

CIVIL AERONAUTICS BOARD

ACCIDENT INVESTIGATION REPORT

Adopted: July 3, 1946

Released: July 9, 1946

NATIONAL AIRLINES - LAKELAND, FLORIDA - OCTOBER 5, 1945

The Accident

National Airlines Flight 16 of October 4, 1945, between Miami and Jacksonville, Florida, crashed into a lake adjoining Lakeland Airport at 0105, October 5, 1945*, while attempting to execute a missed approach procedure. Two passengers were drowned, other passengers received injuries, and the Lockheed Lodestar was extensively damaged.

Description of the Flight

Flight 16 departed Miami at 2112 October 4, 1945, one hour and 15 minutes late due to rerouting of the aircraft from a previous schedule. The flight from Miami progressed uneventfully with routine stops being made at Fort Myers, Sarasota, St. Petersburg and Tampa. The aircraft was refueled at Tampa and under contact flight rules was cleared to Lakeland 33 miles away. Departure was made at 0045 with a crew of three and twelve passengers. The flight climbed to an altitude of 1500 feet and continued towards Lakeland.

At the time of departure the weather at Tampa was unlimited while Lakeland was reporting 9 miles visibility and scattered clouds

*All time referred to in this report is Eastern Standard and based on the 24-hour clock.

at 500 feet. At 0058, when seven miles from the field, the first officer called Lakeland and made an "in-range" report to which the Lakeland tower replied, "In range, wind NE 7-8 mph, NE runway". Although the pilots observed scattered stratus clouds over the lighted city of Lakeland, the airport was clearly visible. A descent was established for a straight-in approach to the NE runway and when at an altitude of about 900 feet and approximately three or four miles from the field the captain extended the gear, put the mixture in automatic rich and reduced the manifold pressure to 20 inches. At an altitude of 700 feet the propellers were placed in low pitch and the landing lights were turned on. When about 2 miles from the field at 600 feet the flaps were extended fully. Shortly thereafter, according to the testimony of the pilot, the aircraft entered a cloud, however, ground witnesses at no time lost sight of the flight during its approach indicating that the cloudiness was not extensive. This cloud was above dark terrain and had not been seen by the pilots as were others above the lighted city.

Because of the unexpected presence of a cloud during the approach, the captain remarked to the first officer that he was going around again and retracted the wheels. Some power was applied and, according to statements of the captain, the flaps were started up at that time. A number of witnesses on and near the airport observed the aircraft continue down the runway at a uniform altitude of 30 or 40 feet. As it passed beyond the runway, the captain stated that the throttles were opened to 45 inches of manifold pressure but that the plane settled rapidly into the lake. The plane struck the surface of the water approximately 1000 feet beyond the runway

shedding some fuselage covering and apparently skipped an additional 1000 feet where it sank in 10 feet of water. The occupants of the aircraft, with the exception of two passengers, escaped from the wreckage and were rescued by local residents approximately thirty minutes later.

Investigation

Examination of the wreckage revealed no indication of malfunction or failure of any of the aircraft equipment prior to impact. The general condition of the wreckage indicated that the first impact of the airplane with the water was in an approximately level attitude both laterally and longitudinally. In the second contact with the water the right wing was appreciably down. The flaps were still projecting approximately three degrees indicating that retraction had not been completed prior to impact. The propellers were found in full low pitch and the throttle settings indicated maximum manifold pressure was being employed at the time of the accident. The testimony of the pilots was in agreement with the above findings.

Investigation disclosed that an adequate fuel supply was provided to have permitted the flight to complete operation in question and that ample fuel was available at the time of the accident. The aircraft was loaded within the allowable gross weight limits and its load was properly distributed with respect to the center of gravity.

The weather observation at Lakeland made at 0100 about 5 minutes before the crash indicated wind direction and velocity substantially the same as that given the flight. Scattered clouds were reported at 400 feet from SE to SW of the field. Weather conditions

were above the contact minimum for landing at Lakeland.

Testimony of the flight personnel and the results of pilot check flights conducted by the CAA and company check pilots subsequent to the hearing revealed a definite lack of familiarity of some National Airlines' captains with the operating limitation of the Lodestar. Although legally qualified to pilot the aircraft, their proficiency was not in conformance with accepted standards. A particular lack of familiarity was demonstrated concerning the conditions of flight peculiar to the Lodestar during flap extension and retraction and with varying combination of flap and power setting.

Discussion

From the several testimonies of eye witness accounts of the accident, the flight crew's statements, and from the subsequent investigation, it can be concluded that the aircraft and its power plant and controls were operating satisfactorily during the landing approach and attempted go-around. The flight was not complicated by inadequate field lighting facilities or by obstructions in the approach path. Except for the moment in which the aircraft passed through a small cloud, the runway was clearly visible to the pilot throughout the approach. No reason existed, therefore, other than inadequate pilot technique, for the unsuccessful completion of the operation.

Because of the excessive delay in applying maximum power and establishing a climb it can be concluded that the pilot failed to commit himself definitely to the go-around procedure until a critical situation was reached. Take-off power should have been applied immediately when the decision was reached to circle for another approach and retained until a climbing airspeed and attitude had been established.

Under the circumstances of this operation, 45 inches of manifold pressure was applied only after the entire length of the runway had been traversed.

It has been determined that the maximum time required in the Lodestar for flap retraction from the full down position in flight is 25 seconds. However, the average time required is nearer 20 seconds. Inasmuch as the flaps had not been completely retracted before impact, it is apparent that retraction must have been started approximately 20 seconds prior to impact or at a point at least one third down the runway. In order to maintain altitude, even with maximum power being developed at the time, a definite change in attitude was necessary to compensate for the loss in lift due to the decrease in effective wing area and camber. The initial portion of the retraction would have resulted primarily in loss of drag and would have reduced the lift only slightly. However, as the retraction of flaps continued, the loss of lift would have become more pronounced and would have required a positive increase of angle of attack to prevent loss of altitude. Even with maximum power applied, the drag of the fully extended flap would have permitted little acceleration during the early stage of the go-around. At the end of the runway, therefore, the pilot was confronted with a low airspeed and a rapidly decreasing effective lift. Failure to correct such a situation resulted in a rapid settling which terminated in contact with the water surface.

In addition to the foregoing, it is common knowledge that the pilot had available alternate procedures which would have enabled him to complete the maneuver safely. In view of the low altitude and airspeed of the aircraft while passing over the runway and since the

operation was being conducted at night, it may have been more safe to have retracted the flap to approximately the 40% position after the gear had been started up. The 40% flap position would have reduced the drag sufficiently to have permitted the aircraft to accelerate and establish a climb. The remainder of the flap could have been retracted in brief decrements while the attitude of the aircraft was corrected accordingly, or left in the 40% position until sufficient altitude had been gained. Because of his lack of familiarity with the action of the flaps and proper flap technique, it can only be concluded that the proficiency of the pilot was questionable and that his training in this respect had been inadequate.

Investigation of the pilot-check and flight training programs provided by the company for both co-pilots and pilots indicated several serious deficiencies. At the time of the accident no aircraft was allocated specifically to the training program. In several instances it was observed that the training of co-pilots prior to assignment was very perfunctory and that flight training in general was inadequately coordinated with related ground instruction. Testimony of company personnel indicated that the sequence of flight instruction was lacking in proper integration. It was further observed that a large percentage of National Airlines' personnel was long overdue for the ~~six-month~~ flight check because of the absence of training or check equipment, shortage of designated check-pilots, and lack of adequate attention by the company to matters related to pilot proficiency. It

must be concluded, therefore, that National Airlines was lax in the provision of adequate instruction and checking of pilot personnel.*

Findings

Upon the basis of available evidence, the Board finds that:

1. The pilots, aircraft and company hold appropriate certificates.
2. The operation involving a landing at Lakeland Field was in accordance with company operating specifications and the applicable Civil Air Regulations.
3. There was no evidence of equipment malfunction or failure prior to the crash.
4. Following a missed approach the pilot exercised faulty technique in attempting a go-around.
5. The aircraft settled into a lake adjoining the field and crashed.
6. The company training program and training facilities were inadequate for the maintenance of sufficient competency of pilot personnel with respect to the Lockheed 18-50.

* CAR 61.530 RESPONSIBILITY OF OPERATOR. In order to maintain a high standard of pilot technique, the air carrier shall be responsible for proper and periodic instruction, in their respective duties, of all first and second pilots employed by such operator.
CAR 61.534 CHECK PILOTS. Each air carrier shall provide a sufficient number of check pilots to insure that each pilot constantly meets and complies with the minimum pilot requirements pertaining to scheduled air transportation.

Probable Cause

On the basis of the foregoing the Board determines that the probable cause of this accident was faulty execution of a missed approach procedure resulting in settling of the aircraft into a water area beyond the landing runway.

BY THE CIVIL AERONAUTICS BOARD:

/s/ James M. Landis

/s/ Harllee Branch

/s/ Josh Lee

/s/ Clarence M. Young

Ryan, Vice-Chairman, did not take part in the decision.

SUPPLEMENTAL DATA

Investigation and Hearing

The Civil Aeronautics Board received notification of the accident at 0205, October 5, 1945, and immediately initiated an investigation in accordance with the provisions of Section 702(a)(2) of the Civil Aeronautics Act of 1938, as amended. An Air Safety Investigator arrived at the scene at approximately 1030 the morning of the accident and was later joined by the Senior Air Safety Investigator of the Board's Atlanta Office.

In connection with the investigation the Board ordered a Public Hearing and designated the Chief, Investigation Division, Safety Bureau as presiding officer. Other members of the Safety Bureau staff participated in the hearing which was held in two sessions, the first on October 12, 1945, in Lakeland, Florida, and the second on October 16, 1945, in Jacksonville, Florida.

Air Carrier

National Airlines, Inc., a Florida corporation with headquarters in Jacksonville, Florida, was operating as an air carrier under a certificate of public convenience and necessity and an air carrier operating certificate both issued pursuant to the Civil Aeronautics Act of 1938, as amended. These certificates authorized the company to fly persons, property and mail between various points in the United States including Tampa, Florida, and Lakeland, Florida.

Flight Personnel

Captain William Merrill Corry, age 31, had been employed by the company since November, 1943, and had accumulated a total of 4800 hours of which 851 hours were in Lockheed 18-50 equipment. First Officer

William Hawley Conrad, age 27, had been employed by the company since May 7, 1945 and had accumulated a total of 5,247 hours, of which 409 hours were in Lockheed 18-50 equipment. Ethel Katherine McCoy was stewardess. Both pilots were certificated for the flight involved and the captain was qualified for the route.

Aircraft

The aircraft, a Lockheed Lodestar 18-50, manufactured in December 1942, for the USAAF was owned by the Defense Plant Corporation and was under lease to National Airlines. It had flown a total of 1798 hours with 628 hours since the last major overhaul. It was equipped with two Wright Cyclone G-202-A engines with 5768 hours and 1259 hours respectively for the left and right engines and 64 hours and 577 hours respectively since the last overhaul. On departure from Tampa the total weight of the aircraft was less than the allowable maximum and the load was distributed with respect to the center of gravity within approved limits.