SA-345

CIVIL AERONAUTICS BOARD

File No 1-0059

AIRCRAFT ACCIDENT REPORT

ADOPTED: August 23, 1960 **RELEASED:** August 30, 1960

REEVE ALEUTIAN AIRWAYS, INC., GREAT SITKIN ISLAND
ALEUTIAN CHAIN, ALASKA, SEPTEMBER 24, 1959

SYNOPSIS

On September 24, 1959, at approximately 1717 A.s.t., a Douglas C-54B-DC, N 63396, operated by Reeve Aleutian Airways, Inc., as Flight 3, crashed into the northeast side of Great Sitkin Island killing all 16 persons on board.

Flight 3 was a scheduled flight between Anchorage and Shemya, with intermediate stops at Cold Bay and Adak, Alaska. A routine takeoff was made at Cold Bay, and all en route radio reporting points were made to the company within two or three minutes of their estimated times. At 1650 A.s.t., the flight reported that it was 100 miles northeast of Adak, at 4,500 feet, on top and in the clear. Flight 3 then estimated it would be over the Adak low frequency range at 1725 A.s.t. The flight was cleared to the Adak low frequency range, to maintain VFR on top, and to call Adak approach control when 30 miles out for landing instructions. At 1715 A.s.t., the flight advised the company it was canceling its IFR flight plan and was proceeding VFR. Two minutes later Flight 3 attempted to communicate with Adak approach control. Upon hearing this message, approach control called the flight but was unsuccessful. It was later determined that the aircraft had crashed on Great Sitkin Island and that there were no survivors.

This accident occurred as a result of the pilot's failure to maintain flight in accordance with visual flight rules over hazardous terrain.

Investigation

Reeve Aleutian Airways Flight 3 of September 24, 1959, was scheduled between Anchorage and Shemya, Alaska, with intermediate stops at Cold Bay and Adak. The flight was to remain overnight at Adak. The crew consisted of Captain Eugene O. Strouse, First Officer Robert I. Pollom, Flight Engineer Brian D. Green, and Stewardesses Elizabeth A. Burke and Lorraine A. Henderson.

Prior to departing Anchorage Captain Strouse reviewed the available en route weather data, including winds aloft and all forecasts. The forecast weather from Sequam Island to Adak for the time the flight was estimated to fly this segment was for west to northwest winds 10 to 20 knots; scattered clouds at 1,000 feet; ceiling 2,500 feet broken to overcast; occasional moderate turbulence; occasional light rain or drizzle; and a freezing level between 4,500 and 5,500 feet m.s.l. The tops of all clouds were forecast to be 5,000 feet. A copy of this weather data was attached to the flight plan.

In addition to the above weather data furnished the crew, hourly sequence reports were relayed by company radio to all its airborne aircraft. Following the review of weather conditions a flight plan was filed with, and approved by, company dispatch and ATC. This indicated a flight to Cold Bay in accordance with instrument flight rules (IFR). The aircraft was to be refueled there and an IFR flight plan filed to Adak prior to departing Cold Bay.

Flight 3 departed Anchorage at 1009[1] with 22 passengers on board. Following takeoff the aircraft was climbed to 8,000 feet, the cruising altitude, and the flight proceeded in a routine manner to Cold Bay where it landed at 1330. Eleven passengers were deplaned.

The aircraft was refueled during the short stay at Cold Bay and Captain Strouse, according to plan, refiled an IFR plan to Adak. This flight plan specified a cruising altitude of 1,000 feet on top direct to Akutan intersection, thence direct to Adak. The estimated elapsed time was three hours plus ten minutes with eight hours and forty minutes of fuel on board; alternates were Umnak and Shemya. Prior to takeoff the aircraft was cleared by approach control as follows: "Cleared out of Cold Bay control area 50 miles southwest via Mordvinof intersection, maintain VFR conditions on top."

Flight 3 departed Cold Bay at 1419 and reported over the Cold Bay low frequency range one minute later. At this time the flight reported the tops of clouds to be 1,200 feet, occasionally 1,600 feet, and advised that it would climb to and maintain 4,500 feet; it also estimated the Mordvinof intersection at 1445. The flight was then cleared by approach control to make all further radio contacts with company radio. The flight reported it was at Mordvinof intersection at 1445, 4,500 on top, and estimating Akutan intersection at 1458. Arrival time over Akutan was reported as 1458, estimating Easy I at 1524. The flight reported reaching this checkpoint at 1527 and estimated arrival at Easy II[2] at 1555. At 1552 arrival over Easy II was reported and the next checkpoint, 100 miles northeast of Adak, was estimated as 1652. This checkpoint was reported at 1650, at which time the flight advised it was 4,500 on top and estimated the Adak low frequency range at 1725. At this time the company advised the flight that ATC had cleared it to the low frequency range, to maintain VFR on top, and to call Adak approach control on 126.18 megacycles when 30 miles out for landing instructions. The altimeter setting was then given as 29.95.

Twenty-five minutes later, at 1715, Flight 3 advised the company it was canceling its IFR flight plan and proceeding VFR. Just two minutes after this message was received, Adak approach control heard the following radio transmission from the flight: "Adak approach control from Flight 3,126.18." Approach control answered the flight within a few seconds but neither this nor any subsequent attempt to reach the flight was successful. The voice of the person making this last call was judged by the Adak controller to be normal.

When the flight was 23 minutes overdue, Search and Rescue was notified and a concerted effort was begun to locate the missing aircraft. At 1850 a

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1/ All times herein are Alaska standard based on the 24-hour clock.

2/ Easy I and II are navigational fixes along the route determined by cross bearings with radio beacons.

Navy aircraft reported seeing an orange-colored fire at approximately the 2,000-foot level on the northeast side of Great Sitkin Island. This was later confirmed to be the burning wreckage of the missing aircraft.

Civil Aeronautics Board investigators arrived at Adak the following morning at 0600. Conferences were immediately initiated with officials of Reeve Aleutian Airways, the United States Navy, and the Federal Aviation Agency. The trip from Adak to Great Sitkin Island was made early the morning of September 26. Because of sea conditions and the rugged coastline of the island, this trip necessitated the use of a U. S. Navy tugboat, the USCG CLOVER, a small motor launch, and finally, rubber rafts for beaching. After landing, a detachment of Marines guided the party to the accident scene.

Great Sitkin Island is composed of volcanic rock which rises from the ocean to a height of 5,740 feet. The island is approximately 14 miles wide in any direction. The wreckage was located on the northeast side of the island at an elevation of 2,100 feet on a 30-degree slope. It was determined that at impact the aircraft was making a right climbing turn and that it struck the mountain when heading 285 degrees magnetic. Initial contact with the sloping ground was made by the left outer wing panel followed in sequence by the left horizontal stabilizer, the Nos. 1 and 2 powerplants, the fuselage, and the Nos. 3 and 4 powerplants. The empennage separated from the aircraft and remained in the initial impact area; all four propellers were found in this area. Wreckage was distributed over a distance of 411 feet. Engines Nos. 2 and 3 were found in a ravine 400 feet below and to the right of the main wreckage.

The forward section of the fuselage, including the cockpit and nose section, and the right wing were destroyed by impact forces and the fire which followed. Fire seriously damaged the left wing, left landing gear and housing, and the No. 1 engine. All landing gears were retracted when the accident occurred.

An examination of the propeller domes of Nos. 1 and 2 propellers showed that the blades of these propellers were positioned 18 and 23 degrees, respectively, from their low-pitch stops. These readings indicated that the engines were developing power at impact. Dome readings of the other two propellers could not be obtained.

Readings of all instruments recovered were determined to be unreliable. No evidence was found which indicated that a malfunction of the aircraft or its components had occurred or that fire had occurred prior to impact. Examination of the company's maintenance records showed the aircraft to be in an airworthy condition for this flight.

It was further determined that the pilot, copilot, and flight engineer were in their respective seats with their safety belts buckled, and that all passengers were seated with their seat belts fastened at impact. No additional information of value was obtained at the accident site.

On September 24, 1959, at the time of the accident, the weather was as follows: Great Sitkin Island was located in a col area with high pressure cells to the north and south and low pressure areas to the east and west. One

low pressure area was centered south of Anchorage, the other just east of the Kamchatka Peninsula. There were no fronts or squall lines affecting the route of the flight.

Each day at 0800 the U. S. Weather Bureau station at the Anchorage Airport issues for Reeve Aleutian Airways a 12-hour route forecast covering the Aleutian chain as far west as Shemya. On the day of the accident this forecast drew attention to the low pressure areas previously mentioned and described their anticipated movement. It further indicated that west of Dutch Harbor along the chain there would be scattered to overcast clouds based at 1,000 feet; a broken to overcast cloud deck above 2,500 feet, tops 5,000 to 10,000 feet; with brief periods of light rain. The freezing level was forecast to be approximately 5,000 feet with light icing occurring between this level and 10,000 feet. Occasional moderate turbulence could be expected between King Salmon and Adak. Between Dutch Harbor and Adak winds aloft at the 8,000-foot level were forecast to be 360 degrees at 25 knots. Winds aloft at lower levels were not contained in this forecast.

The Adak terminal forecast, prepared by the Weather Bureau at Anchorage for the period 1300 of the 24th to 0100 of the 25th, called for a broken ceiling at 2,000 feet with north-northwest winds at 15 knots and occasional light rain.

Surface weather observations recorded at Adak at 1645 indicated broken clouds (8/10 coverage) based at 1,500 feet, with a broken deck above (1/10 observed) based at 7,000 feet; visibility 7 miles; wind west 11 knots; temperature 52; dewpoint 48; altimeter setting 29.95.

Prior to the accident a Navy pilot arriving Adak at 1635 reported a solid overcast at 7,000 feet and CAVU (ceiling and visibility unlimited) above from 100 miles northeast of Adak. He did not observe Great Sitkin Island.

Between 1900 and 2030 another Navy pilot flying low near the crash site described the cloud coverage as broken, ceiling 2,000 feet.

The company dispatcher on duty at Anchorage the day of the flight said that he personally checked the weather information in the Weather Bureau office prior to reporting for duty at 0600. He said also that he briefed Captain Strouse at 0900 and that after this the first officer prepared the flight plan; the flight was then cleared to Cold Bay. He said all dispatching of the flight both at Anchorage and en route was accomplished in a routine manner.

Captain Strouse was first employed by the company in 1950 as copilot. He was upgraded to captain on DC-3 equipment early in 1951 and served in this capacity until September 1955. From this date until March 1957 he was employed elsewhere. He returned to the company in March 1957 as a captain on DC-4 equipment, became senior check pilot in June 1957, and chief pilot in February 1958. He had a total of 12,853 flying hours, of which 1,278 were as captain on DC-4 aircraft.

As chief pilot, Captain Strouse had certain company responsibilities. Among these were: pilot training, including proper accomplishment of all pilot en route and proficiency checks when due; the maintaining of all records pertaining to flight; and the maintaining of records pertaining to the currency of pilots' medical certificates.

An examination of the captain's pertinent flight records indicated that he had taken the prescribed medical examination when due. These dates were noted on a company record entitled "Pilot Five Year Record." However, these records conflict with the records of the local Federal Aviation Agency medical examiner and the Airmen Records Branch of the Federal Aviation Agency in Washington, D. C., which indicate that his last first-class medical examination was taken March 26, 1956. Company flight records also indicated that Captain Strouse and two other captains were overdue for their proficiency checks. Both of these deficiencies are contrary to Civil Air Regulations. In the former instance it is obligatory for the pilot to take a prescribed physical examination each six months in order to validate his airline transport pilot certificate, which is required of a captain. In the latter, an airline pilot cannot legally serve as a captain unless these prescribed checks are taken and passed.

Separate and distinct from the responsibilities of Captain Strouse are those of the company as prescribed in Civil Air Regulations. These, in part, require that adequate flight records be maintained at all times to be certain of compliance with existing regulations. In this case there were records in the company files indicating that Captain Strouse had taken each succeeding physical examination required after March 26, 1956. However, there were no Federal Aviation Agency or designated medical examiners' records found to substantiate these.

A Federal Aviation Agency representative testified that they had made periodic spot checks of the company's records and had found nothing to indicate that they were not in order. He further testified that if a pilot was asked if he had a valid medical certificate and he replied "yes," the Federal Aviation Agency inspector was not required to actually inspect the certificate for validity.

When it was learned that Captain Strouse apparently had not had a valid medical certificate for a period of approximately three years, inquiries were made of other local medical examiners by the Board investigators to ascertain if, in fact, an examination had been taken and not recorded; none such was found. These inquiries disclosed that Captain Strouse had consulted with an ophthalmologist in Anchorage on August 14, 1958. The records of this examination indicate that his visual acuity was 20/40 either eye with correction, and intraocular pressures 27-28-30 were found in each eye. These records were carefully studied by the Eye Research Foundation of Bethesda, Maryland, recognized experts in this field. This organization determined that glaucoma was present as well as cerebrovascular disease. The extent to which the patient was affected by these conditions could not be determined without an autopsy being performed and it was impossible to perform an autopsy. Among the clinical states which are considered likely to occur in varying degrees as a result of this type of cerebrovascular disease are: total immobilization, partial immobilization, and disturbance of memory, judgment, and reasoning.

Part 29.2 of the Civil Air Regulations clearly states what is required of an applicant to obtain a first-class medical certificate.3/

3/ "29.2 First Class (a) Eye. Applicant shall have: (1) A visual acuity of at least 20/20 in each eye separately without correction: Provided, that if the vision in either or both eyes is not poorer than 20/50 and is brought up to 20/20 or better in each such eye by glasses, the applicant may be qualified upon condition that correcting glasses be worn while exercising the privileges of his airman certificate."

Analysis

The Board recognizes the fact that Captain Strouse was held in high esteem by his company and was in a position of trust; also, that the keeping of all flight records was left entirely up to him. The Board also recognizes the company's responsibility to maintain adequate records to assure compliance with 41.53(i)[4/] of the Civil Air Regulations. In this instance, a review of the record of Captain Strouse would have indicated that his medical examination had been taken as prescribed. However, overdue proficiency checks should have been found.

As previously indicated, Captain Strouse's medical certificate was not current; his last medical examination, required each six months, had been taken some three years previously. As chief pilot of the company, as well as being a company agent responsible for the maintenance of pilot records, Captain Strouse was in a position where he readily could have falsified his own records. The Board believes that if an FAA inspector had asked for Captain Strouse's medical certificate to examine it, during the three years it was not current, the lack of its validity would have been discovered.

Great Sitkin Island was completely obscured by clouds of an orographic formation above the 1,500-foot level. Clouds surrounding the island were in two layers. The upper layer was thin with its top at 7,000 feet and its base somewhat below this level. The lower layer had its top at 4,000 feet and a base at 1,500 feet. Each layer virtually created an overcast condition with very small breaks, if any, in the lower deck. Both layers converged over Great Sitkin Island resulting in a solid cloud condition. There was no fog, precipitation, or turbulence of any consequence immediately adjacent to the route involved.

Captain Strouse was an experienced DC-4 pilot and had acquired several years of experience flying this route while employed by Reeve Aleutian Airways.

Throughout the flight from Cold Bay to the last reporting point all reporting points were reached approximately when estimated. From this fact it must be concluded that Captain Strouse could have easily computed his position at the time he canceled the flight plan and should have known approximately how far he was from the only obstacle of any proportion along the course. Since Great Sitkin Island is 5,740 feet in height, and at the time was obscured from the pilot's view by converging cloud layers as well as the orographic formation surrounding the mountain, and since the flight was cruising IFR on top at 4,500 feet, it is obvious that a change of course or altitude had to be made to avoid it. If the captain had elected to continue IFR, under the existing weather conditions, he would have had to change course, climb and maintain VFR on top, or request an amended clearance for an altitude assignment of at least 8,000 feet (the minimum en route altitude). To do this would have taken very little extra

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4/ 41.53(i) QUALIFICATION REQUIREMENTS: (a) No air carrier shall utilize any flight crew member or dispatcher, nor shall any such airman perform the duties authorized by his airman certificate, unless he satisfactorily meets the appropriate requirements of 41.48 etc.

41.48 Certificate. (a) Any pilot serving as pilot in command shall hold a valid airline transport pilot certificate and a rating for the aircraft in which he is to serve.

time and this should not have been a deciding factor because the airplane was to remain overnight in Adak and no other uses were scheduled for it. Captain Strouse did not elect to take any of the above courses of action, but instead decided to cancel his IFR flight plan and proceed VFR.

At the time this decision was made, the aircraft was computed to be approximately 35 nautical miles from its destination and about 9 nautical miles from Great Sitkin Island. Due to the lack of precise information, it is not definitely known what the cloud coverage was where the descent was begun; however, it is believed that it was slightly better than that in close proximity to Great Sitkin Island. It is logical to assume that a pilot with this captain's experience and background would not deliberately descend into a solid cloud condition after stating that he was going to proceed VFR. He must have thought that he could descend to a safe altitude below the clouds in accordance with visual flight rules and proceed in this manner to his destination.

Conclusion

Since the aircraft was apparently in the clouds just prior to impact, the Board concludes that the pilot for reasons unknown, did not continue to maintain visual reference to the extent necessary to navigate successfully through hazardous terrain.

The Board further concludes that the pilot did not know his exact position when he began the descent and thought he was either to the right or left of course or beyond the mountain.

It cannot definitely be determined to what degree, if any, the cerebrovascular disease from which the captain suffered contributed to this accident. However, the fact that poor judgment is one of the results of this disease, it is possible that this may have caused him to attempt to proceed visually under conditions in which better judgment would have caused him to be more cautious.

In any event the Board must conclude that the failure to maintain flight over hazardous terrain, in accordance with visual flight rules, was not compatible with the degree of judgment expected of an airline pilot.

The company has taken the following corrective action: All approaches into Adak are to be made in accordance with instrument flight rules. Photographic copies of each pilot's medical certificates are to be made upon the pilot's receipt of the certificate and placed in the file.

Probable Cause

The Board determines that the probable cause of this accident was the captain's failure to maintain flight in accordance with visual flight rules during a descent over hazardous terrain.

BY THE CIVIL AERONAUTICS BOARD:

/s/ WHITNEY GILLILLAND
Chairman

/s/ ALAN S. BOYD
Member

/s/ CHAN GURNEY
Vice Chairman

/s/ J. S. BRAGDON
Member

/s/ G. JOSEPH MINETTI
Member

SUPPLEMENTAL DATA

Investigation and Public Hearing

The Civil Aeronautics Board was notified of the accident at 2332, September 24, 1959. An investigation was immediately initiated in accordance with Section 701(a)(2) of the Federal Aviation Act of 1958. A public hearing was ordered by the Board and was held in Anchorage, Alaska, October 13, 1959.

Air Carrier

Reeve Aleutian Airways, Inc., is an Alaskan corporation with its principal office in Anchorage, Alaska. The corporation operates as an air carrier under a certificate of public convenience and necessity issued by the Civil Aeronautics Board and an operating certificate issued by the Federal Aviation Agency. These certificates authorize the carrier to engage in air transportation of persons, cargo, and mail within the United States.

Flight Personnel

Captain Eugene O. Strouse, age 49, was employed by Reeve Aleutian Airways as a copilot May 27, 1950. He held an airline transport pilot certificate with DC-3, DC-4, Sikorsky S43, and Curtiss C-46 type ratings. His last proficiency check was taken September 14, 1958. His last FAA first-class medical examination was taken March 26, 1956. He had a total of 12,853 flying hours, of which 1,278 were in DC-4 equipment.

First Officer Robert L. Pollom, age 38, was employed by the company July 7, 1958. He held a valid commercial pilot certificate with an instrument rating. His last FAA second-class medical examination was taken June 15, 1959. He had a total of 3,949 flying hours, of which 883 were in DC-4 aircraft.

Flight Engineer Brian D. Green, age 30, was employed by the company June 26, 1958. He held a valid flight engineer certificate and a mechanic certificate with an airframe and powerplant rating. He had accumulated approximately 312 hours as a flight engineer.

Stewardess Elizabeth Ann Burke, age 24, was employed by the company September 19, 1958.

Stewardess Lorraine Ann Henderson, age 26, was employed by the company November 11, 1958.

The Aircraft

N 63396, a Douglas C-54B-DC was manufactured December 10, 1944, and was purchased by Reeve Aleutian Airways, Inc., March 7, 1957. The aircraft had accumulated a total of 38,390:46 hours since new and 4,151:52 hours since overhaul. The aircraft was equipped with four Pratt and Whitney R-2000-7M2 engines and Hamilton Standard propellers, model 23E50-505.