

No. 26

Aerovías Ecuatorianas, C. A., ("AREA"), C-47, HC-ACL, crashed in the Chugchilán Range, Cotopaxi Province, Ecuador on 7 April 1958. Report released by the Director General of Civil Aviation, Ecuador.

Circumstances

Flight 222 left Guayaquil at 0806 hours on a scheduled non-stop flight to Quito. The aircraft carried 32 persons, including 3 crew members and an infant. It was cleared to climb IFR on the Guayaquil-Esmeraldas track on a heading of 358°, then to continue in visual contact to Quito, after cancellation of the IFR flight. At 0819 the pilot contacted ATC and gave his estimated arrival over Manta radio beacon at 0841. One minute later the pilot reported at 4 000 ft, maintaining this altitude. At 0830 clearance was requested for a further IFR climb and the aircraft was told to wait. At 0836 clearance to climb was again requested and at 0840 clearance was given to climb IFR to 5 000 ft on the Guayaquil-Esmeraldas track. The pilot reported at 0841 as being over Manta beacon at 5 000 ft and estimated arrival at Quito at 0916. Clearance was granted for a climb to above the clouds on the same track. This was the last contact with the aircraft which, presumably, continued to fly in cloud without breaking through on top until it crashed at an altitude of 2 300 metres (7 500 ft) in the western mountains of the Chugchilán Range, killing all occupants.

Investigation and Evidence

The meteorological situation on the Ecuadorian coast from the latitude of Guayaquil to that of Esmeraldas on 7 April between 0700 and 0900 hours was the following:

From the surface to 4 000 ft, the Guayaquil rawinsonde station at 0700 recorded winds from 250° at 8 knots;

from 4 000 to 6 000 ft, winds southwest with an average velocity of 4 to 7 knots; above 7 000 ft, the wind changed to the north quadrant with an average velocity of 5 to 6 knots.

The Guayaquil weather reports indicated the presence on the coast at this time of an almost continuous stratocumulus layer, broken, between 500 and 1 000 metres (1 500 to 3 000 ft). Above the stratocumulus, some altocumulus and altostratus formations constituted an overcast sky. Beneath the stratocumulus layer were some patches of fractostratus, more persistent at Manta and Guayaquil than at Esmeraldas. Manta station recorded local drizzle between 0700 and 0800, reaching the town at 0900. No surface winds were recorded by Guayaquil, Manta or Esmeraldas until 0900.

The following air navigation facilities were available to the flight: Guayaquil radio beacon on 365 kc/s, 500 watts; Manta radio beacon on 300 kc/s, 500 watts; Esmeraldas radio beacon on 385 kc/s, 500 watts.

Accident Site and Examination of the Wreckage

The aircraft crashed into a steep mountainside \* which slopes to about 70°. The site of the accident is 2 300 metres (7 500 ft) above sea level, 600 ft below the crest of the range.

Wreckage was strewn over an area of about 12 metres radius on a rocky foothill of the range. Its condition showed that all the fore parts of the aircraft collided with violent impact with the steep

\* ICAO Note: The direction of impact was presumably 025° since such a heading is mentioned in the Probable Cause.

side. But the traces left by the impact also revealed that the left wing touched the top of a tree growing on the hillside, the aircraft then crashing head-on against the slope, with engines apparently at full power. After impact the aircraft fell vertically about 12 metres and the wreckage came to rest in a small depression formed by a fault in the rock bed.

The cockpit, which suffered the full force of the impact, was totally destroyed.

The wings and their component parts disappeared almost completely, with the exception of a section of the right wing tip, about 1m50 in length, which was found near the rock eminence, and three fragments of the left wing which were in the top of the above-mentioned tree, some 15 metres from the depression containing the remains of the fuselage.

The right engine had disappeared. The left engine was found near the heap of debris. The propeller remained attached to the engine completely twisted backward and around the engine body.

The casings of the radio equipment were pressed into the fuselage, which was in the rock depression, but all instruments and parts were completely destroyed.

The burnt portions of the aircraft clearly indicated that the collision caused the fuel tanks to explode producing a fire which destroyed most of the wreckage of the aircraft.

No reliable information useful to the investigation could be derived from the equipment or the instruments.

#### Witnesses

There were no witnesses to the accident. The location at which it occurred

is uninhabited, inaccessible and invisible from any populated area. On the day of the accident, it was raining and cloudy in this part of the country, and no one saw any fire from afar.

#### Analysis of the Evidence

There is no proof of the time at which the accident occurred, although a wrist watch found in the wreckage was stopped at 0859. This, however, is not a reliable clue as the hands may have been displaced on impact.

The collision was obviously completely unexpected as none of the pilot's message gave any hint that he was in the slightest doubt as to his position. Sudden malfunctioning of any operational part must be excluded in view of the absence of any reference to trouble in the pilot's last message to ATC.

Winds between 2 000 to 5 000 ft from 250° at 8 knots may have caused the aircraft to drift about 8 nautical miles east of the track. It is also likely that, in view of the atmospheric conditions prevailing in the area, considerable interference occurred which may have caused deviation of the ADF.

However, the influence of the west winds cannot have been such as to cause a drift off magnetic track from 358° to 25°

The Guayaquil-Esmeraldas track is the only one available for instrument flight from Guayaquil to Quito. Normal flight should have been as follows:

Visual flight out of Guayaquil until entering the overcast. From then on, IFR on the Guayaquil-Esmeraldas track until clear of cloud, then VFR again to Quito.

If the pilot, on starting his climb through the clouds had had any doubt as to his position, he would have either

declared an alert or assumed a heading of 270° to get away from the mountains.

The pilot, who had 7 402 flying hours, was very experienced on the Guayaquil-Quito route. The accident was due, as stated above, to collision of the aircraft with an 8 100 ft peak, at a point 7 500 ft above sea level.

It is difficult to imagine this pilot attempting to pass over an 8 100 ft peak flying at 7 500 ft, particularly as the aircraft was capable of climbing more than enough to clear the range, since a C-47 with a gross load of 26 000 pounds, at continuous climbing power, has a normal rate of climb of 500 ft per minute.

The pilot was mistaken in his report at 0841 that he was over Manta

beacon, as investigation discloses that the aircraft collided with the Chugchilán Range a few minutes after this message was sent, at a point 70 km east of the Manta fix.

#### Probable Cause

The probable cause of the accident is that the pilot did not follow the 358° Guayaquil-Esmeraldas track, authorized for instrument flight, until clear of cloud, but probably assumed a heading of 25° as soon as he left Guayaquil, in order to fly the most direct route between Guayaquil and Quito. In so doing while on instruments, he deviated from the Guayaquil-Esmeraldas track at too low an altitude to clear the Chugchilán Range before him with an adequate safety margin.