Adopted: November 7, 1944
File No. 1291-44

# REPORT OF THE CIVIL AERONAUTICS BOARD
on the
Investigation of an Accident Involving Aircraft
During a Scheduled Flight

While proceeding under contact flight rules over snow-covered terrain which made visibility uncertain, a Pan American Airways plane on a scheduled flight from Nome to Fairbanks, Alaska, crashed about 3:48 p.m., Bering War Time, April 6, 1944, approximately 10 miles east of the CAA Field at Nome. All occupants, including the pilot, two crew members and three passengers, were fatally injured and the aircraft, a Pilgrim 100-B, was demolished.

## CONDUCT OF INVESTIGATION

The Fairbanks Office of the General Inspection Branch, Civil Aeronautics Administration, was notified at 6:00 p.m., April 6, that NC 742N was overdue; and about 8:00 a.m., April 7 that office was notified by Pan American Airways, Inc. (hereinafter referred to as Pan American) that the wreckage had been found. Due to the unavailability of an Air Safety Investigator of the Civil Aeronautics Board (hereinafter referred to as the Board) the Civil Aeronautics Administration made the investigation for the Board. CAA Inspector D. M. Gretzer arrived at Nome at 3:05 p.m., April 7 to begin his investigation. At that time the bodies had been removed and such mail and cargo as could be handled without disturbing the airplane had been removed.

On the basis of the information furnished by the Civil Aeronautics Administration, the Board now makes its report in accordance with the provisions of the Civil Aeronautics Act of 1938, as amended.

## SUMMARY AND ANALYSIS OF EVIDENCE

### Air Carrier

At the time of the accident Pan American was operating under a certificate of public convenience and necessity authorizing it to engage in air transportation with respect to persons, property and mail between various points in Alaska, including Nome, Moses Point, Nulato and Fairbanks.

### Flight Personnel

Captain Robert Leslie Bullis of Yakima, Wash., held an airline transport certificate with 6-1200 h.p. single and multi-engine land and sea, and flight instructor ratings. He had logged about 3477 hours, 114 of which were on the type aircraft involved. He had flown on the Nome run since August 1943 and had made seven flights to Nome as captain.

Fred Moller of Fairbanks, described in the Pan American clearance as first officer, actually served as flight mechanic and radio operator on this flight. He held an aircraft and engine mechanic certificate.

The third member of the crew, Theodore J. Soltenrieh of Fairbanks, was on the flight for route familiarization. He held an aircraft and engine mechanic certificate.

## The Aircraft

The aircraft, a Pilgrim 100-B, NC 742N, was equipped with a Wright R-1820F-31 engine of 670 h.p., with Hamilton Standard two-position controllable pitch propeller. It had been operated a total of 6852 hours, including 258 hours since the last major overhaul of airplane and engine in January 1944. The take-off weight at the time of departure from Nome was 7539 pounds, which was within the authorized maximum of 7750 pounds. At the time of the accident the plane was operating on skids. It was not equipped with de-icers.

## History of the Flight

NC 742N took off from the Nome CAA field about 3:35 p.m., cleared to Fairbanks with stops scheduled at Moses Point, Unalakleet, Galena and Tanana. No altitude was assigned since the clearance was for contact flight rules, but because of prevailing ceilings it was expected the flight would proceed at an altitude somewhere between 1000 and 1500 feet. Wind was east 17 to 21 m.p.h., light snow was falling and the ceiling was variable.

The only radio contact with Captain Bullis after departure was an exchange of messages with regard to another Pan American aircraft, a Lockheed coming in to Nome along the coast from the east. Bullis turned off his heading of east-southeast, paralleling the coast line, to a heading of northeast, toward the east leg of the radio range, at about the time of this radio contact. It was established that the Lockheed and the Pilgrim passed each other between 3:40 and 3:45 p.m.

From the time of the turn toward the range until the wreckage was discovered from the air, nothing certain is known about the progress of the flight. The last person known to have seen the Pilgrim stated that it nosed down from a height of approximately 600 feet after it turned off its heading, then quickly disappeared below his line of vision toward low hills directly ahead. He said he thought the plane was critically low and that he climbed on top of a porch roof to continue watching, but had difficulty in seeing due to haziness and blowing snow at the ground level. He thought he saw the plane about a minute later but was not sure. However, he was certain it did not level on the next up-slope. Apparently it passed over the summit of a hill 249 feet high and struck on the down slope at an elevation of 125 feet. The wreckage was found parallel with the base projection, 7/10 mile south of the base center line and 6 4/10 miles east of the witness' house.

## Examination of the Wreckage

Examination of the wreckage indicated that the plane struck the ground in a steeply banked attitude at a high rate of vertical descent and with great forward speed. Apparently power was on at the moment of impact. The right wing struck first and the airplane skidded along the ground 39 feet into a depression, bounced 20 feet beyond the hole and came to rest on the right side of the fuselage. There was no evidence found of mechanical failure or malfunctioning of any part of the aircraft prior to impact.

## Weather

In Alaska there are areas that are either rolling or flat and almost without contrast, such as trees, jutting rocks, buildings, etc. When complete snow cover exists, the landscape assumes an unbroken whiteness. During an overcast, particularly with haze or falling snow, the horizon completely disappears and, in effect, instrument conditions exist even when there would be five or six miles visibility if reference marks were available. It was established that Captain Bullis encountered such conditions from the time he left the coastline to the point of the accident. Even the existence of one cabin near the scene of the crash was not sufficient to establish the horizon or contour of the terrain, as was subsequently determined under similar conditions by a CAA Inspector.

It has not been determined why the pilot did not maintain sufficient altitude to clear any obstructions, as he undoubtedly was familiar with the height of the terrain and with the illusions brought about by the snow conditions. The weather report at Nome showed a 2000-foot ceiling, light snow, temperature 32°, and dew point 28°. It is entirely possible that aircraft icing existed under these conditions, including the unheated venturis which supply air pressure to operate the gyroscope instruments. Such an icing condition could have contributed to the pilot's confusion in conducting the flight.

## Discussion

Ordinarily, under such conditions of visibility as prevailed at the time of the accident, pilots on the Nome-Fairbanks run stay near the coast if flying contact, because of the sharply defined reference line where land and water meet. Inland the blending of the snow-covered ground, haze and clouds makes it difficult for the pilot to determine where the plane is with reference to the surface. However, Captain Bullis was competent to fly either route. Why he turned inland off his coastal heading could not be determined, but it is possible he did so either to avoid the Lockheed which was flying toward Nome, or because he decided to fly the beam. If any emergency existed, it is apparent

that the passengers were not aware of it as it was established that they were eating at the moment of impact.

## PROBABLE CAUSE

The probable cause of this accident was failure of the pilot to recognize his proximity to the ground due to heavy snow which entirely covered the terrain.

BY THE BOARD

/s/ Fred A. Toombs
Secretary