and, according to interviews and statements of Aircraft Rescue and Fire Fighting (ARFF) personnel, stated: "We lost a plane on radar - 5 SOB⁴." Eight ARFF Fire Fighters immediately responded with 3 ARFF trucks (Blaze ⁵ 1, 2 and 7) and one quick response and command truck (Blaze 5) with 600 gallons of AFFF ⁶, 6100 gallons of water. Blaze 3 did not respond, because those fire fighters were on a call in Engine 17. They proceeded to the pad in front of the fire station, then proceeded southwest on taxiway A, while searching for signs of the airplane. During this time, Blaze 5 contacted ATCT east ground controller (GCE) to request additional information and the location of the airplane. GCE advised Blaze 5 to proceed across runway 18L in a southwesterly direction toward the approach end of runway 5. As the units approached Runway 5, Blaze 5 overheard the City Alarm Room transmit: "Possible plane crash in the vicinity of Wallace Neel and Old Dowd." GCE transmitted to Blaze 5 that there were five-zero souls, plus five crew on board. Fire fighters stated that when they left the fire station it was raining very heavily. Blaze 7 experienced hydroplaning, however the rain began to diminish as they responded. Blaze 5 and Blaze 1 passed through airport, security gate 36, opening the gate with the Blaze 5 magnetic card; Blaze 7 and Blaze 2 were delayed because the gate would not open. Blaze 7 then "crashed" through the gate, which incurred an estimated 30 second delay.

²Index D - FAA ARFF index for air carrier aircraft of at least 126 feet, but less than 159 feet in length. 14 CFR 139 requires a minimum of 3 ARFF vehicles carrying an amount of water and the commensurate quantity of AFFF so that the total quantity of water for foam production carried by all three vehicles is at least 4000 gallons.

³See Air Traffic Control Group Chairman Factual Report.

⁴SOB - common terminology referring to "Souls on Board"

⁵Blaze - radio call sign for CLT ARFF units.

⁶Aqueous Film-Forming Foam

Blaze 5 then proceeded via "Car Rental" Road at Old Dowd Road, followed Engine 21, Tanker 21, and a MEDIC unit. After encountering some difficulties maneuvering around parked vehicles at the intersection of Old Dowd and Wallace Neel Roads, they proceeded to the crash site.

At 1843:56⁷ the Charlotte-Mecklenburg Police Department (CPD) Communications Section received the first of many "9-1-1" telephone calls from residents and motorists reporting an airplane crash on Wallace Neel Road with fire involved. The Charlotte Fire Department (CFD) Communications Section radio log transcripts (see Exhibit 15F) show that first CFD units were notified and dispatched at 1845:09. The CFD Units assigned included: Engine Companies 30 and 21, Tankers 12 and 21, Ladder 13 and Battalion Chief 5. The first of these units arrived at 1851:53. The First contact with Blaze units was recorded at 1848.

2.2 Fire fighting and Rescue

Blaze 2 attacked the fire which was trailing along the path the airplane had followed, while Engine 21 and Tanker 21 were applying foam to the tail section and the carport using 1 3/4" diameter hose lines. Other Blaze units proceeded to extinguish spot fires. At 1851:17 Blaze 5 notified and confirmed with the CFD Alarm room that an airplane was down with 5 SOB off highway 160 somewhere. At 1851:51 the CFD Alarm Room called for a special alarm⁸. Blaze 5 arrived and assumed command at 1853:37 and called for a second alarm at 1854:25. The Station 17 Captain estimated that the fires were extinguished within about 3 to 4 minutes, (about 1857 or 1858). He went to the house to gain entry into the airplane, but was unable to, so he had a window cut out of the airplane with a K-12 circular saw.

Engine 30 arrived with 1 Captain, 1 engineer and 2 fire fighters. The Engine 30 Captain recalled that they received the initial alarm as : "Possible plane crash in the vicinity of Wallace Neel and Old Dowd - with 5 SOBs" Engine 30 fire fighters pulled a 1 3/4 " hose line and began to attack the fires around the tail section. Victims approached the Fire Captain requesting oxygen and he observed 3 dead persons and he saw 2 survivors exit the house, so he concluded that more than 5 persons were involved. The Captain then proceeded into the house and noticed the odor of jet fuel. He then went outside and encountered one of the pilots who informed him that there were 46 people on board. The Fire Captain

⁷ ⁷ time based on CPD 911 telephone transcripts - NOTE times are not correlated with times reported by other agencies, e.g. FAA ATCT.

⁸ Special alarm - dispatch of hazardous materials, decontamination and rescue units.

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that information to Blaze 5, and instructed the engineer to radio the control tower for a passenger count. The engineer returned and informed him that there were 55 persons on board. The Fire Captain estimated that fires were out in 3 to 4 minutes. He recalled that Engine 30 was located on the opposite side of the airplane's tail. Although he could not find any hydrants near the wreckage, Engine 30 did not run out of water.

The Battalion 5 Chief (C5) responded from the Charlotte Communications Center downtown. As he approached the area, he noticed that the black smoke at the accident site changed to white. He also overheard varying estimates of the number of persons on board the airplane; 85, then 9, then 64. C5 reported on the scene at 1900:48, and assumed command from Blaze 5 at 1902:53.

At that time, C5 assigned Blaze 5 to continue fire suppression (the main fire was out, but Blaze 2 was putting out spot fires), Engine 21 was assigned search and rescue, and the Medical Director, who arrived at that time, was assigned medical operations. Engine 21 and Blaze 2 requested additional manpower, so C5 requested 3 companies of fire fighters be sent from staging, however the personnel never reported in, so he again requested additional manpower and directed that they report directly to him (C5), which they did. Water supplies were then becoming a concern so C5 called for the Steel Creek and West Mecklenburg Fire Department Tankers. Blaze 7 experienced 2 or 3 breakdowns, however he stated that overall fire suppression was not adversely affected.

C5 stated that he had no radio communications with the medical operations for about 20 minutes, and after about 45 minutes he reassigned medical operations to MEDIC unit 102, because the Medical Director was intubating patients. Radio communications were satisfactory, except for occurrences of frequency saturation, and thereafter staging area transmissions were put on a separate frequency. C-5 recalled that a USAir representative arrived about 25 minutes after C-5's arrival and reported that there were 55 passengers and 5 crew members were on board. He also recalled that some USAir personnel were "splashing" through the foam blanket, so he instructed the police to keep all personnel out of the area unless they wore fire equipment. A Command Trailer was established at the intersection of Old Dowd and Wallace Neel Roads.

C-5 recalled that a total of 4 survivors were extricated from the tail section. C-5, the Engine 30 Captain, and the Station 17 Captain agreed that this emergency response was much smoother than had occurred following Eastern Airlines Flight 212 accident in 1974. They attributed the improvements to the utilization of effective incident command.

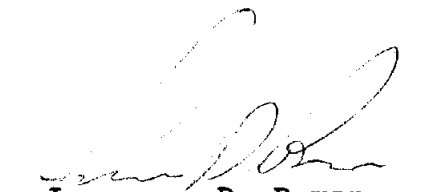
Response by fire departments totalled five alarms. CLT ARFF reported that fire fighting vehicles used 187 gallons of AFFF concentrate at the accident site. (Also see Exhibit 15C)

2.3. Medical Response

At 1843:10 CPD Communications transferred the first 911 call to MEDIC Communications. At 1845 MEDIC dispatched 4 Advanced Life Support (ALS) units, one operational supervisory unit, and the Medical Director and initiated a "Code 10", which summoned 25 additional ambulances from the surrounding area. MEDIC dispatch contacted CLT ATCT at 1845 and 1847 to attempt to obtain more information about the accident airplane. M-7 contacted one patient, in the north sector.

The first ALS unit (M-7) arrived at about 1852. Because debris was blocking the roadway, unit M-41 arrived at 1901 and established a south sector. M-41, which also had an intern trauma physician on board, was met by numerous victims who had evacuated from the airplane. Those victims were gathered in a 30 yard by 30 yard area which was used for triage. M-41 Paramedics stated that they initially had no portable radios, and they had forgotten to bring the green "disaster box" (containing mass casualty trauma supplies), which was still at their station. They requested manpower assistance from a passing Fire Captain, but he replied that he had other duties. They requested that the Fire Captain send more fire department manpower, but none arrived. The first patient was transported from the site at 1938. Additional disaster boxes arrived after about 45 minutes. Fourteen victims were transported Carolina Medical Center; 6 or 7 were transported to Presbyterian Hospital; and 2 or 3 were transported to Mercy Hospital. The 3 hospitals were initially notified of the accident at about 1900. Patients began to arrive at Carolinas Medical Center at 1938; at Presbyterian Hospital at 2005; and at Mercy Hospital at 2018.

MEDIC personnel stated that more medical supplies would have helped, i.e. disaster boxes, and that passenger accountability was difficult due to the presence of unrestrained infants. Transport of patients was accomplished by MEDIC and 7 other ambulance agencies. Other ambulances were available at the staging area, but were not needed.



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