No. 6

Airwork Ltd., Hermes, G-AKFP, and Indian Airlines Corporation, Dakota, VT-AUA, collided at Dum Dum Airport, Calcutta, India on 1 September 1957. Report released by the Department of Communications and Civil Aviation, Ministry of Transport and Communications, India.

(A formal investigation of the accident was conducted by the Government of India, which was attended by an accredited representative of the State of Registry of the Hermes aircraft [United Kingdom]).

Circumstances

The Hermes aircraft was on a non-scheduled passenger flight from Blackbushe Airport, England to Singapore with stops at Karachi, Delhi and Calcutta. While making a radar assisted approach to runway 01R at Dum Dum Airport, Calcutta, it collided (at 0000 hours GMT) with a Dakota aircraft which was lined up on runway 01L. The Dakota was destroyed and four members of the crew, the only occupants on board, were fatally injured. The Hermes sustained substantial damage. Two passengers were injured.

Investigation and Evidence

Schedule of events preceding the accident

2309 The Hermes arrived over Calcutta.

2311 The Hermes asked for and was cleared to make an ILS let-down on to runway 19L. The Air Traffic Control cautioned that there would be a slight tail wind component when landing on this runway. The let-down was carried out.

2318 The captain abandoned the approach at the break-off height as he could not see the runway due to a passing shower. During this overshoot the aircraft requested clearance for a visual landing on runway 01R, but this was refused as a York aircraft was at that time making an ILS approach on 19L. The Hermes was instructed to ascend to 2 000 ft and report over tne BQ NDB.

2320 The captain of the Hermes was asked if he would like to make another ILS approach. On his acceptance, the aircraft was cleared to climb to 3 500 ft and call over the Range Station.

2331 ATC asked if the Hermes would like to be positioned for a radar assisted approach. The captain replied, "if it will expedite our landing, yes please". He was informed by ATC that he would be No. 2 to land as the York aircraft was now carrying out an ACR let-down and was turning finals for 01R.

2338 The Hermes was handed over to the Radar Controller. The latest altimeter setting of 997 mbs was passed on to the aircraft.

2347 The aircraft was informed that it would be a right-hand circuit for runway 01R and from then on the approach progressed in accordance with the laid down procedure until -

2359 when the Radar Control cleared the aircraft to land visually. The aircraft at this time, according to the Radar Operator, was one mile from the threshold of 01R and to the left of the centreline.

However, according to the captain's evidence, during the talk down when approximately 1-1/4 miles away from the threshold of the runway on which he actually landed and at a height estimated by him to be between 400 and 500 ft the aircraft broke cloud heading 005. At this stage, noticing the outline of a runway ahead and slightly to the starboard, he considered himself in visual contact, turned down the R/T and decided to continue visually. He stated that as the runway appeared in the position that he expected to see the runway 01R, he concluded it to be the designated runway and continued the approach. In actual fact, he was approaching 01L. Had the pilot not turned down the R/T at this critical stage and complied with the 5° correction given, runway 01R and the visual aids of this runway would have come into his field of vision.

A minute or so earlier ATC had cleared the Dakota to line up and hold on runway 01L. The captain of the Hermes stated that he did not see the Dakota until it was too late to avoid a collision.

Weather

The weather observation made at 0000 hours GMT (0530 hours IST) by the Weather Section of the India Meteorological Department at Dum Dum on the morning of 1 September 1957 indicated the following conditions:

Wind	320° 04 knots
Visibility	3 nautical miles
Weather conditions	raining
Cloud	
Lower layer	4 octas St. 500'
Second layer	3 octas St. 800'
Third layer	3 octas As. 10 000'
Air temperature	25.6° C.
Dew point	25.6° C.
Pressure	QNH 997.0 mbs
	QFE 996.5 mbs

There was conflicting evidence regarding the visibility at the time of the accident - ranging from 3 miles as reported by the meteorological observers to nil visibility as stated by the first officer of the Hermes. It was concluded that what actually mattered in this case was how much the pilot himself saw or thought he saw.

The captain of the Hermes claimed that at no stage did his visibility go below 2 000 yards, probably because he saw the outline of a wet runway shining at a distance. Relevant evidence indicated that the aircraft was flying through rain, and the pilot did not have the advantage of the windscreen wiper operating. The first officer did not at any stage see anything at all. Had the runway not been reflecting light, it is doubtful whether it would have been possible for the captain to see it at all, particularly as, according to his own statement, nothing else was visible. Furthermore, the captain stated that he found himself high and fast.

Analysis of the evidence

The theory that the aircraft had been positioned left of the centreline of runway 01L by the ACR (Airfield Control Radar) was carefully examined and the Assessors were satisfied that this was not the case. All evidence indicated that the aircraft was to the left of the centreline of runway 01R as indicated by the ACR. The reason why the captain of the Hermes saw 01L to his right is that the heading of the aircraft at the time he saw the runway was offset to the left of the runway QDM.

Taking all factors into account it was considered that a single runway seen in such circumstances of poor visibility etc. provided insufficient orientation to justify continuing the approach. An overshoot action was called for under the circumstances that existed but the captain, however, failed to take such action.

As regards the facilities and assistance provided by the Aerodrome Control, there was some evidence that the red lead-in lights of runway 01R were on at the time the Hermes made its approach. It was also stated by the officer concerned

that the high intensity lights were on, even though there was no corroborative evidence on this point. The sodium bar lights were definitely not on. In the conditions existing at the time, particularly as the Aerodrome Control officer himself estimated the visibility to be only 3/4 of a mile in rain and the fact that aircraft were making instrument approaches, both the high intensity and the sodium bar lights ought to have been on.

The note of Recommendation 1.5 of ICAO, Annex 14, Part III implies that two parallel runways separated by 700 ft should not be used simultaneously in any other conditions than visual conditions. In consequence, to allow the Dakota on to runway 01L whilst the Hermes was being talked down on to runway 01R, not only goes against the recommendation but constituted one of the hazards it envisages.

It was observed from evidence that only a driver and one set of fire fighting crew were on duty at the fire station even though two fire/crash tenders and an ambulance had to be manned.

The question of crew fatigue was brought up during the proceedings and this aspect was examined. It was noted that the last rest afforded the crew was at Karachi where there was a 16 hour stop - 14 hours rest. Although the rest period meets the flight time limitations laid down by the United Kingdom, the fact that the crew operated throughout two consecutive nights and rested only during the intervening daylight hours, may have induced sufficient fatigue to be of significance, having regard to the conditions under which the landing was made.

Fuel on board the aircraft when it departed from Delhi was 1704 Imperial gallons and this quantity conforms to the regulations laid down in the company's Operations Manual. It was considered that the requirement commits the pilot to land or divert immediately on arrival over the destination. It was suggested that in this case, the pilot had used up fuel necessary for diversion. The Assessors were satisfied that this did not cause the pilot any concern.

Probable Cause

The official report of this accident contains two statements of cause, one by the Court, the other by the Assessors, which do not differ in substance; the following summarizes the essential points of the two statements:

An error on the part of the Commander of the Hermes aircraft in turning down the R/T during the final stage of the radar assisted approach and in deciding to continue the approach under conditions which did not enable him to identify positively the correct runway.

Contributory Cause

The presence of the Dakota on the threshold of runway 01L.

Recommendations

1. The simultaneous use of parallel runways must conform to the recommendations contained in para. 1.5 Part III of Annex 14 (ICAO).

2. The importance of co-ordination between the captain and the first officer, particularly under instrument flight conditions, must be emphasized during training of pilots.

3. As far as possible the location of crash tenders and ambulance must be such that the crew manning these vehicles obtain unrestricted view of the entire airport.

4. The fire fighting should be strengthened and the medical facilities at the airport should be improved.

Observations

1. Regulations on flight time limitations must differentiate between night and day flying when laying down rest periods.

2. The operator's interpretation of ICAO standard 4.3.2.2 item (i) Annex 6 differs from what is envisaged in this standard. The fuel allowed for various sectors does not provide the reserve of forty-five minutes over the alternate unless an aircraft diverts immediately on arrival over the destination.

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Non-scheduled
Landing
Collision - aircraft
(one airborne)

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