No. 32

Convair 240-6 aircraft crashed 9 km. south - southwest of Capilla del Señor (Buenos Aires) on 16 October 1954 - Argentine Aircraft Accident Investigation Report No. 467. Released 6 September 1955.

Circumstances

The aircraft, engaged on a scheduled flight non-stop from Ezeiza to Cordoba, took off from Ezeiza Airport at 1500 hours local time with 27 passengers and 5 crew. The approved flight plan provided for a VFR flight at a cruising level of 1200 meters. At 1510 hours the aircraft asked Buenos Aires ATC for clearance to change its altitude to 600 metres due to a marked frontal belt having been encountered. Shortly after this, the aircraft entered a storm area with rain, hail and strong electrical discharges of increasing intensity which caused uncontrolled loss of altitude. It continued descending until it struck the ground at approximately 1520 hours, injuring the pilot, two crew and four passengers.

Investigation and Evidence

According to the testimony of the pilot-in-command and co-pilot, after a few minutes of flight it was noted that ahead and to the left of their course there was a cloudy area clearing to the right; the course was altered 20 degrees accordingly. Shortly thereafter, the aircraft encountered rain, hail and mild turbulence and requested Buenos Aires ATC for clearance to change its altitude to 600 metres. During the descent the rain and hail increased alarmingly causing uncontrolled loss of altitude. An attempt was made to counteract the descent by an increase in the engine rate which was raised to 2400 rpm while the supercharging was brought to some 45 inches. At the same time, course was altered toward the right to try and avoid the storm. Turbulence was not heavy, however, the up and downdraughts were. The aircraft gained and lost altitude repeatedly at indicated speeds of 1,200 and 1,500 feet per minute, until during the final loss of altitude, the descent could not be arrested in spite of the application of maximum power on both engines, and the aircraft crashed into the ground.

Both pilots were of the opinion that the crash was due to the damage which the hail and rain had caused to the leading edges of the blades of both propellers and the effect of the downdraughts.

Prior to the accident the following readings on the instrument panel were made:

Artificial horizon	rising
Speed	150 mph
Indicated altitude	700 feet
Variometer	descending
Gyroscope	20 degrees

The power plants were operating normally.

The Board of Inquiry concluded that after the pilot-in-command had decided to fly at 600 metres, the aircraft encountered a highly active local front. In attempting to leave the storm area the pilot had to alter his course several times, and tried in vain to reach the area to the right which he had noted, before entering the storm area, as being clearer and offering better visibility.

Witnesses at or near the scene of the accident agreed that the aircraft had been seen in horizontal flight at an altitude of not more than 20 metres headed in the direction of the point at which impact occurred shortly afterwards. They also stated that the weather had been poor from mid-day on, the rain and hail causing property damage in the area.

The pilot-in-command testified that the dependent MET Office at Mendoza had forecast the weather conditions encountered and at his request this office was asked to prepare a report for the Ezeiza-Cordoba route on the basis of the relevant facts available at the date and time of the accident. The difference between this report (Mendoza) and the one handed to the pilot at Ezeiza prior to the flight was that the former report indicated the presence of 3 to 5/8 cumulo-nimbus, with cloudbursts and storms that would reduce visibility and lower the ceiling.

In view of this, the National Meteorological Service was asked for a report on the analysis of the weather for the hours 1200 to 1500 on 16 October, which is quoted hereunder:

> "Variable cloudiness with pronounced instability. Isolated cloudbursts and storms with gusts up to the end of the period covered by this report. These weather conditions resulted from a well-defined area of instability, moving from the southwest to the northeast, which developed rapidly and later passed through the area (after 1530 hours)."

It was concluded that the pilot-in-command committed an inexplicable error of judgment, since a turn to the right would have taken him out of the storm without hazard. The Airline Operations Manual stipulates:

> " Safety is the basic concern in the conduct of a flight. This factor will always be given prime consideration in any decisions taken on the ground or in flight."

Further on, the Manual states:

> "When weather conditions such as fronts, icing, turbulence are encountered, whether they are forecast or not, which may place the aircraft in danger, the pilot-in-command is authorized to return to his point of departure or to deviate from his route by as much as 50 nautical miles, making the appropriate report to the relevant ATC office."

A special committee of technical personnel was appointed to study the probable deformations of the airframe and the aerodynamic effects thereof as a result of the exposure of the aircraft to the very violent atmospheric conditions existing at the scene of the accident.

Conclusions

Study and investigation led to rejection of the assumption that the joint action of intense precipitation of rain and hail may have modified to a dangerous degree the aerofoil section and wing load of the aircraft, to the point of modifying its aerodynamic properties.

No structural, operational or maintenance defects were found which might have reduced the normal operating capacity of the aircraft.

The technical conclusions are also supported by the unquestionable statements of witnesses on the basis of which it was possible to establish that over at least 7 or 8 km before the impact point the aircraft was flying at extremely low levels and in very bad visibility.

The possibility of an error in altimeter setting was considered but could not be sustained as shown by inspection of the instruments and by statements of the pilot-in-command and the co-pilot.

The prime reason for the accident must be sought in the pilot-in-command's decision to enter the storm without prior exhaustive analysis of prevailing weather conditions.

The fact that the phenomenon encountered was not included in the forecast was not considered to be extenuating, since the above mentioned Airline Operations Manual refers to "storms, whether they are forecast or not", leaving to the pilot-in-command the option of circumnavigating the area or returning to his point of departure; these are the criteria which would have been applicable in the emergency under consideration.

It should, moreover, be noted that the pilot-in-command stated that he had observed a clear area to the right of his route, through which he could have attempted to go around the storm, as he did after encountering difficulties.

Probable Cause

Through causes which could not be fully ascertained and in circumstances arising while the aircraft, in attempting to leave the area of a violent storm, was flying at a low altitude, the aircraft was carried into the ground.

Contributory Causes

1) The persistence of the pilot-in-command in attempting to climb, without making use, at the appropriate time, of the full power available to arrest the descent caused, according to his own statement, by meteorological conditions.

2) The decision by the pilot-in-command to enter a local storm the violence of which he did not foresee and which he could have circumnavigated as prescribed by the operational standards of the company.

3) The fact that the pilot-in-command had no meteorological information relating to the weather conditions he encountered.

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