

No. 43

Eldorado Aviation Limited, Douglas DC-3-S1C3G, CF-DGJ, made a forced landing 62 miles NNW of Fort McMurray, Alberta, on 4 October 1957. Report by Department of Transport, Canada, Serial No. 57-24.

Circumstances

The aircraft departed from Edmonton at 1137 hours Mountain Standard Time on a flight to Port Radium, North West Territories, with refuelling stops at Fort Smith and Yellowknife, North West Territories. The aircraft climbed to 9 000 feet on a direct route to Fort Smith, N. W. T. Between Edmonton and Fort McMurray it encountered light rime ice which was easily disposed of by the de-icing equipment. At approximately 1320 hours the aircraft was abeam Fort McMurray and encountered freezing rain about five minutes later. The course was altered for Embarras with the intention of joining the airway and following it as far as Fort Smith. The build-up of ice was very rapid at this time and could not be overcome by the de-icing equipment. The crew requested permission to descend to 7 000 feet and during the descent additional ice was picked up. The aircraft could not maintain height at 7 000 feet and went down to 5 000 feet, still running through rain squalls. Throttle and propeller settings were for 40" and 2 500 rpm respectively. Further altitude was lost, and, at about 4 500 feet, severe turbulence was encountered. This together with the accumulation of ice, caused a further loss of height, and the aircraft collided with trees. The pilot closed the throttles and at 1352 hours carried out a forced landing. Both pilots suffered serious injuries.

Investigation and Evidence

The weather forecast indicated that an intense frontal zone, which was about 150 miles wide and was almost stationary with minor waves moving rapidly north-northeast along it, extended from

Churchill to Prince Albert - Moose Jaw - Miles City. A high pressure area was situated about 150 miles northeast of Whitehorse at 0500 hours. This high pressure area was forecast to move near Smith River at 1659 hours. There were north-northeast upslope surface winds over Alberta with a southerly flow of warm moist air aloft.

A meteorological briefing, which was attended by the pilot-in-command, was held at 0615 hours. The meteorologist explained that a low pressure area in central Saskatchewan was causing poor flying conditions as far north as Embarras with snow ceilings of 500 to 1 000 feet and visibilities of less than one mile. Freezing drizzle mixed with snow had been reported at Fort McMurray during the night, and more was expected during the day. Severe clear ice was forecast in the freezing drizzle, with moderate rime ice in clouds below 7 000 feet and lighter icing above this level. No mention was made of turbulence during this briefing.

A thunderstorm was reported at Fort McMurray at 1021 hours. This was reasonable indication that above-freezing temperatures had moved over Fort McMurray. Later on in the day, at 1500 hours, a pilot's report indicated that the freezing level was below 8 000 feet. This lowering of the freezing level over Fort McMurray was further confirmation of the westward movement of the warm frontal surface during the day.

From the behaviour of the warm air over Fort McMurray during the day, it is reasonable to assume that above-freezing temperatures aloft penetrated considerably to the west of Fort McMurray during the same period of time.

It might be concluded from a consideration of the type of air being lifted up the warm frontal surface, that clouds would build up to heights of about 18 000 feet; also that from the occurrence of above-freezing temperatures aloft, freezing rain would fall from the warm air into the colder layers beneath.

It might also be concluded that strong northeasterly winds of 35 to 45 knots would be expected in the cold lower layers, and strong easterly winds of 40 knots in the warmer air. Strong northeasterly surface winds over such hills as the Birch Hills, would cause mechanical

turbulence, to a height of about twice their elevation above the surrounding terrain, i.e., about 4 000 feet m.s.l.

Probable Cause

The aircraft continued its flight into an area of freezing precipitation until the accumulation of ice and severe turbulence resulted in partial loss of control during which the aircraft struck trees.

Contributing factor - the type of weather encountered was more severe than had been forecast.

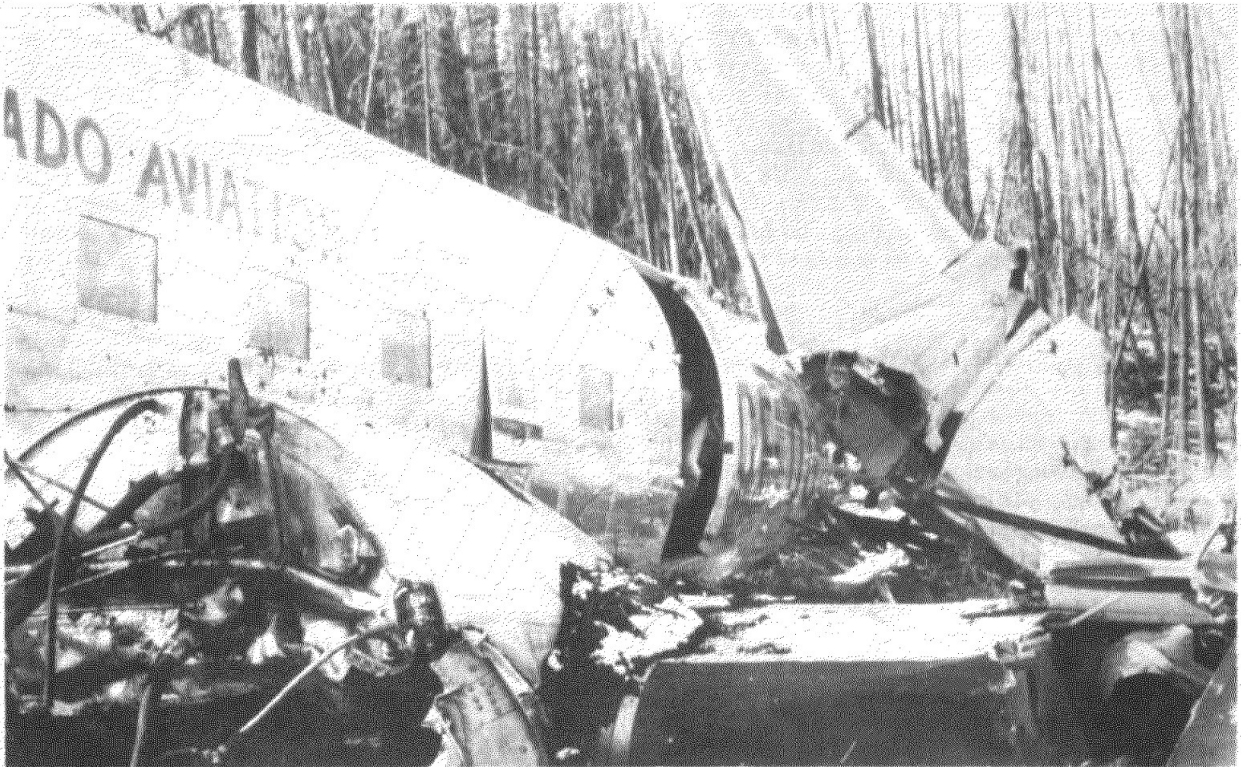


FIGURE 22

Eldorado Aviation Ltd., DC-3 which made a forced landing 62 miles NNW of Fort McMurray, Alberta, Canada on 4 October 1957.

FIGURE 23

