

AIRCRAFT ACCIDENT REPORT

ADOPTED: August 28, 1959

RELEASED: September 3, 1959

ALASKA COASTAL AIRLINES GRUMMAN G-21A, N 4774C,
NEAR HAINES, ALASKA, AUGUST 20, 1958

SYNOPSIS

An Alaska Coastal Airlines Grumman G-21A flew into the water of Lynn Canal near Eldred Rock, 65 miles north-northwest of Juneau, Alaska, at approximately 1525 hours P. s. t., August 20, 1958. Six of the eight passengers and the pilot were seriously injured. One passenger died four days later. The aircraft, an amphibian, descended into the glassy water in cruising configuration from an established cruise altitude of approximately 200 feet. The aircraft received major damage from impact, sank, and was not recovered.

The Board believes the accident was caused by a lack of piloting vigilance which may well have been brought about, at least in part, by preoccupation in looking for surface reference points and by monotony of flying a familiar route. Because of restricted visibility and the glassy surface of the water, other outside references were not sufficient to alert the pilot to the nose-low attitude of the aircraft and its dangerous proximity to the water.

Investigation

Flight 38, a Grumman Amphibian G-21A, was loaded with 8 passengers, 228 pounds of baggage, and 428 pounds of cargo and mail for a total cabin load of 1,928 pounds. Its total takeoff gross weight was 8,888 pounds or 32 pounds under the maximum allowable weight of 8,920 pounds. The center of gravity location was within limits.

The fuel load was adequate and allowed a reserve of approximately one hour for the round trip, Juneau to Haines to Juneau, with a stop at Briget Cove on the return.

N 4774C was normally used as a freighter and did not have regular passenger seats installed. The cabin was fitted with bench-type bucket seats along the right side and a rearward facing seat attached to the left side of the forward cabin bulkhead. Pilot Dawson flew the aircraft from the left seat and a passenger occupied the copilot's seat (authorized by CAA deviation), six passengers occupied the bucket seats, and one passenger was in the rearward facing seat. The company records show the aircraft was released in an airworthy condition for this flight.

Flight 38 departed Alaska Coastal's seaplane base in Juneau at 1453^{1/2}, estimating 35 minutes en route to Haines, a small sod airport 90 miles northwest

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

of Juneau. Normal position reports were received indicating the flight passed Eagle River at 1503 and Berners Bay at 1511. No other radio communication was received.

The sea conditions along the route were calm. A pilot who preceded flight 38 by ten minutes noted the water of Lynn Canal was very "glassy." Pilot Dawson recalled the existence of the glassy water condition; however, he stated he had flown over glassy water many times without difficulty. He was also familiar with company operating procedure which requires that the pilot maintain a visual reference to a shoreline when approaching glassy water conditions, and was trained and checked on this procedure to the satisfaction of the chief pilot.

Weather prevailing at the time of the flight was VFR over the route with scattered patches of low stratus and fog. A light drizzle was falling and visibility in flight was reported to be two to three miles. All ground stations in the area were reporting visibilities of five miles or better. The Eldred Rock weather sequence report given approximately 20 minutes before the accident occurred was 600 feet scattered clouds, estimated 4,000 feet overcast, 12 miles visibility in light drizzle. The Eldred Rock weather station was approximately three miles from the impact area. Most of the stations in the area reported low stratus and fog. Pilot Dawson stated the inflight visibility was approximately 2 miles, horizon obscured. The weather information available to the pilot and operations supervisor before departure from Juneau indicated the flight could be completed satisfactorily under visual flight rules.

The Administrator issued to Alaska Coastal authority to deviate from the altitude requirements of Civil Air Regulations Part 41, permitting flight at an altitude less than 500 feet in Alaskan operations, provided that an emergency landing may be effected at any time en route.

The flight was scheduled to proceed to Haines, Alaska, and return to Juneau with a flag stop at Briget Cove on the return trip. The pilot stated he had planned to inspect Briget Cove from the air on the way to Haines to ensure that there were no obstructions in the water landing area or changes since his last stop there several months previous. He testified he became confused en route to Haines, flew up a bay he could not identify but which he thought was Briget Cove. A passenger recognized it as the circumference of Berners Bay, an inlet midway between Juneau and Haines and well to the right of course.

Pilot Dawson made position reports to the company radio at Juneau while en route. The next report was to have been made when passing Eldred Rock. The pilot stated further he thought he had arrived at Haines when reaching Briget Cove, when in reality he was many miles short of his destination. Pilot Dawson was trying to locate the Haines Airport while circling an area he later realized was Berners Bay.

To continue to Haines, the flight left Berners Bay, returned to Lynn Canal, and passed between Eldred Rock on the right and Sullivan Island on the left. Eldred Rock is less than 5 miles from Sullivan Island. Pilot Dawson's last recollection before impact was to reach for the microphone to call company radio presumably to report passing Eldred Rock.

Personnel of the U. S. Coast Guard Lighthouse Station at Eldred Rock observed the plane fly into the water at a point approximately 3-3/4 miles northwest of the station. These witnesses stated the aircraft was flying at an altitude of 150 to 200 feet when it passed the station. It then began a slow descent as if the pilot intended to land on the water. However, these eyewitnesses agreed there was no change in the sound of the engines. As the aircraft neared the water, it began a slight bank to the right, simultaneously striking the water in a slightly nose-down, right-wing-down attitude.

The aircraft cartwheeled, tearing both engines out of their nacelles and shearing the left wing off at its attachment point. The wreckage came to rest nearly right side up and listing approximately 45 degrees to the right. Passengers aboard the aircraft stated both engines appeared to be and sounded as if they were in good mechanical order prior to contact with the water. Pilot Dawson stated the aircraft control responded normally at all times.

When the aircraft came to rest on the water, Pilot Dawson, whose vision was seriously impaired temporarily as a result of injury, crawled out and back across the top of the cabin, and opened the main cabin door. Through the efforts of Pilot Dawson and Coast Guardsman, all passengers were rescued from the wreckage area and transported to the Eldred Rock Lighthouse Station.

An attempt was made to tow the aircraft to Eldred Rock and beach it, but it sank in 150 feet of water after remaining afloat several hours. An attempt to salvage it was unsuccessful.

The pilot had been an employee of Alaska Coastal Airlines since 1951, had flown approximately 7,500 hours, had 5,000 hours in this type of operation, and had over 3,500 hours in Grumman G-21 aircraft. He was considered a very stable person by supervisory personnel, and his CAA medical examinations revealed no indications of any physical or mental ailments.

Pilot Dawson had been off duty for approximately 19 hours before the flight and stated he had had a normal amount of sleep. On the morning of August 20, he reported for duty at approximately 0900 and departed on his first trip at 0930. This trip was completed at 1209 with a total of 1:39 hours flight time. Following the first flight he had eaten a light lunch with no aftereffects or drowsiness.

The company training and pilot qualification program was reviewed during the investigation. Newly hired pilots are given a comprehensive route and equipment familiarization course, and much emphasis is placed on weather analysis with respect to the peculiarities of the areas served. New pilots are frequently checked and re-evaluated by the chief pilot. Once a pilot is considered qualified, the training is reduced to a minimum, and competency checks are given in accordance with the requirements of current deviations authorized.

Pilot Dawson had flown 56:26 hours during August. Scheduled duty periods were on a basis of five days on duty, with two days off between periods of duty.

During the investigation of the accident the possibility of carbon monoxide poisoning was explored. A company inspector stated the intensifier tubes on all Grumman G-21A aircraft, about the only source of carbon monoxide contamination,

are inspected every 100 hours by two different inspectors. In addition, inflight checks, with the use of a safe CO meter, are made at various altitudes, with different power and flap settings. These tests and inspections have revealed no danger of appreciable carbon monoxide concentration on Alaska Coastal Airlines Grumman G-21A aircraft. This carbon monoxide concentration test was satisfactorily accomplished on N 4774C July 28, 1958.

A detailed examination was made of the records on N 4774C maintained by the carrier. All applicable airworthiness directives pertaining to the aircraft had been complied with through August 20, 1958.

Analysis

Pilot Dawson was regarded by the chief pilot and company managers as a highly skilled, experienced, and competent pilot, and there was nothing in his record to indicate otherwise. He had taken adequate rest and had followed a normal daily routine preceding this flight, and pilot fatigue does not appear to be a causal factor. Pilot Dawson was familiar with the company's operating procedure when approaching for a landing under conditions of glassy water. Under conditions of limited visibility or for landing straight ahead, a power-on descent with wing flaps in the approach position was to be maintained until contact was made with the water. Pilot Dawson had been trained and flight-checked on this procedure to the satisfaction of the chief pilot.

The weather along the route of flight was adequate for normal VFR operation. The air was smooth and stable, which would have permitted the airplane, when trimmed for level flight, to fly a reasonably straight course without flight control action by the pilot. A gradual descent such as the descent this airplane made could have resulted from pressure of the pilot's arm or body against the elevator control; however, there was no evidence to substantiate this. He stated the aircraft was operating normally prior to contact with the water.

Just prior to the accident, Pilot Dawson was flying approximately 200 feet above the water and along a course which offered a view of the shoreline one-half mile to his left. This land mass is an island with an elevation of 943 feet. A light drizzle existed and a low overcast sky prevailed. Patches of haze and fog were present and directly ahead the glassy water blended with the low overcast sky to obscure any definite horizon. The Board believes the only visual reference Pilot Dawson had to assist him in contact flight in that immediate area was the island to his left.

Because of a possible distraction, and the lack of continuous visual reference, Dawson permitted his aircraft to bank to the right and enter a gradual descent into the water.

Pilot Dawson was unable to recollect the events immediately preceding the accident or to explain the reasons for the descent into Lynn Canal. The Board does not doubt Pilot Dawson's testimony that he "blanked out," "didn't remember what happened," and could not recall portions of the flight from Point Sherman until striking the water.

The Board believes that Pilot Dawson was subject to a fixation induced by the monotony of flying a familiar route and by preoccupation in searching for

visual reference. When a pilot fails to consult his instruments, it is impossible for him to determine the relation of his aircraft to any of the three axes of pitch, roll, and yaw without some visual reference. He may have a sensation of flying level when, in reality, his aircraft is banked to the left or right, or is diving or climbing. These illusions occur when the pilot is deprived of knowledge which could give him his actual attitude in space. Lack of a discernible horizon because of a low overcast sky condition, or flying over glassy water with the pilot's intermittent reference to a coastline or other terrain are common circumstances in which this type of sensory illusion can occur. Flying at an altitude of 200 feet, however, is not considered hazardous if the pilot complies with company procedures which require him to fly along the beach line so that visual reference can be maintained at all times. This kind of low-altitude overwater flight has also been conducted by other Alaskan air carriers with a high degree of safety.

Because of the remote possibility that he was suffering from a momentary mental affliction during part of this flight, Pilot Dawson voluntarily submitted to a complete physical examination at a clinic in Seattle, Washington. The results of this examination were negative. Meanwhile, the attending physicians advised him that he should discontinue all flying as a pilot. The company has released him indefinitely from his pilot duties.

Conclusions

The Board concludes that the pilot was not sufficiently attentive to instrument indications of aircraft attitude and height above the surface. He also failed to utilize fully such limited outside visual flight reference as were available to fix the pitch attitude of the aircraft. It is not possible to determine conclusively the nature of the fixation during the moments immediately preceding the accident, but it is considered probable that he was visually scanning, through the side window, the shores of the canal for geographic reference points on which to base a position report. During this preoccupation, the lack of discernible horizon and the glassy surface of the water prevented a sufficiently arrestive reference to alert the pilot to the nose-low attitude of the aircraft and its dangerous proximity to the water.

Probable Cause

The Board determines the probable cause of this accident was the failure of the pilot to maintain control of his aircraft at a safe altitude during marginal visual flight conditions. A contributing factor was a glassy surface which caused the pilot to misjudge the height above the water.

BY THE CIVIL AERONAUTICS BOARD:

/s/ JAMES R. DURFEE

/s/ CHAN GURNEY

/s/ HARMAR D. DENNY

/s/ G. JOSEPH MINETTI

/s/ LOUIS J. HECTOR

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 this accident on August 20, 1958, 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 held in Juneau, Alaska, September 23, 1958.

Air Carrier

Alaska Coastal Airlines is a partnership of two corporations, Air Transport, Inc., and Marine Airways, Inc. Its general office is located in Juneau, Alaska. It held two air carrier operating certificates and a certificate of public convenience and necessity which were in effect at the time of this accident. The company was authorized to transport passengers, mail, and cargo over routes in southeastern Alaska in regular and irregular service.

Under provisions of the Civil Air Regulations, Part 41, Alaska Coastal was issued Air Carrier Operating Certificate No. 804 which, with amendments, was effective on the date of the accident. Alaska Coastal also held, under Civil Air Regulations, Part 42, Air Carrier Certificate No. AN-21, which authorized operation as an irregular air carrier. This certificate was temporarily amended by the Civil Aeronautics Administration (CAA)^{2/} July 18, 1958, to permit Part 42 operations over both regular and irregular routes. This amendment was also in effect at the time of the accident.

The area served by Alaska Coastal includes all of southeast Alaska, and its regular routes provide air service to remote locations inaccessible by other means. Nearly all of these routes are over water and, under normal conditions, a water landing could be safely accomplished almost anywhere en route. Stops at Haines are not regularly scheduled, and passenger traffic determines whether Haines will be served outbound from or inbound to Juneau.

Pilot

Pilot John B. Dawson, age 36, was employed by Alaska Coastal Airlines in 1951. He had accumulated a total of 7,500 flying hours, approximately 5,000 of which were in Grumman G-21 or similar type aircraft. He held a valid airman certificate with a commercial pilot rating for airplane single and multiengine land and sea and an instrument rating. He had passed his CAA physical examination and had been issued a Class II medical certificate May 3, 1958, without waivers. A review of his training folder indicated he had route and proficiency checks at normal intervals and had accomplished each in a satisfactory manner.

Aircraft

The aircraft involved in this accident was a Grumman G-21A, N 4774C, manufactured on October 23, 1944, by the Grumman Engineering Corporation, Bethpage, L. I., New York. The aircraft was leased from the U. S. Navy

^{2/} The term CAA (Civil Aeronautics Administration) rather than FAA (Federal Aviation Agency) is used herein because the accident occurred prior to December 31 1958.

Department on February 20, 1955, when it had a total of 2,833 hours. A CAA Repair and Alteration Form, ACA-337, dated April 22, 1955, covers the details of conversion and modification to the configuration used in Alaska air carrier operation.

The aircraft was equipped with two Pratt & Whitney, Wasp, Jr., R-985 engines. The left engine had 2,899 total hours and 868 hours since the last overhaul. The right engine total time was unknown, but it had 703 hours since the last overhaul. The engines were given a 100-hour check on July 28, 1958. The aircraft was equipped with Hamilton Standard Propellers, Model N 2D30. ✓