

No. 24

Aerotaxi S. A. Bogota, de Havilland DHC-2, HK-181, crashed 8 kilometres from the Municipality of Santo Domingo, (Antioquia), on 4 June 1957.
Report released by Department of Civil Aeronautics, Colombia.

Circumstances

HK-181 landed in Puerto Berrio at 0346 hours local time and took off again for Medellin at 0355 hours. It carried a pilot and eight passengers. When it had covered half of the route and while at the highest point along the route, about 8 kilometres from Santo Domingo, the aircraft crashed, at approximately 0420 hours, into one of the hills. One passenger was killed instantly, another died later at Medellin, and the others suffered minor injuries.

Investigation and Evidence

Weather conditions at Puerto Berrio, at Medellin, and on the route itself were, on the whole, good. However, according to the testimony of witnesses and of some passengers, there were a few low strata of undetermined density at a spot named La Quiebra on the range of hills in the area of Santo Domingo. Although, as will be seen from the investigation, the prevailing weather conditions account partly for the accident, they could not themselves have caused it, since the only obstacles on the route were low lying strata on the highest pass of the range of mountains.

The aircraft was equipped with a radio compass and there is no indication that it was not functioning before the accident. This radio compass might have been tuned in to Medellin frequency if the pilot had deemed it necessary to do so.

When the investigators reached the site of the accident they found the aircraft at a height of 5 340 feet with the pressure manifold at 24", the nose on a heading

of 130 degrees, the propeller in low pitch and slightly bent, the fuel selector valve on the front tank, the shut-off valve off, both flaps indicating a landing attitude, the left wing and the left elevator torn free, the left landing gear and the tail skid torn free, the engine at a 45 degree angle towards the left of the fuselage, and the fuel tank in good condition. When examining the engine, no metal particles were found in the filter and there was no indication of fire. As the carburettor was in an inverted position there were no traces of petrol or water in it, nor was any water found in the fuel tanks. There was no definite sign of engine failure in any of its systems. It should be noted that petrol was found in the tanks and that 39 gallons had been pumped into them on the afternoon of 3 June in order to fill them to the brim. On the afternoon of 4 June, 30 more gallons were pumped into the aircraft's tanks in order to refill them completely. Having regard to the route covered on that day, especially on that afternoon, the aircraft had enough petrol to enable it to fly for at least 3-1/2 more hours. This point is made since the investigators heard it stated that the accident was due to lack of petrol.

The following is the pilot's report on the flight:

"I left Puerto Berrio at approximately 4 p. m. on a heading of 270 degrees. I intercepted the Nus Canyon following it at an average altitude of 5 800 feet, intending to intercept the Porce Canyon which leads to Medellin. There were banks of clouds at a height which I reckon to have been between 9 000 and 12 000 feet. In view of this, I decided to continue flying at a low altitude in order to maintain visual contact.

As I was reaching Cisneros I noticed a belt of strata located precisely at the "Quiebra", where canyons Nus and Porce meet. I reckoned that these strata were no more than 500 feet high. I also noticed that there was an opening between the ground and the base of the strata; I was not, however, quite sure that this opening was wide enough to enable me to fly through it. I came closer and discovered that this "break" was not large enough to enable me to ascertain whether the Porce canyon was clear of clouds or not. Had I followed through this "break" and the Porce canyon been obstructed I should have found myself in an awkward position. I therefore decided to climb above the strata. As I was climbing, and when I was some 50 to 100 feet from the top of the strata my engine began to sputter and to fail sporadically. This was noticeable chiefly because of a rapid decrease in rpm. I do not believe I lost altitude, but I did not gain it either. I immediately thought of making a 360 degree turn in order to have the valley of the Nus canyon in front of me. However, the canyon at this particular point is so narrow that a turn of this order would have been inadvisable and as the engine failure lasted rather a short time I hoped to be able to continue climbing. At this moment the engine failed again. This time I lost height, a fact which, coupled with my horizontal speed, placed me among the strata. As I knew that there were mountains above my present altitude, both ahead of me and alongside, and as my visibility was zero, I decided the only course was to endeavour to make a steep bank turn and to try to follow an opposite course. I made a turn of close to 60 degrees, whereupon the engine failed for the third time and gave no indication that it was about to start again. At this very moment I found myself in a small circular gap within the strata. Since I was losing height and could no longer rely on my engine and in view of the prevailing visibility, I was compelled to decide to make a forced landing within this opening. I noticed a sort of platform on this extremely hilly spot and decided it was the only place

on which such a landing might be attempted. I immediately warned the passengers, in as calm a tone as possible, that they should tighten their safety belts because we were going to make a landing. At the same time I shut off the firewall, petrol and oil switches and also shut off the master switch. I meant to reduce speed to what in my opinion was the absolute minimum short of stalling. Noticing that the mountain on which I was landing curved somewhat towards the left, and that there was a precipice on the right, at the moment that the aircraft touched the ground I gave the rudder a very sharp swerve to the left, managing thus to keep it in its normal attitude until it came to rest. . . This forced landing was due to a set of circumstances chiefly, of course, engine failure, but all of them so critical that I very much doubt that they will repeat themselves in such an acute manner. "

Indications were that the aircraft was flying at very low speed at the moment of impact with the ground. The reasons for this are as follows:

- 1) the aircraft was climbing sharply;
- 2) the first impact was on the tail skid which in striking reduced the speed;
- 3) the left wing struck almost at the same time as the tail skid. The pilot had used flaps for landing and had shut off the engine upon realizing that he was unable to climb above the top of the hill.

The two passengers who died as a result of the accident had not fastened their safety belts. Two testimonies deny that the pilot warned passengers to fasten their safety belts. One testimony bears out the pilot's statement that he did give notice regarding safety belts.

Excerpts from statements of passengers -

- 1) "I was on the outer left side of the back row. As regards the engine, I can only say that it appeared to me it was

running faster at some times than at others. I do not believe that it stopped before the accident. Shortly before we reached "La Quiebra" the pilot tried to go back and then we flew into some clouds. . . . We were all thrown out of the aircraft. . . Our safety belts were not fastened. . . I wish it to be recorded that there were no safety belts on the back seat. "

2) "Before the accident we penetrated into thick cloud which shut off all visibility and emerged from it to notice that we were in a canyon. I heard no special noise from the engine, and I do not believe that the latter had stopped, since the noise was normal and continuous. Noticing that the canyon was closing, the pilot took a turn to the left and endeavoured to climb. In the course of this turn and climb, the left wing of the aircraft struck the hill, thus causing the accident. There was no mention by the pilot of either poor weather, engine failure, or our having to fasten our safety belts. I put them on and fastened them. "

3) "Our flight was normal but we didn't seem to be following the route; we were flying very low. At one unidentified point the aircraft made a turn and followed the route it had been following before. I caught sight of Maceo and it struck me that we could never pass over "Quiebra" at such a low altitude. . . . I did not hear any strange noises from the engine, or at least I wasn't aware of them. The pilot said nothing to us about belts, bad weather, or engine failure. I have travelled very often over this route and was convinced that our flying height would not enable us to get through. "

4) ". . . I am a mechanic by profession and can therefore state that nothing led me to assume that the engine had failed. I believe in a possible failure of the aircraft's controls. The pilot tried to make a turn in order to go back. He tried to climb by pulling the lever back, but the aircraft did not respond. Later he reduced speed. . . . As we were reaching the canyon

we came up against a black cloud and once it was in it the aircraft no longer responded. The pilot decided to make a landing after warning the passengers to fasten their belts. When the aircraft hit the ground its speed was already very low. "

Probable Cause (Inspectors' opinion)

Low flying through a dead end canyon. Contributing cause: low strata preventing visibility.

The Head, Civil Aviation Safety did not agree with the conclusions reached by the group investigating the accident. In his opinion the probable cause of the accident was - pilot's lack of experience on this type of aircraft, and contributing causes were as follows:

1) flying below the normal altitude on this route;

2) the aircraft stalled due to a sharp climb with flaps and in trying to recover it crashed;

3) the pilot's loss of judgment when finding himself on an instrument flight at a low altitude and in a hilly area;

4) . . . the pilot. . . had flown only 30.39 hours on this type of aircraft.

Recommendation

All aspirants to taxi pilots should be required to show a minimum of 50 hours flight on the aircraft they are to pilot, both in local and in route training.

Office of Head, Technical Control and Inspection

The Inspector General in charge of operations agreed with the findings of the investigating group. He believed the most probable cause to be - "Flying at low height through a canyon without an issue. " In his opinion the primary cause of the accident was pilot error - the pilot continued flying on visual flight rules under unfavourable

meteorological conditions, i. e. conditions below the meteorological VFR minima, got into a canyon without an issue and was then compelled to make a rough emergency landing.

Recommendation

He recommended that the captain be submitted to an intense route training and be checked since this is an indispensable requirement for an air taxi pilot.

Comments by Director, Civil Aeronautics

After careful study of the present investigation referring to the accident involving aircraft HK-181 owned by Aerotaxi S. A. on the territory of the municipality of Santo Domingo (Antioquia) which

occurred on 4 June 1957, it is found that the cause of the accident was pilot error. This error consisted in the pilot's having flown too low under poor weather conditions and in his having engaged his aircraft in a canyon with no outlet. He was thus forced to make an emergency landing on unsuitable terrain. Unfavourable weather conditions being an extenuating circumstance, Civil Aeronautics rules that the pilot is to pay a penalty fine of five hundred pesos (\$500.00) into the National Treasury in view of his responsibility for this accident which resulted in two deaths, and in the destruction of the aircraft. Aerotaxi S. A. shall submit the pilot to severe checking before allowing him to fly again as a taxi pilot.

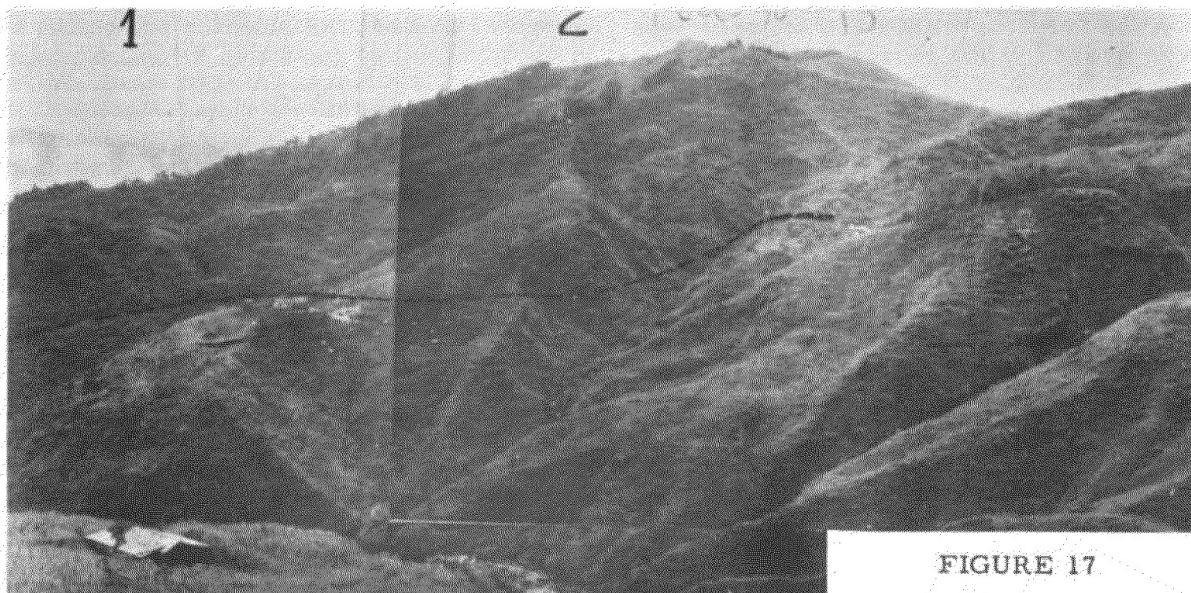


FIGURE 17

These photos show the route which HK-181, a Colombian aircraft, took prior to crashing into a hill 8 km from the municipality of Santo Domingo - the result of low flying in a dead end canyon in poor visibility conditions.



FIGURE 18

Close-up view of the wreckage of HK-181.