SA-273 File No. 1-0015

C I V I L A E R O N A U T I C S B O A R D
ACCIDENT INVESTIGATION REPORT

Adopted: September 17, 1953 Released: September 22, 1953

SLICK AIRWAYS, INC. - NEAR BRADLEY FIELD,
WINDSOR LOCKS, CONNECTICUT, - MARCH 4, 1953

The Accident

On March 4, 1953, between 0145 and 0150,[1/] a Slick Airways C-46F, N 4717N, crashed in a wooded area short of the boundary of Bradley Field during an approach for landing. Captain John Bielak and First Officer Jefferson R. Elliott, the only occupants, were killed. A major portion of the aircraft was consumed by fire after impact.

History of the Flight

Flight 162-3, a cargo flight, originated at New York International Airport at 0101 with Chicago, Illinois, as its destination. Intermediate scheduled stops were to be made at Bradley Field; Philadelphia, Pennsylvania; Cleveland, Ohio; and Detroit, Michigan.

An IFR flight plan for the segment between New York and Bradley Field was filed and approved by ARTC for a cruising altitude of 3,000 feet via Airways Green 5 and Blue 53 to Hartford, Connecticut, and thence direct to Bradley Field. The alternate was Boston, Massachusetts. Forecasts indicated that both Bradley Field and Boston would remain above Slick Airways' authorized minimums.

The gross weight of the aircraft upon departure from New York International Airport was 37,945 pounds, well under the allowable gross weight, and the load was properly distributed with relation to the center of gravity. The flight proceeded uneventfully to the Hartford radio range station.

At 0139 the pilot advised Bradley Approach Control that the aircraft was over Hartford at 0138 and that he would maintain 3,000 feet to the Bradley Field outer marker. The controller in the Bradley Field tower, who was handling all three radio positions, acknowledged the Hartford position report, gave the flight a time check (0139), and cleared it for an instrument approach with advice that No. 6 was the runway in use. Weather information was also given to the flight: "Wind indicating northeast calm," and Bradley Field 0128 weather conditions -- ceiling indefinite 500 feet, obscurement, visibility one and one-half miles, light rain and fog, altimeter 30.01 inches. The pilot was then requested to report over the outer marker when inbound and was advised that the Bradley Field glide path was inoperative until further notice. The glide path had been decommissioned for some time owing to extension of Runway 6; this had been duly published in "Notices to Airmen."

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

At approximately 0141, the pilot asked if the Bradley Field ILS localizer was also inoperative. He was told that the monitoring panel indicated normal operation of all components except the glide path. The pilot replied, "I believe my ILS is out momentarily and I will continue to make an ADF let-down."

The flight reported over the outer marker at 0144. The controller acknowledged and asked the pilot if the flight was inbound. The pilot replied "Roger" and the aircraft was cleared to land. The controller advised that the high intensity lights were on intensity 5 (maximum brilliance) and requested the pilot to let the tower know when he wished the intensity lowered. The pilot again acknowledged with "Roger." This was the last contact with the aircraft.

At approximately 0149, the controller requested the pilot to give the aircraft's position. Receiving no response, he then transmitted the following advisory: "If you are experiencing transmitter difficulties and have missed your approach you are cleared to reverse course, climb to 2,500 feet on the outer marker for another approach."[2/] Several other efforts were made to contact the flight, but to no avail.

Following the last contact with the tower, the aircraft was seen and heard flying low to the southwest of Bradley Field just before it struck the trees.

Investigation

After the pilot reported over the outer marker, an approach to the airport was continued, since the aircraft passed very low over the home of Mr. Frank Reilly, whose house is located near the approach end of Runway 6, about one-half mile west of the runway.[3/] Mr. Reilly stated that "the motors of the plane were roaring" and the aircraft was so low that the vibrations shook the television antenna. He noted that a light rain was falling and that visibility was one mile or more.

Investigation disclosed that there were no other aircraft in the area at the time. Neither Mr. Reilly nor two other witnesses saw the aircraft, but did hear it as it came near the field boundary on its first approach. These other two witnesses who heard the aircraft were on the east side of Bradley Field, near the Slick Airways office. Although there is some question as to which way the aircraft turned, these three were in agreement that the aircraft did make a turn.

2/ Investigators were unable to secure a true record of contacts by the Bradley Field tower to the aircraft with exception of the first, since the transcription belt on which contacts are recorded was garbled. It should be noted, therefore, that reported contacts in the above narrative, and the times, were the controller's own recollection of the conversations.

3/ See Attachment.

Several other witnesses were found who both heard and saw the aircraft a few seconds before the accident. In general, the homes of this second group of witnesses are located about two miles southwest of Bradley Field. From the locations and observations of these witnesses, it is obvious that the pilot was attempting a second approach. The statements of these witnesses indicated that the aircraft was slightly left of a direct course between the outer marker and the end of Runway 6 and flew very low over the home of Mrs. Thyra Nielsen, about seven-eighths of a mile southwest of the accident site. The aircraft crashed less than 3,000 feet to the left of the course to Runway 6 and one and one-half miles southwest of the airport boundary. These witnesses stated that the aircraft appeared to be proceeding northeast at an exceedingly low altitude with wings level; none of them observed it in a turn. The aircraft was not on fire. A surge of power was heard almost simultaneously with the sounds associated with the crash. The eyewitnesses reported that it was raining lightly at the time, but there was no fog in the immediate area. Witnesses estimated visibility to be in excess of one mile.

The left wing tip, the first portion of the aircraft to contact any ground object, struck a tree approximately 70 feet in height, and was torn off. The remaining portion of the wing then struck a second tree 112 feet further away, and was torn off. Cut branches and tree trunks revealed that the wings were relatively level upon initial contact with the trees. A 12-foot portion of the right wing panel, including the tip, was torn from the aircraft. As the aircraft cut a swath through the trees, it described a complete roll to the left. The right engine and wing stub dug into the ground when about 270 degrees of the roll had been completed; momentum carried the aircraft through the roll.

Owing to the extent of fire and impact damage, no particular significance could be attached to the investigative findings on the radio equipment.

The captain's altimeter was found set at 30.00 inches and the copilot's at 29.99 inches. The wing flap control valve was in the "Up" position. The left main landing gear and tail wheel were down and locked; the right main gear was torn from the structure. Both landing lights were extended. The electronic equipment disclosed no evidence of failure prior to impact. Inspection of the propeller domes, segment gear, and markings on the shim plates indicated that the blade pitch angles of both propellers were 14 degrees positive pitch, or four degrees above the low pitch setting.

The wreckage disclosed no evidence of fire prior to impact, nor was there any indication of mechanical failure or malfunctioning of either the airframe or engines.

A review of maintenance and engine overhaul records disclosed no significant item with reference to the possibility of malfunctioning components.

Slick Airways had been operating into Bradley Field for five months. Captain Bielak had landed there approximately 10 to 15 times during this period, but it was not known whether he had ever made an ADF or ILS approach

to Bradley Field under instrument conditions. First Officer Elliott had been flying this route for only a short time, and it was also unknown how many such approaches he had experienced or made. Both pilots were considered competent instrument pilots, and had received a Link trainer check-out on a Bradley Field approach.

The CAA-approved weather minimums for ILS, ADF, or circling approaches to Bradley Field by Slick Airways flights were 500 feet ceiling and one-mile visibility.

The controller stated that after he did not hear from the flight for a time, he issued the instructions given earlier in the report, but received no acknowledgment. He testified that he did not specify the direction in which the pilot was to turn, for he did not know the position of the aircraft at that moment.

Investigation revealed that the aircraft was airworthy upon departure from New York, and that the company, aircraft, and crew were properly certificated.

A ground check of all operating radio facilities in the area indicated normal operation during the pertinent period.

Analysis

In the ADF approach to Bradley Field, a pilot should cross the outer marker locator at 2,500 feet MSL, proceed to the Weatogue intersection[4] on a course of 238 degrees, make a procedure turn to the left (south), and return to the outer marker locator on a course of 058 degrees, crossing the locator at 1,740 feet MSL. After passing this point, the pilot would descend to not less than the minimum prescribed altitude of 500 feet above the ground. The timing of the approach at a normal rate of descent would bring the aircraft to minimum altitude about one mile from the end of the runway. Upon reaching minimum altitude, should the field not be in sight at the end of the specified time (dependent upon approach speed) a missed approach procedure should be executed and further clearance from the tower for another approach be requested. The missed approach procedure consists of climbing to 2,500 feet MSL on a course of 058 degrees. It is noted that the missed approach procedure should be executed if the pilot is still on instruments. It would follow that his request for a second approach in such case would be for an instrument approach procedure.

It will be recalled that the flight passed so low over Mr. Reilly's home that it shook his television antenna, and that he noted visibility was one mile or more. It can be deduced, therefore, that the aircraft was low enough for the pilot to have had visual reference to the ground. Since reported weather was equal to his circling minimums, it would not have been improper for him to circle under the overcast in a second attempt to land. The more desirable method of making a second approach would have been to conduct a missed approach procedure and a new ADF instrument approach. A properly performed ADF procedure would probably have prevented the accident,

4/ Intersection of the northwest leg of the Hartford radio range and the south leg of the Westfield radio range.

even recognizing that the final approach would require precise control of the rate of descent, for its procedures are designed to prevent collision with ground hazards. The Board therefore questions the pilot's judgment in this instance.

Upon missing the first approach, the pilot obviously did not follow a standard missed approach procedure. He did not advise the controller of the failure to make a successful approach, nor did he request further clearance. It is also evident that he did not execute a second ADF instrument approach, in view of the fact that there was insufficient time for such procedure between the time the flight passed over the outer marker, then Mr. Reilly's home, and the reporting of the accident at 0150. It is known that the aircraft was at low altitude near the airport on the first approach and later at very low altitude immediately prior to the crash. The altitude at points between is unknown; the pilot could have remained low and tried to circle while under the cloud base, or he might have climbed before letting down to low altitude.

The takeoff from New York, climb, and cruise were all in warmer air in above-freezing temperatures. During the descent approaching Bradley Field some turbulence, light to possibly moderate, was likely at the inversion level; otherwise little or no turbulence was indicated for the flight. Little or no icing is believed to have existed at the time N 4717N descended for an approach. However, conditions were favorable for carburetor and pitot tube icing if preventive measures were not taken by the pilot. Weather analysis indicated that the rain falling at the time of the accident was not freezing rain; this was borne out by witness statements. In this connection, a pilot who landed at Bradley Field at 0120 stated that he encountered no ice, and thought temperatures too high for its formation. Several aircraft landing somewhat before this time did, however, accumulate ice. Flight 162-3 came into the area about 25 minutes after the 0120 flight; warming of the air and lowering of the inversion was taking place during this period.

The barometric pressure at Bradley Field was falling, and at the time of the accident was about .03 of an inch lower than the last setting given to the pilot. This would have resulted in the pilot believing, from his indicated altitude, that he was 30 feet higher than he actually was.

The last weather report for Bradley Field which was given to the flight showed an indefinite ceiling of 500 feet and visibility one and one-half miles. At 0210 the ceiling was reported as indefinite 300 feet, and visibility one mile. In this variable condition, it is quite possible that the flight had to descend to a very low altitude during the attempt to make a second approach if the pilot were attempting to maintain visual contact with the ground.

Findings

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

1. The flight was cleared from New York to Bradley Field on an IFR flight plan.

2. The crew members were qualified and properly certificated for flight under instrument conditions.

3. The flight reported being over the Hartford radio range station at 0138 and was cleared by the Bradley Field controller for an instrument approach.

4. The pilot advised the Bradley tower he would make an ADF approach and reported over the outer marker inbound at 0144.

5. The aircraft was heard and seen at about 0145 by several witnesses who live near the airport.

6. The controller did not receive any information from the pilot that he had missed the first approach, was conducting a missed approach procedure, was circling with visual contact, nor was any request received for clearance to conduct a second approach.

7. The pilot did not cancel his IFR flight plan at any time.

8. There was no evidence of mechanical failure or malfunction of either the aircraft or engines.

Probable Cause

The Board determines that the probable cause of this accident was that after missing his first approach to the airport, the pilot displayed poor judgment in attempting a circle under the overcast in rain and at night, rather than execute a standard instrument approach.

BY THE CIVIL AERONAUTICS BOARD:

/s/ OSWALD RYAN

/s/ HARMAR D. DENNY

/s/ JOSH LEE

/s/ JOSEPH P. ADAMS

/s/ CHAN GURNEY

SUPPLEMENTAL DATA

Investigation and Hearing

The Civil Aeronautics Board was notified of this accident at 0300, March 4, 1953. 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 public hearing was ordered by the Board and was held in the Federal Building, Hartford, Connecticut, on April 7 - 8, 1953.

Air Carrier

Slick Airways, Inc., is a Delaware corporation, and has its principal offices at Burbank, California. The company engages in scheduled carriage of air freight; the service, maintenance, modification, and repair of aircraft; and sale of aircraft parts. It possesses a currently effective certificate of convenience and necessity issued by the Civil Aeronautics Board and an air carrier operating certificate issued by the Civil Aeronautics Administration. Slick Airways, Inc., is certificated to serve 52 cities in the United States, including Hartford, Connecticut.

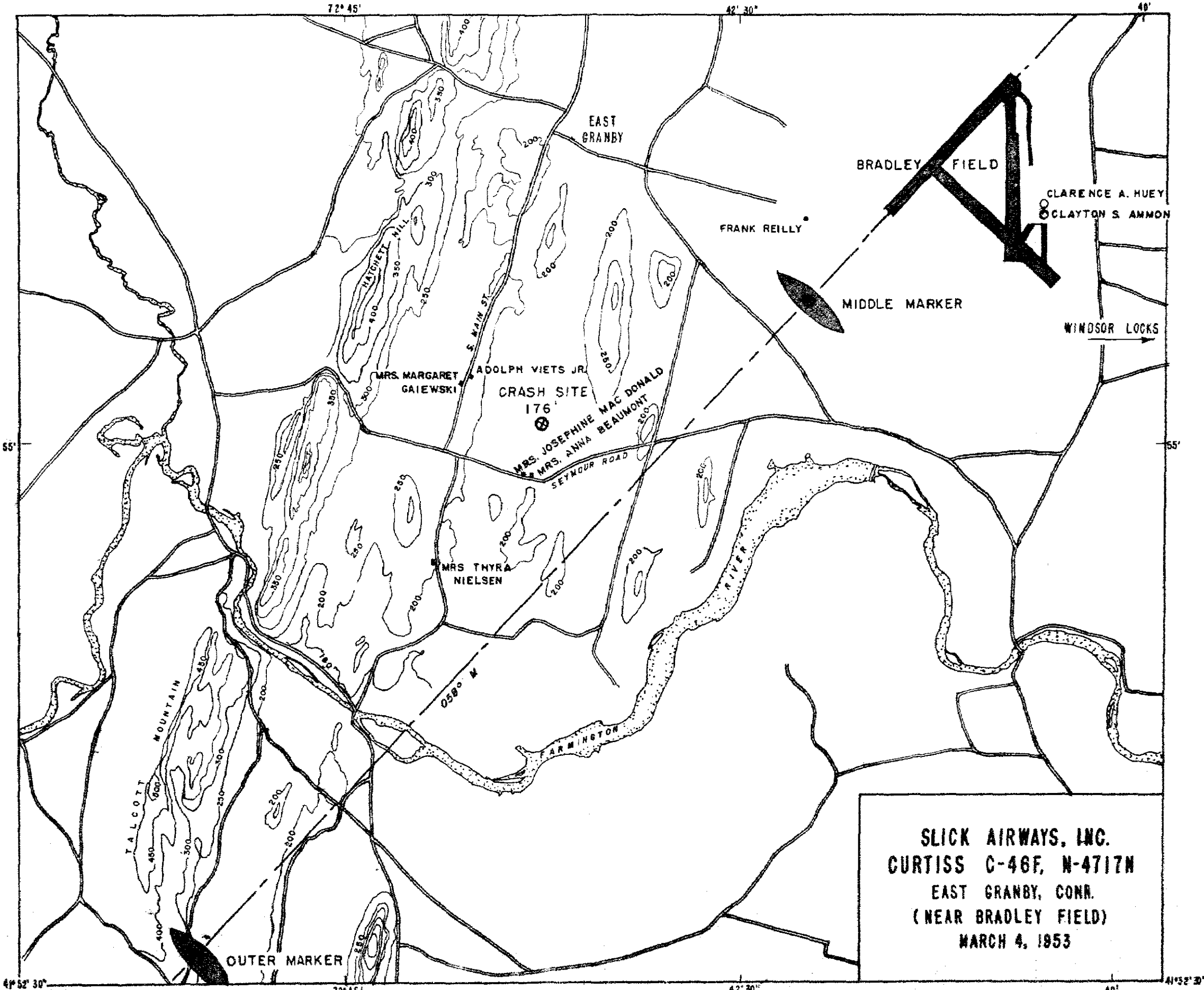
Flight Personnel

Captain John Bielak, age 37, was employed by Slick Airways, Inc., as a copilot on May 10, 1948, and became a C-46 captain on March 30, 1950. He held an airman certificate with air transport rating 114784 for single and multi-engine land aircraft, a flight instructor rating, and a C-46 type rating. Captain Bielak had logged 7,742 flying hours as of March 1, 1953; of this total, 5,092 hours were in C-46 equipment, and nearly 542 hours were instrument flying time. Captain Bielak received a six-months check on September 8, 1952, and a 90-day captain's check on December 1, 1952. His last physical examination was accomplished on November 26, 1952. He had a rest period of 23 hours and 52 minutes prior to departure of this flight.

First Officer Jefferson R. Elliott, age 31, was employed by Slick Airways, Inc., as a copilot on August 31, 1950. He possessed an airman certificate with air transport rating 417102 for single and multi-engine land aircraft, a flight instructor rating, and helicopter rating. Mr. Elliott had logged 4,074 flying hours, of which 1,958 were in C-46 equipment and 244 were instrument flying time. His last six-months equipment and instrument check was accomplished on February 26, 1953. He was given a physical examination on January 21, 1953.

The Aircraft

N 4717M, a Curtiss Wright C-46F, Serial No. 2509, was built for the Army Air Force and was purchased from Army surplus by Slick Airways, Inc., on July 21, 1947. Conversion work was performed on the aircraft and it was certificated for civil use by the Civil Aeronautics Administration. It had a total of 14,310 flying hours at the time of the accident. The engines were Pratt & Whitney Model R 2800-75 and the propellers were Hamilton Standard Model 25E50-505/6491A-6.



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ATTACHMENT