

CIVIL AERONAUTICS BOARD

ACCIDENT INVESTIGATION REPORT

Adopted: October 20, 1947

Released: October 21, 1947

PAN AMERICAN AIRWAYS, INC.—NEW ORLEANS, LOUISIANA—DECEMBER 19, 1946

The Accident

Pan American Airways' Flight 702, NC-88897, a Douglas DC-4, collided with trees in the immediate vicinity of Moisant Airport, New Orleans, Louisiana, at approximately 2258.^{*} December 19, 1946. Considerable damage resulted to engines and aircraft, but no injuries were sustained by any of the 45 occupants. After the accident the aircraft proceeded to Brookley Field, Mobile, Alabama, landing safely at 0105, December 20, 1946.

History of the Flight

Flight 702 originated at Balboa, Canal Zone, December 19, 1946, and made routine stops between Balboa and Guatemala City, Guatemala, where the crew of six involved in the accident boarded and assumed control. No difficulty was experienced from Guatemala City to Merida, Mexico. Departure from Merida was at 2103, December 19, 1946, with 39 passengers, the crew of six, and 2,000 gallons of fuel aboard. The company cleared the flight direct to New Orleans on an instrument flight plan at an altitude of 8,500 feet, Lake Charles, Louisiana, and Mobile, Alabama, being designated as alternates. Good weather was expected along the entire route, and no difficulty anticipated for the landing at Moisant Airport, New Orleans, Louisiana, however, instrument conditions were expected in the vicinity of New Orleans.

Two hundred miles from destination Flight 702 was flying "contact." At that time the New Orleans airway traffic control center (ATC) cleared the flight to the Moisant Tower, and instructed it to cross the Barataria fan marker, which is approximately 20 miles south of the New Orleans range station, at 1,500 feet or below. At 2132 the flight was advised by Overseas-Foreign Airways Communication Station, New Orleans, that the barometer at New Orleans was falling rapidly.

* All times referred to herein are Central Standard Time and based on the 24-hour clock

Captain Sidney A. Adger, the pilot, called Moisant Tower after crossing the Barataria marker, reporting that he had flown over the marker at 2151, and that he was then on instruments at 1,000 feet. In response, the tower transmitted a 2100 Moisant weather observation which was: "Ceiling 2,700 feet, scattered clouds at 1,400 feet, visibility 4 miles." The tower then cleared the flight to land on Runway 10 at the captain's discretion, and stated that the altimeter setting was 29.93 inches.

Flight 702 reported over the New Orleans range station at 2157, made a standard instrument "let-down" on the northeast leg of the range, and after passing the range station, flew a heading of 280 degrees toward the field. The aircraft passed over the Moisant Airport to the right of Runway 10 "contact." A left procedure turn was then made for a landing into the wind on Runway 10. Captain Adger, however, was unable to align the aircraft with the runway, and was obliged to climb, and to proceed again out the northeast leg of the range. At approximately 2218 the flight passed over the range station, in-bound for the second approach, Captain Adger's second pattern being substantially the same as his first. At about that time the 2218 weather observation was transmitted by the tower. This observation was: "Indefinite overcast, indefinite ceiling, 400 overcast 200 scattered, moderate rain, light fog, visibility 2 1/2 miles." A landing at this time was not completed because visibility was obstructed by heavy rain. Captain Adger climbed to an altitude of 500 feet, and held a heading of 100 degrees for a period of one minute. From that time on until the landing at Brookley Field, Mobile, Alabama, there is no reliable evidence of record from which the exact flight path of Flight 702 can be determined. Shortly after Captain Adger completed his second approach, the tower transmitted the following 2228 weather observation.

"Indefinite 200 overcast, lower scattered, visibility 2, heavy rain, light fog, temperature 51, dew point 51, wind east at 12, altimeter 991, indefinite 400 foot overcast, ceiling ragged."¹

Between 2228 and 2240 Flight 702 was advised that the Pan American dispatcher at Brownsville recommended Memphis, Tennessee, as an alternate, and the tower relayed to the flight information concerning course and distance to Memphis, which Captain Adger had requested. At 2243 the tower transmitted the following weather observation "Indefinite 300 overcast, lower broken, visibility 2, light rain, light fog, barometer falling rapidly, altimeter 985." At approximately 2251 Flight 702 reported holding at 2,000 feet between New Orleans range station and a point 4 miles northeast. At 2258 the tower transmitted the following weather observation "Ceiling 300 feet broken, visibility 2, light rain, light fog, altimeter setting 981."²

Sometime between 2228 and 2303, Flight 702 made a third approach for landing at Moisant Airport. A Chicago and Southern airliner, at that time, was standing by on the airport waiting for Pan American to land. Flight 702 was instructed that should he miss his approach, he was to continue on a westerly heading, and climb to and maintain 2,000 feet. Flight 702 missed his approach, struck trees near the airport boundary, and shortly after reported trouble with engines No. 1 and No. 2. At 2313 Chicago and Southern was instructed to return to the hangar in order to allow Pan American to make an emergency landing. Although an emergency landing was requested, downwind, on Runway 28, it is not established that another approach was made, however, the aircraft did remain in the New Orleans area 20 to 25 minutes after the accident.

At 2321 Flight 702 was issued a clearance to Memphis. Captain Adger, however, requested clearance to the nearest landing place because of engine trouble. Engine No. 1 was shut down and the propeller feathered; Engine No. 2 was reduced to 20 inches manifold pressure because of excessive oil temperature

¹ Observation was incorrectly quoted by tower. It should have been stated "Ceiling indefinite 200 overcast, lower broken, etc.," rather than "Ceiling indefinite 200 overcast, lower scattered." As the tower stated it, it would mean scattered clouds under the 200 foot overcast.

² Tower should have stated "Ceiling indefinite 300 feet broken," rather than "Ceiling 300 feet broken."

and vibration. Clearance to Mobile at an altitude of 2,000 feet or below was given by ATC, and Captain Adger was advised that Brookley, the Army Air Force Field, Mobile, had crash equipment and would be a suitable field for landing. Biloxi, Mississippi, (Kessler Army Air Field), midway to Mobile, was reporting a ceiling of 1,000 feet, and visibility of 2 miles at the time that 702 was in the vicinity. Captain Adger continued on. After arriving over Brookley Field, Flight 702 circled the tower to have a visual check made of the landing gear. A landing was accomplished at Brookley at 0105, December 20, 1946, without further difficulty.

Investigation

Examination of the aircraft, NC-88897, indicated that considerable damage had resulted from the airplane flying through trees on the third approach at New Orleans. Spanish moss and wood particles were found in Nos. 1 and 2 engine nacelles, and in each of the three landing gear struts. Propellers No. 1 and No. 2 were out of "track." A three-inch tear was found in the left de-icer boot, and a four-inch hole was found in the left flap. The wheel nacelle doors were dented and damaged, and the left main landing gear bungee system including cables, springs, and bracket, was broken. The right hand "sense" antenna, and the rear short "marker" antenna were missing. Oil cooler cowlings for Engines No. 1, No. 2 and No. 3 were dented and choked with Spanish moss. The right in-board fuel tank was ruptured. The right landing light assembly was missing, and the right horizontal stabilizer was badly damaged. Prior to the accident the aircraft was entirely airworthy and properly certificated. There was no evidence to indicate that any mechanical failure occurred before the airplane struck trees.

The crew was qualified and properly certificated to make the flight. Captain Adger had a total of 3,146 flying hours, 1,000 of which were in DC-4 equipment. First Officer Lutz had a total of 2,926 flying hours, 164 being in DC-4 equipment.

The U. S. Weather Bureau forecast for New Orleans, December 19, 1946, indicated that the ceiling would drop from 6,000 feet at 1630 to 800 feet at 0000,

and that the visibility would be restricted from 8 miles at 1630 to 4 miles at 0000. The ceiling at Lake Charles was predicted to drop to 300 feet, and the visibility to one mile. Mobile was expected to remain above 1,500 feet with the visibility 4 miles or better; Memphis was expected to remain above 2,000 feet with a visibility of 7 miles or better, but icing was forecast at 2,000 feet, lowering to near surface after dark. The forecast made by Pan American personnel was substantially the same as that of the U. S. Weather Bureau summarized above.

Pan American airport specifications for Moisant Airport, in effect December 19, 1946, provided for night landings not below the minimums of ceiling 400 feet, visibility 2 miles, or ceiling 500 feet, visibility one mile. The first two approaches of Flight 702 were made when the weather was reported to be better than the above stated minimums. Between the time of the second approach and the time that Flight 702 flew through the trees, however, Moisant Tower transmitted at least two weather observations reporting the ceiling to be at 300 feet or below, and the visibility to be 2 miles. At least one approach was made after the ceiling was reported below minimums, and after the Pan American dispatcher at Brownsville advised Flight 702 to proceed to Memphis. Captain Adger decided, however, to remain in the New Orleans area.

There was no evidence of malfunctioning of radio equipment or flight instruments. The altimeters were removed from the aircraft, tested by Pan American personnel, and showed no error greater than the tolerance allowed to a manufacturer for a new instrument. Two possible sources of altimeter error existed. If the static selector valve had been in the alternate source position, it would have resulted in an error of as much as 100 feet. The second source would have resulted from the failure of the flight crew to make the necessary altimeter settings. From the time that the flight first contacted Moisant Tower to the time of the accident, the altimeter setting dropped .12 inches which would have resulted in the instrument reading approximately 120 feet higher than the actual altitude. There is no reliable evidence, however, from which a finding can be made concerning these possibilities.

and such a finding is not essential in determining the probable cause of this accident.

DISCUSSION

Though good weather was expected along the entire route, thorough study of the weather data and charts available prior to take-off from Merida, Mexico, would have indicated to the flight crew that instrument conditions would be encountered before their arrival over New Orleans, and Captain Adger was forewarned of a rapidly falling barometer by Overseas-Foreign Airways Communication Station, New Orleans, when 25 minutes from destination. A warm "wave" had formed on a previous cold front south of the Texas coast. This developed into a storm center which moved northeastward, causing low ceilings and rain in the Gulf states. The warm front moved more rapidly than predicted, and was located between New Orleans and the Gulf coast at the time that the flight was in the New Orleans area. Weather conditions, similar to those at New Orleans, should have been expected at Lake Charles and Mobile, yet Lake Charles and Mobile were both designated as alternates.

The Moisant Airport control tower log indicates that Flight 702 received requested information from the tower. Had a listening watch on tower frequency been continually maintained by the pilots, the transmitted weather information and altimeter settings also should have been received. If, however, the observations transmitted during the first two approaches were not received, safe practice would have required Captain Adger to secure a full and complete weather report, including an altimeter setting, before starting any third approach.

Evidence indicates that Captain Adger was fully cognizant of a lower than minimum ceiling in the vicinity of Moisant Airport. The traffic controller reported that Captain Adger stated: "You gave me a bum steer on weather. I am down to 300 feet and am not 'contact'." He was also observed by tower personnel to fly as low as 50 feet above the trees. It appears, therefore, that the third approach, at which time the trees were struck, was made when Captain Adger knew that the ceiling was below minimum, and at a time when no mechanical malfunctioning existed.

Captain Adger referred to the procedure he used to land at Moisant Airport as a "New York approach." He held a heading so as to arrive to the right of the intended runway for landing, and after passing the airport boundary circled so as to land into the wind on that runway. The object of such an approach was to keep the field in sight while maneuvering underneath the overcast. An examination of Exhibit 2D, which is a chart of Moisant Airport on which Captain Adger drew his flight path, will show that no precise or consistent pattern was flown after passing over the range station toward the field, and that no standard missed approach procedure was used. Though he succeeded in descending below the overcast over the airport, he was unable to align the aircraft for a landing on any runway.

Findings

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

1. The aircraft, crew, and carrier were properly certificated.
2. Weather data and charts available to the crew prior to departure from Merida, Mexico, indicated that good weather existed along the route, but that instrument conditions would be encountered in the New Orleans area, and that weather conditions similar to those in New Orleans could be expected at Lake Charles and Mobile.
3. Lake Charles and Mobile, both in the same storm area as New Orleans, were designated as alternate airports.

4. No mechanical failure occurred to the aircraft or any of its components prior to the time of the accident.

5. Frequent weather observations were transmitted by the tower from the time the flight first reported over the New Orleans range station until it collided with trees.

6. The pilot did not make a standard "straight in" instrument approach, but attempted to circle underneath the overcast for a landing into the wind.

7. The third instrument descent and approach for landing was made after the ceiling had been reported below minimum, and after the Pan American dispatcher at Brownsville advised proceeding to Memphis.

8. The pilot knew that the ceiling was below minimum before making his third approach at which time he collided with trees. The flight then proceeded to Mobile, Alabama, and landed safely.

Probable Cause

The Board determines that the probable cause of this accident was the pilot's deliberate descent through an overcast to a dangerously low altitude in an attempt to land despite his knowledge that ceilings and visibility were below the minimums authorized by the Civil Aeronautics Administration.

BY THE CIVIL AERONAUTICS BOARD:

/s/ J. M. LANDIS

/s/ OSWALD RYAN

/s/ JOSH LEE

Branch, Member, did not take part in the decision.

Supplemental Data

Investigation and Hearing

No notification of this accident was given by Pan American Airways to the Civil Aeronautics Board. First knowledge was received from the Chief, CAA Air Carrier Inspector for the Second Region who informed the Board's Investigator in Charge at Atlanta, Georgia, that Pan American's Flight 702 had "met with an incident." Full particulars were requested by telegram. On December 23, 1946, the Operations Manager for Pan American Airways in Miami submitted information to the Civil Aeronautics Board, Atlanta office, that Flight 702 had struck trees while approaching Moisant Airport for a landing, and that the damage resulting was extensive enough to have replacement parts sent to Mobile where the aircraft had landed. An investigation was initiated immediately in accordance with the provisions of Section 702(a) (2) of the Civil Aeronautics Act of 1938, as amended.

A public hearing was ordered by the Board and was held at Miami, Florida, February 10, 1947.

Air Carrier

Pan American World Airways, incorporated under the laws of Delaware and having established its headquarters in New York, New York, with bases at Miami and New Orleans, was operated under a certificate of public convenience and necessity and an air carrier operating certificate, both issued pursuant to the provisions of the Civil Aeronautics Act of 1938, as amended. These certificates authorized Pan American World Airways to transport persons, property, and mail between Balboa, Canal Zone, and New Orleans, Louisiana.

Flight Personnel

Captain Sidney A. Adger, age 30, was employed by the Pan American Airways May 5, 1941, having a total of 205 hours accumulated in the U. S. Army Air Corps.

At the time of the accident he had logged 3,146 hours, 1,000 hours being in DC-4 equipment, and 350 hours being instruments. Captain Adger held an airline transport rating, Certificate No. 162003. He had been given a route check into Moisant Field, however, he was not familiar with any of the designated alternate fields for Moisant Airport. Nicholas H. Lutz, the co-pilot, age 30, was employed by Pan American January 4, 1943. He held an airline transport rating, Certificate No. 129485. When hired, he had a total of 1,500 hours accumulated in the U. S. Army Air Corps, and at the time of the accident he had logged 2,926 hours, 162 in DC-4 equipment, and 370 hours instruments. Both pilots received a CAA physical examination July 16, 1946. Other crew members were: C. A. Doles, Flight Radio Officer, A. Garcia, Purser, M. I. Dewey and P. O'Brien, Stewards.

The captain and first officer were properly certificated for their respective duties, and the captain was qualified over the route.

Aircraft

NC-88897, a Douglas DC-4, was acquired by Pan American Airways from the military services and was converted for commercial use at the Douglas factory on June 25, 1946. It had accumulated a total of 4100.39 hours, 1436.52 of which were since conversion.

Four Pratt & Whitney R-2000-11 engines, equipped with Hamilton Standard propellers, were installed.

Total time on No.1 engine was 2196.28 hours.

Total time on No.2 engine was 1834.40 hours.

Total time on No.3 engine was 2439.46 hours.

Total time on No.4 engine was 1530.35 hours.

Total time on each engine since overhaul was 63.31 hours.