SA-133 File No. 5565-46

CIVIL AERONAUTICS BOARD

ACCIDENT INVESTIGATION REPORT

Adopted: December 8, 1947 Released: December 9, 1947

WESTERN AIR LINES, INC.,—MT. LAGUNA, CALIFORNIA, DECEMBER 24, 1946

The Accident

Western Air Lines' Flight 44, A Douglas DC-3, NC-45395, en route from Holtville to San Diego, California, crashed on the eastern slope of Cuyapaipe Mountain three miles south-southeast of Mt. Laguna, at 1919,* December 24, 1946. The aircraft was demolished by impact and subsequent fire and all 12 occupants were fatally injured.

History of the Flight

Flight 44 had originated at Los Angeles, California, on the afternoon of December 24, 1946, and was on a return flight from Holtville to Los Angeles, with intermediate stops at San Diego and Long Beach. The same crew that had flown the plane to Holtville was returning it to Los Angeles.

The flight departed Holtville at 1850 and was cleared to the Lindbergh Tower at San Diego on a contact flight plan to cruise at 7,000 feet, to make a contact flight rule approach, and if that were not possible, to maintain 7,000 feet altitude and advise approach control. En route at 1909, the flight made a position report to the company radio at Los Angeles advising that it was over Mt. Laguna at 7,000 feet and that it was changing to the Lindbergh Tower frequency. The flight established communications with Mt. Laguna radio at 1912 and wished the personnel there a Merry Christmas but gave no position report during this contact. The aircraft communicator at Mt. Laguna returned the greeting, after which he voluntarily advised the flight of the local weather and gave the altimeter setting. Flight 44 acknowledged receipt of this information.

The last transmissions heard by the Mt. Laguna communicator were at 1918 and 1918:30 when the flight was attempting to communicate with Lindbergh Tower. Attempts to contact the flight by Lindbergh Tower and the company radio after it was overdue were unsuccessful, and search operations were subsequently inaugurated.

Investigation

Subsequent to the accident the prevailing overcast lowered and low ceilings and rains continued to exist which made air search impracticable. A ground search party discovered the wreckage on the morning of December 27. It was located on the eastern slope of Cuyapaipe Mountain approximately 75 feet from the crest at an elevation of 6,120 feet, 66 miles west of Holtville, within the airway on the northern edge of the [illegible] course of the San Diego radio range.

Examination revealed no evidence of any failure or malfunctioning of the aircraft, engines or accessories, or any evidence of fire before impact. Inspection of propellers and engines indicated power was being developed by both engines on impact. Inspection of the company maintenance records disclosed that the aircraft was in an airworthy condition upon its departure from Holtville. Examination of the steel fittings which retained the seats and seat belts revealed that both pilots and 8 of the 9 passengers had their safety belts fastened at the time of the accident. It is apparent from abrasion marks of the left wing tip on a boulder that the aircraft was in a left bank of approximately 37 degrees and the distribution of the wreckage indicated that it was on a heading of 215 degrees at the moment of impact. The time of the accident was established as 1919 by watches recovered from the crash.

Examination of the radio equipment revealed that one automatic direction finder radio receiver was tuned to the San Diego range frequency and the other to the Lindbergh Tower frequency. The

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

transmitter was last used on the frequency of Lindbergh Tower. There was no evidence of any malfunctioning of this equipment.

Both altimeters were recovered and it was determined that the left one was set at 30.01 inches and the right one at 30.00 inches. The station altimeter setting at Holtville at the time of the flight's departure was 30.02 inches and that of Mt. Laguna near the time of the accident was 30.14 inches.

The weather forecast indicated that at approximately the time of the flight the main cloud base would be 6,000 feet above sea level at San Diego, sloping to 10,000 feet at El Centro with the ridges on the mountains in between becoming obscured by a lower layer of clouds. Intermittent light rain was indicated with a possibility of light turbulence, except locally over the coastal range where turbulence was expected to be moderate to heavy. The icing level was expected to be at 9,500 feet. The last regular weather sequence available to the pilot while on the ground at Holtville indicated an unlimited ceiling with a high overcast, lower scattered clouds at 7,500 feet, visibility 30 miles at El Centro; a ceiling of 2,000 feet, visibility 50 miles at Mt. Laguna; and an unlimited ceiling, high overcast with lower scattered clouds at 9,000 feet, visibility 7 miles at San Diego.

An aftercast of the weather indicated that at the time of the accident an overcast prevailed with a base at 5,000 feet at San Diego. The overcast sloped gradually upward to the east with a base at 3,500 feet above Mt. Laguna and became scattered at El Centro with a high overcast layer above. When the flight contacted Mt. Laguna by radio at 1912 it was given the local weather as follows: "Ceiling 3,500 feet, overcast, visibility 50 miles, wind south-southwest 20, barometer 30.14." Pilots who flew over the route within forty-five minutes preceding and after the time of the accident indicated that turbulence was very light or non-existent and that downdrafts were not apparent.

The Captain of Flight 44 had made 33 flights between Holtville and San Diego, after he had been checked out as a captain the latter part of May 1946. His last flight on this route had been made within the preceding three hours.

In order to establish the altitude of the flight, the flight line of the barograph flight analyzer card, which was recovered in a badly burned condition, was closely examined. It indicated a normal descent into Holtville, the time on the ground and the climb out of Holtville to 6,000 feet at 400 feet per minute. At this point the flight line was no longer discernible and laboratory tests at the Federal Bureau of Investigation could not establish further traces of the line.

Discussion

Although not contributory to this accident, it is nevertheless apparent that the flight was improperly cleared as CAR Part 61 requires night contact flights to be cleared 1,000 feet over the highest terrain within five miles on either side of the flight path to be flown. The impact site was within the airway at an elevation of 6,120 feet, 75 feet below the crest of the ridge. In establishing the proper altitude for this night contact flight, the company dispatcher was bound only by CAR Part 61 as no minimum altitudes were specified in the route specifications. Although contary to the Civil Air Regulations, 7,000 feet was in practice used by the air carrier as a night contact clearance altitude from Holtville to San Diego. Since the time of the accident the company has established a minimum night contact flight altitude of 9,000 feet over this route.

It was apparent that the flight had progressed without any evidence of malfunctioning of the aircraft, engines, radio or accessories, and a later inspection at the scene of the accident confirmed the absence of any failure or malfunctioning. As the accident occurred during the hours of darkness, the overcast and the absence of reflected light would make the area over the mountains very dark. Since this area is sparsely settled there are few lights by which the pilots would be able to determine the altitude above the ground. The visibility from the Mt. Laguna radio beacon station, located at an elevation of 6,208 feet, was excellent as the lights of both El Centro and San Diego, 50 and 42 miles away respectively, could be seen.

The flight, proceeding in a westerly direction, had reported "over Mt. Laguna"

at 1909 and the time of the accident was 1919, yet the location of the accident was east of the flight's reported position. Had the 1909 position report been correct, the flight would have progressed approximately twenty-two miles farther west in the intervening ten minutes. Furthermore, it cannot be understood how the pilot's position report over Mt. Laguna could have been correct as this would have given the flight a ground speed of 205 miles per hour which is improbable due to a prevailing wind of approximately 30 miles per hour from a southerly direction. It is more probable that the ground speed was approximately 175 miles per hour. Therefore, it can be concluded that the pilot's position report was in error, and that a descent was established before the high terrain in the vicinity of Laguna Mountain had been passed.

Preoccupation in tuning the radio to establish communications with Lindbergh Tower and the absence of any lights which would make the mountain readily visible could account for approaching the mountain too closely. The angle of bank at the moment of impact indicated that the pilot apparently did see the mountain but too late to avoid it.

At the time of the 1909 position report, the aircraft was in an approximate position with respect to the Airway light beacon No. 7 as Mt. Laguna is to light beacon No. 5. Had beacon No. 5 been mistaken for No. 7 at the time the pilot reported "over Mt. Laguna," it is readily apparent why the descent was initiated east of the Laguna mountain range. There is no assurance, however, that such an error was made.

The altitude necessary to clear the Laguna mountain range was considerably higher than the bottom of the overcast at San Diego. In order to avoid entering the overcast and making an instrument approach at San Diego, which would have delayed the flight, it would be necessary to start the descent as soon as possible after passing the Laguna mountain range. The Mt. Laguna non-directional radio beacon, which operated only "on request" and which provides an excellent radio check for the position over Mt. Laguna, was not requested by the pilot. Subsequent to the accident this facility has been placed in continous operation by the Civil Aeronautics Administration.

The last two radio transmissions, which were made 30 seconds before impact in attempting to contact Lindbergh Tower, were made in a normal manner and the pilot gave no indication that the flight was being conducted other than in a routine manner. The flight's inability to contact Lindbergh Tower is attributed to distance only.

The difference in the altimeter setting between the altimeters of Flight 44 and the altimeter setting of Mt. Laguna results in the actual altitude of the aircraft being approximately 140 feet higher than the indicated altitude. The elevation of the crash at 6,120 feet would therefore be within 20 feet of the actual altitude of the aircraft had the flight been conducted at 6,000 feet. At this cruising altitude the lights of San Diego would not be visible to the pilots.

A wind velocity of 20 miles per hour was reported by the Mt. Laguna communication station 7 minutes before the accident. This low wind velocity is not usually accompanied by marked pressure variations resulting from the effect of irregular terrain. The Mt. Laguna station is located at a point on the ridge at which it would be subject to pressure abnormalities due to high wind velocities, but in this instance, wide variations in barometric pressure were not indicated. Since Flight 44 crashed only 3 miles from this station it appears reasonable to conclude that no significant aircraft altimeter errors resulting from barometric pressure variations existed.

Findings

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

1. The air carrier, the aircraft and the crew were properly certificated.

2. There was no failure or malfunctioning of the aircraft, engines or radio, and the flight had experienced no difficulty up to the time of the accident. Both engines were developing power at the time of impact.

3. The captain was adequately qualified for the route.

4. Contact weather conditions were prevailing across Mt. Laguna at the clearance altitude of the flight.

5. Extremely dark conditions existed over the mountainous area of the flight.

6. The lights of San Diego and El Centro were plainly visible to the Mt. Laguna communicator.

7. The lights of San Diego would have been visible to the pilots of Flight 41 when over Mt. Laguna had the flight maintained the company clearance altitude of 7,000 feet.

8. The pilot did not make use of the Mt. Laguna radio beacon to establish a positive radio fix.

9. Wind conditions were such that no important errors in the altimeter would result from terrain effect.

10. The flight's position report "over Mt. Laguna" was in error as the aircraft was east of the reported position.

11. The flight was cleared at an altitude which did not provide 1,000 feet clearance above terrain as required by the Civil Air Regulations.

12. An altitude was not maintained that would clear all obstructions.

13. The aircraft was in a turn to the left at the time of impact.

Probable Cause

The Board determines that the probable cause of the accident was the conduct of the flight at an altitude which would not clear obstructions, due to an error by the pilot in determining his position with respect to Laguna Mountain.

BY THE CIVIL AERONAUTICS BOARD:

/s/ J. M. LANDIS
/s/ OSWALD RYAN
/s/ HARLLEE BRANCH
/s/ JOSH LEE

Supplemental Data

Investigation and Hearing

The Civil Aeronautics Board received notification of the accident at 2130, December 21, 1946, and immediately initiated an investigation in accordance with provisions of Section 702(a)(2) of the Civil Aeronautics Act of 1938, as amended. The Senior Air Safety Investigator of the Board's Santa Monica office dispatched two investigators to the scene of the accident, who were in the immediate area when the aircraft was located. These investigators, with members of the sheriff's office, coroner's office, and CAA reached the scene on December 27, 1946, at 1000. A public hearing was ordered by the Board and was held in San Diego, California, January 8, 1947.

Air Carrier

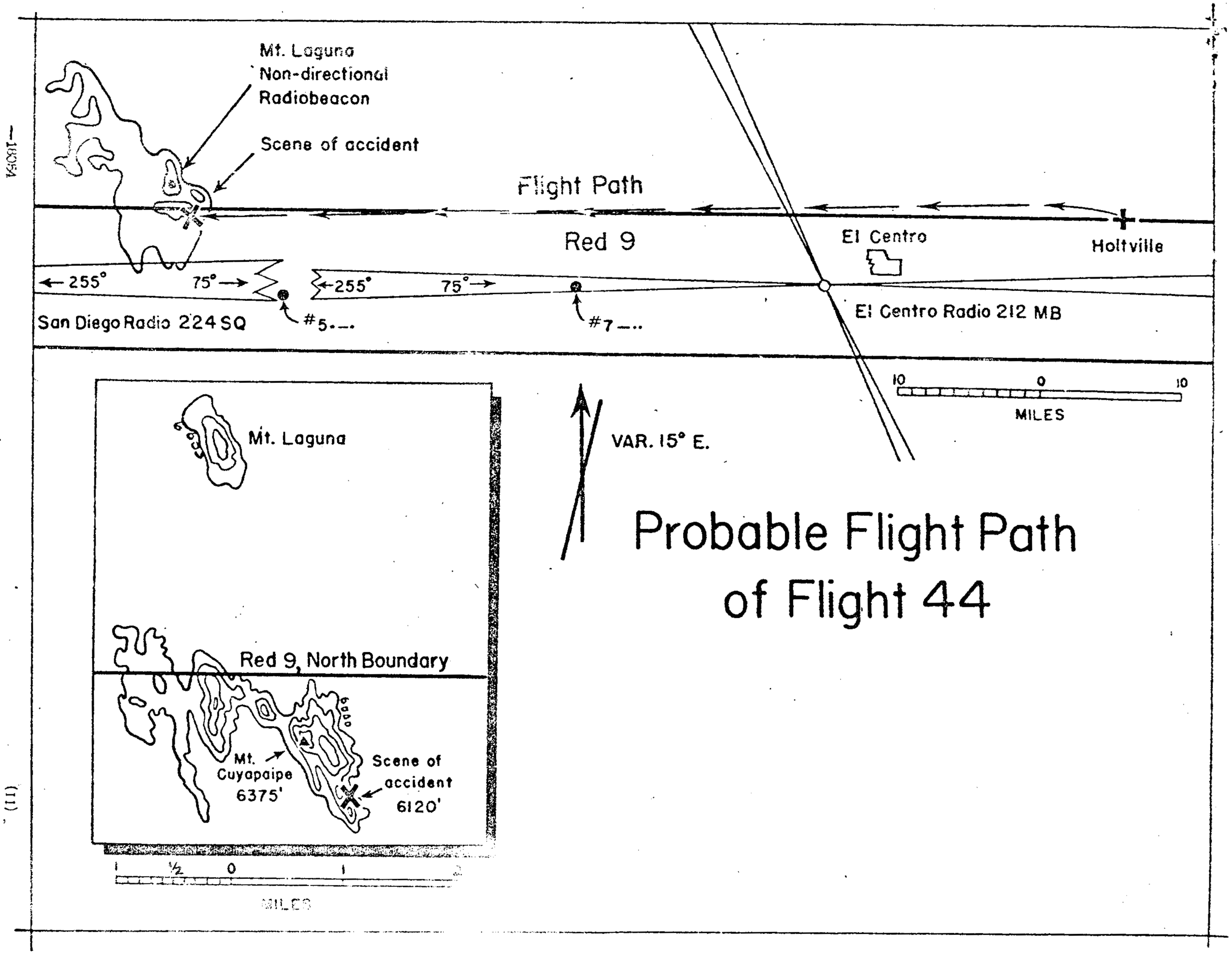
Western Air Lines, Inc., incorporated under the laws of Delaware, with headquarters in Beverly Hills, California, was operating under a certificate of public convenience and necessity and an air carrier operating certificate, both issued pursuant to the Civil Aeronautics Act of 1938, as amended. These certificates authorized Western Air Lines, Inc., to transport persons, property and mail between various points in the United States, including Los Angeles, San Diego, and Holtville.

Flight Personnel

Captain George Burton Sprado, age 38, of Santa Monica, California, was pilot of the aircraft. Captain Sprado possessed an air line transport pilot rating, effective at the time of the accident and up to the date of the accident had accumulated a total of 3,524 hours flying time, of which approximately 2,500 hours were obtained in DC-3 equipment. First Officer Richard John Weber, age 24, of Los Angeles, California, had accumulated a total of 2,658 hours, of which 861 hours were as co-pilot in DC-3 equipment. With the exception of that portion of his experience as co-pilot with Western, Weber's flying time was almost entirely obtained in the Army Air Force. He possessed an effective air line transport pilot rating. Miss Glenda M. Wade of Los Angeles, California, was stewardess. The Captain and First Officer were properly certificated for their respective duties and the captain was qualified over the route.

Aircraft

NC-45395, a Douglas DC-3 manufactured March 2, 1943, was leased from the War Assets Corporation on September 20, 1945, at which time it had been completely modified to Western Air Lines Standardization. After modification and overhaul, it was put into service by Western Air Lines on December 13, 1945. At the time of the accident it had accumulated a total of 3,699 hours. This was also the number of hours since the last major overhaul. Two Pratt & Whitney S1C3G engines equipped with Hamilton Standard propellers were installed. The left engine had accumulated a total of 10,603 hours, of which 39 hours were obtained since the last major overhaul and 5 hours since the last twenty-five-hour check. The right engine had accumulated a total of 8,914 hours, of which 39 hours were obtained since the last major overhaul and 5 hours since the last twenty-five-hour check. At the time of departure from Holtville, the gross weight of the aircraft was within maximum allowable limits and the center of gravity was within approved limits.



Probable Flight Path of Flight 44