

CIVIL AERONAUTICS BOARD

ACCIDENT INVESTIGATION REPORT

Adopted: March 4, 1957

Released: March 7, 1957

CORDOVA AIRLINES, AERO COMMANDER N 5386N, SKILAK LAKE,
ALASKA, APRIL 9, 1956

The Accident

On April 9, 1956, Aero Commander, model 520, serial 520-7, N 5386N,^{1/} owned and operated by Cordova Airlines, departed Anchorage, Alaska, on a scheduled flight to Seward, Alaska. It failed to reach its destination and a search resulted in discovery, the following day, of its wreckage on a mountain slope near Skilak Lake, Alaska. The pilot and five adult male passengers were killed and the aircraft was demolished.

History of the Flight

Cordova Airlines Flight 6 of April 9, 1956, departed Anchorage international Airport at 0905 A. S. T.^{2/} (scheduled time of departure 0845), destination Seward. The flight plan filed with the company by Pilot John Arthur Waide contained the following: Anchorage to Seward VFR^{3/} via Skilak Lake, true airspeed 145 knots, estimated time en route 45 minutes. All fuel tanks were full and the fuel on board was sufficient for six hours. The estimated time for arrival at Seward was 0950.

Witnesses saw 86N flying southeast toward Seward, heard it circle Upper Russian Lake and saw it pass them again flying west-northwest at 0951. At 1255 Flight 6 was still unreported and search and rescue procedures were initiated. On April 10, 1956, at approximately 1400, the wreckage of 86N was reported on the south slope of an unnamed mountain east of Skilak Lake at an elevation of approximately 3,000 feet M. S. L.,^{4/} near latitude 60°24'N, longitude 150°03'W.

Investigation

The wreckage of 86N was sighted by a civilian pilot who was assisting in the search and rescue efforts which had been instituted by the United States Air Force, from Elmendorf Field.

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- 1/ Hereinafter referred to as 86N.
 - 2/ All times herein are Alaska standard and based on the 24-hour clock.
 - 3/ Visual Flight Rules.
 - 4/ All altitudes mentioned herein are mean sea level.

One passenger's watch was found; however, its damaged condition precluded a determination of the time of the crash. Damage to the aircraft clock also prevented a time finding. No other watches were found. However, it appears that the accident occurred at approximately 0954, three minutes after the aircraft was last seen 5.7 miles southeast of the crash point.

Investigation disclosed that the flight proceeded from Anchorage toward Seward via Skilak Lake and Upper Russian Lake. The statement of Mr. and Mrs. Luke Elwell, who were located at a lodge on the north shore of Upper Russian Lake, 5.7 miles southeast of the accident site, reads as follows:

"On Monday morning, April 9, 1956, while outside our cabin in a blinding blizzard, shoveling a ditch in the snow to keep melting snow-water from running in our cellar, we saw the twin-engine Aero Commander come over our head, going south toward Seward. We identified it as being that particular plane because it was a new one on the Cordova Airlines' run to Seward, and we had been discussing it with bush pilots from there who had landed here the week before.

"He circled our lake and turned back toward Anchorage. We heard him turn but could not see him in the driving snow until he went almost over our heads. At that time visibility was about a hundred yards.

"We waved our shovels at him and he pushed the throttle a couple of times making it roar to give us the highsign.^{5/}

"Then he swerved toward the river and started to climb. We heard him about 15 seconds before the storm muffled his sound. That was the last we saw or heard on him.

"Luke, who is a guide and who has been on searching parties for lost planes, looked immediately at his watch which registered nine fifty-one. We believe our time to be fairly accurate as we maintain a bush-phone schedule with the Alaska Communication System."

A CAB investigator surveyed the terrain and the wreckage from a helicopter on April 12 and April 18, 1956. 86N, while flying on a westerly heading, had struck the southern slope of the mountain and had come to rest approximately 200 yards beyond the point of first impact. The cockpit and cabin area had disintegrated. Bodies of all occupants were removed by military personnel who were specialists in rescue work and travel under such conditions of weather and terrain. Detailed inspection of the terrain and the wreckage was delayed by weather and the ground conditions.

On July 14 the Board investigator was able to reach the scene of the accident, via helicopter, landing about 100 yards above the main wreckage. At that time the area was generally free from snow and ice except for scattered patches above and toward the west. The ground at the scene and in the adjacent

^{5/} This was the only communication from Flight 6 after the VFR flight plan was filed.

area was covered by large, jagged fragments of loose rock. The condition of this surface showed that one or more large rock slides had occurred subsequent to the accident.

Study of the wreckage and the terrain confirmed the observations made from aloft. The aircraft had plowed into a ledge at approximately 3,000 feet while on a heading of approximately 274 degrees magnetic.

Impact marks made by the mountain slope upon the aircraft were on the lower side of the fuselage at a point approximately even with the pilot's cockpit. The nose wheel and its strut were found substantially intact. The cockpit and the passenger compartment of the fuselage were shredded to a point six to eight feet forward of the vertical fin attachment. Seats, instruments, and controls were demolished.

The aircraft had moved across the ledge plowing a mark for 20 yards, rebounded, and came to rest at a point about 200 yards to the west and about 30 yards below the point of initial impact.

Both powerplants were torn from the main wreckage. Only one of them was located; this was at a point about 350 yards to the west of the main wreckage and at an altitude of 2,300 feet. Neither propeller was located.

The center section remained attached to the fuselage, but its structure had collapsed. Both wings remained attached to the center section. They were displaced forward. The right wing tip was damaged by contact with the mountain slope during initial impact. This damage extended inboard 71 inches. A line joining the damaged portion of the right wing to the damaged portion of the fuselage bottom had a downward slant approximately the same as that of the mountain slope in the direction across the path gouged into that slope by the aircraft. The attachment of the right aileron remained about normal but the right flap was partially separated.

The fuel cells remained unruptured but practically all of the fuel had drained away through broken fuel lines.

The empennage with the rear portion of the fuselage was separated from the main wreckage and was thrown to the left. It was severely damaged throughout all components.

The landing gears were found in the retracted position. The nose wheel and its struts were separated from the main wreckage by the destruction of that portion of the fuselage to which it was attached.

Such detailed examination of the wreckage as was possible at the site disclosed no indication of inflight failure, malfunction of the aircraft or any of its components, or of fire.

The CAA operating certificate AN 38 (CAR 42) issued to Cordova Airlines provides for operation of certain light aircraft, including 86N, under VFR and during the hours of daylight only. Dispatch of such aircraft is at the

discretion of the pilot in charge and does not require clearance from the company dispatcher. However, on April 9 the weather conditions, which are described later, were such that pilot and dispatcher conferred at length after which the dispatcher ordered that sufficient fuel be put on board to "top off" the tanks; 43.8 gallons of fuel were added, increasing the fuel on board to 147.6 gallons (885.6 pounds).

The point at which the wreckage was found is just within the northern limit of airway Red 103. The centerline of this airway is marked by the southeast leg of Kenai radio range, which is oriented at 267 degrees magnetic, toward the station. At this point the centerline of Red 103 passes over the northern nose of a mountain to the south. That nose is about 4,000 feet high at that point, and it rises to 5,000 feet within the airway. Also at that point, the actual pass, with its low ground at 500 to 1,000 feet, lies about midway between the center line of Red 103 and the scene of the accident.

The route includes two mountain passes, the one described between Skilak Lake and Upper Russian Lake, and also one called Resurrection Pass, between Upper Russian Lake and Seward. The floor of both these passes is generally as low as 500 feet with small knolls reaching 1,000 feet. High ground on both sides of both of these passes reaches 3,500 to 4,500 feet. Elwell's Lodge, where 86N was seen last, is at 690 feet. The Russian River and the pass to Skilak Lake lie along the same direction (northwest) from Elwell's Lodge for 3.29 miles, then the river bends to run approximately north along the eastern base of an unnamed 4,113-foot mountain. South of this mountain the low ground (1,000 feet and less) continues west to Skilak Lake.

The center of gravity was within authorized limits, but the gross weight at the time of takeoff was approximately 5,892.6 pounds, 392.6 pounds over the CAA authorized gross weight which is 5,500 pounds. Maximum takeoff weight of 5,700 pounds had been authorized by the company's chief pilot, who advised the Board's investigator that this was done on the basis of figures contained in the CAA approved flight manual pertaining to Aero Commander model 520 aircraft.

The chief pilot was not familiar with CAA aircraft specification 6A1, which authorizes takeoff gross weight of 5,700 pounds for certain Aero Commander model 520 aircraft, but does not apply to 86N, serial 520-7, which is excluded by note 3 of the specification.

Cordova's superintendent of maintenance, and the chief inspector, participated in preparation of the current CAA Form 337 for 86N, which specified a maximum gross weight of 5,500 pounds, and they were familiar with specification 6A1. 86N was certificated for operation with five persons aboard - pilot and four passengers. On this flight it carried six - pilot and five passengers.

Careful scrutiny of Cordova Airlines' records on 86N disclose no defect in the equipment or in its maintenance which could have contributed to this accident.

A deep low pressure center was located in the vicinity of Naknek at 0430 on April 9, 1956. An occluded front extended southeastward from this center into the Gulf of Alaska. During the following six hours this low center moved northward and the front moved northeastward passing the area of the accident at about 1000. The area from Anchorage southward, including the whole Kenai Peninsula, was directly under the influence of the low pressure system which was accompanied by many layers of clouds and by snow at the higher elevations and rain or snow at the lower elevations. Moderate to strong surface winds, mostly southeasterly, existed ahead of the front, becoming more southerly after the frontal passage. Strong southerly winds existed aloft.

A U. S. Weather Bureau forecast broadcast at 0700 (also available to the pilot and dispatcher) contained the following: "Strong, gusty winds will cause moderate turbulence that will be severe opposite passes and channels leading out of the mountains to the east . . . All passes out of Anchorage area are expected to be closed and turbulent." The U. S. Weather Bureau area forecast for the period 0900 to 2100, April 9, 1956, available to the pilot and dispatcher at 0822, indicated broken to overcast between Anchorage and Seward, with ceiling and visibility mostly 1,500 feet and three miles, but frequently as low as 800 feet and one mile. Light rain and light snow was expected generally, and the mountain passes were expected to be closed. Surface winds were forecast to be southeast 20, with gusts to 30 miles. Icing was expected in the clouds with the freezing level 1,500 feet to 2,000 feet. Light to moderate turbulence was forecast.

Analysis

Cordova Airlines' operating certificate required that the operation of light aircraft over the routes involved be done under daylight VFR conditions only, and that the dispatch of these aircraft be at the discretion of the pilot in command. During the investigation, it was determined that it was the duty of the company's dispatcher to assist the pilot in the preparation of the flight in an advisory manner. It was also determined that the chief dispatcher did work with the pilot in the planning of the subject flight. It is known that the weather forecast which was broadcast at 0700, and the 0900 weather forecast, which was filed at 0822, were available to both the chief dispatcher and the pilot prior to the flight's departure. Since this weather information clearly indicated that the flight could only have been flown under extremely marginal conditions, the Board is of the opinion that the pilot, having available weather data which indicated that the flight could not be completed throughout its entirety under VFR conditions, should have cancelled the flight before takeoff or turned back immediately upon encountering IFR conditions.

An analysis of the weather indicates that along the route Anchorage to Kenai and to Skilak Lake during the time of the flight scattered clouds existed as low as 700 feet with broken to overcast layers beginning at 2,500 feet above the surface to 25,000 feet. Intermittent light rain was occurring, occasionally mixed with light snow. Winds at 1,500 feet were southeasterly about 20 knots, becoming more southerly and increasing in speed at higher altitudes. Between Skilak Lake and Russian Lake the clouds obscured the mountains with ceiling and visibility at or near zero. Strong southeasterly winds were funneling through

this Pass, resulting in moderate to at times severe turbulence; this turbulence would undoubtedly have been in the nature of strong gusts in the area where the accident occurred.

The evidence indicates further that Pilot Waide was unable to proceed under VFR conditions in the vicinity of Upper Russian Lake because of low ceiling and visibility. It is therefore believed that he decided to discontinue the flight to Seward and return to Anchorage. It is further thought that during the return trip he was unable to maintain visual reference to the ground and elected to climb, hoping to clear terrain in the area. The fact that Pilot Waide held an instrument rating, and the aircraft was equipped with the necessary instruments for flight under IFR conditions, together with the fact that the accident occurred at an elevation well above that at which VFR flight could be flown lends credence to this belief.

Subsequent to this accident, the company revised its personnel structure by the addition of a vice president in charge of all operations, who coordinates the Operations Department with all other departments within the company. In addition, it was made possible for the company to obtain weather reports, by radio, from Elwell's Lodge on Upper Russian Lake.

Findings

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

1. The aircraft, the carrier, and the crew were currently certificated.
2. The gross weight at the time of takeoff exceeded the allowable gross. The weight was properly distributed. The overload was not a factor in the accident.
3. At the time of takeoff the weather observations and forecast indicated that VFR flight over the route involved would be extremely marginal. These forecasts were available to the dispatcher and the pilot.
4. The dispatching of the flight was at the discretion of the pilot in command. The assistance of the dispatcher in planning the flight was solely advisory in nature.
5. Pilot Waide partially traversed a route segment through mountain passes in which conditions of ceiling and visibility were below VFR minimums, and were deteriorating.
6. In attempting return through a pass after reversing his course, he lost visual contact and attempted to climb above the terrain.
7. During the climb through the clouds the aircraft struck a mountain slope.

Probable Cause

The Board determines that the probable cause of this accident was the pilot's action in continuing flight during instrument weather conditions on a planned VFR flight through a mountain pass, and striking a mountainside while attempting to climb out.

BY THE CIVIL AERONAUTICS BOARD:

/s/ JAMES R. DURFEE

/s/ CHAN GURNEY

/s/ HARMAR D. DENNY

/s/ G. JOSEPH MINETTI

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

Investigation

The Civil Aeronautics Board was notified of this accident at 1645 on April 9, 1956. An investigation was immediately started in accordance with the provisions of Section 702 (a) (2) of the Civil Aeronautics Act of 1938, as amended. The Board's investigator surveyed the scene from a helicopter and as soon as weather and ground conditions permitted he returned for detailed study of the wreckage and terrain.

Air Carrier

Cordova Airlines, Inc., is a scheduled air carrier. It operates under CAA air carrier operating certificates Nos. 808 (CAR, Part 41), and AN 38 (CAR, Part 42).

The carrier's Flight 6 is regularly scheduled and operates daily, except Sunday, between Anchorage and Seward, nonstop.

<u>Departing</u>	<u>Arriving</u>
Anchorage 0845	Seward 0925
Seward 0935	Anchorage 1015

Cordova Airlines, Inc., maintains an operations office at Anchorage International Airport.

On the date of this accident, the company employed two certificated dispatchers, one of whom was on duty at all times when Cordova Airlines flights were in the air, and a chief pilot who was in charge of all pilot personnel.

Cordova Airlines' certificate AN 38 restricts the operation of small aircraft on the route between Anchorage and Seward to day VFR conditions. Dispatch of light aircraft is at the discretion of the pilot in command and does not require clearance by a company dispatcher.

Flight Personnel

Pilot John Arthur Waide, age 42, held a currently valid airman certificate with commercial pilot privileges and the following ratings: Single- and multi-engine land and sea airplanes, flight instructor, and instrument. He had accumulated approximately 7,000 hours of flying time. He entered the employ of Cordova Airlines February 18, 1955, and served as copilot on DC-3 and similar type aircraft, and as first pilot on small aircraft (Cessna 170 and 180). He was route checked on August 30, 1955, by Cordova's Chief Pilot G. L. Mower. On March 7, 1956, having completed 7:39 hours of instruction and check flying in 86N, Pilot Waide was certificated to serve as pilot in command on Aero Commander aircraft. On June 15, 1955, he passed a CAA second-class medical examination, without limitations.

The Aircraft

Aero Commander, model 520, N 5386N, manufacturer's serial number 520-7, was manufactured in 1952. It had a total flying time of 1,136:53 hours, of which 88:13 hours were since major inspection. It was last modified on March 8, 1956, by installation of radio and electrical equipment which resulted in empty weight of 3,620 pounds. On March 14, 1956, CAA issued a Form 337 certifying it as a five-place aircraft with a gross weight of 5,500 pounds. (CAA Aircraft Specification No. 6A1, dated October 4, 1955, makes certain aircraft of 520 design eligible for certification at a gross weight of 5,700 pounds, listing serial numbers of aircraft affected, but does not include serial number 520-7.)

Prior to its purchase by Cordova, 86N had been equipped and certificated with a coffee bar and an auxiliary seat. The records (CAA form 337, dated February 21, 1956) show that the coffee bar was removed, also the right control column, to reduce weight, upon purchase by Cordova Airlines, Inc. The auxiliary seat was not removed. There were six seats in the aircraft, each of which was approved for use; but the aircraft was never certificated for flight with six occupants.

It was powered with two Lycoming model GO-435-C2B engines, serial numbers 2187-11BA and 2265-11BA, which had, respectively, 421:38 hours (since new) and 756:48 hours (398:08 of which were since top overhaul). The propellers were Hartzell HC-82K20-2A, serial numbers 11249 and 11104, each of which had flown 758:18 hours since new.