CIVIL AERONAUTICS BOARD

ACCIDENT INVESTIGATION REPORT

Adopted: June 25, 1948 Released: June 25, 1948

NATIONWIDE AIR TRANSPORT SERVICE, INC.—CARMEL, NEW JERSEY, JANUARY 5, 1947

The Accident

A Douglas DC-3, NC-50046, owned and operated by Nationwide Air Transport Service, Inc., a non-certificated air carrier,[1] crashed near Carmel, New Jersey, at approximately 2030,[2] January 5, 1947. Of the 23 occupants aboard, the co-pilot and two passengers were killed, and 10 passengers sustained serious injuries. The aircraft received major damage.

History of the Flight

The flight departed from the 36th Street Airport, Miami, Florida, at 1430, January 5, 1947, for Newark, New Jersey, carrying a crew of three, 20 passengers, 600 gallons of fuel, and 423 pounds of baggage. Because of reported low ceilings, rain, and snow extending from Savannah, Georgia, to Raleigh, North Carolina, Captain Robert Sheker, the pilot, had planned to land at Jacksonville, Florida, for fuel, and then to proceed non-stop to Newark. Shortly before take-off the sequence reports indicated an improvement in the weather at Raleigh and Captain Sheker decided, therefore, to alter his flight plan to include a refueling stop at Raleigh rather than at Jacksonville. An instrument flight plan was accordingly filed specifying a cruising altitude of 7,000 feet to Raleigh and designating Richmond, Virginia, as alternate.

After passing Savannah the flight was instructed by the Jacksonville Air Traffic Control Center to change its cruising altitude to 9,000 feet. This change in altitude was made and the flight proceeded to Raleigh, reporting over Raleigh at 1815. The ceiling at Raleigh at this time was 400 feet and the visibility was restricted by fog to three-quarters of a mile. Since the last Richmond weather report transmitted to the flight indicated a ceiling of 2,000 feet, visibility one and three-quarters miles, light rain and smoke, the flight requested and received clearance over Raleigh to Richmond. The flight reported leaving Raleigh at 1832 and proceeded to Richmond at 9,000 feet.

The flight arrived over Richmond at 1857 at which time the reported weather at Richmond was ceiling 300 feet and visibility one and one-quarter miles, which was below the minimums for that airport. In view of the fact that the weather at Washington, D. C., was being reported as ceiling 1,600 feet, visibility two and one-half miles, light rain, and fog, the flight requested and obtained clearance to continue to Washington. At this time approximately one hour and 30 minutes fuel remained. Having been instructed by the Washington Air Traffic Control Center to descend to 8,000 feet when over Doncaster, Virginia, the flight continued to Washington at that altitude. Static and unusually heavy communications traffic made it impossible for the flight to contact Washington until approximately 1938, at which time it had proceeded two miles beyond the Washington radio range station.

During the flight from Richmond to Washington the pilot, overhearing the considerable amount of communication between Washington Radio and other aircraft, became apprehensive concerning the possible delay at that station in awaiting instrument approach clearance. At the time of his position report all approaches had been temporarily suspended at Washington because of two flights which had declared emergencies due to a shortage of fuel. The pilot, therefore, requested a report of the

[1] The term, "Non-Certificated Air Carrier," as used herein means an air carrier which does not possess a Certificate of Public Convenience and Necessity issued under Title IV of the Civil Aeronautics Act of 1938, as amended. These carriers are commonly referred to as non-scheduled air carriers.

[2] All times referred to herein are Eastern Standard and based on the 24-hour clock.

Millville, New Jersey, weather and was advised that the latest sequence report for that station was ceiling 2,000 feet, overcast, visibility seven miles, light rain. Since all stations northeast of Washington were reporting weather conditions well above visual flight rules minimums, the pilot requested and received clearance to Millville. At this time he reported one hour's fuel supply remaining and estimated reaching Millville in 30 minutes.

Shortly after the flight was cleared to Millville the Washington Center of Air Traffic Control notified the New York Center by interphone that the flight was en route to Millville at 9,000 feet. At approximately 1950 the aircraft communicator at Washington recalled that the Millville communications station ceased operation at 2000. This fact came to the attention of the New York Center of Air Traffic Control shortly after 2000 and the center, therefore, requested Philadelphia Radio to attempt to establish contact with the flight to advise the pilot of this condition. Between 1950 and 2015 Philadelphia Radio and Washington Radio made repeated attempts to contact the aircraft without success. Due apparently to the unusually severe static interference, the captain's attempts to contact Millville prior to 2000 were not successful.

At approximately 2002, while en route to Millville, the flight established a descent. The Millville radio range station was crossed at approximately 2007 at an altitude of 7,000 feet. The flight proceeded out the northwest leg and completed a standard instrument approach to the Millville airport at 2015. Since no notice was given the airport management of the anticipated arrival of the aircraft, the field lights were not on. The aircraft passed over the airport at an altitude of approximately 1,000 feet but the pilot was not able to sight the field. Hearing the aircraft pass over the field, the manager of the airport immediately turned on the beacon and the boundary and runway lights. However, the aircraft was not heard or seen thereafter in the immediate vicinity of the airport.

Failing to orient himself with respect to the airport during the following 10 minutes and realizing that the fuel aboard was dangerously low, the pilot decided to effect an emergency landing. While searching for a suitable cleared area, contact was made with trees at an indicated airspeed of slightly more than 60 miles per hour. Full power was applied in an attempt to recover, but the aircraft struck the ground and skidded to a stop in a wooded area near Carmel, New Jersey, at approximately 2030.

Investigation

The aircraft had crashed into slightly rolling and wooded terrain seven-tenths of a mile north of the Millville range station while headed in a northerly direction. It was apparent from the marks of impact that contact had been made with the ground in a near stalled attitude. The fuselage retained its general structural configuration, although considerable damage was sustained by the leading edges of the wings and horizontal stabilizers as a result of contact with the ground and with trees. The condition of the safety belts of the two passengers who were fatally injured and who were occupying the forward left seats indicated that they were not fastened at the time of impact. Fourteen of the 21 passenger seats were broken at the top of the leg attachment brackets.

Inspection of the aircraft wreckage disclosed no evidence of structural failure or equipment malfunctioning prior to impact. Examination of the maintenance records of this aircraft indicated that it was in airworthy condition prior to departure from Miami. The captain stated that the aircraft and all accessory equipment functioned normally throughout the flight.

Communication records of the Civil Aeronautics Administration revealed that all radio facilities between Washington and Millville, including the Millville range, were functioning normally during the evening of January 5, although unusually heavy static was experienced on frequencies other than VHF. The pilot stated that at no time did he receive any notice from any ground station concerning the fact that the Millville communication station ceased operation at 2000. Although it is probable that the first attempt by the flight to contact the Millville communication station occurred slightly before 2000, the severe static interference would no doubt have made reception of this call difficult.

When the flight arrived in the vicinity of Millville the communicator had already left his post.

On the afternoon of January 5, a cold front was located in the southeastern United States, oriented northeast-southwest, and passing over northern Florida with a warm wave off the Atlantic Coast. Moist maritime air was flowing into the southern seaboard states aloft and the overrunning of this air produced relatively high ceilings. However, as a result of almost continuous rain in this area, the surface air became saturated and low stratus cloud formations resulted. The cooling which occurred during the evening of that day produced fog and caused general lowering of ceilings. In this instance the Weather Bureau forecasts for Raleigh and Richmond failed to anticipate such an occurrence.

At the time of departure of the flight from Miami, the weather at Raleigh was being reported as ceiling 4,000 feet, visibility one and one-half miles. The terminal forecast for this station indicated that the ceiling would remain at 2,000 feet or above at the estimated time of arrival of the aircraft. Soon after departure, the ceiling at Raleigh lowered to 500 feet; however, the weather reports for Richmond, the alternate airport, continued to indicate ceilings above 5,000 feet. The first amended forecast for these terminals was made at 1455, which indicated that marginal conditions were anticipated at Raleigh. However, no change was made in the forecast for Richmond. Although the weather conditions at Richmond at the time of the flight's passage over Raleigh were being reported as "ceiling 500 feet, visibility two miles," there is no record that the flight was advised of such low ceilings. In each instance, the forecasts of marginal or below-minimum conditions at these terminals were issued after such conditions had already been observed and reported.

Meanwhile, a cell of polar continental air was moving in a southeasterly direction into the United States from central Canada. The influx of the dry-cold air into the northeastern United States, due to its unstable lapse rate and low moisture content, was believed by the United States Weather Bureau forecast personnel to provide an indication of satisfactory weather conditions north of Washington at the time of arrival of the flight. However, during the period of this flight a low pressure trough began to appear in the West Virginia area accompanied by considerable unexpected precipitation. The surface flow during this period was toward the northeast and the moisture content of the lower levels appeared to be higher than had been anticipated. The cold air aloft meanwhile was flowing toward the east and southeast. The convergence of these two air masses was difficult to detect because of the absence of radio winds-aloft facilities in the northeastern United States. The advection of cold air aloft produced an unstable condition which resulted in extensive snow showers and which moved eastward farther and more rapidly than had been anticipated.

The latest report available to the flight concerning the weather at Millville indicated a ceiling of 2,000 feet, visibility seven miles, and light rain at 1926. Although it is known that these conditions remained fairly constant until 2000, no official observations were made after that time. However, other evidence indicates clearly that heavy snow began to fall at Millville shortly after 2000, reducing the visibility considerably. At times the visibility was zero in heavy snow.

The current issue of the Notices to Airmen published by the Civil Aeronautics Administration in the Airman's Guide did not indicate either the hours of operation of the Millville voice communications facility or the fact that the airport lighting facilities were available only on request. Since the pilot made no reference to the Notams, this oversight did not influence the pilot's decision. However, the communicator on duty at Washington testified that he consulted the current Airman's Guide in order to determine whether it would be advisable to transmit any "advisory" concerning Millville to the pilot. Finding no reference in the Airman's Guide, he transmitted no such "advisory," nor was the pilot advised through any other source of the imminent shutdown of this station. Since Millville was not then on any civil airway and because traffic was generally very light in this area, it was the pilot's opinion that he would experience less delay at Millville than at any other major airport in that area.

On January 5 the Civil Aeronautics Administration was engaged in establishing an interphone communications system between Millville and the New York Air Traffic Control Center in order to provide direct communications with that station in anticipation of designating a new airway which would pass directly over Millville and for which Millville would constitute a compulsory reporting point. This system was not in operation on the night of the flight and the only voice facility available whereby either the New York or Washington centers were able to contact the personnel on duty at Millville prior to 2000 was the long distance telephone. No attempt was made by either center to notify Millville by telephone of the intended arrival of NC-50046.

Normal communications procedures of the Federal Airways Service required that a teletype communication be transmitted from the Washington communication station containing the change of flight plan of NC-50046. This flight plan should have been transmitted on Circuit 93, the Service "B" teletype circuit serving Millville, in addition to those circuits serving other stations normally notified of the flight's change in destination. The communicator responsible for the transmission of the flight plan in this instance, however, neglected to transmit the message on Circuit 93. The other teletype messages were transmitted from Washington approximately ten minutes before the Millville station ceased operation. The omission of the Circuit 93 transmission was not discovered until several hours after the accident had occurred.

Discussion

As the flight progressed northward from Miami, the unpredicted influx of precipitation into the eastern seaboard states caused a progressive deterioration of the weather at successive northern terminals. In each instance when the captain was confronted with weather conditions at or below minimums at his destination, the next major station north was expected to remain above instrument minimums. This condition was encountered first at Raleigh, then at Richmond, and later at Washington. There is little doubt that the weather conditions encountered by the flight while en route from Miami were completely unexpected and the pilot's decision to forego an instrument approach, both at Raleigh and Richmond, was doubtless in order. In the light of the favorable forecasts for terminal north of Raleigh, the decision of the pilot to continue northward was completely justified. Several of the emergencies which were declared in the Washington-Baltimore area were aircraft operating from Miami under conditions similar to those of this flight.

Confronted with a critically low fuel supply at Washington, the decision of the pilot, in view of the congested traffic situation at that terminal, was indeed a difficult one. While some question may be raised concerning the wisdom of the pilot's decision to pass Washington, it appears that it was motivated by a desire to avoid contributing to the difficulties which already existed in that area. Furthermore, the air traffic controller stated that the flight would probably not have been able to land at Washington sooner than at Millville because of the time required to descend from 8,000 feet and the possible delay because of existing emergencies. In this respect, it is significant to note that seven emergencies were declared at Washington, two at Philadelphia, and two at Baltimore between the hours of 1822 and 2126.

It appears that the radio winds-aloft facilities essential to an accurate and rapid forecast of meteorological conditions at high altitude which affected the area north of Washington were lacking in this instance. Most of the winds aloft reporting stations in the northeastern states obtain their data from visual theodolite readings of pilot balloons; however, radio winds aloft observations were obtained from only one station in this region during the afternoon of January 5. Under conditions of poor visibility or low overcast, visual winds aloft readings are not possible and in this instance few reports concerning high altitude winds were available from which to analyze the weather trends aloft. The lack of high altitude weather data made it impossible for the Weather Bureau to anticipate the snow storm conditions which affected the area north of Washington. Since these conditions were not forecast, a far greater number of aircraft was dispatched into the affected area than would have been the case had more accurate information been available.

The same forecasts of satisfactory weather in the Millville area which influenced the pilot's decision to proceed to Millville were used by Air Traffic Control in its operations. Neither the Washington nor the New York Center, therefore, had any reason to believe that the flight would encounter the heavy snow conditions which existed at the time of its arrival at Millville.

The evidence accumulated in the course of this investigation indicates clearly that the traffic conditions existing during the evening and night of January 5, 1947, were such that the number of the Civil Aeronautics Administration personnel on duty during that period was not sufficient to provide adequate traffic handling. The gravity and complexity of the traffic situation required frequent shifting of duty assignments and, in order to prevent a complete breakdown of the system, during the more critical periods some individuals were performing functions normally accomplished by several.

Millville lies within the Flight Information Area of the Washington communications station. The communicator on duty at Washington, therefore, had at his disposal a facilities suspense file which contained complete information concerning Millville. However, under the press of a critical traffic situation the communicator apparently chose to refer to the more readily accessible Airman's Guide which, as a result of an oversight, did not contain any reference to the hours of operation of the Millville communication station. It is apparent, therefore, that this oversight in the Airman's Guide contributed to the failure on the part of the Washington communicator to advise the flight concerning the facilities at Millville.

Although the flight left the vicinity of Washington without having been forewarned of the status of the facilities at Millville, there nevertheless was available to the Washington communicator a course of action which might well have averted this accident. Had Millville been notified of the expected arrival of the flight in sufficient time, the airport lighting facilities would have been turned on prior to its approach. Such a notice would have been provided the Millville communications station had the flight plan been transmitted on the circuit serving that station. It appears that the fact that such a transmission was not made was due, at least in part, to the unusual volume of instrument traffic at Washington and the exceptional number of emergency operations being handled. Although additional attempts were made to contact Millville by teletype from Washington, it appears that these transmissions were not made in sufficient time to be available to the Millville communicator prior to the closing of the station at 2000.

It appears that the Millville airport personnel turned the airport lights on shortly after the first approach of NC-50046. The testimony of witnesses in that area indicates clearly that the aircraft remained below the overcast, that the pilot was attempting to orient himself by visual reference to the ground, and that he did not return to the immediate vicinity of the airport at any time after his first approach. Had the pilot accomplished a normal missed-approach procedure, there is little doubt that he would have sighted Millville airport during the second instrument approach. However, it must be remembered that the remaining fuel supply was so critically low at this time that any decision concerning the necessity for executing a missed-approach procedure must have been tempered with the possibility that the aircraft may have exhausted its fuel while the flight was on instruments.

Findings

On the basis of all available evidence the Board finds that:

1. The air carrier, aircraft, and crew were properly certificated.

2. At the time of departure from Miami, Florida, the aircraft was properly loaded with respect to both its maximum allowable gross weight and center of gravity.

3. The flight departed Miami at 1430 with its destination Newark, New Jersey, and with its first stop scheduled at Raleigh, North Carolina.

4. The weather at Raleigh was forecast to remain above minimums during the flight; however, the weather at that station worsened to below minimums prior to the arrival of the flight, and the pilot, therefore, requested and received clearance to Richmond, Virginia.

5. Although the weather at Richmond was above minimums at the time of the

reclearance and forecast to remain above minimums, it was below minimums when the flight arrived and the pilot, therefore, requested and received clearance to Washington, D. C.

6. The weather at Washington remained well above instrument flight rules minimums throughout this portion of the flight. However, considerable delay was being experienced at that station as a result of traffic congestion and the existence of emergencies in that area.

7. Having overheard radio conversations concerning emergencies in the Washington area, the pilot requested clearance to Millville, New Jersey, without making any inquiry concerning the estimated delay in approach clearance at Washington.

8. Clearance to Millville was granted by the Washington Air Traffic Control Center.

9. In delivering the clearance to the flight, the aircraft communicator at Washington transmitted no information concerning the status of facilities at Millville; due to an oversight, no irregularities in the above facilities were noted in the Airman's Guide.

10. Shortly after the aircraft left the vicinity of Washington, the Washington communicator recalled that the Millville communications station ceased operation at 2000.

11. Since the flight's estimated time of arrival at Millville was approximately five minutes after 2000, several attempts were subsequently made to inform the flight of the hours of operation of the Millville communications station; however, no radio contact was established.

12. Due to an oversight, the revised flight plan was not transmitted by the Washington communications station over teletype to Millville until several hours after the station ceased operation.

13. Failing to sight the unlighted airport after the first approach, the pilot attempted for approximately 10 minutes to locate the airport by maneuvering under the overcast with visual reference to the ground.

14. Although the airport lights were turned on shortly after the first approach, the aircraft did not return to the immediate vicinity of the airport.

15. Because of a critically low fuel supply, the pilot crash-landed the aircraft near Carmel, New Jersey, at 2030.

Probable Cause

On the basis of the above findings the Board determines that the probable cause of this accident was the necessity of the pilot to attempt an emergency crash landing because of imminent fuel exhaustion. A contributing factor was the failure of the United States Weather Bureau to anticipate below-minimum weather conditions north and south of Washington sufficiently in advance of the arrival of the flight at each of the various terminals selected as its destination and alternates. A further contributing factor was the oversight on the part of Civil Aeronautics Administration personnel in failing to note the status of communications and lighting facilities at Millville in the Airman's Guide and in failing to transmit the flight plan by teletype to Millville in sufficient time to alert that station to the expected arrival of the flight.

BY THE CIVIL AERONAUTICS BOARD:

/s/ JOSEPH J. O'CONNELL, JR.
/s/ OSWALD RYAN
/s/ JOSH LEE
/s/ HAROLD A. JONES

Adams, Member, did not participate.

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Supplemental Data

Investigation and Hearing

The Board was advised of the occurrence of this accident at 2330, January 5, 1947, and an investigation was immediately initiated in accordance with the provisions of Section 702 (a) (2) of the Civil Aeronautics Act of 1938, as amended. Investigators of the Board's New York office proceeded immediately to Carmel, New Jersey, reaching the scene of the accident at 0215, January 6, 1947. A public hearing was ordered by the Board and was held in New York, January 23, 1947.

Air Carrier

Nationwide Air Transport Service, Inc., was incorporated in the State of Delaware and maintained its headquarters at Miami Springs, Florida. At the time of the accident Nationwide Air Transport Service, Inc., was operating as a non-certificated air carrier and was conducting the major portion of its flight operations in the eastern United States.

Flight Personnel

Robert Donald Sheker, age 26, of Coral Gables, Florida, was pilot of the aircraft. He possessed a commercial pilot certificate with instrument rating and until the date of the accident he had accumulated a total of 2,463 hours flight time, of which approximately 2,200 hours had been obtained in DC-3 type equipment. Percy Wayne Vannoy, age 30, of Hialeah, Florida, was co-pilot. He possessed a commercial pilot certificate with instrument rating and until the date of the accident had accumulated a total of approximately 3,000 hours. Although approximately 2,000 hours of his total flight experience had been accumulated in twin engine aircraft, Mr. Vannoy had little experience in the DC-3. Miss Venetia Britt, age 20, Lumberton, North Carolina, was stewardess.

Aircraft

NC-50046, Douglas DC-3-C, Serial No. 4511088, had been operated a total of 938 hours since original manufacture. It was equipped with two Pratt & Whitney R-1830-92 engines, of which the left and right engines, respectively, had been operated for a total of 625 hours and 1,442 hours, and 41 hours and 40 hours since the last major overhaul. At the time of departure from Miami the total weight of the aircraft was less than the maximum allowable gross and the load was distributed with respect to the center of gravity within the allowable limits.