

## CIVIL AERONAUTICS BOARD

## ACCIDENT INVESTIGATION REPORT

Adopted: April 8, 1947

Released: May 21, 1947

## WESTERN AIR LINES, INC —NORTH HOLLYWOOD, CALIFORNIA—APRIL 24, 1946

## The Accident

NC-33621, owned and operated by Western Air Lines, crashed two miles northwest of Lockheed Air Terminal, Burbank, California, at 0157\*, April 24, 1946, during an emergency single-engine approach to that airport, following an engineering test flight. The crew of three were fatally injured and the Douglas DC-3A was demolished by impact and subsequent fire.

## History of the Flight

NC-33621, hereinafter identified by the company designation, Aircraft 106, had been released by the Superintendent of Maintenance of Western Air Lines during the night of April 23 for an engineering test flight. In order that the aircraft might be available for a scheduled passenger flight on April 24, the company operations manager arranged for a flight to test the two newly installed engines during the early morning of that day.

Captain Wayne M. Fidroeff and First Officer Marvin Schwartzbach, both of whom had returned from scheduled flights shortly before, agreed to make the test flight, and were accompanied by a company inspector, Leon Turgeon. The aircraft was dispatched from the Lockheed Air Terminal, commonly referred to as Burbank Airport, on a Contact Flight Rules flight plan and took off at 0116. Following the report of take-off transmitted by the pilot, no further radio contact was had with the flight until 0145 when landing instructions were requested from Burbank Tower. The weather at this time was High broken clouds, visibility 3 miles, light smoke, temperature 55, dew point 53, wind NW at 5 miles per hour, altimeter setting 29.85 inches of mercury, smoke aloft. One minute later the flight reported over Warner Brothers Studio, a regular check point for landing approach to Runway 33. When Aircraft 106 was instructed to circle over "Warner Brothers" because of United Air Lines Flight 586 which had been cleared for a straight-in approach, the pilot replied that one propeller was feathered.

The aircraft communicator at Burbank immediately contacted UAL Flight 586 and instructed it to remain clear of the airport. Aircraft 106 was then cleared for an immediate landing on Runway 33. Approximately 45 seconds later, or at 0147, Aircraft 106 passed over Runway 33 at an altitude too high for a safe landing. The aircraft turned slightly to the left and passed out of sight on a heading of approximately 300 degrees. About 0150 the flight reported over the City of Burbank, which is east of the airport indicating that the pilot had turned to the east shortly after passing over the field.

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

At approximately 0154 Aircraft 106 requested permission from the tower to make a right-hand traffic pattern for landing on Runway 15. The request was granted and the tower advised that there would be a slight tail wind if this runway were used. No further radio contact was had with the flight, and it was not seen by the tower operator after the first missed approach. The aircraft crashed at a distance of approximately two miles northwest of Burbank Airport, about three minutes after the tower had transmitted the final clearance to land.

## Investigation

The purpose of this flight was a routine engineering check of the two newly installed engines, the duration of which is normally 30 minutes. The aircraft had been inspected prior to the flight by Inspector Turgeon, who died in the accident. As Western Air Lines employs no pilots specifically for maintenance test flights, it is customary to use the regularly scheduled pilots when available for this purpose. Both the pilot and co-pilot involved in the accident had completed scheduled flights as First Officers and had landed at Burbank within 30 minutes prior to the take-off of Aircraft 106. W. M. Fidroeff, pilot of Aircraft 106, was a reserve captain.

Although the inspection records, which were completed following the installation of the engines, had been destroyed in the accident, the investigation indicated that the aircraft had been completely inspected and was considered thoroughly airworthy prior to the commencement of the flight. The maintenance history of the aircraft disclosed a normal operating record, and recent pilot reports and inspection reports revealed no mechanical defects in the aircraft.

The company flight release was prepared at approximately 0055 on the basis of the Burbank 0030 weather sequence, which reported High broken, low scattered at 700 feet, visibility 5 miles, very light fog, wind ENE 4. A special Burbank forecast to cover the period from 2315 to 0430 was available at the airport prior to take-off, and this forecast indicated that during the earlier part of this period the weather was expected to be Ceiling broken to overcast at 500 feet, visibility 3 miles, light fog. During the last two hours of this period, it was expected that the ceiling would become overcast at 300, visibility 1 1/2 miles, and light fog. The weather at Newhall, 23 miles to the north, remained satisfactory for contact operations throughout the period of this flight.

From statements of witnesses and the aircraft position report when over Burbank, it was possible to

determine the approximate flight path between the first and second landing approach at Burbank Airport. After passing over the southeast end of Runway 33, the aircraft turned to the left and continued in a northwesterly direction for a maximum distance of two miles. The aircraft then banked into a long, shallow turn to the right, during which it appears a complete circuit of the airport was made. During this time, low stratus clouds with bases at about 200 feet were drifting over the airport from the northwest. At 0152 a special weather observation was made at the request of the Burbank control tower, which reported Ceiling variable at 200 feet, thin overcast, light fog, wind northwest at 6 miles per hour, breaks in overcast, visibility to the north 1 1/2 miles, west 1/2 mile, south 1 1/2 miles, east 1/2 mile. Although Burbank Tower attempted to transmit this information to the flight no acknowledgment was received from Aircraft 106. Statements of persons residing in the vicinity of the airport indicate that at that time a dense layer of ground fog lay north northwest of the airport.

Shortly after reporting over Burbank the aircraft was heard northwest of the airport flying in a northeasterly direction and at a very low altitude underneath the overcast. At approximately 0156 the aircraft reversed its direction of flight in a sharp turn to the right and, while on a southwesterly heading approximately two miles northwest of the airport, struck a tall eucalyptus tree at a point 35 feet above the ground. Immediately after contact with this tree, the aircraft climbed and subsequently fell to the ground in a nearly vertical attitude indicating that it had stalled. It struck the ground in an extremely nose-low attitude immediately adjacent to a small cottage located 1425 feet south southwest of the tree with which initial impact was made.

Inspection of the wreckage disclosed that the No. 8 link rod of the left engine had failed in flight. The propeller of the left engine was found feathered. No indication of malfunctioning was apparent from the investigation of the right engine, and it was apparent that neither engine had been subjected to fire prior to impact. No mechanical failure or malfunctioning of any of the aircraft control systems was noted. The setting of the aircraft altimeters corresponded with that provided by Burbank Tower shortly before the accident.

The link rod which failed in flight in this instance was located in the No. 8 cylinder, which is the lowest of the forward bank of cylinders in the type engine installed. The investigation disclosed that the failure which occurred was the result of a piston overload caused by a "liquid lock" in the cylinder.

## Discussion

In view of the fact that the engine had recently been overhauled and had been standing idle for some time prior to this flight, it appears reasonable to assume that the "liquid lock" which caused the link rod failure was the result of excessive oil accumulation in this cylinder. The non-compressibility of

the oil would result in a serious overload as the piston travelled outward from the crankcase when the engine was started and, should a failure occur, it would most likely be in the link rod. It is probable in this instance that the rod became damaged during starting and that the stresses then induced resulted subsequently in complete failure while the aircraft was in flight. As a result of the above investigation and from the inspection of the aircraft maintenance records, it can be concluded that the company maintenance personnel failed to take proper measures for drainage of oil accumulation prior to starting the engines.

In view of the weather conditions existing at Burbank at the time of take-off the original clearance of the flight in accordance with contact flight rules was in order. Nothing is known of that portion of the flight between 0116 and 0145. However, it appears that during this interval the failure of the No. 8 link rod of the left engine occurred. With the exceptionally light load aboard on this flight the performance of the aircraft with one engine inoperative was adequate to permit the flight to land on any runway at Burbank or to proceed to an alternate airport. It is apparent that the poor visibility prevailing at the time of the first approach to Burbank rendered the approach difficult. However, the pilot elected to complete the approach at Burbank rather than proceed with one engine inoperative over mountainous terrain to an alternate airport at which favorable weather conditions existed. Having missed the first approach, the pilot circled the airport to the right, the latter portion of the pattern being flown at a very low altitude.

The reason for electing to attempt a landing on Runway 33 is not known. However, it appears from the evidence that the pilot continued in a right-hand traffic pattern until entering the dense layer of fog northwest of the airport. It is apparent that the subsequent loss of visibility in this area led the pilot to turn sharply to the right in an attempt to return southward toward an area of better visibility. It is evident that the aircraft was under control during this turn and that, in order to remain contact, the pilot descended to a very low altitude, at which time the wing tip struck the eucalyptus tree on the side of the inoperative engine. Poor judgment was demonstrated by the pilot in his failure to maintain a safe altitude after encountering ground fog. The impact resulted in a sharp yaw to the left, and it appears that the pilot climbed the aircraft immediately after contact with the tree, during which time the aircraft stalled.

## FINDINGS

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

1. The aircraft and crew were properly certificated for the flight.
2. The aircraft was dispatched under CFR clearance for an engineering test flight under weather conditions forecast to be below instrument minimums.

- 3 During the 30 minutes of flight after take-off, the No 8 link rod of the left engine failed and the left propeller was subsequently feathered.
- 4 The single-engine performance of the aircraft was adequate to permit it to maneuver in the vicinity of Burbank for a landing on any runway or to proceed to an alternate airport.
5. Although low ceilings and poor visibilities prevailed at Burbank, the pilot elected to attempt a landing at Burbank Airport rather than proceed to a suitable alternate airport over mountainous terrain and with one engine inoperative.
6. Upon contacting Burbank Tower, the flight was cleared for immediate landing on Runway 33, but was unable to complete the landing after passing over the approach end of the runway.
- 7 The pilot made a complete right hand circuit of the airport and received approval of a request to land on Runway 15
8. Upon entering an area of dense ground fog while turning toward the northeast approximately two miles northwest of the airport the aircraft reversed its direction of flight and descended to a very low altitude.

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9. Shortly after this turn the left wing tip of the aircraft struck a tree approximately 35 feet above the ground

10 The aircraft climbed after initial impact, stalled, and fell to the ground in a steep dive

#### Probable Cause

The Board determines that the probable cause of this accident was the action of the pilot in descending to an excessively low altitude in an attempt to remain contact after encountering ground fog during an approach for an emergency landing. A contributing factor was failure of the left engine due to excessive oil accumulation in the No. 8 cylinder prior to starting the engine. A further contributing factor was the failure of maintenance personnel to take proper precaution for drainage of oil accumulation prior to starting the engine.

#### BY THE CIVIL AERONAUTICS BOARD

/s/ J M Landis  
/s/ Oswald Ryan  
/s/ Harllee Branch  
/s/ Josh Lee  
/s/ Clarence M Young

# Supplemental Data

## Investigation

The Civil Aeronautics Board was notified of the accident at 0256, April 24, 1946 and investigation was immediately initiated in accordance with the provisions of section 702 (a) (2) of the Civil Aeronautics Act of 1938, as amended. Air safety investigators of the Board's Santa Monica office arrived at the scene of the accident at 0345 the same day.

## Air Carrier

Western Air Lines, incorporated in the State of California and with headquarters at Burbank, operated NC-33621 in scheduled air carrier operations under the provisions of 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.

## Flight Personnel

Captain Wayne Martin Fidroeff, age 27, of Los Angeles, California, had been employed by the company since August 31, 1942. At the time of the accident he possessed an airline transport pilot

rating and had accumulated a total of 2,802 hours' flying time of which 2,442 hours were obtained in DC-3 equipment. First Officer Marvin Schwartzbach, age 25, of Roscoe, California, had been employed by the company since October 26, 1944. At the time of the accident he possessed a commercial pilot's certificate and an instrument rating, and had accumulated a total of 3,300 hours' flying time of which 1,315 hours were obtained as co-pilot in DC-3 aircraft. Leon Turgeon, of Los Angeles, California, maintenance inspector for Western Air Lines, accompanied the flight.

## Aircraft

The Douglas DC-3 A, NC-33621, had been flown a total of 13,354 hours with approximately 1,234 hours accumulated since the last major overhaul. It was equipped with two Pratt & Whitney engines on which Hamilton Standard propellers were installed. The left engine, a type S13CG, had been operated a total of 8,747 hours prior to the last overhaul while the right engine, a type 1830-92, was new. Inasmuch as no passengers or load was carried the gross weight at the time of take-off was considerably less than authorized maximum.