File No. 1-0029

CIVIL AERONAUTICS BOARD

ACCIDENT INVESTIGATION REPORT

Adopted: June 30, 1949 Released: June 30, 1949

CHICAGO AND SOUTHERN AIR LINES, INC.—NEW ORLEANS, LOUISIANA—MARCH 13, 1949

A Chicago and Southern Air Lines DC-4, NC 53102, operating as Flight 500 from Maiquetia, Venezuela, via Havana, Cuba, to New Orleans, Louisiana, struck several trees while making an ILS (instrument landing system) approach to Moisant Airport, New Orleans, at 2224C[1] March 13, 1949. The airplane, although damaged considerably, was still controllable and flight was continued to a normal landing on Moisant Airport without injury to anyone on board.

Flight 500 departed from Havana, Cuba, on schedule on an instrument flight plan. The flight crew consisted of Captain Lloyd Rowe Davidson, First Officer Jack Dillard Payne and Radio Officer Forest E. Scott. When they arrived in the New Orleans area weather conditions were reported as ceiling indefinite 800 variable, overcast lower broken, visibility 3 miles, light rain, smoke and fog. New Orleans approach control cleared the flight to the Moisant range station at 2,500 feet and when it reported over the range station, cleared it to the outer marker for an ILS approach.

The aircraft was a little above approach altitude over the outer marker[2] and flight was continued a short distance out the ILS approach leg in order to lose altitude. Following a normal procedure turn, in which the flaps were lowered 15 degrees and the airspeed was reduced to 140 mph, the landing gear was lowered. The airplane passed over the outer marker inbound at an altitude of approximately 1,040 feet with the glide path and localizer well centered. Power was then adjusted to maintain an airspeed of 130 mph. The first officer advised intermittent contact at 700 feet and at 500 feet reported that he could see the runway and approach lights.[3] The captain elected to continue on ILS for a instrument landing procedure practice approach. The first officer stated that as they neared the middle marker he noticed that the airplane seemed to be much lower than the glide path receiver indicated and he notified the captain that they were too low. Power was immediately applied and landing gear retraction begun. Almost simultaneously the airplane began striking the tops of cypress trees 90 to 100 feet in height. It then struck the compass locater pole, approximately 60 feet high, located at the middle marker, 3,485 feet from the approach end of the runway. As soon as the captain realized the airplane was still controllable, he lowered the landing gear and continued straight ahead to a normal landing on Runway 10. Upon arriving at the loading ramp the passengers deplaned, following which the aircraft was towed to a hangar and placed under guard. No one was allowed on board pending arrival of the Board's investigator.

Immediately after the accident the crew of Flight 500 reported the ILS glide path unreliable and the tower then issued a notice to airmen that the glide path at Moisant Airport was inoperative. When an immediate check of the ILS ground installation revealed it to be operating normally, the notice to airmen was lifted. The tower then solicited checks from incoming flights and at 2241, 17 minutes after the accident occurred, an Eastern Air Lines flight made an ILS approach and landing and reported that everything seemed normal.

Subsequent to the accident five captains of Chicago and Southern flights who had made simulated ILS approaches to

[1] All times referred to herein are Central Standard and based on the 24-hour clock

[2] 3.92 miles from the approach end of Runway 10.

[3] Chicago and Southern's ILS minimums for Moisant Airport, New Orleans, were ceiling 300 feet, visibility 3/4 mile.

New Orleans reported difficulty with the glide path. On March 14 a CAA DC-3, especially equipped for flight checking ILS ground installations, was flown to New Orleans. Seven flight checks were made of the ILS equipment at Moisant Airport on March 14, 15 and 16, and it was found to be functioning normally in every respect.

In view of the fact that ILS malfunctioning was reported by Chicago and Southern pilots only, three of their airplanes (one DC-3 and two DC-4s) were taken from schedule as they came into New Orleans on March 15 and were flown down the ILS approach path. It was found that the ILS receivers in all three airplanes were not properly calibrated.

On March 16 the glide path receiver was removed from the airplane involved in the accident and installed in another Chicago and Southern DC-4 for checking. Captain Davidson piloted the airplane on this test and simulated as nearly as possible the approach he had made the night of the accident. This flight showed conclusively that the ILS receiver was out of calibration and that the cross-pointer indicator did not give sufficient warning to the pilot when the airplane was below the glide path. Subsequent laboratory tests confirmed that this receiver was not calibrated properly.

Testimony of Captain Davidson and First Officer Payne indicated that their altimeters registered in excess of 250 feet immediately prior to impact with the trees. The station barometric pressure, as furnished the flight by the tower just prior to the approach was 29.99. Examination of the aircraft's altimeters subsequent to the accident revealed them both to be set at 29.99. Furthermore, these instruments were removed from the aircraft and appropriate tests conducted, all of which showed them to be functioning normally.

There seems to be no doubt that the airborne ILS equipment in NC 53102 was calibrated in such a manner that if the pilot depended solely on its readings in making an ILS approach to the minimum altitude, he would be misled as to his position. However, sufficient alertness to other means at the crew's disposal for determining the flight's altitude would have precluded descending so dangerously low during the approach. The altimeters were properly set and as far as could be determined were functioning normally. Moreover, the crew's testimony indicates that not only were the runway and approach lights visible after reaching the 500-foot altitude, but also that there was no scud or other obstructions to visibility during the last portion of the approach and at the time of impact with the trees.

As a result of this accident the Civil Aeronautics Administration restricted Chicago and Southern's operations to localizer *only* minimums during the short period that its glide path receivers were being recalibrated.

The airplane, carrier and crew were properly certificated for the flight involved. Captain Davidson's service with Chicago and Southern covers a period of nearly 12 years. His total pilot time is approximately 15,000 hours, 2,500 of which were accumulated in the type of aircraft involved. He stated that he had made more than 100 actual and simulated ILS approaches and that approximately 100 of them had been with First Officer Payne. On March 16, 1949, he was given a thorough flight check in a DC-4 at New Orleans in which he demonstrated complete competency to conduct instrument flight and ILS approaches. First Officer Payne had been with Chicago and Southern since November 1, 1945. He had flown approximately 2,600 hours, which included about 790 hours in the type of aircraft involved.

The Board determines that the probable cause of this accident was failure of the flight to maintain sufficient altitude to clear obstructions during a simulated ILS approach.

BY THE CIVIL AERONAUTICS BOARD:

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