

NATIONAL TRANSPORTATION SAFETY BOARD  
OFFICE OF AVIATION SAFETY (AS-50)  
Washington, D.C. 20594

October 31, 1994

HUMAN PERFORMANCE GROUP  
OPERATIONS SUB-GROUP  
SUB-GROUP CHAIRMAN'S FACTUAL REPORT OF INVESTIGATION

A. ACCIDENT: DCA-94-MA-076

Location: Aliquippa, Pennsylvania  
Date: September 8, 1994  
Time: 1904 Eastern Daylight Time  
Airplane: Boeing 737-300, N513AU

B. OPERATIONS SUB-GROUP

The sub-group met at the on-site command post on September 9 through 15, 1994. The following group members participated in the investigation:

Chairman: Malcolm Brenner, Ph.D.  
National Transportation Safety Board  
Washington, D.C. 20594

Members: Jodi Reeves  
National Transportation Safety Board  
Chicago, IL

Robert Sumwalt  
Air Line Pilots Association  
USAir  
Pittsburgh, PA

Peter J. Lambrou, M.D.  
USAir  
Pittsburgh, PA

Chuck DeJohn, D.O.  
Civil Aeromedical Institute  
Federal Aviation Administration  
Oklahoma City, OK

C. SUMMARY

On September 8, 1994, at 1904 Eastern Daylight time USAir flight 427, a Boeing 737-300, N513AU, crashed while maneuvering to land at Pittsburgh International Airport, Pittsburgh, Pennsylvania. The airplane was being operated on an instrument flight rules (IFR) flight plan under the provisions of Title 14, Code of Federal Regulation (CFR), Part 121, on a regularly scheduled flight from Chicago-O'Hare International Airport, Chicago, Illinois, to Pittsburgh. The airplane was destroyed by impact forces and fire near Aliquippa, Pennsylvania. All 132 persons on board the airplane were fatally injured.

D. DETAILS OF INVESTIGATION

The sub-group, working in support of the operations group, focussed on human performance issues related to the pilots. These included medical issues, including identification of remains and toxicology testing. Three members focussed on operational issues. They participated in interviews of individuals related to the flightcrew, in some cases working together with members of the operations group.

The wives of the pilots declined to be interviewed by members of the sub-group. However, they provided written answers to questions from the sub-group. Additional relevant documents related to the flightcrew were obtained and reviewed.

1. Background of the pilots

The captain, age 45 years, was hired by USAir in February, 1981. According to his wife, he became interested in aviation as a child because an uncle was a transport pilot. The captain began private flying lessons as a high school student. He served as a pilot in the U.S. Air Force, flying the T-37, T-38, and O-2 aircraft. After completing military service, he worked as a pilot for Pilgrim Airlines, Braniff Airways, and, when furloughed from Braniff, for USAir. His wife indicated that the captain once belonged to a flying club, but that she was not aware of his having participated in any aerobatic events. She was not aware of any in-flight emergencies experienced by the captain.

The captain lived in Moorestown, NJ and was based at Philadelphia (PHL). He and his wife had been married for 19 years and had two young children. Several colleagues indicated that the captain appeared to be happily married and devoted to his family. According to his wife, there were no major changes in the captain's personal or financial situations in the twelve months before the accident. He held a valid New Jersey driving license with a history of no automobile accidents and one violation in the preceding three years. The violation, in January, 1993, was for

failure to give a proper signal. Records of the FAA and NTSB indicated no aviation accidents or enforcement actions. Records of the Federal Bureau of Investigation (FBI) National Crime Information Center (NCIC) indicated no criminal history.

Two first officers who had flown recently with the captain indicated that his greatest strength as a pilot was an ability to get along with the entire crew and bring both first officers and flight attendants into the operation. One co-pilot described a recent flight in which the captain attempted a VOR approach in bad weather into an airport neither pilot had landed at before. He said the captain provided a long briefing and flew the approach well.

The first officer, age 38 years, was hired by Piedmont Airlines (subsequently merged into USAir) in February, 1987. According to his wife, he became interested in aviation through a family-owned fixed-based operation at an airport at which he had worked as a child. He began private flying lessons as a teenager, worked as a corporate pilot, and was hired by Piedmont. His wife indicated that he had extensive experience flying small aircraft, but that she was not aware of his having participated in any aerobatic flying.

The first officer experienced an in-flight emergency situation in August, 1994. It involved the loss of the B hydraulic system on a Boeing 737 aircraft during revenue service. The crew had to execute an overweight precautionary landing. The first officer was flying when the emergency began, then relinquished control and assisted the captain at executing diagnostics and landing. The captain of the flight indicated that the first officer was very calm during the situation.

The first officer lived in Nassau Bay, TX and commuted to his base at PHL. He and his wife had been married for almost two years and did not have children. Several colleagues indicated that the first officer appeared to be happily married. His wife accompanied him as a passenger on a four-day trip in August. According to his wife, there were no major changes in the first officer's personal or financial situations in the twelve months before the accident. He held a valid Texas driving license with no history of automobile accidents or violations in the preceding three years. FAA and NTSB records indicated no aviation accidents or enforcement actions. Records of the Federal Bureau of Investigation (FBI) National Crime Information Center (NCIC) indicated no criminal history.

## 2. Activities before the accident

The accident occurred on the last day of a three-day flight sequence that had begun on Tuesday, September 6. Both crewmembers were off-duty on September 5 (Labor Day). Their activities prior to reporting for duty were described by their wives.

According to his wife, the captain normally slept about seven and one half hours when he was not working. On Monday, September 5, he awoke between 0700 and 0800 after having gone to bed about 2300 the previous evening. He spent the day with his family, visiting a nearby park and having dinner with friends. The captain went to bed between 2300 and 2400. On Tuesday, September 6, he awoke at 0700. He did chores around the house, played with his children, and had a light lunch. He departed in the afternoon for PHL with a reporting time of 1616.

According to his wife, the first officer normally slept about eight hours when he was not working. On Monday, September 5, he awoke between 0630 and 0700 after having gone to bed about 2200 the previous evening. He and his wife had lunch with neighbors and went sailing in the afternoon, and the first officer went to bed at approximately 2200. On Tuesday, September 6, he awoke about 0500, departed the house around 0600 to drive to Houston Intercontinental Airport, and caught a deadheading flight to PHL about 0755 (cdt). He arrived early for his reporting time at 1616 (edt).

The first day of the accident trip consisted of three flight legs and concluded at 2310 at Toronto, Canada. According to their wives, both pilots called from the layover hotel. The first officer said that he had not flown previously with any of the other crewmembers and that it was a "good crew."

On Wednesday, September 7, the crew reported for duty at 1400, flew three flight legs, and finished duty at 2254 at Jacksonville, Florida (JAX). According to the customer service agent (CSA) who met the flight, the crew seemed cheerful. It was the birthday of one of the flight attendants, and the remaining crewmembers sang "happy birthday" and kidded her as they left the airplane together. They checked into the layover hotel at approximately 2330. According to hotel records, the captain ordered a sandwich that was delivered at 2352 by room service. According to their wives, both pilots called that evening and sounded normal. The wife of the first officer indicated that the trip appeared to be routine.

On Thursday morning, September 8, the captain telephoned a male friend at 10:23 and, according to the friend, sounded normal. The captain also spoke with his wife and they discussed plans for the weekend. The crew had a reporting time of 1215. According to the CSA who brought paperwork to the airplane, the pilots and flight attendants arrived together, ahead of the reporting time, and their mood was very happy. They had purchased food at the

airport, and, being early, sat together in the airplane eating it. After the passengers were boarded, the CSA overheard the captain talking in the cockpit with a flight attendant concerning a problem passenger. The captain indicated that if the passenger continued to be a problem during the flight, he should be alerted and he would come back to the cabin to handle the problem. The CSA described the captain's mood as very good, and indicated that he seemed rested.

The crew departed JAX at 1310, flew a leg to Charlotte, NC, and a second leg to Chicago (ORD). A deadheading pilot rode in the cockpit jumpseat on the second leg. He described the pilots as amiable and alert, and indicated that the flight seemed routine. The jumpseat rider indicated that the captain provided a thorough jumpseat briefing, and invited input from the first officer and the jumpseat rider concerning ORD since he had not landed there recently. All passengers deplaned at ORD. A CSA who boarded the flight while it was being cleaned described the captain as alert, not rushed, and displaying no evidence of alcohol or other impairment. The captain thanked her for having the lavatories emptied in response to a request from the flight attendants. Another CSA, who interacted with two flight attendants, said they were in a good mood. The flight was loaded, and departed ORD on the accident leg.

### 3. Medical factors

The captain held a valid first class airman medical certificate dated 7/9/94. There were no restrictions. His height was listed as 5'11" and weight as 210 pounds. Distant vision was listed as 20/20 in each eye without correction, and near vision as 20/60 corrected to 20/20 in each eye.

The captain had undergone back surgery in March, 1994 to remove a ruptured disk. He returned to flight status in May, 1994. According to his wife, he did not complain of further back pain. The captain drank alcohol rarely, according to his wife, and took no medication other than allergy shots. The wife characterized her husband's health as "very good."

The first officer held a valid first class airman medical certificate dated 7/13/94. There were no restrictions. His height was listed as 6'3" and weight as 210 pounds. Distant vision was listed as 20/15 in each eye without correction, and near vision as 20/30 in each eye without correction. The first officer did not take medication, and, according to his wife, was a moderate, occasional drinker. She characterized the first officer's health as "excellent."

Remains from both pilots were identified using DNA protocols at the Armed Forces Institute for Pathology (AFIP). Toxicological samples for both pilots were sent to the Federal Aviation Administration (FAA) Civil Aeromedical Institute (CAMI) and testing is in progress.

4. Air traffic control toxicology testing

In response to a request from the Safety Board for toxicological samples from all air traffic personnel involved with the accident aircraft, the air traffic control tower supervisor on duty voluntarily provided urine and blood samples. The samples were stored and subsequently returned untested to the individual when a determination was made that this individual was not significantly involved in the accident.

  
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Malcolm Brenner, Ph.D.  
Senior Human Performance Investigator