

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

ACCIDENT INVESTIGATION REPORT

Accepted: January 26, 1946Released: February 1, 1946AMERICAN ALLEGES - RURAL RETREAT, VIRGINIA - FEBRUARY 23, 1945

American Airlines Flight 9 en route from New York to Los Angeles departed New York at 0139 EDT* on February 22, 1945 and subsequently crashed about 0225 on February 23, 1945, approximately 5½ miles southwest of Rural Retreat, Virginia. The airplane crashed on the wooded summit of Glade Mountain killing fifteen of the nineteen passengers and both pilots. The four remaining passengers and the hostess received serious injuries and the airplane was demolished.

The site of the crash was approximately 3910 feet above sea level, 64 miles northeast of the Tri-City Airport and about 1½ miles to the left of the center of the airway. The nearest local community was Rural Retreat, Virginia, 5½ miles to the northeast of the site of the crash. The wreckage was strewn over a path of 450 feet and was not found until it was sighted from the air at 1240 on February 23. A rescue party arrived at the scene shortly thereafter.

Subsequent investigation disclosed that the first impact evidently occurred as the airplane was in approximately level flight and proceeding straight ahead at cruising power. From the first point of impact and for approximately 425 feet in the general direction of the course, trees were broken at decreasing heights until the plane struck the ground. Parts of the airplane were strewn along this whole path. A check of the airway radio facilities indicated that no irregularities prevailed at the time of the accident.

Passengers later testified that the plane had been passing through rain and clouds and encountering considerable turbulence for some time prior to the crash. Competent testimony as to the current weather supported the passengers' testimony. Survivors also stated that a freezing rain fell soon after the crash occurred. A summary of the weather conditions existing and forecast is given in the Appendix to this report.

Departure from Washington had been at 0011 of February 23 and routine position reports from the airplane had given no indication of difficulty up to the time of the crash. At 0150 a radio message had been received and acknowledged by the Captain reclearing the flight on instruments from Tri-City to Smithville and contact flight rules from

*Time throughout this report is Eastern War and based on the 24-hour clock.

Smithville to Nashville. The last radio message from the flight at 0205 gave its position as 4000 feet over Pulaski, Virginia. The evidence would indicate that between this time of 0205 and the time the flight would have proceeded on an instrument flight plan at Tri-City, the airplane had crashed into the mountain while in normal cruising flight on its normal southwesterly course. This, taken together with the testimony of the passengers that the flight was in rain or clouds prior to the crash, would indicate that the Captain had neither turned the flight around nor proceeded to a safe altitude which would adequately clear the terrain existing along the Pulaski-Tri-City leg of the flight.* In the absence of difficulties not disclosed by the evidence, it appears that the flight was being conducted contrary to the Civil Air Regulations.** In other words, either an emergency had occurred of which no evidence could be found or else the pilot was using poor judgment in not having adequate terrain clearance. Testimony of some other company pilots disclosed their unfamiliarity with the Civil Air Regulations pertaining to minimum altitudes for night contact flight and the procedure for changing from contact to instrument flight in the event an instrument altitude had not been previously requested or assigned.

Further evidence disclosed that it had been customary for the company to dispatch night contact flights through this region at the 4000-foot altitude although the region cannot be flown at 4000 feet if a 1000-foot clearance is to be maintained over all terrain for 5 miles to either side of the center of the airway. There is evidence which indicates that the Civil Aeronautics Administration, due to a shortage of personnel, had not kept a close enough check on the company's operating and dispatching procedures. It may be noted here that Flight 7, which took off from Washington shortly after Flight 9, flew at 6000 feet although cleared to fly at 8000 feet over the same terrain. The company's approved minimum instrument altitude throughout this whole region is 7000 feet.

* Airway Traffic Control assigns altitude levels for instrument flights for the purpose of flight separation only and does not accept responsibility of flight control in respect to terrain clearance.

** CAR.61.7401 NIGHT. "No scheduled air carrier aircraft shall be flown at an altitude of less than 1,000 feet above the highest obstacle located within a horizontal distance of 5 miles from the center of the course intended to be flown, except during take-offs and landings or when operating in accordance with specific procedures for definite localities approved by the Administrator."

All of these facts taken together would seem to indicate a general laxity in dispatching and flight supervision and a need for continued training and checking of pilots in proper flight planning.

In this particular accident the evidence indicated that the company's dispatcher at New York had approved the Captain's plan to fly the route from Washington to Tri-City according to contact flight rules at 4000 feet and prior to the departure of the trip from New York. While on the ground at Washington the Captain had discussed the weather ahead with a company dispatcher and had been informed that other pilots had been planning instrument flights because of existing and forecast weather and the fact that the flight was being conducted at night. Evidence was offered that the Captain decided that he could fly contact as he expected an improvement in the weather, and chose an altitude of 4000 feet ostensibly to avoid headwinds and possible icing conditions at higher altitudes. This plan was approved although weather indications showed the ceilings en route and forecast to be below contact flight minimums with a trend toward less favorable weather.* Also, as has been previously stated, contact flight clearance at 4000 feet over this terrain was in violation of the Civil Air Regulations.

The company dispatcher approved the Captain's flight plan but issued an instrument clearance covering an alternate plan, with the understanding that the Captain would request assignment of an instrument altitude from Airway Traffic Control if he found it necessary to go on instruments. It would seem that this had been the general company practice when weather conditions were marginal or doubtful.

While flight clearances are the joint responsibility of Captain and dispatcher, there can be no doubt that once a flight has taken off the Captain is responsible for its safe conduct. The Captain is authorized in the event of an emergency to deviate at his own discretion from his previously approved flight plan. Unless in an extreme emergency, he is required to notify Airway Traffic Control of any action he may take. Despite the primary responsibility of the Captain, it is the company dispatcher's responsibility to maintain a close check on flight conditions and keep the Captain advised as to expected weather changes. In the instant case it would appear that although the Captain received an amended flight plan near Fulaska he did not promptly go to a safe altitude nor did the company dispatcher advise the Captain further concerning amendment to his flight plan. As no evidence could be found that mechanical or operational difficulties were encountered by this flight, it can only be assumed that flight planning errors predominated although in justice to the pilots it should be pointed out that there could

* CAR 61.71080 (2) "The hourly weather report sequence and current weather forecasts shall show a trend that gives sufficient indication that the ceilings and visibilities along the route to be flown are and will remain at or above the minimums specified in the air carrier operating certificate until the flight arrives at the point cleared to."

have been mechanical or operational difficulties (wing icing) which caused the flight to be below a normal safe altitude at the time of the crash.

DISCUSSION AND FINDINGS

Taking all the evidence as a whole the Board finds that:

1. Existing and forecast weather known to the company and the crew at both Washington and New York indicated the inadvisability of attempting the conduct of the flight under contact flight rules. (See Appendix)
2. Civil Air Regulations were violated in conducting the flight at all between Pulaski and Tri-City at an altitude of 4000 feet.
3. The company exercised poor judgment and laxity in both dispatching and flight supervision.
4. The pilot used questionable judgment in his flight planning.
5. Because of a shortage of personnel the Civil Aeronautics Administration had not kept a close enough check on the company's operating and dispatching procedures over this route.
6. The pilot either used poor judgment or was experiencing undisclosed mechanical or operational difficulties on that leg of the flight between Pulaski and Tri-City.
7. Company, aircraft and crew were properly certificated for the flight.

PROBABLE CAUSE

The Board concludes that the probable cause of this accident was the pilot's failure to properly plan the flight and remain at a safe instrument altitude under existing conditions. A contributing cause of the accident was the company's laxity in dispatching and supervising the flight.

BY THE CIVIL AERONAUTICS BOARD:

/s/ L. Welch Pogue

/s/ Harllee Branch

/s/ Oswald Ryan

/s/ Josh Lee

SUPPLEMENTAL DATA

Investigation and Hearing

The Atlanta Office of the Civil Aeronautics Board was advised at 0430 on February 23, 1945, that American's Flight 9 was overdue and that the last radio contact had been at 0205. At 1330 the Atlanta Office was notified that the wreckage had been located approximately 5½ miles southwest of Rural Retreat, Virginia.

An investigation was initiated in accordance with provisions of the Civil Aeronautics Act of 1938, as amended. Air Safety Investigators proceeded immediately to the scene of the accident. The wreckage was guarded by Virginia State Police on February 23 and 24 and by county sheriffs on February 25 and 26 at which time the Board released the wreckage to the company.

In connection with the investigation the Board ordered a Public Hearing which was held in two sessions - one at Marion, Virginia, on March 1, the other at New York, New York, on March 8 and 9. The Chief of the Investigation Section, Safety Bureau, presided and other personnel of the Board's Safety Bureau staff participated.

Air Carrier

American Airlines, Inc., a Delaware Corporation with main offices at New York, New York, was operating as an air carrier under a currently effective 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 the company to transport persons, property and mail between various points in the United States, including Washington, D. C., and Nashville, Tennessee.

Flight Personnel

Captain James E. Stroud, age 35, First Officer Robert M. Brigman, age 24, and Stewardess Sarah Worley Pedgett, all of Nashville, Tennessee, comprised the crew. Both captain and first officer were properly certificated and rated and the captain was qualified for the route involved.

Aircraft

The Douglas DC3, serial number 2138, NC 16142, was manufactured by the Douglas Aircraft Company in May 1939, and was properly certificated. It was purchased new by American and was flown in that company's service for approximately 17,296 hours, 2026 of which were after the last major overhaul. The aircraft was powered by two Wright Cyclone G-102 engines, having respectively 18,529 hours, 411 since overhaul and 12,354 hours, 170 since overhaul. Hamilton Standard propellers were installed.

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APPENDIX

WEATHER

The synoptic map issued prior to departure of the subject flight from New York shows a rather intense low pressure system covering the Great Lakes area eastward to New England and southward to Alabama and Georgia with the center in Ontario, Canada. A cold front moving eastward extended from the center through eastern New York to the Atlantic, thence southwestward just off and parallel to the coast as far as southeastern Georgia. A secondary cold front extended southward from near Buffalo, New York, through western Pennsylvania, West Virginia, extreme western Virginia, crossing the boundary of Tennessee and North Carolina and thence to Atlanta and Mobile. When the flight was ready to clear Washington the secondary cold front was located along the route between Pulaski and Roanoke, Virginia, and was rather diffuse and composed of a broad band of decreasing temperature and local rain squalls. Light rain prevailed ahead of this front as far as Washington.

Observations available to American Airlines before departure from Washington indicated the following heights above sea level of broken or overcast cloud layers: Washington unlimited, Quantico 1900, Gordonsville 1800, Lynchburg 1500, Roanoke 6600, Pulaski 6600 and Tri-City 4900. The reports at 0130, while the flight was en route, showed the following heights above sea level of the bases of broken or overcast layers: Washington 1500, Quantico 1800, Gordonsville 1900, Lynchburg 1400, Roanoke 4600, Pulaski 4900 and Tri-City 4900. At 0230, five minutes after the accident, the following ceilings above sea level were reported: Lynchburg 1500, Roanoke 4500, Pulaski 3700 and Tri-City 4900. These observations show that ceilings existed below 4000 feet from Quantico to Lynchburg before the flight departed from Washington and that while en route the ceiling lowered between Lynchburg and Tri-City with Pulaski showing ceiling below 4000 feet near the time of the accident.

When the accident occurred the forward edge of the cold frontal zone was near and a little east of Roanoke at the surface. At 4000 feet the front was probably entered between Roanoke and Pulaski and the flight at that point went from winds estimated 240° - 250°, 35 to 40 miles per hour, into 070°, 23 - 28 miles per hour. The temperature also decreased as the flight progressed toward the point of the crash. It is believed that the temperature at the 4000-foot level at the time of the accident was approximately 32°.

A showery condition prevailed in the area Roanoke to Chilhowie until after the accident, turning to snow about 2000 feet above sea level around 0300 to 0400. Turbulence is believed to have been mostly light but occasionally moderate. There is no reason to believe that much static existed at the 4000-foot level other than that caused by precipitation.

Although the company forecast was used in dispatching the flight the Weather Bureau forecast had been considered. No very important differences were indicated in the two. The following is quoted from the company forecast which was for the period 1900 to 0700, February 22 and 23, 1945:

General: Washington - Lynchburg - 1900-2300 EWT, variable scattered to broken clouds, bases 600 and tops 1200 above sea level, a second layer variable scattered to broken with bases 5000 and tops 7000 above sea level, and a third high broken layer above any intended flight level. Occasional light turbulence in clouds. 2300-0300 EWT, high broken clouds with a lower variable layer scattered to broken with bases 5000 and top 7000 above sea level. Occasional light turbulence below 5000.

Lynchburg - Tri-City - 1900-0200 EWT, high broken clouds with lower variable layer scattered to broken bases 4500 and top 3000 above sea level. Light turbulence to tops of clouds. Light icing in clouds. 0200-0700 EWT, high broken clouds with lower variable layer scattered to broken with bases 3500 and tops 8000 above sea level. Light turbulence to tops of clouds. Light icing in clouds above 5000.

Winds and Temperatures:

Washington - Tri-City - Wind 4000 feet 260°, 45 miles per hour; 500 - 250° - 50; 6000 - 250° - 55; 7000 - 240° - 60; 8000 - 240° - 65; 9000 - 240° - 70; 10,000 - 240° - 75.
Temperature 4000 feet 40°F; 5000 - 35°; 6000 - 32°; 8000 - 30°; 10,000 - 35°.

In considering this flight from the meteorological standpoint the most significant factors are summarized as follows:

1. United States Weather Bureau sequence reports available before departure from Washington indicated that continuous CFR (contact flight rules) conditions at 4000 did not exist between Washington and Lynchburg.
2. The company forecast indicated the possibility that continuous CFR conditions would not be found between Washington and Tri-City.
3. The Weather Bureau forecast indicated that continuous CFR conditions at 4000 feet would not be found between Washington and Tri-City.
4. Sequence reports shortly before and at about the time of the accident indicate that continuous CFR conditions at 4000 feet were not then existing in the area from Lynchburg to near Tri-City.