

CIVIL AERONAUTICS BOARD
ACCIDENT INVESTIGATION REPORT

Adopted: July 20, 1949

Released: July 21, 1949

LOS ANGELES AIRWAYS - LOS ANGELES, CALIFORNIA - JANUARY 21, 1949

The Accident

At approximately 2021*, January 21, 1949, Los Angeles Airways' Flight 224, a Sikorsky S-51 Helicopter, NC-92812, crashed while attempting to take off from the roof of the Post Office Terminal Annex Building, Los Angeles, California. The pilot, the only occupant, was killed and the aircraft was destroyed.

History of the Flight

Flight 223 made a routine landing on the roof of the United States Post Office Terminal Annex, located in downtown Los Angeles, at 2012 with a load consisting of 44 pouches of mail weighing 767 pounds. In accordance with the operating procedure of Los Angeles Airways, the pilot, Harry A. Slemmons, remained in the aircraft while incoming mail was unloaded and outgoing mail was loaded. This was accomplished by Post Office employees under supervision of the pilot.

According to the United States Post Office Air Mail Dispatch Record, a form completed by employees of the Post Office, 34 mail pouches weighing 750 pounds were loaded on the aircraft. This form was signed by an employee of the Post Office and by the pilot. The Pilot's Flight Report indicated that 603 pounds were placed in the forward compartment and 147 pounds in the aft compartment. With this distribution the aircraft would have been properly loaded with respect to the center of gravity.

The flight, redesignated as 224 for the trip from the Post Office to Los Angeles Airport, attempted a takeoff at 2020. The aircraft appeared to move forward six to eight feet in a southerly direction, then rose vertically approximately six feet above the roof. Moving forward at this altitude, it assumed an abnormal nose-down attitude and turned in a steep bank to the right as it approached the south edge of the roof. During this maneuver, the main rotor blades struck the roof and a three-foot parapet on the edge of the roof. The right main landing gear collided with the parapet and the aircraft then fell 62 feet to the street below. It was destroyed by the crash and the pilot was killed.

Investigation

Impact marks left by the main rotor blades and the right main landing gear on the roof and parapet of the building showed that the aircraft was banked approximately 70 degrees to the right at the time of impact with the parapet. All rotor blades were broken by this impact and were found scattered about the roof. The aircraft struck the street on its right side with the nose approximately 30 degrees below the horizontal. The forward portion of the airframe absorbed the major impact force and was severely crushed. The entire airframe structure was buckled and distorted. The tail boom had separated from

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

the airframe as a result of striking a power line as it fell.

No evidence of structural failure of the aircraft or mechanical malfunctioning of the engine prior to impact with the parapet was found. The marks of the main rotor blades on the roof and parapet indicated that takeoff power was being developed at that time. No evidence of fire was found. The maintenance and operating history of the aircraft and engine was reviewed and found to be normal.

The roof of the Post Office Department is 524 feet long and 188 feet wide. It is bounded on all sides by a reinforced concrete parapet, 16 inches thick and three feet high. The landing area located approximately in the center of the roof is 80 feet long and 48 feet wide. It is a level area consisting of a tar and gravel composition. Flight 224 prior to takeoff was located centrally in this landing area and 56 feet from the edge of the roof which was struck. With the exception of the parapet, there were no obstructions of the roof for a south takeoff, which was made in this case. The landing area was well lighted. The entire roof, including the parapet, was clearly visible for night landings and takeoffs, and there was no glare from city lights.

Immediately following the crash all the mail pouches were removed from the aircraft and weighed by officials of the Post Office Department. This weighing was observed by Civil Aeronautics Board investigators. Forty-three pouches weighing 994 pounds were removed. Nine of these pouches, weighing 244 pounds, had been just delivered to the Los Angeles Post Office Department but were inadvertently reloaded with the outgoing mail. As a result the total weight of the mail at the time of takeoff was 994 pounds, rather than 750 pounds as indicated by the Air Mail Dispatch Record and the Pilot's Flight Report. The pilot had no knowledge of this additional load, since he received his information as to the number of pouches and total weight from the Post Office Department.

The aft compartment of the aircraft holds only 150 pounds of mail because of space limitation. At the time of takeoff 147 pounds of mail had been loaded in the aft compartment and 847 pounds in the forward compartment which included the 244 additional pounds mentioned above. The maximum weight that can be carried in the forward compartment, with 147 pounds in the aft compartment, is 618 pounds and still have the center of gravity of the aircraft within the approved limits. This additional weight in the forward compartment over the maximum allowable of 618 pounds moved the center of gravity 2.31 inches forward of the maximum allowable position. Although the aircraft was improperly loaded with respect to the center of gravity, the total weight aboard was within the certificated limit of 5300 pounds.

Analysis

The location of the aircraft's center of gravity 2.31 inches forward of the maximum allowable position resulted in an extreme nose-down flight attitude immediately following takeoff. As a result the aircraft moved forward and struck the three-foot parapet.

Los Angeles Airways now employs a loading inspector on the roof of the Post Office to assist pilots in the proper loading of aircraft. A new takeoff procedure has also been instituted since the accident. All flights taking off from the roof "weigh-off", raising vertically a few feet then settling back

down on the landing area. Takeoff power is then reapplied and altitude gained in a normal manner. This enables the pilot to check the flight characteristics of the helicopter with reference to proper loading and center of gravity location before leaving the confines of the roof.

Findings

1. The aircraft and crew were properly certificated.
2. The center of gravity of the aircraft was 2.31 inches forward of the maximum allowable position at the time of takeoff.
3. The pilot had no knowledge of the improper loading of the aircraft.
4. The aircraft immediately following takeoff assumed an extreme nose-down attitude while moving forward.
5. Because of the nose-down attitude, the aircraft moved forward and struck the parapet on the roof of the Post Office Building.

Probable Cause

The Board determines that the probable cause of this accident was improper loading of the aircraft with respect to the center of gravity.

BY THE CIVIL AERONAUTICS BOARD:

/s/ JOSEPH J. O'CONNELL, JR.

/s/ OSWALD RYAN

/s/ HAROLD A. JONES

Josh Lee and Russell B. Adams, Members of the Board, did not participate in the adoption of this report.

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

Investigation and Hearing

The Civil Aeronautics Board was notified of the accident at 2045, January 21, 1949, by the Civil Aeronautics Administration, 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. A public hearing was ordered by the Board and was held in Santa Monica, California, February 16, 1949.

Air Carrier

Los Angeles Airways, incorporated under the laws of the state of California, May 11, 1944, holds a temporary certificate of public convenience and necessity authorizing the carriage of mail and cargo via helicopter in the Los Angeles area. This certificate was issued May 20, 1947, and was accompanied by an exemption order permitting operations in an area of 50 miles in a radius centering on the Los Angeles Post Office.

Flight Personnel

Pilot Harry A. Slemmons held an airman certificate with commercial pilot, multi-engine, land and helicopter ratings. Previous to being employed by Los Angeles Airways, he had accumulated a total of 838 hours as a United States Air Force Pilot; 806 hours were logged in fixed wing aircraft and 32 in helicopters. At the time of the accident he had accumulated 454 hours in the Sikorsky helicopter as a pilot for Los Angeles Airways.

The Aircraft

The aircraft NC-92812, an S-51 Sikorsky helicopter, was manufactured July 28, 1947 and was certificated for night and day flying according to visual flight rules. It was purchased from the manufacturer by Los Angeles Airways and had been operated a total of 1,397 hours at the time of the accident. This aircraft had no history of any previous accidents and its maintenance history was normal. The engine was a Pratt and Whitney R985-B4, Serial No. P227158, and had been operated a total of 1,196 hours since it was first placed in service August 12, 1947. The last major overhaul was received December 20, 1948, accomplished by CAA approved engine repair station. Following overhaul, the engine was installed in NC-92812 on January 4, 1949. It had been operated a total of 47 hours since overhaul. The maintenance history of the engine was normal.