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REPORT OF THE CIVIL AERONAUTICS BOARD

On the investigation of an accident involving aircraft of United States registry NC 17320 which occurred at Dayton, Ohio, on June 27, 1942.

*See Supplemental Report
Released Feb. 25, 1943.*

CONDUCT OF INVESTIGATION

An accident involving aircraft NC 17320 occurred at the Dayton Municipal Airport, Dayton, Ohio on June 27, 1942 at 3:44 a.m. (all times referred to herein are EWT) while the aircraft was operating in scheduled air carrier service between New York, New York and Los Angeles, California, as Flight 3 of Transcontinental and Western Air, Inc. (hereinafter referred to as TWA). The accident resulted in substantial damage to the airplane. At the time of the accident the airplane was carrying fifteen passengers and a crew of three. None of the passengers or members of the crew sustained any injuries.

The Chicago office of the Safety Bureau, Civil Aeronautics Board, (hereinafter referred to as the Board), was notified by the TWA Chicago office at 4:15 a.m. the same day. Immediately after receiving this notification the Board initiated an investigation of the accident in accordance with the provisions of Section 702 (a) (2) of the Civil Aeronautics Act of 1938, as amended. Investigators were sent to the scene of the accident, the first of whom arrived there about 6:00 p.m., June 27.

In connection with the investigation of the accident, a public hearing was held at Kansas City, Missouri on July 8, 1942. The following personnel of the Safety Bureau of the Board participated in the hearing: W.K. Andrews, Chief, Investigation Section, as Examiner; R. D. Hoyt, Assistant Director; R. P. Parshall, Senior Air Safety Investigator; and H. V. Shebat, Air Safety Investigator. R. C. Schmidt, U. S. Weather Bureau, Department of Commerce, also participated.

Upon the basis of all the evidence accumulated in the investigation and at the hearing, the Board now makes its report in accordance with the provisions of the Civil Aeronautics Act of 1938, as amended.

II.

SUMMARY AND ANALYSIS OF EVIDENCE

At the time of the accident TWA was operating under currently effective certificates of public convenience and necessity and air carrier operating certificates. These certificates authorized it to engage in air transportation with respect to persons, property, and mail over various routes, including Route No. 2 between the co-terminal points, New York, New York and Newark, New Jersey, and the terminal point Los Angeles, California, via certain intermediate points, including Pittsburgh, Pennsylvania; Columbus and Dayton, Ohio; Indianapolis, Indiana; St. Louis and Kansas City, Missouri; Wichita, Kansas; Amarillo, Texas; Albuquerque, New Mexico; Winslow, Arizona; and Boulder City, Nevada.

The crew consisted of Captain Norman A. Hortman, First Officer Charles C. Connick, and Hostess Ruby Davis.

Captain Hortman, who had a total of approximately 3,876 hours of flight time, was the holder of an airline transport pilot certificate and had been in the employ of TWA for a little over three years. Prior to the accident he had logged approximately 1400 hours as a captain on Douglas equipment. Company records indicated that he was a well-qualified and proficient pilot. He received a satisfactory grade on his last flight check, given under the hood in April 1942. His last physical examination, required by the Civil Air Regulations, was taken on March 12, 1942.

First Officer Connick, who had a total of approximately 2,800 hours of flight time, was the holder of a commercial pilot certificate with instructor and instrument ratings, and had been in the employ of TWA since February 1942. Prior to the accident he had logged approximately 143 hours as a co-pilot in Douglas DC-3 equipment. His last physical examination, required by the Civil

Air Regulations, was taken on February 10, 1942.

It appears from the evidence that both Captain Hortman and First Officer Connick were physically qualified and held proper certificates of competency for the flight and equipment involved.

Aircraft NC 17320 was a Douglas, model DC-3, manufactured by the Douglas Aircraft Company, Inc., of Santa Monica, California, and purchased new by TWA in August 1937. It was powered with two Wright Cyclone G202A engines, and at the time of the accident had been flown a total of 13,152 hours. This model aircraft and its equipment had been approved by the Civil Aeronautics Administration for air carrier operation over routes flown by TWA with 21 passengers and a crew of four. The airplane had been certificated for operation with a standard weight of 24,400 pounds and a provisional weight of 25,200 pounds,^{1/} without de-icer equipment. TWA's weight computation sheet indicates that at the time of the departure of Flight 3 from Pittsburgh, Pennsylvania, the weight of the airplane was 25,199 pounds. This consisted of: Passengers 2,550 pounds; cargo 2,272 pounds; airplane 17,803 pounds; buffet 234 pounds; and fuel 2,340 pounds. The airplane was properly loaded and the weight distributed in such a manner that the c.g. location was within the allowable limits. The aircraft and its equipment had received the overhauls, periodic inspections, and checks which are required by company practice and approved by the Civil Aeronautics Administration.

^{1/} The "standard weight" of an airplane is the maximum allowable weight for landing, while the "provisional weight" of an airplane is the maximum allowable weight for take-off. When an airplane takes off with a weight in excess of the designated standard weight, the weight of the airplane must be reduced by gasoline consumption, prior to arrival at its next scheduled stop, to the extent necessary to bring it within the standard weight for landing. If sufficient gasoline has not been consumed between time of take-off and any emergency landing, gasoline can be dumped by the use of tested and approved dump valves in order to reduce the total weight to the approved weight for landing. At the time of the accident the weight of the airplane had been reduced since its departure from Pittsburgh, Pennsylvania, to its authorized standard weight.

History of the Flight

TWA's Flight 3 of June 26, 1942, originated at La Guardia Field, New York, and was operating as a scheduled air carrier flight from New York to Los Angeles, California, with several scheduled intermediate stops, including Pittsburgh, Columbus, and Dayton. It departed from Pittsburgh at 2:07 a.m., cleared to Dayton, Ohio, with Detroit, Michigan, and Fort Wayne, Indiana, as alternates. At 2:34 a.m., while the flight was east of Columbus a special report was issued showing that weather conditions at Dayton had fallen below the minimum visibility limits.^{2/} At 3:06 a.m. the flight was re-dispatched to Toledo, Ohio with Detroit as an alternate. Flight 3 passed over Columbus at 3:08 a.m. at which time, according to Captain Hortman's subsequent statement, the latest Dayton, Columbus and Toledo weather information was received. The captain proceeded to the Troy intersection with the intention of following Red Airway #27 to Toledo. (Red Airway #27 intersects Green Airway #3, on which he was flying at Dayton.) However, upon arriving at the intersection, he elected to circle the Dayton Airport for the purpose of ascertaining whether or not conditions there would permit landing instead of continuing to his approved destination. His testimony shows that at an altitude of 4000 feet, he was able to see the boundary lights and runways. At this altitude, it appeared to him that there was some fog on the eastern portion of the field but only haze on the remaining part of the field. He requested permission from Airway Traffic Control to circle the field, after which he circled three times, descending to an altitude of about 700 feet. While he was circling, he requested a spot weather observation from the company radio operator at Dayton. This operator reported that the visibility was "not so good."

^{2/} TWA minimums for landing at the Dayton Municipal Airport at night were: Straight-in approach, 500-foot ceiling, 1 mile visibility; over a 46° turn 500-foot ceiling, 2 mile visibility; 600-foot ceiling, 1½ mile visibility, or 700-foot ceiling, 1 mile visibility also approved.

While making his second trip around the field, Captain Hortman had requested permission from Airway Traffic Control at Cincinnati to land at Dayton. He testified that clearance to land was radioed from the Dayton Airport. The approach to the field was from the west. The landing gear was lowered and the flaps were extended at a point about one-half mile from the boundary of the airport. During the approach the aircraft was stalled at an altitude of from three to five feet and fell in on the left wing and stabilizer, bounced over on the right wheel, and was slowed down to a stop just off the runway. The ship was then taxied to the loading platform. The impact resulted in some damage to the left wing, left elevator, left stabilizer, right wing and fuselage. There was no evidence of any malfunctioning of the aircraft, engines or accessories prior to the impact.

Weather Conditions

The weather reports indicated that a zero visibility condition prevailed at the Dayton Municipal Airport from 3:00 a.m. to 5:00 a.m. on June 27, 1942, and the airport was closed from 2:34 a.m. until 7:30 a.m.

The U.S. Weather Bureau observations for Dayton from 3:00 a.m. to 5:30 a.m. were as follows:

(SPECIAL) 3:00 a.m. Instrument, high scattered clouds, visibility zero, dense ground fog, sea level pressure 1022.0, temperature 61, dew point 60, wind NE 3, altimeter setting 30.18

3:30 a.m. Instrument, high scattered clouds, visibility zero, dense ground fog, sea level pressure 1022.0, temperature 58, dew point 58, wind NE 4, altimeter setting 30.18

4:30 a.m. Instrument, high scattered clouds, visibility zero, dense ground fog, sea level pressure 1022.0, temperature 58, dew point 58, wind NE 5, altimeter setting 30.18

5:30 a.m. Instrument, high scattered clouds, visibility 1/8 mile, dense ground fog, sea level pressure 1022.0, temperature 58, dew point 58, wind NE 4, altimeter setting 30.18

When Flight 3 was informed of the zero visibility conditions at Dayton, caused by dense ground fog, Captain Hortman reported to the company radio operator that west of the field he had three miles forward visibility. The operator advised the CAA operator and weather observer of the pilot's report and asked if a special report would be filed, showing this information. The CAA operator replied that zero conditions still prevailed on the ground; therefore, no special report could be given. The pilot of TWA Flight 3 then exercised his emergency authority^{3/} and landed the aircraft at Dayton at 3:44 a.m.

The terminal forecast for Dayton, Ohio, issued by the U. S. Weather Bureau predicted the formation of fog at Dayton, with decreasing visibility becoming about one mile by 1:30 a.m. on June 27, 1942, and to near zero by 4:00 a.m. The forecast issued by TWA predicted ground fog forming at Dayton with visibility three miles at midnight, decreasing to 1/2 mile by 4:30 a.m. The actual weather report shows that Dayton was closed at the time of the accident, with zero visibility caused by dense ground fog. The difference between the forecasts and the actual conditions which prevailed at the time of the accident is relatively small. The actual conditions were, therefore, within a reasonable tolerance to what would have been expected by the forecasts.

Conduct of Flight

The flight was re-dispatched to Toledo at 3:06 a.m. The captain said he had based his decision to land at Dayton on the forecasts he had used at New York, showing a very small spread between temperature and dew point at Detroit, Fort Wayne, Toledo and other points along the northern route. He testified that Dayton had closed in slightly earlier than was forecasted by the TWA

^{3/} Civil Air Regulations, Section 61.7811 Emergency decisions. The first pilot is authorized, in emergency situations which require immediate decision and action, to resolve upon a course of action which is required by the factors and information available to him. He may, in such situations, deviate from the prescribed methods, procedures or minimums to the extent required by considerations of safety. When such emergency authority is exercised, the pilot shall, to the extent possible, keep the proper control station fully informed regarding the progress of the flight.*****

meteorologist, and this led him to believe that there was a possibility that the alternate airports might also close in. Dayton did not close in substantially earlier than forecasted by the United States Weather Bureau and the original alternates remained open until after the flight would have arrived, had the captain proceeded to either one of them instead of landing at Dayton. Toledo, approximately 43 minutes away, remained open until after 5:00 a.m.

It appears that Captain Hortman was at fault in using his emergency authority and landing at Dayton after being advised that visibility at that point had decreased below the authorized minimums. At the time of being re-dispatched to Toledo Captain Hortman should have informed himself as to the weather at that point in order to have sufficient knowledge upon which to make a sound decision. He testified that while he believed he had requested Toledo weather, he did not recall receiving it. Records indicate that Toledo weather was radioed to the flight in code and that at least the pertinent part of the message was received by Flight 3. The crew apparently did not decode this information or make any attempt to secure information concerning the weather condition at Toledo.

There appears to be no question but that the flight was properly dispatched from New York to Pittsburgh and from Pittsburgh to Dayton. When it became apparent to TWA's dispatcher at La Guardia Field that the visibility at the Dayton Airport had decreased below the minimums authorized, he immediately re-dispatched the flight to Toledo and in so doing provided Captain Hortman with an alternate airport at Detroit, should the visibility at Toledo fall below the minimums authorized. The fuel on board the aircraft at the time it left Pittsburgh was sufficient for the flight to proceed to any of its alternates, and remain well within the requirements of the Civil Air Regulations.

The United States Weather Bureau and TWA's forecasts proved to be reasonably accurate. Toledo and the alternate, Detroit, remained open almost two hours after the flight ended at Dayton.

III.

CONCLUSIONS

Findings

Upon all of the evidence available to the Board at this time, we find that the facts relating to the accident involving aircraft of United States registry NC 17320, which occurred at Dayton, Ohio on June 27, 1942, are as follows:

1. The accident, which occurred at approximately 3:44 a.m. (EWT) on June 27, 1942 to TWA's Flight 3 of June 26, resulted in major damage to aircraft NC 17320 but in no injuries to any of the occupants.
2. At the time of the accident TWA held a currently effective certificate of public convenience and necessity and an air carrier operating certificate authorizing it to conduct the flight.
3. Captain Hortman and First Officer Connick were physically qualified and held proper certificates of competency to operate as air carrier pilots over a route between New York, New York and Los Angeles, California, via intermediate points.
4. Aircraft NC 17320 was currently certificated as airworthy at the time of the accident.
5. Flight 3 was cleared in accordance with proper procedure from New York, New York to Pittsburgh, Pennsylvania, and from Pittsburgh, Pennsylvania to Dayton, Ohio.
6. Flight 3 proceeded normally from New York, New York to Dayton, Ohio.
7. At the time of departure from Pittsburgh, and at the time of the accident, the gross weight of the airplane did not exceed the permissible gross weight and the aircraft was loaded properly with reference to the location of the center of gravity.

8. At the time of departure from Pittsburgh the aircraft carried sufficient fuel to permit flight at normal cruising power to Dayton and thereafter for about two hours and thirty minutes, thus making available to Captain Hortman a choice between Detroit, Michigan and Fort Wayne, Indiana, the alternate airports.

9. While in flight between Pittsburgh and Dayton, Flight 3 was re-dispatched to Toledo, Ohio, with an appropriate alternate. This change in destination was accomplished in accordance with company procedure and the Civil Air Regulations.

10. At the time of the accident, weather conditions at Dayton were below the approved minimums.

11. Captain Hortman was flying the aircraft at the time of the accident.

12. Although Flight 3, enroute, had been re-dispatched to Toledo, and while circling the Dayton Municipal Airport a spot weather report from the Dayton radio operator described the visibility as "not so good," Captain Hortman, on his emergency authority, elected to attempt a landing at Dayton.

PROBABLE CAUSE

On the basis of the foregoing findings and the entire record available to us at this time, we find that the probable cause of the accident involving NC 17320 (TWA's Flight 3 of June 26, 1942) on June 27, 1942, was a stall resulting from the action of the captain in attempting a landing under conditions of insufficient visibility.

APPROVED:

/s/ Oswald Ryan
Oswald Ryan

/s/ Harllee Branch
Harllee Branch

/s/ Edward Warner
Edward Warner