

CIVIL AERONAUTICS BOARD  
ACCIDENT INVESTIGATION REPORT

Adopted: November 26, 1946

Released: December 5, 19

TRANS-LUXURY AIRLINES - MOLINE, ILLINOIS - August 21, 1946

The Accident

NC-51878, owned and operated by Trans-Luxury Airlines, a non-scheduled air carrier, crashed near Moline Airport, Moline, Illinois, at 0419<sup>30</sup>, August 21, 1946, during an attempted go-around following an emergency single engine approach. The Douglas DC-3 was destroyed by impact, the pilot and co-pilot were fatally injured, and several of the other 23 occupants sustained minor injuries.

History of the Flight

The flight of the Trans-Luxury Airlines' DC-3, hereinafter referred to as Aircraft 878, originated at Teterboro, New Jersey, and departed Bendix Airport at that city at approximately 2105, August 20, 1946 for San Francisco, California. The flight to Chicago, Illinois, was made without incident, one stop having been made at Cleveland, Ohio, for refueling. At Chicago, however, the pilot observed a slight oil leakage on the left engine nacelle and requested the Monarch Air Service to inspect the engine in order to determine the location of the oil leak. The reason for the leakage was not determined, however, and the flight continued as soon as refueling was completed.

Aircraft 878 departed Chicago at 0303, August 21, with its destination as Omaha, Nebraska. The flight was continued under instrument flight rules and was cleared by the Air Traffic Control Center to cruise at 4,000 feet

\*

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

via airway Green 3 to the Omaha Airport. At approximately 0400, within about 35 miles of Moline, a flash of fire was observed at the left engine by several passengers. Shortly thereafter the propeller was feathered and the flight continued toward Moline on one engine. At 0410, the aircraft began circling Moline Airport and was observed by airport personnel although no radio contact was established with the flight.

Upon hearing the aircraft pass close within the vicinity of Moline Airport, field personnel switched the airport boundary lights on. After at least two complete circles about the field, the pilot established an approach to Runway 22. However, the approach was apparently high and, when the aircraft had passed over at least one-third of the runway from the approach end at an altitude of about 50 feet, power was applied to the right engine in an attempt to go around.

As a result of the application of power to the right engine the aircraft yawed to the left and gradually banked to the left as it continued in a southerly direction beyond the boundary of the field. Shortly beyond the south boundary of the airport the angle of bank to the left increased sharply and the left wing tip struck the ground. The aircraft executed a partial cartwheel and came to rest at a point 1,500 feet south of the airport boundary.

The Moline mobile crash unit was immediately notified and it proceeded to the scene of the accident. The pilot and co-pilot had been fatally injured due to impact and several of the passengers had been injured.

#### Investigation

The aircraft had come to rest in a flat, spongy field bordering the airport to the south. First impact had been made with the left wing tip which dragged along the soft ground for a distance of 120 feet from the point of initial contact to the point at which the left engine tore loose from the

wing. The aircraft continued to rotate to the left as the nose struck the ground crushing the pilot's compartment. After completing 180 degrees of turn from the time of initial impact, the tail dropped forcefully, leaving a deep impression of the tail wheel in the ground. The stress thus placed upon the aircraft broke the fuselage in two along the bulkhead immediately aft of the trailing edge of the wings. After the rearward section came to rest, the forward section of the aircraft continued its rotation for approximately 60 degrees stopping on a heading of approximately 170 degrees.

Investigation of the wreckage disclosed that the range receiver was tuned to 220 kilocycles. The frequency of the Moline radio range was 224 kilocycles. The left landing light was on; the right landing light was off. The fluorescent instrument light, cockpit light and navigational light switches were all found in the "On" position. The landing gear and flaps were fully extended. Both engines had been torn from their wing mounts and had fallen from the aircraft as it skidded to a stop.

Examination of the right power plant at the scene of the accident indicated no mechanical failure or malfunctioning prior to the accident. The left engine and propeller were removed from the scene of the accident and brought to the Moline Airport hangar shops for detailed inspection. It was observed that the cylinder sleeve of No. 5 cylinder had failed circumferentially at the fillet on the crankcase side of the lowest fin and that this failure must have occurred in flight. The piston contacted the remaining lower end of the sleeve at the flange location, cocking to one side so as to prevent further motion within the cylinder toward the crankcase. The articulating rod continued its inward motion breaking the piston pin loose from the piston and leaving the piston jammed at the cylinder break. As a result of this damage an almost complete disintegration of the reciprocating parts of

the rear power section followed.

The sump screen was examined and a considerable amount of metallic particles was found, however, such a condition would be normal for a failure of this type. Inspection of the oil screen in the rear accessory housing disclosed very little metallic accumulation indicating that the engine had been operated only a very short time following the complete failure of the cylinder.

Testimony of a mechanic employed by the Monarch Air Service who inspected the left engine of Aircraft 878 during its stay at Chicago Municipal Airport indicates that considerable oil was spread throughout the inside of the engine cowl. The mechanic further testified that it would have been necessary to wash down the engine to determine the cause of the oil leak. However, the pilot instructed the mechanic not to conduct his inspection any further, commenting, "We'll catch it at the next stop." The flight was conducted, therefore, without determining the cause of the oil leak.

Several persons on Moline Airport observed Aircraft 878 circle the field at least twice and establish an approach for Runway 22. Testimony of passengers of the aircraft indicates that the left propeller had been feathered prior to this time. No runway lights are installed at the airport but the field boundary lights, including runway end markers, were switched on shortly after the aircraft reached the vicinity of Moline. At no time did the pilot establish radio contact and notify any airways communications station of his predicament or request landing instructions for Moline Airport.

#### Discussion

Evidence indicates the likelihood that a progressive cylinder crack, the primary stages of which had occurred prior to landing at Chicago, accounted for the oil leakage. The crack gradually progressed around the entire circumference of the cylinder at the lowest fin. Approximately 15 minutes before

reaching Moline, the entire upper part of the cylinder broke loose. A failure of this nature could not have been recognized before departure from Chicago unless the engine had been washed down and a careful examination completed. The pilot chose to postpone such an inspection, however, until at some subsequent stop. The responsibility for such a decision rested entirely upon the pilot of the aircraft inasmuch as the company does not possess its own maintenance facilities at Chicago.

Immediately after the failure of the left engine, the flight crew feathered the propeller. The pilot apparently elected to proceed to the nearest available airport which in this instance was at Moline. The frequency setting of the range receiver tuning dial indicates that the pilot had tuned to Moline Radio before the accident had occurred. The stewardess testified that shortly after the left engine failed, she observed the captain using the microphone in a manner indicating that he was attempting to establish contact with a ground station. However, none of the aircraft communication stations in the vicinity of Moline guarding the transmitting frequency being used by the flight received any transmissions which could be identified as having been from Aircraft 878. Inasmuch as the aircraft communications equipment was operating satisfactorily at the time of departure from Chicago and since it is apparent that the electrical equipment was functioning satisfactorily when at Moline, it is difficult to understand why no contact was made with an airways communications station concerning the difficulty which was encountered.

Examination of the records of several accidents involving air carrier aircraft overshooting on an approach in which one propeller was feathered indicated a significant pattern of pilot errors. The difference in drag of a feathered propeller as compared to one that is windmilling is equivalent

to approximately 220 horsepower at 120 miles per hour. The decrease in drag experienced in a single engine approach with one propeller feathered, therefore, requires a considerably longer approach path if the traffic pattern is flown at the normal altitude. An attempt to accomplish such a landing from a normal approach pattern will invariably tend to result in overshooting. The pilot of Aircraft 878 eventually fully extended both landing gear and flaps although his approach was high. Having already committed himself to a landing, he nevertheless elected to attempt to go-around when at an altitude of approximately 50 feet and under extremely difficult circumstances. Both the landing gear and flaps were fully extended during the attempted go-around, the aircraft failed to maintain airspeed or altitude and shortly after passing the south boundary of the airport the left wing struck the ground.

### Findings

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

1. Trans-Luxury Airlines, a non-scheduled air carrier, was operating a Douglas DC-3 in the transportation of passengers from Teterboro, New Jersey, to Omaha, Nebraska, the flight having originated at Bendix Airport at 2100 August 20, 1946.
2. The pilots and aircraft were properly certificated.
3. Upon arrival at Chicago, Illinois, from Teterboro, the flight crew observed oil leaking from the left engine.
4. Unknown to the flight crew, a crack had developed at the lower fin of No. 5 cylinder of the left engine and oil was leaking from this crack.

5. Having been informed by a certificated mechanic that the engine would have to be washed down before the source of the oil leakage could be determined, the pilot elected to continue the flight to Omaha without further inspection.

6. Aircraft 878 departed Chicago at 0303, August 21, 1946 with its destination as Omaha.

7. At 0400, when approximately 35 miles from Moline, the No. 5 cylinder fractured completely and the propeller was feathered immediately thereafter.

8. The flight was continued to Moline for an emergency single engine landing.

9. No radio contact was made by the flight subsequent to the engine failure.

10. While no runway lights were available at Moline Airport, field personnel switched on the boundary lights shortly after Aircraft 878 reached the vicinity of Moline.

11. The pilot established an approach to Runway 22 with landing gear and flaps fully extended.

12. Inasmuch as the approach was faulty, the pilot attempted a single engine go-around after passing over approximately 1/3 of the runway.

13. The aircraft gradually lost altitude as it banked slowly to the left and continued in a southerly direction.

14. Approximately 1,500 feet beyond the south boundary of the field the aircraft struck the ground on its left wing tip and partially cartwheeled to a stop.

#### Probable Cause

On the basis of the foregoing, the Board determines that the probable cause of the accident was the faulty execution of an emergency single engine

approach following failure of the left engine in flight. A contributing factor was the failure of the pilot to exercise sufficient caution by having a qualified mechanic determine the reasons for oil leakage in the left engine prior to departure from Chicago.

BY THE CIVIL AERONAUTICS BOARD:

/s/ J. M. Landis

/s/ Oswald Ryan

/s/ Harlee Branch

/s/ Josh Lee

/s/ Clarence M. Young

*Considered the pilot's responsibility  
and the fact that the aircraft was as  
safe as it could be at the time.*



## SUPPLEMENTAL DATA

### Investigation

The Board was notified of the accident at 0700 August 21, 1946 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. The Chief Investigator of the Board's Chicago Branch arrived at the scene of the accident at 1115 the same day and was subsequently assisted by other investigators of the Safety Bureau staff. A public hearing was ordered by the Board and was held at Chicago, Illinois, August 28, 1946.

### Air Carrier

Trans-Luxury Airlines, with headquarters at Teterboro Airport, Teterboro, New Jersey, was incorporated under the laws of the State of New Jersey August 1, 1946 and has operated since that date for the transportation of persons and property between various points in the United States, including New York and San Francisco.

### Flight Personnel

Captain James L. Steen, age 26, of Coral Gables, Florida, was pilot of the aircraft at the time of the accident. Until the date of the accident he had acquired a total of 2,589 hours, the major portion of which had been procured in DC-3 type of aircraft. Captain Steen had been in the employ of Trans-Luxury Airlines since August 6, 1946 and possessed an Airline Transport Pilot Rating effective at that date. Marvin O. Fox, age 29, of Binghamton, New York was co-pilot. Until the date of the accident he had accumulated a total of 3,452 hours, of which approximately 1,500 hours had been procured in DC-3 type equipment. At the time of the accident he possessed an effective commercial license and instrument rating.

Ida Marie Moser, of Miami Beach, Florida was stewardess.

Aircraft

NC-51878, a Douglas DC-3, was leased by Trans-Luxury Airlines from the International Airlines, Chicago, Illinois. The aircraft had been in operation a total of 4,121 hours since new and until the date of the accident it was equipped with two Pratt and Whitney R-1830-92 engines, with Hamilton Standard propellers installed. The left engine had accumulated 152 hours since the last major overhaul. Total time of the right engine is unknown. At the time of departure from Chicago, Illinois the total weight of the aircraft was within its gross weight limits.