

CIVIL AERONAUTICS BOARD

ACCIDENT INVESTIGATION REPORT

Adopted: March 14, 1955

Released: March 17, 1955

LOCKHEED VENTURA, N 44M, GENERAL MITCHELL FIELD,
MILWAUKEE, WISCONSIN, DECEMBER 17, 1954

The Accident

A Lockheed model B-34 Ventura, N 44M owned and operated by the Miller Brewing Company, Milwaukee, Wisconsin, crashed approximately 3,200 feet north of General Mitchell Field, Milwaukee, Wisconsin, December 17, 1954, at approximately 1708^{1/}. The four occupants were killed and the aircraft was demolished by ground impact and subsequent fire.

History of the Flight

Lockheed Ventura N 44M took off from runway 1 (005 degrees magnetic) of General Mitchell Field, Milwaukee, Wisconsin, at approximately 1708 for an IFR (Instrument Flight Rules) flight to Winnipeg, Canada. Aboard were Pilot Joseph Laird, Copilot Paul Laird, and two passengers--Fred Miller, Sr., President of the Miller Brewing Company, and his son, Fred Miller, Jr. As N 44M was passing over the northern boundary of the airport, after an apparently normal takeoff, the Mitchell Field Tower Controller received the message, "an engine on fire" and "making an emergency landing." The controller acknowledged this message and the pilot reported something about an engine sputtering. The aircraft, which had started a turn to the left at this time, was cleared to return to the airport and use any runway. The pilot then reported an engine feathered. As the controller turned up all runway lights to the highest intensity, personnel in the tower observed a mushrooming mass of flame just north of the field. The aircraft had crashed in a nose-down right-wing-low attitude in an open field approximately 3,200 feet north of the airport and west of a projected line of runway 1. Fire of large magnitude occurred after ground impact and continued for several hours before it was completely extinguished.

Investigation

Impact occurred in an open field, 3,200 feet north of the northern boundary of the airport and 26 degrees to the left of a projection of runway 1, where the ground level is slightly less than 50 feet higher than the airport. The highest altitude attained by the flight, which was not more than a minute in duration, is estimated at 150-200 feet by ground eyewitnesses.

^{1/} All times referred to are central standard and are based on the 24-hour clock.

The 1710 weather observation of the U. S. Weather Bureau station at Mitchell Field was: measured ceiling 4,000 feet, overcast, 500 feet broken; visibility 1-1/2 miles; light rain, very light snow, moderate fog; temperature 33; dewpoint 33; wind west 7 miles; ceiling ragged. Night takeoff minimums for Mitchell Field are 300 feet and one mile.

The purpose of the flight was to transport Fred Miller, Sr., and his son to Canada for a combination hunting and business trip. Because of marginal weather conditions Pilot Laird had canceled a short trip to South Bend, Indiana, the morning of December 17 and the aircraft remained at Mitchell Field until the start of the subject flight. The six wing tanks had been "topped" on the preceding day and the two bomb bay tanks were filled to capacity on December 17 after the South Bend flight was canceled. The gross weight of N 44M at the time of takeoff has been computed at 27,390 pounds, well under the maximum gross weight of 31,000 pounds.

The Miller Brewing Company maintained a well-appointed private hangar at General Mitchell Field and owned two aircraft--the Lockheed involved in this accident and a Grumman Widgeon. Pilot Joseph Laird had been employed as a pilot and in charge of the aviation department since 1947. His brother, Copilot Paul Laird, had been employed by the Miller Brewing Company nearly five years. Lockheed N 44M had been flown to all parts of the United States for upwards of 250 hours during 1954. Both pilots were engaged in courses to maintain proficiency and there was no expense spared, so far as could be ascertained, in the maintenance and upkeep of the aircraft or home base.

It is known definitely that the aircraft was on a northwesterly course just prior to ground impact. However, the ground impact mark of the right wing leading edge indicates that had the plane been level fore and aft, rather than practically vertical, the heading would have been about 30 degrees or approximately 90 degrees to the right of the northwesterly course.

Examination of the remaining portion of the airframe did not reveal any evidence of structural failure or control malfunctioning prior to impact. Testimony of eyewitnesses nearest the accident scene indicates no fire prior to ground impact.

Examination of both propellers revealed the dome position at impact, in respect to blade angle, to be approximately 26 degrees with the rotating cam lug against the low pitch stop. From examination of the blade shim plates, the blades of both propellers indicated a blade angle of approximately 26 degrees. There was no evidence of other than normal propeller operation prior to ground impact and no indication of propeller feathering.

Extensive examination of the entire left engine assembly revealed a fatigue failure in the crankshaft at the rear intermediate counterweight cheek in the area of the crankshaft bolt. The nucleus of the fatigue fracture originated in the last full thread edge of the rear crankshaft bolt hole and the progression lines extended approximately 85 percent through the crank-cheek before instantaneous failure took place. This failure resulted in complete destruction of the articulating and piston assemblies of the rear power section.

Extensive examination of the right engine assembly indicated all piston movement to be normal, and there was no indication of excessive operating temperatures, lack of lubrication, or other difficulties. All cylinder interiors were free of scoring, the pistons were in normal condition, the pins and plugs were normal. Rotation of the propeller shaft revealed that all gear trains and reciprocating parts from the nose section to the rear cam compartment were operating normally. Examination of the dual magneto of the right engine (Scintilla model DF18RN, serial no. 6379) revealed that the No. 1 breaker assembly cover had a hole, approximately one-half inch in diameter, and two worn grooves made by rubbing of the propeller governor control cable which is normally next to the magneto. Bench testing of this magneto revealed flashover on both coils due to a considerable amount of moisture being present in the interior; however, the magneto breaker assemblies were normal with no evidence of point arcing or burning.

At ground impact both engines had separated from the nacelles at the firewall and were subjected to the intense ground fire that consumed approximately 85 percent of the airframe as well as all of both engine rear sections up to and including the rear cam compartments. All front cylinders on both engines received severe damage from ground impact.

A majority of the eyewitnesses testified they did not see any signs of fire in the air. One of the three controllers in the tower, and another witness driving east and south several blocks of where the accident occurred, stated that there were signs of light, or a streak of flame, coming back from the engine area. The first of three radio transmissions from the flight, after becoming airborne, also stated "an engine on fire." However, a former Air Force pilot and one of the three witnesses nearest the point of impact gave positive testimony that there was no visible fire or flame on the aircraft in flight. The flame-smudged parts of the aircraft, when examined, gave indication of ground fire only, with the flames rising vertically. There were no fore and aft flame streaks or marks that indicated a fire in flight.

The completely burned out cockpit area prevented the determination of instrument indication at the time of ground impact. Examination of the airframe revealed that at the time of the accident the landing gear and wing flaps were fully retracted. The rudder trim tab was at a 10-degree right setting. The elevator trim tab was 5 degrees, indicating a nose-down setting.

Analysis

From testimony of eyewitnesses and examination of the engines, it is apparent that a sudden cessation of power from the left engine occurred soon after the aircraft became airborne in a normal takeoff. The nature of the structural failure in the left engine would permit windmilling of the left propeller. Several ground witnesses stated they heard sputtering noises as the aircraft passed overhead north of the airport boundary. These sputtering noises could be attributed to the initial failure of the crankshaft. There were also witness statements to the effect that the right propeller was turning slowly. It is possible that there was sufficient moisture in the right engine magneto to cause engine roughness although this moisture may

have been introduced after the accident. Any reduction of power would have resulted in the output of less than rated power from the right engine and affected single-engine performance adversely.

The Military Technical Order (01-55EC-1) Manual covering the operation of this model Lockheed states that, "if an engine fails (after takeoff) after attaining an indicated air speed of 127 miles per hour and gross weight does not exceed 27,000 pounds--flight may be continued--. Every effort must be made to prevent the airplane from yawing excessively. Do not use the ailerons. Maintain all power possible while holding a straight course. If flight is continued retract the landing gear, adjust the rudder trim tab and then feather the inoperative propeller."

The gross weight of N 44M at the start of this flight has been computed as 27,390 pounds (390 pounds over the 27,000 pounds named in the single-engine procedure) and because of the short time element, reduction of the gross weight was impossible. The record of Captain Joseph Laird indicates a well-trained and conservative pilot with ample experience in flying N 44M. It is reasonable to assume that an indicated airspeed of 127 miles per hour had been attained at the time of passing over the boundary of the airport. It was in this immediate area that the failure of the left engine occurred. The ground level rises north of the airport and there is also a high tension power line running east and west less than a mile north of the airport. A necessary left turn to return to the airport, with the left propeller windmilling, would seriously affect any single-engine performance. This, coupled with the possible engine power reduction on the right engine, would compound the pilot's difficulties. These difficulties continued to a point where flight was no longer possible. Impact marks from a nose-down, right-wing-low ground contact from the estimated flight altitude of 50-75 feet indicate a loss of flying speed and falling off on the right wing at the final stage of the flight. This movement is substantiated by the heading of the ground marks being approximately 90 degrees to the right of the observed northwest course.

There may have been a considerable pyrotechnical display streaming back during the left engine failure. This would be due to probable rupture of manifolds, irregular firing, etc., and would account for the two witnesses who observed unusual light or fire effects on the aircraft while it was still in flight. However, the great majority of eyewitnesses, and this includes three nearest the point of impact, are certain that there was no aircraft fire in flight. It is also possible that the pilot had a panel fire-warning indication that prompted him to report a fire to the tower.

Findings

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

1. The aircraft and the crew were properly certificated.
2. The aircraft was properly loaded with respect to maximum gross weight and center of gravity limits.

3. A structural failure and total power loss in the left engine occurred shortly after the aircraft became airborne.

4. A power lessening of the right engine prevented normal single-engine performance.

5. The terrain and obstructions did not permit a straight-ahead emergency landing.

6. The left turn and loss of power produced loss of airspeed and control that resulted in an uncontrolled crash.

Probable Cause

The Board determines that the probable cause of this accident was the failure of the left engine, together with a reduction of power in the right engine following takeoff, which prevented normal single-engine performance. This condition together with the fact that the aircraft was overloaded for single-engine performance resulted in loss of control.

BY THE CIVIL AERONAUTICS BOARD:

/s/ ROSS RIZLEY _____

/s/ CHAN GURNEY _____

/s/ HARMAR D. DENNY _____

/s/ JOSH LEE _____

/s/ JOSEPH P. ADAMS _____

S U P P L E M E N T A L D A T A

Special Investigation

The Civil Aeronautics Board was notified of the accident at 1745, December 17, 1954. An investigation was immediately initiated in accordance with the provisions of Section 702 (a) (2) of the Civil Aeronautics Act of 1938, as amended. A special investigation, ordered by the Board, was held in Milwaukee, Wisconsin, January 5 and 6, 1955, and in Washington, D. C., January 17, 1955.

Flight Personnel

Pilot Joseph Jack Laird, age 35, held pilot certificate No. 50177, Air-line Transport, DC-3, and PV-1 (B-34) ratings. He also held airplane single- and multi-engine land and sea and flight instructor ratings. According to CAA records, his total pilot time, as of August 4, 1954, was 4,500 hours, with 100 hours the last six months prior. His last medical examination was passed August 4, 1954, without limitations.

Copilot Paul Laird, age 34, held commercial pilot certificate No. 203560 with aircraft single- and multi-engine land, including Lockheed PV-1, ratings. His certificate was originally issued on military competency in September 1945. Total pilot time, as of July 13, 1953, is recorded as 1,298 hours, of which 100 hours were flown the preceding six months. His last CAA medical examination, taken July 13, 1953, was passed without limitations.

The Aircraft

N 44M, serial No. 4820, was originally a medium bomber manufactured in October 1942 by the Lockheed Aircraft Corporation. It was released for civilian sale by the Canadian War Assets Corporation December 3, 1947. After passing through several firms the aircraft was purchased by the Miller Brewing Company June 20, 1951. The latest limited category certification was August 3, 1954; this does not permit operations for hire or reward. The aircraft was equipped with two Pratt and Whitney R-2800-31 engines, serial Nos. 109791 and 5029, and Hamilton Standard type 23E50-473 propellers. Total time on the airframe is recorded as 822 hours and 55 minutes. Time on both engines since overhaul was 546 hours 49 minutes as of December 5, 1954.

CIVIL AERONAUTICS BOARD
Washington

December 20, 1954

TO: Messrs. Gurney, Denny, Ryan, Lee, Adams,
The Executive Director

FROM: Director, Bureau of Safety Investigation

SUBJECT: Aircraft Accident - Lockheed PV-1,
N 44M, Milwaukee, Wisconsin,
December 17, 1954, Pilot Joseph Laird

At approximately 1707 c. s. t. the subject aircraft took off from runway 1, General Mitchell Field, Milwaukee, Wisconsin. On board were Pilot Joseph Laird, Copilot Paul Laird, and two passengers - Fred Miller, Sr., President of the Miller Brewing Company, and his son Fred Miller, Jr.

Shortly after takeoff the pilot radioed that he was having engine trouble and in a second radio contact referred to the possibility of fire. In a third and last communication he stated that one engine was backfiring and missing and that he would attempt to return to the field. The flight was then cleared for a left turn. No further contacts were made and the airplane crashed approximately 1200 feet from the northeast end of runway 1. Extensive fire followed impact and all occupants were fatally injured.

The Tower controller is reported to have observed a pink glow against the bottom of the overcast, as though reflected from the aircraft. The aircraft was equipped with special long-distance fuel tanks and carried approximately 2000 gallons of fuel.

Weather conditions were: ceiling 4000 feet, overcast, broken clouds at 500 feet; visibility $\frac{1}{2}$ miles; light rain, fog, and light snow.

CAB Investigators Fred G. Powell and Harvey Hedlund of the Board's Chicago office and Mr. Frank T. Taylor of the Washington office are at the scene.

W. K. Andrews

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