GOVERNMENT OF INDIA

MINISTRY OF COMMUNICATIONS

सत्यमेव जयत

# Report of the Court of Enquiry on the accident to Indian Airlines' Dakota Aircraft VT-COZ on the 21st January, 1955 near Gauhati Airport

# REPORT

## OF THE COURT INVESTIGATION OF THE ACCIDENT TO INDIAN AIRLINES' DAKOTA AIRCRAFT VT-COZ ON 21ST JANUARY 1955 NEAR GAUHATI AIRPORT

| | |
|---|---|
| COURT | SHRI N. S. LOKUR |
| ASSESSORS | SHRI K. L. PURI |
| | CAPT. K. VISHWANATH |

SECRETARY TO THE COURT . . SHRI B. S. GIDWANI

## MINISTRY OF COMMUNICATIONS

### NOTIFICATION

*Dated, February 5, 1955.*

**No. 17-A/3-55.**—WHEREAS on January 21, 1955, an accident occurred five miles south of Gauhati aerodrome to a Dakota, aircraft VT-COZ of the Indian Airlines Corporation, engaged in a scheduled flight from Calcutta to Gauhati on a freighter service, resulting in the death of all the three members of the crew on board,

AND WHEREAS it appears to the Central Government that it is expedient to hold a formal investigation of the said accident.

2. Now, therefore, in exercise of the powers conferred by rule 75 of the Indian Aircraft Rules, 137, the Central Government directs that a formal investigation of the said accident be held.

The Central Government is further pleased to appoint Shri N. S. Lokur, Chairman, Railway Rates Tribunal and Air Transport Licensing Board, to hold the said investigation.

The Central Government is also pleased to appoint:

(1) Shri K. L. Puri, Director of Aeronautical Inspection, Civil Aviation Department; and

(2) Capt. K. Vishawanath, Divisional Operations Manager, Air India International

to act as Assessors to the said investigation.

B. N. JHA,

*Secretary to the Government of India.*

MADRAS AIRPORT

23rd March, 1955.

To

The Secretary to the Government of India,
Ministry of Communications,
New Delhi.

SIR,

By Notification No. 17-A/3-55, dated February 5, 1955, issued by the Central Government under Rule 75 of the Indian Aircraft Rules, 1937, I was appointed to hold a formal investigation into the crash of the Dakota aircraft VT-COZ near Gauhati when engaged in carrying freight in a scheduled flight from Calcutta to Gauhati on the morning of 21st January 1955, resulting in the death of all the three members of the crew.

2. By the same Notification Shri K. L. Puri, Director, Aeronautical Inspection and Captain Vishwanath, Divisional Operations Manager of Air-India International, were appointed as Assessors to the said investigation.

3. A public notice was published in the local and various outside papers requesting anyone who had any relevant information to communicate it to the Secretary.

4. Accordingly, I arrived at Calcutta on 8th March 1955, and obtained all the available information from the Aerodrome Officer, Shri Sundararajan and Shri Y. R. Malhotra, who had already made a preliminary investigation of the accident. On the next day I flew to Gauhati in the company of the two Assessors, Shri Malhotra and the Secretary, Shri B. S. Gidwani. We all went to the scene of the accident about 3 miles from the Airport, and inspected the wreckage and the various marks made by the aircraft in its trail. Some parts had been removed to the Airport, and I examined them with the help of the Assessors and Shri Malhotra. I recorded the statements of ten witnesses including the eye-witnesses who had seen the ill-fated aircraft crashing and burning, and returned to Calcutta in the evening.

5. On the next two days I recorded evidence of thirty-five witnesses at Calcutta (Dum Dum) Airport. The Indian Airlines Corporation was represented by Capt. Braganza, who was present throughout the investigation and was allowed to assist the Court by suggesting questions to be put to witnesses, either to elicit further information or to elucidate any statement already made. He also gave evidence himself. I am thankful for his co-operation.

6. The public hearing was concluded on 11th March 1955, and the report was finalised in Madras. I have now the honour to present

my report together with the record of the evidence and the proceedings of the investigation. Both the Assessors gave their full co-operation during the investigation and my report represents our unanimous and well-considered opinion. I am grateful to both of them for all the assistance which they willingly gave me.

7. My thanks are also due to Shri Y. R. Malhotra who had already done the spade work before I arrived at Calcutta and placed at my disposal all the information he had gathered. His help throughout the investigation was indeed invaluable. When the evidence as to whether fire had broken out in the aircraft during flight was conflicting, Shri Malhotra's evidence in Court was so clear, logical and convincing that after weighing all the evidence, the Assessors and I had no difficulty in accepting his view that there was no fire during flight.

8. I must also express my thanks to Shri Jung, Controller of Aerodromes, Calcutta Region, Shri Sundararajan, Aerodrome Officer, Calcutta (Dum Dum) Airport, and Shri Hajra, Aerodrome Officer, Gauhati, who made excellent arrangements for the sittings of the Court and also looked after every convenience required.

9. I join the Assessors in recording our appreciation of the hard and intelligent work of the Secretary, Shri B. S. Gidwani, both during the investigation and in the drafting of the report. The knack which he showed in getting things done quickly and satisfactorily is indeed superb.

I must also express my satisfaction at the work done by the staff of the Court.

Yours faithfully,

N. S. LOKUR.

CONTENTS



APPENDICES

# REPORT OF THE COURT INVESTIGATION OF THE ACCIDENT TO INDIAN AIRLINES' DAKOTA AIRCRAFT VT-COZ ON 21ST JANUARY, 1955, NEAR GAUHATI AIRPORT.

## 1. ACCIDENT DETAILS

(a) *Location.*—On a bearing of 210° and at a distance of 2·9 miles from the 03 end of runway 03/21 at Gauhati Airport at an elevation of 162 feet, a.m.s.l.

(b) *Date and time of accident.*—21st January, 1955, at approximately 0729 hours I.S.T.*

(c) *Type of flying.*—Scheduled freight service flight No. 313-21.

(d) *Object of flight.*—To operate Scheduled freighter service from Calcutta (Dum Dum) to Gauhati.

(e) *Date and time of receipt of notification by the Inspector of Accidents.*—On 21st January, 1955, at 1100 hours the Inspector of Accidents, Civil Aviation Department, New Delhi was notified.

(f) *Date and time of arrival of the Inspector of Accidents at the scene.*—On 22nd January, 1955, at 1100 hours the Inspector of Accidents arrived at the scene of the accident and commenced investigation of the accident.

## 2. SUMMARY OF ACCIDENT.

Indian Airlines Dakota aircraft VT-COZ, carrying a crew of three and 6358 lbs. of freight, was airborne from Calcutta (Dum Dum) Airport at 0546 hours on 21st January, 1955. The aircraft took off normally and set course for Gauhati. During its flight, the aircraft exchanged routine messages with Air Traffic Control, Calcutta and Gauhati. At 0727 hours, the aircraft contacted Air Traffic Control, Gauhati, and reported its position as ten miles out from Gauhati Airport. The Air Traffic Control furnished landing instructions to the aircraft and it was asked to call again on joining circuit. There was no further contact with the aircraft. At approximately 0729 hours, the duty officer at the Tower noticed black smoke at the top of a patch of fog to the south of the airport. Repeated calls were made to the aircraft on 118. 1 Mc/s and 6440 Kc/s, but no response was received from the aircraft. At about the same time, some persons in Tarapati village saw the aircraft hit 'Arecanut' trees, crash in a field and burst into flames. The aircraft was destroyed. The Commander of the aircraft, Captain S. C. Sanyal and Co-pilot K. K. Ghosh died instantaneously, while Radio Officer D. L. Das died in the transport in which he was being rushed to the hospital.

## 3. AIRCRAFT INFORMATION

The information is given in Appendix 'T'.

*Indian Standard Time has been used throughout.

## 4. CREW INFORMATION

The information is given in Appendix 'II'.

## 5. WEATHER CONDITIONS

The weather observations made at Gauhati Airport at 0700 hours on the 21st January, 1955, indicated the following:—

| | | | |
|---|---|---|---|
| Total amount of cloud | .. | 4 Octa. | |
| Visibility | .. | 0·9 Nautical miles. | |
| Present weather | .. | Fog, become thinner. | |
| Past weather | .. | Fog. | |
| Significant cloud | .. | First layer. | Second layer. |
| Amount of cloud | .. | 1 Octa. | 3 Octa. |
| Type of cloud | .. | St. | Ac. |
| Height of base | .. | 500'. | 10,000'. |
| QFE | .. | 29·89". | |
| Altimeter setting QNH | .. | 30·06". | |

A special weather observation was made at 0715 hours at the request of the aerodrome control. The visibility at that time had improved to 1·5 nautical miles.

The weather observations made at Gauhati Airport at 0800 hours on 21st January 1955 indicated the following:—

| | | | |
|---|---|---|---|
| Total amount of cloud | .. | 6 Octa. | |
| Surface wind direction | .. | Calm. | |
| Visibility | .. | 2 nautical miles. | |
| Present weather | .. | Fog preceding hour. | |
| Past weather | .. | Fog. | |
| Significant cloud | .. | First layer. | Second layer. |
| Amount of cloud | .. | 2 Octa. | 4 Octa. |
| Type of cloud | .. | St. | Ac. |
| Height of base | .. | 600'. | 9,000'. |
| QFE | .. | 29·91". | |
| Altimeter setting QNH | .. | 30·08". | |

The area in which the crash occurred was covered by fog at the time of the accident. The exact height of the fog could not be accurately established, but it was estimated to be about 250 to 300 feet above ground level.

## 6. NAVIGATIONAL AIDS

The navigational equipment carried on board the aircraft and the aids available on the ground were adequate for the flight. In this case the navigational equipment and aids did not have any bearing on the accident.

7. RUNWAY AT GAUHATI

| | |
|---|---|
| 1. Orientation | 03/21. |
| 2. Length and width | 1500 × 50 yards. |
| 3. Surface | Concrete. |
| 4. End elevation | 159 feet. |
| 5. Markings | Runway end markings. Longitudinal markings. |
| 6. Approaches | Clear. |

8. FIRE FIGHTING EQUIPMENT ON BOARD

The aircraft was fitted with standard fire fighting equipment. This consisted of a LUX $CO_2$ cylinder and remote control valve assembly for extinguishing engine fires instantaneously while in flight or on ground. A.C.T.C. type hand fire extinguisher was provided in each of the crew and passenger compartments for extinguishing other fires. The aircraft was also equipped with Graviner type of fire detection system.

9. WITNESSES

Names of witnesses are given in Appendix 'III'.

10. EXAMINATION OF THE WRECKAGE AND TECHNICAL INVESTIGATION

(a) *Location of wreckage.*

A plan showing the location of the wreckage in relation to the aerodrome is given at Appendix IV (not printed).

This shows that the aircraft crashed at a distance of 2·9 miles on a bearing of 210° from the 03 end of runway 03/21 at Gauhati airport at an elevation of 162 feet a.m.s.l.

(b) *General observations—Conditions of wreckage and its technical examination.*

A plan showing the wreckage trail is given in Appendix V (not printed). It shows that the aircraft had its first impact with arecanut trees, 43 feet above the ground. This site is at an elevation of 162 feet a.m.s.l. Hundred feet ahead, the aircraft had its second impact with a bunch of trees at a height of 40 feet above the ground.

The first impact with the trees had resulted in the tearing off of the port wing tip. The second impact with the bunch of trees made deep dents in the leading edges of the wings and caused pieces of landing light glass, cockpit glass and engine nacelle parts to be shed off the aircraft. A section of the port elevator with fabric and a part of the port aileron were also torn off at that stage. The aircraft still continued in the air at a considerable speed until it hit the ground at a distance of 830 feet from the first impact with the trees. At the time of the impact with the ground the aircraft was substantially level laterally, but very much nose down. The impact caused heavy disruption of the aircraft. However, all the components picked up at this point were completely free of any evidence

of fire or smoke and it was not till another 230 feet ahead that the first burnt component (part of port aileron) was found. This component was lying within 12 yards of the burst and burnt port main fuel tank. The main cargo door including the frame, sections of the port elevator, a floor board which had separated from the aircraft on its disruption and which were lying before the burst fuel tanks were all clear of any fire or smoke. The port auxiliary fuel tank was found burst and burnt within 66 feet of the port main fuel tank and near the starboard wing, undercarriage and centre section which had swung round and was facing the direction from which the aircraft had come. The impact had also been severe enough to break the fuselage into two. The rear fuselage along with the tail components was thrown another 130 feet from the starboard wing and centre section.

It was noted that the larger pieces of wreckage (the starboard wing centre section and rear fuselage) had suffered damage by fire, but this fire had affected the top surfaces only. The fabric of the rudder as well as the elevators which were still attached to the respective stabilizers, was burnt, but not the sections of the port elevator which had been torn off earlier. There was no evidence of fire on the lower surfaces of the starboard wing and the horizontal stabilizers, excepting at the tip of the starboard horizontal stabilizer which was resting on the ground. There was no soot or fire trail running from the sides of the fuselage to the attachment of the stabilizers. The maximum intensity of the fire was in the area of the cabin opposite to the freight doors. The freight doors had, however, been thrown off earlier and were free from any evidence of fire. Pieces of floor board from this area had also been thrown out. A piece of floor board which was lying in the immediate vicinity of the fire area was burnt. Yet the two adjoining pieces of floor boards which had been thrown clear of the rear fuselage, were untouched by fire. The aircraft step ladder, normally placed in the rear fuselage and the rear emergency exit were thrown out on impact and were clear of smoke or fire.

The $CO_2$ fire extinguisher bottle as well as two C.T.C. fire extinguishers were recovered from the scene of the wreckage. The head of the $CO_2$ bottle had broken off and it was empty. The head of one of the C.T.C. extinguishers was also broken and it was partially empty. The second C.T.C. bottle had its handle loose and was empty.

The engine control pedestal was extensively damaged and no reliance could be placed on the position of the levers, which were as follows:—

| | *Left hand* | *Right hand* |
|---|---|---|
| Mixture controls | Auto-lean | mergency |
| Throttles | Retarded | etarded |
| Propeller Pitch controls | Fully coarse | Fully coarse |

The position of the fuel selector and the cross-feed could not be determined, but the positions of the trimmer controls were as follows:—

| | |
|---|---|
| Elevator trim | 1° nose down |
| Rudder trim | Zero |
| Aileron | 1° right up. |

The actual settings of the tabs on the elevator and rudder were ½" up and full to the left respectively. The aileron trim tab was neutral. The control cables were checked. They showed evidence of tensile failure only as a result of disintegration of the aircraft.

No useful information could be gathered from the auto-pilot.

Pilot's altimeter was set at 29·86". The sub-scale of the second altimeter was missing.

117 Imperial gallons of petrol were off-loaded from the starboard tanks—75 from the starboard main and 42 from the auxiliary. It was estimated that approximately four gallons were left in the tanks as this quantity could not be off-loaded with the equipment available.

The undercarriage of the aircraft was down and locked.

There was no evidence of any mechanical failure of the engines. Both the engines were clear of any sign of fire, external or internal. There was evidence of adequate lubrication. Fuel was recovered from the nacelle filters and injectors. Both the propellers were in the constant-speed range and in the same fine pitch.

The weight of the freight salvaged from the scene of the accident came to 4,058 lbs. No articles which are prohibited for carriage by air were recovered from the wreckage.

A sample of charred textile material selected by the Court was sent to the Chemical Examiner to the Government of West Bengal, in order to determine whether the charring was due to acid or chemicals. In his report, the Chemical Examiner states "Neither any acid nor any incendiary chemical has been detected in the burnt portions of the lungi".

(c) *Loading.*

The laden weight of the aircraft according to the Load Sheet was 26,852 lbs. as shown below:

| | lbs. |
|---|---|
| Tare weight of the aircraft | 17,299 |
| Weight of petrol | 2,262 |
| Weight of oil | 378 |
| Weight of three members of the crew | 470 |
| Weight of crews' baggage | 30 |
| Weight of freight | 6,358 |
| Weight of aircraft equipment | 25 |
| Weight of catering equipment | 25 |
| Weight of concertina | 5 |
| Total weight : | 26,852 |

## 11. COMMUNICATIONS

The communication equipment carried on board the aircraft and the ground facilities were adequate for the flight. The aircraft was airborne at 0546 hours. Routine messages were exchanged by the aircraft, during flight, with Air Traffic Control, Calcutta and Gauhati, both on W/T and R/ *vide* Appendix VI (not printed).

At 0722 hours, the aircraft contacted Air Traffic Control, Gauhati on Radio Telephony and reported flying under visual flight rules, 25 miles away from Gauhati Airport at an altitude of 6,000 feet. The Air Traffic Control Officer on duty passed the altimeter setting to the aircraft, cleared it to descend under V.F.R. and instructed it to call when ten miles from the airport.

The aircraft asked for a bearing on frequency 119·7 (Homer) at 0725 hours and a bearing of 045° class 'A' was given. This was confirmed as correct by the aircraft, which also reported being 15 miles from the airport at a height of 3,000 feet at that time. The next contact of the aircraft with Gauhati Tower was at 0727 hours, when it reported being at a distance of ten miles from the airport. Landing instructions were passed to the aircraft and it was asked to call again on joining circuit.

There was no further communication with the aircraft.

## 12. SEARCH AND RESCUE ACTION

The last communication between the aircraft and the Air Traffic Control, Gauhati had been exchanged at 0727 hours, when the aircraft had reported being at a distance of ten miles away from Gauhati airport. About two minutes after this communication had been established, the Air Traffic Control Officer on duty noticed black smoke at the top of a patch of fog to the south of the airport. Repeated calls were made on all channels, but no response was received from the aircraft.

Another Dakota aircraft VT-AYG which had taken off from Gauhati Airport a little earlier was informed of the approximate location of the black smoke and was requested to overfly the area. The Captain of this aircraft saw 'towering smoke' penetrating through the fog, but was unable to see the ground. He informed Gauhati Tower that the smoke appeared to be that of a petrol fire. The Aerodrome Officer, Gauhati was informed by the duty officer about the loss of contact with the aircraft and the existence of black smoke about three to four miles from the airport. The Aerodrome Officer instructed the crash tender and ambulance to proceed to the spot and picking up a stretcher, followed in a jeep with the duty officer. They ran into thick fog after going some distance and owing to the poor visibility, they had some difficulty in reaching the site of the accident. Ultimately, guided by the villagers, they reached the site at about 0805 hours, and found the dead bodies of the Pilot and the Co-pilot lying at a distance of about 20 yards away from the main wreckage, parts of which were still burning. Radio Officer Das who had been extricated from the wreckage by the villagers, was still alive, but only semi-conscious. He was placed as comfortably as possibly in the jeep for removal to hospital, but after proceeding

about 500 yards they were met by the pick-up van which had to take a longer route to reach the site. The ambulance and the crash tender could not, however, reach the scene of the accident early on account of the difficult terrain. Das was moved into the pick-up van on a stretcher and rushed to the hospital. He died *en route.*

By the time the crash tender arrived at the site, the flames had nearly died out, and with the aid of a few 2-gallon fire extinguishers the fire was completely controlled. The Aerodrome Officer then arranged for guards to be posted at the wreckage, and took necessary action to send intimation of the crash to all the authorities concerned.

13. DISCUSSION OF THE EVIDENCE

Indian Airlines Corporation's Dakota aircraft VT-COZ engaged on a scheduled freighter service from Calcutta (Dum Dum) to Gauhati under the command of Captain Sanyal crashed at a distance of 2·9 miles from the 03 end of runway 03/21 at Gauhati Airport on 21st January, 1955, at approximately 0729 hours, causing death of all the three members of the crew. The aircraft was destroyed.

Prior to its flight, the Aircraft Maintenance Engineer, G. S. Shivtarkar, had carried out the daily inspection of the aircraft, in respect of airframe, on the morning of 21st January, 1955, in accordance with the prescribed procedures, and had signed the Certificate of Safety for Flight in respect of the airframe (including its instruments and equipment) at 0400 hours on 21st January, 1955. Similarly, the Aircraft Maintenance Engineer, S. R. Das Gupta, had carried out the daily inspection of the engines and engine installations (including the instruments relating thereto) in accordance with the prescribed schedules and had signed the Certificate of Safety for Flight at 0435 hours on 21st January, 1955.

The aircraft had a valid Certificate of Airworthiness and the previous history of the airframe, engines and propellers, as available from the respective log books, does not denote anything abnormal.

Captain S. C. Sanyal, Commander of the ill-fated Dakota held Indian pilot's 'B' licence which was endorsed for Dakota type of aircraft. Pilot-in-Command certificate for Dakota type of aircraft by day only was issued to him on 1st November, 1954. He did not possess Pilot-in-Command certificate for flight by night. He had a total of 3,844 hours, 15 minutes flying experience, of which 205 hours, 15 minutes were flown by him as Pilot-in-Command of Dakota type of aircraft.

Co-pilot, K. K. Ghosh, also held Indian pilot's 'B' licence endorsed for Dakota type of aircraft and the Pilot-in-Command certificate for this type of aircraft by day only. His total flying experience amounted to 3,950 hours, 40 minutes.

Radio Officer D. L. Das possessed the requisite qalifications and experience.

The laden weight of the aircraft at the time of take-off from Calcutta (Dum Dum) Airport, was 26,852 lbs.—48 lbs. below the maximum permissible weight of 26,900 lbs. in respect of freighter aircraft. The distribution of the load in the aircraft was such that the centre of gravity position was within safe limits.

The aircraft carried on board 6,358 lbs. of freight which comprised of textiles, hosiery, stationery, Aluminium utensils, brass ware, betel leaves, fresh fruits, motor car parts, medicines, photographic materials and books. None of these goods was of a nature which was likely to start a fire. Some bottles of *Bon Sante* preservative, containing a percentage of Formic Acid, were carried on this flight as cargo, but it has been established that it would not, either by itself or in combination with the other cargo, start a fire. None of the articles on board was prohibited for carriage by air. A sample of charred cloth from the cargo salvaged from the wreckage was sent to the Chemical Examiner to the Government of West Bengal to ascertain if the charring was due to acid or chemicals. The Chemical Examiner stated in his report that neither any acid nor any incendiary chemical was detected in the sample sent to him.

The aircraft carried 312 Imperial gallons of fuel which would give it an endurance of approximately 4½ hours. It also carried 42 gallons of oil.

The crew were briefed for the flight. The air traffic control and communication briefing was of a routine nature. However some special significance attaches to the meteorological briefing. The meteorological forecast covering the route along with the terminal forecast for the period 0630 hours to 1030 hours for Gauhati Airport was handed over to Captain Sanyal, the Commander of the aircraft. The terminal forecast indicated surface visibility of 660 yards in fog, intermittently 110 yards in thick fog, upto 0830 hours and thereafter improving to five nautical miles. It may be pointed out that the weather minima laid down for Gauhati Airport by the Indian Airlines Corporation and approved by the D.G.C.A. requires a visibility of 1·5 nautical miles for landing by day. The alternate aerodrome specified in the clearance form was Agartala. Nevertheless, the forecast did not contain the terminal forecast for the alternate, namely, Agartala. Captain Sanyal did not ask for this information, nor did the meteorologist volunteer this information during the briefing.

Notice to Airmen No. 29 of 1952 which lays down Meteorological Minima for Aerodromes, requires that "a flight shall not be continued towards the aerodrome of intended landing unless the latest available meteorological information indicates that conditions at that aerodrome, or at least one alternate aerodrome, will, at the expected time of arrival, be at or above the minimum criteria specified for such aerodromes....." In this case, although the terminal forecast for Gauhati indicated that the conditions of visibility would be lower than the minima for landing by day, and no terminal forecast was available to the pilot for any alternate for the expected time of arrival, the flight took off and continued to Gauhati, contrary to the provisions laid down in the above Notice to Airmen.

It is relevant to add that the weather observation made at 0500 hours at Gauhati indicated a visibility of 550 yards in thickening fog. As a result of this, an M.5 (Danger Met.) for visibility was issued by Gauhati. This message did not reach Air Traffic Control, Calcutta, till 0700 hours, and, therefore, was not passed on to the aircraft.

It would seem, therefore, that the aircraft should not have taken off for Gauhati in view of the terminal weather forecast for that airport and that the flight should not have been continued.

It may, however, be mentioned that the visibility at Gauhati Airport had, at 0715 hours, improved to 1·5 nautical miles.

The aircraft took off normally from Calcutta (Dum Dum) Airport, and was airborne at 0546 hours. It set course for Gauhati and during its flight exchanged routine messages with Air Traffic Control, Calcutta and Gauhati. At 0722 hours the aircraft spoke on Radio Telephony with the Air Traffic Control. Gauhati and reported its position at a distance of 25 miles from Gauhati Airport, at an altitude of 6,000 feet. The aircraft was required to call in Gauhati Tower when it reached a distance of 10 miles from the airport. At 0727 hours again, the aircraft contacted Gauhati Tower and reported being at a distance of 10 miles from the airport. The aircraft was given landing instructions and was asked to call again on joining circuit. The visibility at Gauhati Airport, at that time was 1·5 nautical miles. About two minutes later. the officer on duty at Gauhati Tower noticed black smoke. emanating from the top of a patch of fog in the southerly direction. Suspecting that a mishap may have occurred, he made repeated calls to the aircraft, but received no response. At about the same time some villagers in Tarapati village saw the aircraft hit some trees and burst into flames after crashing in a field.

The aircraft had its first impact with arecanut trees, 43 feet above the ground. The tops of the arecanut trees were chopped off. The nature of the cuts on these trees indicates that the aircraft was in a laterally level attitude. The aircraft had its second impact, 100 feet ahead, with a bunch of trees, 40 feet above the ground. This goes to show that within the distance of 100 feet (the distance between the points of the two impacts) the aircraft lost three feet in height. The port wing tip was torn off at the first impact. The second impact caused pieces of landing light glass, cockpit glass, engine nacelle parts, a section of the port elevator with fabric and part of the port aileron to be thrown off from the aircraft. Yet the aircraft continued in the air until it hit the ground at a distance of 830 feet from the point of initial impact. At the time of the crash with the ground, the aircraft was substantially level laterally, though in a nose-down attitude. Heavy disruption of the aircraft took place at this point.

None of the components picked up between the points of the first and the second impacts has suffered any damage from fire or smoke. Similarly, all the components picked up in the vicinity of the point where the aircraft hit the ground are completely free from any evidence of fire or smoke. In fact, it is not till another 230 feet away from this point that the first burnt component (part of port aileron) was found. This component was laying within 12 yards of the burnt and brust port main fuel tank. Several components, such as the main cargo door, sections of the port elevator and floor board, which had been separated from the aircraft on its disruption, were also clear of any fire or smoke.

Larger pieces of wreckage (the starboard wing centre section and rear fuselage) had suffered damage by fire, but it had affected

the top surfaces only. The fabric of the rudder and the elevators, which were still attached to the respective stabilisers, were burnt, but not the sections of the port elevator which had been torn off earlier. There was no evidence of fire on the lower surfaces of the starboard wing or the horizontal stabilisers. There was no smoke trail on both the sides of the fuselage. There was no soot or fire trail running from the sides of the fuselage to the attachment of the stabilisers. The maximum intensity of the fire had been in the area of the cabin opposite the freight doors. The doors together with the frames had, however, been thrown off earlier and are perfectly clean. Pieces of floor board from this area had also been thrown out. A piece of floor board in the immediate area of the burnt fuselage was charred, and yet the two adjoining pieces of floor boards which were thrown clear of fire were untouched by fire or smoke. The aircraft step-ladder, which is normally placed in this region, but was thrown out on impact, is also clear.

From the foregoing data, it is evident that there was no fire in the aircraft either at the point of its first impact with the arecanut trees or even when the aircraft hit the ground at a distance of 830 feet from this point. The fire has obviously started approximately 230 feet from the point where the aircraft hit the ground (approximately 1060 feet from the point of first impact), as a result of bursting of the port main fuel tank.

The theory that a fire took place in the aircraft during flight was advanced by some witnesses. As will be clear from the foregoing, we have given this theory our most careful consideration but find it untenable. The examination of the wreckage definitely reveals that fire broke out in the aircraft after it crashed against the ground. The theory of fire during flight was chiefly built up on a rumour that the aircraft had, just before it crashed, sent an S.O.S. signal. We have established that no S.O.S. signal was sent by the aircraft. The mistake arose because a signal sent by Air Traffic Control, Gauhati, to Air Traffic Control, Calcutta, was misunderstood by the Operations staff of Indian Airlines Corporation to whom it was read out on telephone. The signal reads as under:—

> "QBM VTGT=LAST QSO VT-COZ 0157 Z (.) SMOKE SEEN THEREAFTER (.) OFFICERS GONE OUT TO ASSESS NEWS(.)"

The word "assess" was misheard for S.O.S.

As discovered from an examination of the wreckage, the undercarriage of the aircraft at the time of the crash was down and locked. Both the engines were operating. The aircraft was in a laterally level attitude and lined up with the runway. These factors go to show that the aircraft was attempting a controlled descent on the runway at Gauhati Airport and did not come down on account of any distress or emergency. The last communication between the aircraft and the Air Traffic Control, Gauhati, had been exchanged just two minutes prior to the accident. At the time of the crash, considerable fog hung over the area South-West of the airport—the direction from which the aircraft was approaching. The airport itself and an area of about two miles to the South-West were, however, clear. The fog was beginning to form into stratus cloud and the

tops were estimated to be approximately 300' above ground level. As the sky above the cloud was clear, the pilot must have seen the airport from some distance when still at a height, and apparently he decided to make a straight-in-approach to land, a practice frequently followed by pilots arriving at Gauhati Airport from Calcutta. This is clear from the fact that the aircraft was accurately lined up with the runway with wheels down. As stated elsewhere, there is no doubt that the pilot was making a controlled descent and entered the fog expecting to get out into the clear on the other side which he had earlier seen and known to be clear. Indeed he would have been able to do so, had the aircraft maintained sufficient height.

It has not been possible to ascertain the reason why the aircraft was so much lower than it should have been, but it is almost certain that the pilot himself was not aware that he was so low over the ground. The two possible explanations are that either the pilot did not observe the altimeter or the altimeter itself may not have been set correctly and did not indicate correct height. It may be added that the aircraft radio log book was missing even though all other documents were recovered from the wreckage. There was no fire in the area occupied by the Radio Officer, although considerable disintegration had taken place. This log book would have disclosed what entries had been made therein regarding the altimeter setting.

14. FINDINGS.

The Court finds that—

(i) The aircraft held a valid Certificate of Airworthiness. It had been maintained in accordance with the approved maintenance schedules and had a valid Certificate of Daily Inspection.

(ii) The crew held valid licences and were qualified under the rules to undertake the flight.

(iii) The crew were in a fit and sobar state.

(iv) The all-up weight did not exceed the authorised take-off weight limit and the position of the centre of gravity was within the safe limits.

(v) The aircraft carried sufficient fuel and oil for the intended flight.

(vi) The Commander was in possession of all relevant communication and air traffic control information. He also had relevant meteorological data, including the terminal forecast for Gauhati Airport, although he did not have the terminal forecast for Agartala which was indicated as alternate airport in the clearance form.

(vii) The weather conditions at Calcutta (Dum Dum) Airport at the time of take-off were good. The visibility at Gauhati Airport at the time of the accident was 1·5 nautical miles. The terminal meteorological forecast for Gauhati Airport supplied to the Commander prior to his take-off indicated conditions below the weather minima at Gauhati at the expected time of arrival of the aircraft.

(viii) No inflammable goods and no articles prohibited for carriage by air were on board the aircraft.

(ix) The aircraft did not send any distress or emergency signals to the ground stations.

(x) The aircraft had its first impact at a height of 43 feet from the ground with arecanut trees which were obscured from view due to fog.

(xi) The aircraft was in controlled descent when it hit the arecanut trees.

(xii) There was no fire or explosion in the aircraft during flight.

(xiii) Fire broke out after the aircraft impacted with the ground as a result of disruption of port fuel tank.

(xiv) The aircraft was in a laterally level attitude when it hit against the arecanut trees.

(xv) At the time of the initial impact, the undercarriage of the aircraft was down and locked; the aircraft was lined up with the runway and both the engines were operating.

(xvi) There is no sign of any control, mechanical or structural failure.

15. PROBABLE CAUSE OF THE ACCIDENT.

The Court determines that the Dakota aircraft VT-COZ crashed in the course of a premature descent, during the final approach, as a result of hitting arecanut trees which were obscured from view by fog in the area.

16. RECOMMENDATION.

There are reasons to believe that the premature descent of the aircraft was due to the pilot's being unaware of his correct altitude when entering the fog. Such a situation could easily arise from either an incorrect setting of the altimater or the pilot's failure to observe it at the time. It is therefore recommended that pilots should be warned against the recurrence of such a happening, and should, in order to avoid errors, be required to repeat the altimeter setting to the Air Traffic Control.

17. OBSERVATIONS

Some other points which call for observations have come out in the course of the evidence and though they do not directly pertain to the cause of this accident are well worth mentioning.

(i) Operational control was not exercised for this flight and the operator had not designated a representative for this purpose as required by Notice to Airmen No. 29 of 1952.

(ii) The meteorological briefing of the pilot was not complete inasmuch as the terminal weather forecast for alternate aerodrome was not obtained by him.

(iii) The manuals used by the crew of this aircraft were not complete or up-to-date.

N. S. LOKUR, *Court.*

We agree.

K. L. PURI, *Assessor.*

K. VISHVANATH, *Assessor.*

23*rd March*, 1955.

## APPENDIX I

### AIRCRAFT INFORMATION

| | |
|---|---|
| (*a*) Registration Marking . | VT-COZ |
| (*b*) Aircraft type and maker's serial number | Douglas D.C. 3(C47A) 13569. |
| (*c*) Engines | Two, Pratt & Whitney Twin Wasp R1830-92. |
| Port . | No. CP351273 |
| Starboard | No. 791 |
| (*d*) Propellers | Two, Hamilton Standard Hydromatic 23E50-473. |
| Port . | No. F 8191 |
| Starboard . . . | No. FB-9318. |
| (*e*) Certificate of Registration | No. 1197/3 |
| (*f*) Certificate of Airworthiness : Date of Expiry . . | No. 727<br>13th November, 1955. |
| (*g*) Certificate of safety for flight Date, time and place of issues | 21st January, 1955; 0435 hrs. I.S.T. at Dum Dum. |
| (*h*) Year and place of construction of air-frame. | 1944; Santamonica, U.S.A. |
| (*i*) Name and address of the owner. | Indian Airlines Corporation, Mandi House, New Delhi. |
| (j) Grossweight :- | |
| Maximum authorised weight of the aircraft. | 26,900 lbs. |
| (*k*) Airframe history | Number of flying hours at departure from Dum Dum Airport on 21st January, 1955, 9,662 hrs. since new. Calculated aircraft hours at the time of the accident since its last Certificate of Airworthiness Overhaul 237 hours. |
| | On 14th December, 1954, when the last Certificate of Airworthiness Overhaul and Inspection were carried out all the essential modifications pertaining to DC-3 type of aircraft were incorporated. Major inspections carried out since that date at Dum Dum up to the date of accident are tabulated below : |

Check II (25/30 hrs.) on 19th December, 1954.

Check II (25/30 hrs.) on 27th December, 1954.

Check II (25/30 hrs.) on 1st January, 1955.

Check III (100/120 hrs.) on 7th January, 1955.

Check II (25/30 hrs.) on 12th January, 1955.

Check II (25/30 hrs.) on 16th January, 1955.

Check II (25/30 hrs.) on 20th January, 1955.

On 21st January, 1955, a Check I (daily inspection) was carried out at Dum Dum.

(1) Engine history . . . (*i*) Engine fitted on the port side No. CP351273.

Type.—Pratt and Whitney Twin Wasp R1830-92.

Maker.—Pratt & Whitney Engine Division of United Aircraft Corporation, East Hertford, U.S.A.

Total hours up to the time of departure from Dum Dum Airport 6503 hrs. 45 mts. The engine was last overhauled at Indian Airlines Corporation, New Delhi on 1st November, 1954. All essential modifications pertaining to the engine and its accessories were carried out. It was installed on the port side of the aircraft VT-COZ on 10th December, 1954. Since then the engine has run a total of 240 hrs. The approved period between complete overhauls is 850 hours. Major inspections carried out at Dum Dum since the 10th December, 1954, are as follows :—

II (25/30 hrs.) on 19th December, 1954.

Check II (25/30 hrs.) on 27th December, 1954.

Check II (25/30 hrs.) on 1st January, 1955.

Check III (100/120 hrs.) on 7th January, 1955.

Check II (25/30 hrs.) on 12th January, 1955.

Check II (25/30 hrs.) on 16th January, 1955.

Check II (25/30 hrs.) on 20th January, 1955.

On 21st January, 1955, a Check I (daily inspection) was carried out at Dum Dum.

(*ii*) Engine fitted on the starboard side No. 791.

Type.—Pratt and Whitney Twin Wasp R1830-92.

Maker.—Pratt and Whitney Engine Division of United Aircraft Corporation, East Hertford, U.S.A.

Total hours up to the time of departure from Dum Dum Airport 1797 hrs. 50 mts. The engine was last overhauled at Indian Airlines Corporation, Calcutta, on 17th December, 1954, and was installed on the starboard side of aircraft VT-COZ on 25th December, 1954. All essential modifications pertaining to the engine and its accessories were carried out. Since then it had run a total of 187 hrs. 45 mts. The approved period between complete overhauls is 850 hours. Major inspections carried out at Dum Dum since 25th December, 1954, are as follows :—

Check II (25/30 hrs.) on 27th December, 1954.

Check II (25/30 hrs.) on 1st January, 1955.

Check III (100/120 hrs.) on 7th January, 1955.

Check II (25/30 hrs.) on 12th January, 1955.

Check II (25/30 hrs.) on 16th January, 1955.

Check II (25/30 hrs.) on 20th January, 1955.

On 21st January, 1955, a Check I (daily inspection) was carried out at Dum Dum.

**(*m*) Propeller history**

(*i*) Port : No. F 8191

Type.—Hamilton Standard Hydromatic Series 23E50-473

Maker.—Hamilton Standard Propeller Division of United Aircraft Corportation, U.S.A.

Total hours up to the time of departure from Dum Dum Airport—unknown. The propeller was fitted to engine No. CP351273 installed on the port side of aircraft VT-COZ on 13th December, 1954. The propeller has run a total of 235 hrs. since its last complete overhaul up to the time of departure from Dum Dum. The approved period betweeen complete overhauls is 1700 hours.

(*ii*) Starboard : No. FB-9318

Type.—Hamilton Standrad Hydromatic Series 23E50-473.

Maker.—Hamilton Standard Propeller Division of United Aircraft Corporation, U.S.A.

Total hours up to the time of departure from Dum Dum Airport 6233 hrs. 50 mts. The propeller was fitted to engine No. 791 installed on starboard side of aircraft VT-COZ on 25th December, 1954. The propeller has run a total of 1048 hrs. 10 mts. since its last complete overhaul up to the time of departure from Dum Dum Airport. The approved period between complete overhauls is 1700 hours.

## APPENDIX II

### CREW INFORMATION

(*a*) Captain : . . . Suvash Chandra Sanyal

1. Date of birth : . . 1st August, 1926.

2. Qualifications : . . Indian Pilot's 'B' Licence No. 869 issued on 11th November, 1950, valid up to 14th April, 1955, endorsed for Dakota type of aircraft. Pilot-in-Command Certificate for Dakota type of aircraft by day only issued on 1st November, 1954. He did not possess Pilot-in-Command (by night) Certificate.

3. Initial training : . . In England; He obtained United Kingdom Commercial Pilot's Licence No. 29859.

4. Service record . . : (A) Himalayan Aviation Ltd.
(*i*) Appointed as Pilot in August, 1950.

(B) Airways (India) Ltd.
(*i*) Joined Airways (India) Ltd., as Co-pilot on 15th October, 1951.

(C) Indian Airlines Corporation.
(*i*) Junior Co-pilot on 1st August, 1953.
(*ii*) Promoted as Senior Co-pilot on 15th October, 1953.
(*iii*) Promoted as Captain on 13th November, 1954.

5. Flying experience :

| | | Hrs. | Mts. |
|---|---|---|---|
| Total single engined aircraft | Day dual | 88 | 35 |
| Do. | Day solo | 191 | 15 |
| Do. | Night dual | 9 | 10 |
| Do. | Night solo | 8 | 05 |
| Total Dakota Type of aircraft | day under training | 3 | 35 |
| Do. | Day Co-pilot | 3010 | 30 |
| Do. | Day Commander | 205 | 15 |
| Do. | Night under training | 1 | 30 |
| Do. | Night Co-pilot | 323 | 55 |
| Do. | Night Commander | 2 | 30 |
| Total Instrument flying | simulated | 15 | 10 |
| | actual | 187 | 35 |
| Total Flying Experience : | | 3844 | 15 |

6. Recent Flying Experience : . Last flown as Commander on 19th January, 1955, Calcutta-Agartala—Calcutta.

7. Last Flight Check : . . (*i*) Route check (Calcutta-Gauhati-Calcutta-Calcutta-Dacca-Calcutta) on 17th July, 1954.

(*ii*) Local flight check carried out on 7th October, 1954.

(*iii*) DC-3 Pilot-in-Command (day and night) check carried out on 6th September, 1954, by the Chief Inspector of Flying, Civil Aviation Department, Government of India.

8. Previous Accidents : . . Nil.

(*b*) Co-pilot : Kalyan Kumar Ghosh.

1. Date of birth : . . 24th June, 1926.

2. Quaifications : . . . Indian Pilot's 'B' Licence No. 873 issued on 15th November, 1950, valid up to 22nd February, 1955, endorsed for Dakota type of aircraft, Pilot-in-Command certificate for Dakota type by day only issued on 17th September, 1954.

3. Initial training : . . . In U.S.A. ; He obtained United States of America Airmen Certificate No. 1178013.

4. Service record : . . . (A) Airways (India) Ltd.

(*i*) Joined as an unendorsed Co-pilot on 22nd November, 1950.

(*ii*) Promoted as temporary endorsed Co-pilot on 14th December, 1950.

(*iii*) Promoted as Junior Co-pilot on 5th July, 1951.

(*iv*) Promoted as Senior Co-pilot on 6th July, 1953.

(B) Indian Airlines Corporation.

(*i*) Joined as Senior Co-pilot on 1st August, 1953.

(*ii*) Promoted as Captain on 1st November, 1954.

5. Flying experience :

| | | | *Hrs.* | *Mts.* |
|---|---|---|---|---|
| Total Single engined aircraft . | day | dual | 153 | 10 |
| Do. | day | solo | 198 | 40 |
| Do. | night | dual | 18 | 40 |
| Do. | night | solo | 21 | 20 |

| | | Hrs. | Mts. |
|---|---|---|---|
| Total Dakota type of aircraft | under training . | 27 | 35 |
| Do. | day Co-pilot . . | 3057 | 45 |
| Do. | day Commander . | 201 | 10 |
| Do. | night under training . | Nil. | |
| Do. | night Co-pilot . . | 270 | 20 |
| Do. | night Commander (under check) | 2 | 00 |
| Total Instrument flying . | simulated . . | 25 | 00 |
| | actual . . . . . | 269 | 35 |
| | Total Flying Experience : . . | 3950 | 40 |

6. Rent flying experience : . Last flown a Co-pilot on 19th January 1955, Calcutta-Agartala—Calcutta.

7. Last flight check : (i) Route check (Calcutta-Lilabari Calcutta) on 13th August, 1954.

(ii) Local flight check carried out on 17th August, 1954.

(iii) Dakota Pilot-in-Command (day and night) check carried out on 7th September, 1954, at Calcutta by the Chief Inspector of Flying, Civil Aviation Department, Government of India.

8. Previous accidents : . . Nil.

(c) Radio Officer : . . Dhirendra Lal Das.

1. Date of birth : . . 23rd August, 1913.

2. Qualifications : . . Certificate of Competency No. 951 issued by the Director General of Posts & Telegraphs, India, on 4th May, 1942. On the strength of this certificate a 2nd Class Radio Telegraph Licence No. 55 was issued on 27th June, 1946 valid up to 13th May, 1956.

3. Initial training : . . In India.

4. Service record : . (A) Indian National Airways Ltd.

(i) Junior Radio Officer from 1st December, 1945 to 31st July, 1953.

(B) Indian Airlines Corporation.

(i) Joined as Junior Radio Officer on 1st August, 1953.

(ii) Promoted as Senior Radio Officer on 1st January, 1954.

5. Flying experience .

| | Hrs. | Mts. |
|---|---|---|
| Total flying experience | 9557 | 30 |

## APPENDIX III

### List of Witnesses

| *Serial No* | *Date* | *Witness.* |
|---|---|---|
| 1 | 9-3-1955 | Shri Purnaram Das, Agriculturist, Village, Tarapati. |
| 2 | 9-3-1955 | Shri Horesh Ali, Egg Seller, Village Tarapati. |
| 3 | 9-3-1955 | Shri A. K. Chowdhary, Meteorological Department, Gauhati, Airport. |
| 4 | 9-3-1955 | Shri A. K. Mitra, Incharge of Communication Station, Gauhati, Airport. |
| 5 | 9-3-1955 | Shri L. C. Kempt, Assistant Aerodrome Officer, Gauhati, Airport. |
| 6 | 9-3-1955 | Shri D. D. Mukherjee, Senior Observer, Meteorological Department, Gauhati, Airport. |
| 7 | 9-3-1955 | Shri J. A. James, Chief Traffic Assistant, Indian Airlines Corporation, Gauhati, Airport. |
| 8 | 9-3-1955 | Shri B. N. Chatterjee, Fire Operator, Gauhati, Airport. |
| 9 | 9-3-1955 | Shri N. C. Sahoria, Sub-Inspector of Police, Polashbari. |
| 10 | 9-3-1955 | Shri B. Hajra, Aerodrome Officer, Gauhati, Airport. |
| 11 | 10-3-1955 | Shri G. S. Shivtarkar, Aircraft Maintenance Engineer, Indian Airlines Corporation, Calcutta. |
| 12 | 10-3-1955 | Shri S. R. Das Gupta, Aircraft, Maintenance Engineer, Indian Airlines Corporation, Calcutta. |
| 13 | 10-3-1955 | Shri B. L. Bhattacharya, Aircraft Maintenance Engineer, Indian Airlines Corporation, Calcutta. |
| 14 | 10-3-1955 | Captain G. C. Arya, Chief Inspector of Flying, Civil Aviation Department, New Delhi. |
| 15 | 10-3-1955 | Shri N. K. Dey, Assistant Aerodrome Officer, Calcutta (Dum Dum) Airport. |
| 16 | 10-3-1955 | Shri G. S. Lahiri, Senior Traffic Clerk, Indian Airlines Corporation, Calcutta (Dum Dum) Airport. |
| 17 | 10-3-1955 | Shri Ramkaran Sukha, Traffic Assistant, Air Assam, Calcutta. |
| 18 | 10-3-1955 | Shri C. L. Bajaj, Traffic Manager, Indian Airlines Corporation, Bombay. |
| 19 | 10-3-1955 | Captain T. A. Saddler, Calcutta (Dum Dum) Airport. |
| 20 | 10-3-1955 | Shri P. K. Moitra, Pilot, Calcutta (Dum Dum) Airport. |
| 21 | 10-3-1955 | Shri S. K. Das, Radio Officer, Calcutta (Dum Dum) Airport. |
| 22 | 10-3-1955 | Captain H. S. Hirani, Pilot, Calcutta (Dum Dum) Airport. |

| *Serial No.* | *Date* | *Witness* |
|---|---|---|
| 23 | 10-3-1955 | Shri M. Gangopadhyaya, Meteorologist, Incharge, Calcutta (Dum Dum) Airport. |
| 24 | 10-3-1955 | Shri B. Pande, Assistant Aerodrome Officer, Air Traffic Control, Calcutta Airport. |
| 25 | 10-3-1955 | Shri J. K. Behram, Assistant Aerodrome Officer, Calcutta (Dum Dum) Airport. |
| 26 | 10-3-1955 | Shri H. K. Bhattacharjee, Communication Assistant, Calcutta Airport. |
| 27 | 10-3-1955 | Dr. R. C. Banerjee, Assistant Meteorologist, Calcutta (Dum Dum) Airport. |
| 28 | 10-3-1955 | Shri D. C. Dey, Booking Incharge, Air Assam, Calcutta. |
| 29 | 10-3-1955 | Shri S. K. Das Gupta, Traffic Clerk, Indian Airlines Corporation, Calcutta (Dum Dum) Airport. |
| 30 | 10-3-1955 | Shri P. M. Clarke, Traffic Assistant, Howrah. |
| 31 | 10-3-1955 | Shri P. N. Dutta Accounts Clerk, Air Assam, Calcutta. |
| 32 | 10-3-1955 | Shri Sampuran Singh, Operations Assistant, Indian Airlines Corporation, Calcutta. |
| 33 | 10-3-1955 | Shri U. B. Singh, Senior Assistant Operations Manager, Calcutta. |
| 34 | 10-3-1955 | Shri B. L. Sharma, Operations Assistant, Indian Airlines Corporation, Calcutta. |
| 35 | 10-3-1955 | Shri Sundararajan, Aerodrome Officer, Calcutta (Dum Dum) Airport. |
| 36 | 10-3-1955 | Shri M. N. Sitaram, Controller of Aeronautical Inspection, Calcutta (Dum Dum) Airport. |
| 37 | 10-3-1955 | Shri B. C. Verma, Aerodrome Officer, Civil Aviation Department, New Delhi. |
| 38 | 11-3-1955 | Shri H. Mull, Chief Engineer, Indian Airlines Corporation, Calcutta. |
| 39 | 11-3-1955 | Shri K. N. Kathju, Deputy Chief Engineer, Indian Airlines Corporation, Calcutta. |
| 40 | 11-3-1955 | Capt. J. W. Davidson, Pilot, Indian Airlines Corporation, Calcutta. |
| 41 | 11-3-1955 | Shri G. S. Rangaswami, Chief Inspector, Indian Airlines Corporation, Calcutta. |
| 42 | 11-3-1955 | Shri S. C. Joshi, Aerodrome Operator, Calcutta Airport. |
| 43 | 11-3-1955 | Capt. D. Braganza, Assistant Operations Manager, Indian Airlines Corporation, Calcutta. |
| 44 | 11-3-1955 | Shri G. S. Gupta, Senior Air Traffic Control Officer, Calcutta. |
| 45 | 11-3-1955 | Shri Y. R. Malhotra, Inspector of Accidents, Civil Aviation Department, New Delhi. |

GIPD—SS—26 M of Com.—6-8-55—700.