

No. 14

Passaat Ltd., Lockheed Super Constellation L-1649A, N 7301C accident at Fontibón, Bogotá D.E., Cundinamarca, Colombia, on 18 December 1966. Report undated, released by the Civil Aeronautics Administration, Colombia

1.- Investigation1.1 History of the flight

The aircraft, which was on wet lease from Passaat Ltd., Miami, U.S.A., to Aerocondor de Colombia, was on a non-scheduled international flight from Miami International Airport, U.S.A., to Bogotá/Eldorado Airport, Colombia. The flight took off from Miami at 2040 hours local time on 17 December and proceeded normally. At 0240 hours local time, on 18 December, it reported over the Bogotá VOR at 12 000 ft and requested from the Air Route Traffic Control Centre authorization to change over to frequency 118.1 mcs and to contact Eldorado Control Tower. This was granted and communications were established with the Control Tower. The flight was given a QNH of 30.14 in. Hg. and was cleared for landing on Runway 12; however, it requested permission to land on Runway 30. It was then instructed to proceed directly to the inner marker for Runway 12, at 8 895 ft (elevation of the airport was 8 364 ft) and if visual to make a circling approach to Runway 30. There were fog patches on and in the vicinity of the aerodrome. The tower communications tape recording revealed that the flight reported proceeding inbound to Runway 12 and that it was instructed to continue its approach to Runway 12 as the fog appeared to be thinning out in that direction. Shortly thereafter the tower asked "how is visibility in the direction of 12" and the flight replied "It is a little better, I think we can make it in a second". At 0753 hours GMT the flight requested permission to land and the tower replied "... correct, cleared to land if you can do so, lights are at maximum intensity, let us know if it is necessary to reduce them".

The flight advised the lights were OK and reported on final approach. It was cleared to land and was advised again that the wind was calm and the QNH was 30.14 in. Hg. It acknowledged the message by "Thanks". Some 10 to 20 sec. later an explosion was heard and the control tower called the flight several times in vain. The fire crews were immediately alerted and directed to the threshold of Runway 12. They reported that the wreckage of the aircraft was some 10 to 20 m before the threshold of Runway 12. The accident occurred at 0755 hours GMT.

1.2 Injuries to persons

Injuries	Crew	Passengers	Others
Fatal	4	13	
Non-fatal	2	14	
None	1	25	

1.3 Damage to aircraft

The aircraft was destroyed.

1.4 Other damage

There was no other damage.

1.5 Crew information

The following three flight crew members were U.S. citizens on lease from Passaat Ltd.:

The pilot-in-command, aged 51, held an airline transport pilot's licence, issued on 13 July 1963 with ratings for Lockheed 18, Lockheed Constellation, Curtiss Wright C-46, Boeing 307/Douglas DC-3/DC-4/B-26 aircraft. He held a first class medical certificate valid until 14 December 1966; however, on 31 May 1966 he had been issued a second class medical certificate which was valid at the time of the accident with the following limitation: must wear corrective lenses for near-sightedness.

According to Part 67 of the U.S. FAA regulations the pilot-in-command of a commercial transport aircraft carrying passengers shall hold a first class medical certificate. Therefore he was not properly certificated to carry out the flight as pilot-in-command. The date of his last flight proficiency checks on the Constellation was unknown. He had flown a total of approximately 22 000 hours, including 600 hours on Constellation aircraft.

The co-pilot, aged 61, held an airline transport pilot's licence issued on 1 October 1958 with ratings for Curtiss Wright C-46, Douglas DC-3 and Lockheed 1850 type aircraft. He held a first class medical certificate issued on 1 December 1966 without limitations. He had flown a total of approximately 18 000 hours including 350 hours on Constellation aircraft.

The flight engineer, aged 41, held a flight engineer's licence and a second class medical certificate issued on 7 June 1966 without limitations. He had flown a total of 8 000 hours including 5 000 hours on Constellation aircraft.

Also aboard the flight were a supernumerary flight engineer and three cabin crew members; all four were employees of Aerocondor de Colombia.

1.6 Aircraft information

The Certificate of Airworthiness of the aircraft was valid until 2 September 1967. Maintenance of the aircraft had been carried out at an FAA certified maintenance depot and the latest periodic check was made on 2 September 1966. The aircraft had flown a total of 11 068 hours.

The aircraft's weight at the time of the accident was 128 800 lb., i.e. 5 800 lb in excess of the maximum authorized landing weight. The centre of gravity was not mentioned in the report, neither was the type of fuel being used.

1.7 Meteorological information

The meteorological forecasts and actual en-route weather conditions were good.

The weather reports appearing in the signal log book of the control tower were: 0753 hours GMT: reduced and variable visibility on approach to Runway 12 and very good for Runway 30. Cloud bank covering the airport from west to east and restricting the visibility of the approach end of Runway 12 from the tower.

0800 hours GMT: visibility still variable, cloud banks in all directions. Airport closed due to obstruction of runway. Wind calm - visibility 2 500 m variable - cloud banks in all directions - ceiling unlimited.

1.8 Aids to navigation

The aircraft was equipped with 2 VOR receivers and 2 ADF receivers.

While en route from Miami to Bogotá the aircraft did not report any deficiencies of its equipment to the relevant Control Centres.

At Bogotá/Eldorado Airport the following landing aids were available for instrument approach to Runway 12: a VOR and an NDB with an outer marker (BO) and an inner marker (OG). All aids were operating normally at the time of the accident.

1.9 Communications

The aircraft experienced no communications difficulties.

1.10 Aerodrome and ground facilities

The threshold of Runway 12 was 8 350 ft AMSL. The length of the runway was 12 464 ft. In addition to the normal runway lighting, the visual approach slope indicator system (VASIS) was in operation. At the time of the accident the VASIS system was operating normally, and the runway lights were at maximum intensity.

1.11 Flight recorders

No flight recorder was carried aboard the aircraft.

1.12 Wreckage

The aircraft first struck the embankment of the Bogotá river at an estimated angle of approximately 30° nose down: The nosewheel left an impact mark 1.40 m below the top of the embankment and the starboard and port wheels of the main undercarriage left marks respectively 0.30 m and 0.20 m below the top of the embankment. As a result of the impact the nose wheel assembly broke and came to rest in the river bed. It was later found down the river about 2 580 m from the point of impact. After the first impact the aircraft continued skimming across the lagoon, leaving behind fragments of the engines, propellers and fuselage covering. Another severe impact took place 201 m after the first impact when the aircraft struck the inner edge of a drainage ditch left of the extended centre line of the runway.

The tailplane of the aircraft was found 32 m after that point, with parts of two propellers on either side. Nos. 1 and 4 engines and the left main undercarriage were located 121 m farther on and the main part of the wreckage, including the fuselage, a further 50 m, nearly on the extended centre line of Runway 12/30, 34 m before the threshold of Runway 12 and at a 90° angle to the runway direction. Most of the propeller blades were bent backwards.

1.13 Fire

There was no fire.

1.14 Survival aspects

At 0255:30 hours local time, a few seconds after contact with the aircraft was lost the control tower alerted the fire crews. About 4 min. later, No. 1 fire truck arrived on the scene and, hearing shouts for help, proceeded to rescue survivors. Ambulances were requested from the control tower and rescue work started immediately and lasted about 45 min.

1.15 Tests and research

None mentioned in the report.

2.- Analysis and Conclusions

2.1 Analysis

There was no evidence of malfunctioning or failure of the aircraft, its engines and control control system and no deficiencies were reported by the crew who were in radio contact with the tower until seconds before the accident.

A note on the Bogotá/Eldorado Airport chart, included in the Colombian Air Routes Manual approved by the C.A.A. reads:

"If, on passing over OG, the ground is not visible, a climbing turn will be made (to pass TER at 9 500 ft or higher) up to 12 000 ft in the holding and climb pattern and instructions will be requested from control".

The prescribed altitude for passing over the inner marker OG was 8 895 ft (500 ft above ground level); from OG to the threshold of Runway 12, which has an elevation of 8 355 ft, the distance is exactly 9 NM. According to eye witnesses and some of the passengers on board, the former saw, and the latter felt, a very steep descent; the first impact of the aircraft with the ground occurred when its undercarriage struck the inner bank of Bogotá river at a point 1 435 m to one side of the extended centre line and 450 m before the threshold of Runway 12, which is the runway authorized for instrument landings.

The runway lights were at full intensity and the flight informed the control tower during the approach that this was adequate for landing. In addition the Visual Approach Indicator System (VASIS) was also in operation and was functioning properly. It was believed that the pilot may have seen the runway lights when he reported on final approach and received authorization to land from the control tower to which he replied

"OK. Thanks". However, a subsequent misjudgement of the distance between the aircraft and the ground resulted in an undershoot.

The recording of the communications between the aircraft and the control tower revealed the presence of a fourth person in the cockpit during the final approach. All communications from the aircraft were made in Spanish. The official report of the FAA's operations inspector stated that the pilot-in-command spoke a little Spanish but not fluently. It was concluded that the Manager of Aerocondor was the person in direct contact with the control tower and that his presence in the cockpit may have disturbed the execution of the landing operation by the pilot-in-command and caused him to exceed his abilities.

2.2 Conclusions

(a) Findings

The crew of the aircraft held valid licences with appropriate type rating at the time of the accident; however, the pilot-in-command held a "second class" medical certificate which, according to the U.S. FAA regulations did not entitle him to act as pilot-in-command of an airline commercial transport aircraft carrying passengers.

The co-pilot and flight engineer held valid medical certificates.

The aircraft had a valid Certificate of Airworthiness in accordance with the FAA regulations and had been inspected on 2 September 1966. Maintenance was carried out at an FAA approved base.

There were variable fog patches at Eldorado Airport at the time of the final approach to land; however, the pilot considered that the weather conditions were satisfactory

The landing weight of the aircraft at Eldorado Airport was 5 800 lb above the limit specified by the manufacturer.

The investigations carried out at the scene of the accident indicated that the aircraft, its controls and the powerplants were operating properly. Furthermore, no technical deficiencies had been reported by the crew.

It was concluded that the accident was due to an error of the pilot who misjudged the distance between the aircraft and the ground, and who exercised poor judgement in taking the decision to land in variable weather conditions which possibly reduced the visibility of the VASI lights and precluded proper identification of the threshold of the runway.

(b) Cause or Probable cause(s)

The accident was attributed to pilot error. The pilot-in-command misjudged the distance between the aeroplane and the ground and undershot the landing area. He also exercised poor judgement in taking the decision to land in variable weather conditions which perhaps precluded proper visibility of the VASI lights and identification of the exact location of the threshold of Runway 12, and in failing to follow the missed approach procedure specified on the Eldorado International Airport chart.

Contributing factors(a) Other personnel

The presence on board of a fourth person in the cockpit (Manager of Aero-vias Condor de Colombia) may, at a certain moment, have distracted the attention of the pilot-in-command of the aircraft during the final approach-to-land and/or induced him to exceed his ability.

(b) Lack of supervision

The Aerocondor airline accepted as pilot-in-command a pilot who held a second class medical certificate which, under both the U.S. FAA and the Civil Aeronautics Administration of Colombia regulations did not entitle him to act as pilot-in-command of a commercial transport aircraft carrying passengers.

(c) Unfavourable weather

There were variable patches of fog in all directions over the airport at the time of the accident.

3.- Recommendations

1. The Technical Co-ordination Committee (Disciplinary) should determine the penalties to be imposed upon Aerocondor de Colombia for lack of supervision of the licences of the crew of the aircraft leased from Passaat Ltd. of Miami, Florida, U.S.A.
 2. The Civil Aeronautics Administration of Colombia should again request the "ECA" to relocate the meteorological observation facilities at Eldorado Airport at an appropriate site, since the present site makes it difficult for the observer to carry out proper meteorological observations.
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