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# REPORT

ON

ACCIDENT TO PUNJAB GOVERNMENT SUPER KING AIR  
B-200 AIRCRAFT VT-EUJ NEAR KULU ON 9TH JULY 1994

BY

**THE COURT OF INQUIRY**  
**HON'BLE MR. JUSTICE D.P. SOOD**  
**JUDGE (RETD) HIGH COURT, HIMACHAL PRADESH**

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## CHAPTER - I

### 1. INTRODUCTION

This accident was unbelievable. VT-EUJ Super King B-200 aircraft crash is yet fresh, like festering wound. It is so easy and perfect. Fly an aeroplane below the minimum level by deviating pre-determined path and that too, in a mountainous region. Obviously fatal accident would be the result.

On July 9, 1994, shock, anxiety and surprise sprung at the highest possible tone from the news of the highly sophisticated Beechcraft Super King Air B-200 aircraft with the state of art turbine technology, crash in the mountainous region wherein destiny assumed a most crucial dimensions wiping out in a flash almost entire family of Shri Surendra Nath, the then Governor of Punjab and Himachal Pradesh. After observing the formalities of filing the flight plan and seeking start up clearances, Punjab Government Super King nine seater airplane left Chandigarh at 0850 hours IST, though initially scheduled to fly at 0800 hours IST when the weather was stated to be though fine both at Chandigarh and Kulu, but with cumulus clouds between Bilaspur and Sunder Nagar. In fact, rainy season had set in and the weather condition in the valley was cloudy with occasional rains. Before its arrival at Kulu (Bhuntar airport), the ill-fated aircraft, one of the finest in the Beechcraft family, while cruising at Flight Level 90, dashed against the trees on almost the hill-top resulting into the immediate disintegration of the tail and swooping thereof which further resulted into the hitting of the airplane against a big boulder and catching fire near Serinala in

Kamrunag at a height of about 10,000 feet. The whereabouts of this plane would have remained unknown, but for the solitary Gujjar family, which saw the ill-fated plane crash, killing not only the passengers aboard, but also the three crew members. The location of the accident is about 25 nautical miles South of Kullu, which was firstly identified by Capt. T.S. Gill, who picked up the beacons of the crashed aircraft while returning from Leh to Delhi on the scheduled Indian Airlines flight operating Airbus A-320. The wreckage of the aircraft including bodies badly mutilated and mostly beyond recognition, scattered in an area of 300 metres radius coupled with the damaging, cutting and felling of 12 trees presented a horrible, dazing and shocking state of affairs indicating to some extent the manner and origin of the accident.

Shri Vikram Malhotra, son of late Shri Surendra Nath, one of the passengers, had been posted as Deputy Commissioner of Kullu about two months prior to the accident and he was to make arrangement for the VIP visit. Shri Surendra Nath along with his family was on a short holiday tour to Kullu and he had planned to stay at the guest house of the Indo Tibetan Border Police (ITBP) at Bandrol near Kullu on the high-way to Manali.

The plane was being piloted by Capt. R.D.S. Sandhu, Chief Pilot and Capt. Pargat Singh, Senior Pilot as Co-Pilot; and Shri Pandey, Flight Attendant was accompanying the passengers and the crew members on board.

Shri V.K. Chandna, Director of Air Safety, Delhi Region, was immediately appointed to act as Inspector of Accidents under Rule 71 of the Aircraft Rules, 1937 (hereinafter shortly referred to the



Rules). On his examination by this Court, he has proved his report, exhibit PW 66/A wherein detailed preliminary findings analysing and examining the facts in question have been given. Vide a notification dated 29th July, 1994, issued by the Ministry of Civil Aviation, Government of India, I was appointed to conduct the formal investigation into the circumstances of the accident under Rule 75 of the Aircraft Rules, 1937. Capt. D.K. Sharma, Chief Operations Manager, Air Safety and Training, Vayudoot Ltd. and Shri K.B. Batra, Chief Engineer (Air), Border Security Force, were appointed as Assessors to assist the Court. Shri Ashok Sahdev, Scientific Officer, DGCA, was appointed to function as Secretary to the Court. It would be appropriate to detail the material portion of aforesaid Rule 75, which is as under :

**“Rule 75 Formal Investigation**

Where it appears to the Central Government that it is expedient to hold a formal investigation of an accident, it may, whether or not an investigation or an inquiry has been made under Rule 71 or 74, by order direct a formal investigation to be held and with respect to any such formal investigation the following provisions shall apply, namely :

- i) The Central Government shall appoint a competent person (hereinafter referred to as “the Court”), to hold the investigation, and may appoint one or more persons possessing, legal aeronautical engineering, or other special knowledge to act as assessors, it may also direct that the Court and the assessors shall receive such remuneration as it may determine.



- ii) The Court shall hold the investigation in open Court in such manner and under such conditions as the Court may think most effectual for ascertaining the causes and circumstances of the accident and for enabling the Court to make the report hereinafter mentioned."

**And further Rule 75 (6) reads as follows :-**

"The Court shall make a report to the Central Government stating its findings as to the cause of the accident and the circumstances thereof and adding any observations and recommendations which the Court thinks fit to make with a view to the preservation of life and avoidance of similar accidents in future, including, a recommendation for the cancellation, suspension or endorsement of any licence or certificate issued under these Rules."

The nature of the investigation and the content/subject matter of the investigation under the Indian Aircraft Act and the Rules framed thereunder consist of an open investigation to the parties to tender evidence, file affidavits and also produce documents on which they rely before the court. For any documents being not in their possession, they can request the court for procuring those documents. The Inquiry is of such a nature that there is neither an accuser nor any accused, there is in effect no lis inter se between the parties approaching before the Commission.

In other words, the proceedings before these Court differed from the normal judiciary proceedings, in that there are no opposing sides here and this Court is not required to adjudicate upon any dispute as no lis situation exist. Thus, it is merely a fact finding inquiry and is neither accusatory nor punitive. Thus, during the formal investigation whatever has been stated, that has been done with a view to assist the Court and not to advance the cause of any organisation or participant. Thus the report of the Inspector of Accidents has though formed the basis for this Court to proceed in the inquiry, yet the focus of this Court is to remain fixed on the accident in question as to what happened, how it happened and why it happened. It is well said that suspicion is merely a ground for scrutiny for evidence but it can never be a ground of decision. Suspicion, howsoever, sound, cannot take the place of proof. The scope of inquiry has also been made clear in the ICAO Manual of Aircraft Accident Investigation, Part-I, Chapter-I, which sets out the purpose thereof, inter alia, as under :

“The fundamental purpose of inquiry into an Aircraft Accident is to determine the facts, conditions and circumstances pertaining to the accident with a view to establishing the probable cause thereof, so that appropriate steps may be taken to prevent a recurrence of the accident and the factors which led to it. An equally important purpose is to determine the facts, conditions and circumstances pertaining to the survival or non-survival of the occupants, and the crash worthiness of the aircraft. The nature of the enquiry

into an aircraft accident should not be accusatory as the object is to take remedial rather than punitive action; similarly the assessment of blame or responsibility should not be included in the duties of an Aircraft Accident Investigation Authority since this function is normally the prerogative of the judicial authorities of the State concerned. Nevertheless, it is unavoidable that acts of omissions, by individual persons or organisations, are sometimes clearly revealed and in such instances it is the duty of the inquiry to say so. Any such statement should not confuse the purpose of the aircraft Investigation which is primarily to indicate what causes the accident rather than who causes it: this should rightly be for others to decide."

Thus, the fundamental objective of the investigation of an accident or an incident is the prevention of accidents and incidents in future. However, this does not mean that this court would turn a blind eye to any mistake made by the people who may be found to have caused the accident or contributed towards its occurrence. To do so would have negated the very purpose of our investigation because, unless we could establish, wrong action which led to the accident, we cannot suggest any preventive measures for the future. Thus, our general approach may be improved upon by saying that we were determined to find out everything which was relevant to the accident, but we were not so much interested within "who did it" as we were keen to ascertain "why it happened". Our comments in this report on the errors of individuals and



deficiencies in the organisations are not to suggest any punitive action but to focus attention on areas needing preventive measures in the interests of flight safety.

## 2. APPROACH OF THE COURT OF INQUIRY

Immediately upon being appointed to conduct this formal investigation, I convened a meeting at Delhi on August 1, 1994. Shri H.S. Khola, Director General of Civil Aviation accompanied with S/Shri Satendra Singh, Deputy Director General Civil Aviation; V.K. Chandna, Director Air Safety; Ashok Sahdev, Secretary to the Court of Inquiry, personally briefed me about the accident and the investigation carried out by different agencies of the Government of Himachal Pradesh, Government of Punjab and that of the Central Government. During the meeting, photographs of the site of accident depicting factual position existing thereof besides video film, was also shown on the television set. I also directed Shri V.K. Chandna, Inspector of Accidents to continue the investigation.

During the proceedings, we visited nine various places not only in India, but also outside the country simply with a view to acquaint ourselves with the functioning and operational management of the various types of aeroplanes by the regulatory authorities and also airline operators besides the steps taken by them in respect of safety measures. It has been a well-worn visit to Wichita, USA and Switzerland. How an aeroplane manufacturer engages itself in the manufacture of a plane and in what manner training with respect to the plane so manufactured is imparted to the pilots as also how an airline operator behaves in its operational sphere having due regard



to the safety aspect is seen to be believed. The culture, the system control, the outlook, the sincerity for the purpose together with devotion to the concept of air passengers safety outweighs the Indian culture in this behalf. It needs special mention. Public safety is predominant in Swiss culture. As a matter of fact, the entire operational management is being administered by the flyers only. As in our system, the executive pilots in Swiss Airlines do also fly but to a limited extent in terms of hours in comparison to that of the line pilots. This mode gives the Executive Pilots the time to devote on to the organisational aspect and administrative works and thereby they evolve the best safety measures.

I cannot but help noting another aspect even at this juncture concerning the coordination between the civil and defence aviation authorities with which they engage themselves in operational sphere by giving priority to the air safety measures of the passengers. We take the things as they are : we do not analyse the whole existing situation in depth nor we have any inclination to give it a thought by having a joint deliberations. We, in fact, lack cooperation and cohesiveness in our administrative as also organisational system. We want to continue with the existing system of the two wings working and engaging themselves in operational spheres in their tightened limits. We have entirely separate rules w.r.t. the administrative as also organisational aspects of the aviation in civil and defence. There exists no common ruler whereby technical, non-technical, operational or non-operational employees of one wing may work or be adjusted in the other/wing even on deputation. This aspect is also of utmost significance which has arisen from the facts emerging from the instant aircraft crash. Some device shall have to be evolved to prevent such like occurrences. The time, therefore, now come to

view seriously as to the happenings particularly in the Civil Aviation sector in the country and without losing any further time, a proper introspection is needed to be effected. Several aircraft crashes have attracted investigations through the Court of Inquiries constituted at the behest of the Government and resultantly inquiry reports have also come with quite a good number of recommendations emerging therefrom. I am sure that Government must have also implemented substantial number out of them yet there appears to be some snag somewhere in our system. In these air-crashes, we have experienced loss of several precious and invaluable human lives - Monetary compensation or lip sympathy is no solution to this problem. We shall have to rise up to the occasion to stop the recurrence of the same, which is otherwise avoidable in nature.

The Inspector of Accidents also presented few reports relating to past accidents for my perusal and apprised me of the progress of his investigation. Number of queries relating to the accident in question were raised, to which necessary explanation was provided.

It would be worthwhile to state that as all the crew members, besides, the passengers had fatal injuries in the accident in question and the aforesaid instrument did not have Cockpit Voice Recorder (CVR) or Digital Flight Data Recorder (DFDR), this Court has to determine and draw inferences as to the causes of the accident from the circumstantial evidence consisting of oral as also documentary evidence. Also various versions on the above said subject were being published by editors of different newspapers circulated in this country and as a high dignitary and his family had been the victims, this Court considered it fit to hold a public inquiry in order to investigate

the causes thereof and to observe and make recommendations strictly in accordance with Rule 75 of the Aircraft Rules, 1937.

Apart from it, the modalities relating to the proposed draft notification inviting the views/information from the general public were also prepared and approved by me and the Secretary of the Court of Inquiry was then directed to get it published in all the leading newspapers in English and preferably 'Punjab Kesari', Hindi edition and some other local newspapers being widely circulated in Himachal Pradesh. The Secretary to this Court of Inquiry was also directed to contact the newspaper offices and also get their respective versions along with the information as to the names and whereabouts of the persons from whom their journalists got the respective versions in relation to the cause(s) of the accident. Similarly, he was also directed to contact police officials who investigated the matter at the spot. As Punjab Government had also sent its officials for conducting preliminary investigation, the Secretary was also asked to contact them for getting their version. This Court also got the data with respect to details of the flight by both the pilots of the aircraft in question to Kullu during the past three years. Their interse relationship data was also sought for.

In the next meeting held on August 18, 1994, discussions with Shri H.S. Khola, Director General of Civil Aviation and his team besides the Assessors and the Inspector of Accidents as also the Secretary was held and various aspects of the accident were discussed, consequent whereto Shri Ashok Sahdev, the Secretary, was directed to take the following actions:



- i) A reminder be issued to all the Newspapers that whatever information they have regarding the accident to Punjab Government aircraft, be preserved with them as they are likely to be called as a witness in the court.
- ii) Features of B-200 aircraft vs. C-90 aircraft to be studied.
- iii) Efforts to be made to get weather report from Kursog, Mandi and Simla Observatories on the date of the accident.
- iv) A query be made to Punjab Government to know the source of information, they have relied upon in their letter No.1/10/94-4T(3) dated the 16th August, 1994.
- v) Pilot requirements for the aircraft weight less than 5700 kgs. may be known.
- vi) The manufacturer of the aircraft should be informed that they can participate in the investigations, if they so desire.
- vii) A letter to be written to Mr. Kureel, DIG, Simla for furnishing the required information.
- viii) Indamer Company be approached for sending the Pilot Operating Handbook related to the Super King Air B-200 aircraft.
- ix) Punjab Government may be approached to send the Operation Manual, Maintenance Manual and Pilot Operating Handbook. In case of non-availability, these may be obtained.



In the subsequent meeting of August 19, 1994, the Border Security Force hangar at IGI Palam, New Delhi, was visited by me along with the Assessors, the Secretary and the Inspector of Accidents, besides, the concerned officers of the said airport. I familiarised myself with salient features, construction and working of the aircraft in detail through the Inspector of Accidents Shri V.K. Chandna, as also the staff and officers of the Border Security Force, who keenly participated in the inspection conducted by me followed by discussion with respect thereto. On the following day, during discussions, Shri V.K. Chandna aforesaid, explained in details the functions and the status of various parts of the fateful aircraft, consequent to which action with respect to various factors was directed to be taken by the Secretary in the following terms :

- i) How much time does an Engineer take for checking the aircraft before the flight takes off?
- ii) What is the rate of climb at 9,000 feet at that atmospheric conditions and aircraft weight conditions?
- iii) Forest Department may be requested to estimate the angle of cut at which the trees were cut at the accident site by the aircraft.
- iv) How many passengers were on-board?
- v) Request for entire ATC Transcript right from the first conversation.

- vi) What is the rule position with regard to passengers on-board vis-a-vis ATC?
- vii) Photocopies of the statements of duty officer of ATC, Chandigarh/Barnala and Flight Despatcher of Punjab Government.

On September 3, 1994, we visited Chandigarh in order to get information with respect to the aircraft, its pilots and the conduct of the business conducted by the Government of Punjab with respect to high dignitaries as also the manner of use of the aircraft in relation thereto such persons. Resultantly, the meeting was held wherein Shri J.S. Maini, Principal Secretary to the Chief Minister, Government of Punjab, besides, other officers including Mrs. A.C. Duggal, Director Civil Aviation, was held in Punjab Bhavan. Both the Principal Secretary and Director Civil Aviation belonging to the Government of Punjab hail from Indian Administrative Service cadre. A meeting was held and information with respect to the working of the Civil Aviation Organisation, the staff and the rules followed by the Operator was sought for. On our visit to Air Force station and ATC Tower Chandigarh, we also got the weather forecast, the Met. and other civil aviation working briefing. This discussion related in giving various directions to the Secretary of this Court to contact operators like M/s Jagson and Archana Airways and also Air Force Authorities, Barnala and Delhi, besides, the Chief Engineer of the Civil Aviation Punjab Government with respect to aircraft C-90 from his Office located at Patiala. On the following day, this Court along with the Assessors and Inspector of Accidents also visited Alpha Control Barnala for on the spot study of the facilities and equipments available there. Gp. Capt. P. Singh, Station Commander; Sq. Ldr.

R.S. Chhatwal and Sq. Ldr. Manmohan Upadhyay explained in detail the functioning of the Alpha Control and the object underlined thereunder. We were informed that their objective is to intercept the enemy airplane and take the appropriate action. In respect of the civilian aircraft, we were informed that their aim is that such aircraft does not drift to the territory of the neighbouring countries and ensure that no traffic conflict take place with the Defence aircraft. It was made clear that neither they are qualified as Air Traffic Controllers nor they are supposed to do any traffic control. In case, any level change is done by them, it is so done with the consent of the Delhi and Chandigarh ATCs. In other words, they apprised this Court that their role is advisory in nature. In addition, they also informed that the aircraft blip is visible only upto Bilaspur and after that it is not clear due to hill shadows. Regarding division of ATC number, they informed that in case of change in departure time the number remains the same. However, they change the timings and accept the flight. In respect of the aircraft in question, this Court was apprised that the Pilot-in-Command was following Pre-Determined Route (PDR) at 015 degree from Chandigarh to Kullu at flight level 90. According to them, generally all the aircraft follow this route. They further qualified their information by stating that these days i.e. the period when inspection was conducted, the aircraft flight had a higher level. They also expressed that even they should have better communication facility like STD, hot-line with Kullu for better traffic management. We also observed a flight on radar of Archana Airways operating from Delhi to Kullu in order to apprise ourselves with respect to the information sought for and consequent directions given by the Officers of the aforesaid Alpha Control. The aircraft was also viewed on the Route 015 at a level of 130 which flight level was chosen by the commander because of the clouds



between Bilaspur and Sundar Nagar. Information was also sought for from Shri Balvinder Singh, the then Flight Despatcher, though ultimately, now, has been found to be unapproved one by the Director General of Civil Aviation, New Delhi and also from Capt. Mehra, Junior Pilot and Sandeep Bhatia. On September 9, 1994, we conducted a meeting with the officials of M/s Pawan Hans Limited, New Delhi, in order to acquaint ourselves with regard to the training in instrument flying through their simulator. For that purpose, an exercise of simulator flying was also shown to us by Simulator Instructor Shri Maini. He also explained us as to how the flying is done by standing various instruments and simulation of emergency. We also had discussions with respect to VFR and IFR flying. On the subsequent day, we thought it to have a meeting with the officials of National Airports Authority. After explaining the purpose of visit i.e. to see the radar facilities, FIC functioning, search and rescue centres and to seek from the ATC expert suggestions for meeting the safety standards with respect to air travel. The concerned officer of the said authority explained us the various facilities provided at the airport, functioning of the Flight Information Centre located there and also told us that their role is that of advisory in nature. We were also acquainted with the fact that the purpose of FIC number was to ensure that the flight plan has been received and that the actual time of departure is known to them for providing better service. It was also stated that FIC number remains valid for half an hour. At the same time, they explained the difficulties being faced by them with respect to coordination between Air Force Station and National Airports Authority airports in relation to the civil flights. We also visited "Approach Control Radar" and "Area Control, Search and Rescue Centre" where we found that FC-10 was not manned even at the time of our visit. The concerned authorities informed us that it



was due to shortage of staff. Shri S.A. Ram, Director of Aerodrome, National Airports Authority, also gave us a write up about the functioning and the responsibilities of the FIC and regarding acceptance of the flight plans and responsibilities thereof. A flight plan pertaining to Archana Airways flight to Kullu was also perused. We also saw the working of MLC and MLU units. We found that MLU unit gives ATC number and has a hot-line with Barnala. On the other hand, we were apprised that MLC unit only coordinates with the Defence aircrafts. In the subsequent meeting held in the Office of Inspector General of Air Force at West Block, R.K. Puram on 12.9.1994, the concerned Director Flight Safety apprised us regarding the submission of the civil flight plans and the role of Alpha control in relation thereto. Air Marshal D.R. Nadkarni and Air Cdr. I.J.S. Boparai participated in this meeting. In relation to the coordination for civil flights between authorities of Defence airfields and civil airfields, this Court found organisational vacuum in terms of lack of coordination. On persuasion with respect to the urgent need of coordination between the two wings of aviation i.e. civil and Defence, Air Cdr. Boparai assured us that he shall also look into the matter for taking corrective actions. However, we were informed that there existed lack of communication facilities between Chandigarh and Bhuntar. He also suggested that there should be trial landings by the pilots at such aerodromes where he has not operated for a long time. According to him, facilities at Chandigarh and Bhuntar airfields should be provided in line similar to that of Srinagar route. It was also suggested that the orange colour balloons should be installed at number of positions which eventually would help the pilots flying in that area to become alert. According to him, installation of a radar on this route somewhere in the Himachal hill range is also necessary for improvement of safety

measures in the northern sector. During the proceedings, it was felt necessary by this Court to know about the manufacturing process of the fateful aircraft and the nature of the training imparted to the pilots in general and also in respect of the both pilots handling the said aircraft on the fateful day in particular. As the aircraft in question was manufactured by Raytheon Company (Beechcraft) Flight Safety International, Wichita, USA, and both the pilots had been trained to fly the aircraft in question on simulators installed at that place and also there being no such simulator in India, it was decided to visit the said place for seeking information on various systems employed in manufacturing such aircraft and imparting training to the pilots engaged in flying on such aircrafts. Simultaneously, as the aircraft flying in the mountainous region located in Switzerland is quite prevalent and as there are various airports in close vicinity in that country, we felt it necessary to visit the said place to apprise ourselves regarding operation and safety measures in the hill flying. We also observed that the operation regulations applicable to the flying of aircraft in Switzerland are similar to that as per the guidelines of ICAO. It also formed one of the reasons for our intended visit to the aforesaid two countries during the period from November 30 to December 9, 1994. As per the programme sorted out, we had meetings and discussions with the concerned authorities of the aforesaid manufacturers, operators etc. Following are the points which emerged during the discussions/visit at the above said places:

" VISIT TO RAYTHEON FACTORY (Wichita, USA)

At this factory the different models of Beechcraft are manufactured. A visit to the plant was made and steps of

manufacturing and assembly procedure of the aircrafts were witnessed. A discussion was held with the various representatives and officials of Beechcraft Company. The specialists on various system and the Test Pilot on King Air aircraft participated in the discussion along with the Beechcraft Investigators including their legal expert. Following points emerged during the discussions :

- i) Beechcraft representative agreed to supply the details of manufacturing of the involved aircraft.
- ii) The normal climb rate is around 2100 feet per minute while cruising at 9,000 feet.
- iii) For the hilly terrain flying under VFR conditions, pilot has to ensure visual contact all the times and omega navigation will not be of help under those conditions.
- iv) Beechcraft agreed to supply the data in respect of the accident in bad weather/collision with the hills.
- v) Beechcraft agreed to give a note on affect of CG positions on handling/performance characteristics of the aircraft.
- vi) Regarding pressurisation of the aircraft the aircraft could be pressurised while at 9,000 feet at the rate of 2,000 feet per minute.



## VISIT TO FLIGHT SAFETY INTERNATIONAL, WICHITA

This facility is full fledged set up for providing training to the pilots. Ground training, simulator flying and aircraft flying is available to the trainees at this institution. The training contents are approved by FAA. Discussions were held with Capt. Dan Orlando who is rated pilot-cum-instructor on the Super King aircraft. Exercises on the simulator of Super King Aircraft were carried out to simulate the accident flight.

### (a) Simulator Flying

Various exercises were planned with different all-up-weight (5500 kgs., 5300 kgs., 5100 kgs.) at normal cruising speed (210 knots) with centre of gravity position at around 19.26%. An abrupt maximum pull up was carried out while cruising at 9,000 feet to climb upto 9,400 feet (height at which crash took place) with auto-pilot engaged and with auto-pilot disengaged. Time taken/pitch angle, speed at 9,400 were recorded. The print out were taken for various exercises. While going through various exercises, it was observed that with auto-pilot engaged the pitch angle was around 40 degree while with auto-pilot disengaged the pitch up angle had gone upto 55 degrees. It was also observed that the speed had washed down to 180 knots while reaching at 9,400 feet (similar to what was observed on speed indicator in the wreckage of the crashed aircraft). The time taken to climb to 9,400 feet was approximately 3.54 seconds to 3.75 seconds. This experiment indicated

that auto-pilot was engaged when the pilot pulled up the control column to avoid the collision as the pitch angle achieved was 40 degree and the same was observed on the cutting angle on the trees by the aircraft at the crash site. The visibility estimated in the area where the collision took place was of the order of approx. 1,000 feet.

Speaking for myself, I jotted down my inspection note with respect to the exercise carried out in the simulator at Wichita and the discussions held there as also at Zurich. My observation in this regard are as under :

"A state-of-the-art facility, Super King B-200 engineering simulator housed at the Beechcraft Aeronautical Training Establishment Wichita is stated to have played a major role in imparting trouble-free training to the pilots with respect to aircrafts manufactured by them. A speciality worked out for Super King B-200 and already incorporated in the simulator is the system of head-up and head-down displays with the help of which pilots can see through the factual situation in front of their eyes flight readings will also surface.

Taking off, landing, rolling and pitching, the simulator enveloped in front by a 3-D view seems unconvincingly closed to piloting a real aircraft. In other words myself along with other sitting in the cockpit and the aircraft only a simulator Super King B-200 veered sharply on its

journey in front for taking off from the airfield runway away ..... and we were in the sky. Thus by the simulator we not only evaluated the normal speed, weight and the uplift speed after forcefully but instantaneously putting the sticks after setting it in the conditions found the factual position revealed by the various instruments/equipment fitted in the fateful aircraft, but also compared the ultimate results concluded from the exercises conducted therein with the actual digital revalidating. There was not even a minimal difference therein which shows that simulators in recent years have played a major role not only in improving the particular aircraft but also in imparting training to the pilots who wanted to operate it. Both the pilots in question were trained in this institute.

Thus, simulators are converted into a training apparatus from the design-oriented vehicle."

(b) **Discussion regarding pilot training and regulations:**

Following points came out during discussion with Capt. Orlando:-

- i) The pilots were given training as per the FAA approved syllabus on simulator and other training material.



- ii) Though Omega equipment is not fitted on the simulator, a separate training was given on the omega equipment installed in the class-room.
  - iii) It was for the DGCA to ensure that pilot had undergone necessary training and also day and night flying on the aircraft before endorsement for the aircraft on the pilot licence.
  - iv) As per the FAA regulations for the private flying where no public is involved, no route checks are called for with respect to mountainous flying etc. However, Beech Company have made necessary for pilots to undergo route check for route destination and difficult airfields.
- c) Visit to Zemix Aviation and Federal Office of Civil Aviation, Zurich, Switzerland
- a) Discussion with Zemix Aviation :

Zemix Aviation is a Swiss registered firm under the regulatory control of Switzerland and it carries out the operations in oil installations. The discussions were carried out with Capt. Nick Hater regarding operation and safety measures adopted in the hill flying in Switzerland. Following points emerged:-

- i) In Switzerland the aircraft flying in the valley is quite prevalent and as there are various airports in close vicinity, the navigation is quite safe.
- ii) The operation regulations are similar to that as per the guidelines of ICAO.
- iii) At the VFR airfields pattern of flying have been defined at the airport.
- iv) For difficult terrain like dessert, flying training for the same is given before the pilot is released for operation in that area.

d) **Discussion with Federal Office of Civil Aviation**

Discussions were held with capt. B. Balsiger, Chief Of Flight Operations in Switzerland. Following points emerged during discussions:-

- a) For the pilots operating aircraft below 5,700 kgs. weight of aircraft, no proficiency check is called for similar to that of ICAO regulations.
- b) There are no special regulations for the aircraft operations for the private operators when they carry VIP on board, however, there is an understanding that they will follow similar control

of the operation of aircraft similar to that of commercial aircraft operations.

- c) There are no instructions for trial landing for the new destination. However, a detailed briefing by the experienced pilot shall suffice.
- d) There are no separate regulations for the VIP aircraft operations.

We also conducted an inspection of M/s Indamer Company, Bombay, on March 2, 1995, and meeting with the participation of Shri Montero and Shri H.B. Singh, the responsible officer belonging to the said company. Mr. Montero, Quality Control Manager, gave introduction describing the salient features of the aircraft and also with respect to the details of the level and procedures followed on the aircraft type in question. The radio engineer working in this company gave us the details of avionics installed in the aircraft in question. We also perused and attempted to understand the specific details of weather radar functioning and its utility in detecting the obstruction in the flight in bad weather conditions, regarding which we also had lengthy discussions. Capt. Srivastava, who flew aircraft of the type in question also participated in the discussions. We also pointedly discussed other aspects regarding fuel quality check, rate of flying, seating configuration and limitation of number of passengers carried and effect of centre of gravity, checks on pilots for flying in hilly terrain. The crux of the discussions was that seating configuration depended upon the desire of the operator. However, the aircraft in question was certified for maximum number of 12 seats configuration, though it had only 9 seats with safety belts



provided therein. We have also observed earlier that seating configuration of the aircraft in question was seven passengers besides the crew members. We were apprised by Capt. Srivastava that the limiting factor with respect to this aspect was all-up-weight in which variables like fuel, weight, passenger weight and the baggage weight is adjusted. He also told us that number of persons are usually restricted to number of seating belts and at centre of gravity position always depended upon the low distribution.

According to him, the engineers and pilots are required to be trained on all the equipments/aids. He also suggested that there should be a refresher course for both pilots and engineers and that in case of a new type of aircraft where the different instruments/aids are fitted, the pilots and engineers must get training. The pilots in particular, as per his statement, required to be trained on aircraft during day and night. He also told us that fuel vendor duly approved by Director General of Civil Aviation usually keep check and shown the fuel quality used in the aircraft by the operators. He gives a certificate as to whether fuel quality so used was contaminated or not. Maintenance facility wing of the aforesaid Indamer Company was also visited by us. In addition to the above, we also conducted inspection at Central Training Establishment at Hyderabad on March 10, 1995. We observed functioning of the simulator at that place too and had useful discussions with Shri Reddy.

Pre-Conference Meeting of the Court was also held at Punjab Bhavan, Chandigarh before material evidence was recorded at various places. Meanwhile, the Secretary of the Court of Inquiry was directed to issue a public notice that whoever have a knowledge and desires to make a representation concerning the circumstances or

cause of the accident, may do so in writing in the form of an affidavit duly attested and address the same to the Secretary so as to reach him within a fortnight of the publication of the notice. A public notice was accordingly published inviting informations from the public in general and persons desirous of imparting information w.r.t. aircraft crash in question. In addition, they were also directed to submit their suggestions with respect to any other aspect/angle which might be relevant for proceeding further in the inquiry in question within ten days. Such suggestions were directed to be filed personally or through post to the Secretary, Court of Inquiry. Accordingly, a notice in the following terms was published :

The Government of India vide its Notification No.AV.15013/8/94-SSV, dated 29th July, 1994, has appointed Hon'ble Mr. Justice D.P. Sood of the Himachal Pradesh High Court to investigate the causes of accident to Punjab Government Super King Air B-200 Aircraft VT-EUJ near Kullu on 9.7.1994.

Any person having direct or relevant knowledge or information about the said accident or the causes or circumstances leading to the said accident, or knowledge or information which may lead to the determination of the cause of or circumstances leading to the said accident, or who may or is likely to be affected by the findings of the Court of Inquiry, may furnish, a statement in writing to the court of Inquiry.

Any person furnishing the statement shall also furnish to Court of Inquiry along with the statement, the list of

documents, if any, on which he/she proposes to rely and forward to the Court of Inquiry wherever practicable, originals or true copies of such of the documents as may be in his/her possession or power and shall state the names and addresses of the persons from whom the remaining documents may be obtained.

The statement and list of documents, if any, shall be delivered personally or through an authorised agent or sent by registered post at the Office of the Secretary, court of Inquiry, Office of the Director General of Civil Aviation, Technical Centre, Opposite Safdarjung Airport, New Delhi - 110 003 on or before 5th September, 1994.

The witness shall be examined either on affidavit or on his appearance in person in the court. The expenses, if any, shall be borne by the Court."

The help of my staff while functioning as a sitting Judge of the High Court of Himachal Pradesh and even after I demitted the office on March 30, 1995, with the permission of the Hon'ble Chief Justice of High Court of Himachal Pradesh, on two sittings at Chandigarh, particularly for recording the evidence of material witnesses, was sought. Thereafter as no staff in the shape of stenographer or any other person except gunman was provided to me and also as the entire record throughout the proceedings remained with the Secretary to the Court of Inquiry under my orders and the Secretary as also both the Assessors were stationed at Delhi thus in the absence of staff particularly a senior stenographer or even a minimal



staff with me, I deemed it fit in the interest of justice to continue my sittings at Delhi for the purpose of preparing the report and submission thereof.

There has been numerous sittings of the Court at Shimla, Mandi, Chandigarh etc. and over 90 witnesses have deposed before the Court. Apart from the Report of the Inspector of Accidents, numerous documents have been placed during the proceedings by the Inspector of Accidents, witnesses, participants and others. Participants were afforded opportunity to file affidavits, inspect documents/exhibits and cause witnesses to be examined. The court has spared no effort and every aspect of the matter has been brought up for thorough investigation. This summary draws upon the affidavits and testimony of the witnesses and other matters before the Court, including reports, documents, test data, ICAO documents, AIP, AICs etc. as have relevance.

This Court had accorded participant status to the Airports Authority of India after merger of National Airports Authority of India and National Airports Authority with effect from 1.4.1995. After the collection of the evidence, this Court has heard all the parties through their learned counsels at length. They have also submitted their respective written submissions. We have given our thoughtful consideration to the entire material before us.

From the deep analysis thereof, we feel that for stepping up safety measures, the operators organisational structure needs to be revamped for various factors discussed in the report. The purpose behind it is that a culture is introduced, which would by itself negate any chance of risk and will promote safety. The details of the study

undertaken by me at Wichita and Switzerland have also been highlighted in this regard. Suffice it to note, however, that the regulatory authority ought to exist only for the purpose of supervision of the whole system in its letter and spirit and mainly the operator is required to concentrate and evolve a system of safety by which air travel in this country may become safe as in USA and in Switzerland. Speaking for myself, I am not prepared to accept that we lack efficiency in any way, but what we lack is the system, control and the management and the operator should, now, give it a thought in order to bring home the concept of safety in the minds of air passengers, which is in a gradual decline at present.

## CHAPTER-II

### 3. FACTUAL INFORMATION

#### 3.1 History of The Flight

##### Background

Punjab Government Beech Super King Air B-200 aircraft VT-EUJ, which was on a flight from Chandigarh to Bhuntar (Kulu) on 9.7.1994, met with an accident at about 0905 IST and crashed near the top of a hill about 10 NM south-east of Sundar Nagar, Himachal Pradesh. The aircraft disintegrated and caught fire after impacting with tall trees and rocks on top of the hill. There were 13 persons on board, including 3 members of crew. The passengers included Shri Surendra Nath, the then Governor of Punjab and Himachal Pradesh and 9 members of his family. All persons on board received fatal injuries.

##### Details of Flight

The aircraft was under the command of Capt. R.D.S. Sandhu with Capt. Pargat Singh as his Co-Pilot. Shri Balwindar Singh, the Flight Despatcher of the Punjab Government had filed the Flight Plan for the ensuing flight. The aircraft was to operate sectors Chandigarh-Bhuntar-Chandigarh-Ludhiana-Chandigarh on July 9, 1994. At 0846 hours IST, Chandigarh tower gave start up clearance and informed aircraft that runway in use



is 11, QNH Chandigarh 29.55 inches and further aircraft to change over to approach frequency of 122.3 MHz.

**The aircraft took off from Chandigarh at 0850 hours IST for the flight to Bhuntar.** (While it was taxiing, Pilot contacted Archana Airways aircraft which was on flight. On inquiry he informed Pilot-in-Command of aircraft in question that there were cumulous clouds between Bilaspur and Sundar Nagar). Thereafter at 0853 hours IST, it reported overhead at Flight Level 70 that he was setting the course to Bhuntar. ATC Chandigarh informed about the estimates for which the Punjab Government aircraft replied as abeam Bilaspur. Thereafter it remained in contact with Air force SIS Unit, Barnala till 0903 hours IST which was the last transmission. Earlier at 0902 hours IST, the Air Force SIS had advised the PIC to contact Bhuntar airport and the same was acknowledged by the later. As per the record, both PIC and his Co-Pilot were new to the route with the newly acquired aircraft in question.

#### **Details of Crash**

After Bilaspur, the flight "appears to have moved off from the track" (from the pre-determined flight path) as pilot probably could not see anything in the immediate vicinity due to poor visibility weather conditions.

The aircraft hit a number of tall trees about 40 feet height from ground level and chopped off nearly 12

trees before hitting the rocky mountain surface. The smashed cockpit was found about 600 metres away from the point of impact. However, most of the instruments were traceable from the location. The position of throttle was found in full forward position as if the pilot had been trying to climb up. The resultant impact have sheared off the main body (fuselage) exposing the passengers to the open. The speed of the aircraft was estimated to be at 220 knots and passengers getting exposed after shearing off the cockpit resulted disintegration of human bodies into many pieces. Death would have been instant due to impact and resultant disintegration of the human bodies. The exposed fuselage had travelled approximately 800 metres before it rested close to the house of Shri Jeethu, a "Gujjar" residing on a slope of the hill. He and his family were witnesses to the crash scene. It was the same Gujjar who reported the details of crash to the police after trekking about 10 kilometres from the scene.

The wreckage of aircraft was shattered along the flight path from the point of impact. The wing and 2 engines were found nearly 900 metres away from the point of impact. They were partly burnt, probably on impact. The fire was not very intense.

Immediately area and leaves of trees/bushes around the point of impact were found blackened due to spillage of

fuel. There is no sign of serious fire at the site of impact.

The lighter and fragile wreckage were found in the immediate vicinity along the direction of flight path from the point of impact. The wreckage were splintered into small pieces and found in a funnel covering approximately 800 metres. The most of cushions and other inflammable furnishing of the aircraft were found unburnt except two.

There were no significant wreckage found before hitting the trees/point of impact.

### Terrain

Kamrunag hills are series of steep hills, height ranging from 8,000 feet to 11,200 feet. The height at the point of impact as per altimeter setting of the aircraft was 9,400 feet. The area is covered with thick vegetation and tall trees. Nearest approach to the site is from a place called "Chowki" where the elevation is around 6,400 feet. The route from Chowki to the scene of crash was treacherously steep, slippery and slushy and was very difficult to negotiate.

The area at the point of impact was rocky covered with tall trees. The aircraft after hitting the tall trees and chopping about 12 trees hit a rock and disintegrated.



The parts of the aircraft were thrown off along the flight path.

There is no inhabitation except a bunker type of house where a "Gujjar and his family" stayed. The house was nearly 900 metres from the point of impact but facing towards the scene where the wreckage were scattered. The area where the cockpit and fuselage were drifted were free of vegetation/trees but full of small rocks and boulders.

### 3.2 Injuries To Persons

<u>INJURIES</u>	<u>CREW</u>	<u>PASSENGERS</u>	<u>OTHERS</u>
FATAL	3	10	-
SERIOUS	-	-	-
MINOR/NONE	-	-	-

None of the passengers survived. Their names are as follows:

<u>Passengers</u>	<u>Name</u>	<u>Age</u>
1	Hon'ble Governor Sh. Surinder Nath	69
2	Smt. Gargi Devi	63
3	Shri Vikram Malhotra	35
4	Smt. Rekha Malhotra	32
5	Miss Sehar Malhotra	7
6	Miss Vinya Malhotra	3
7	Shri Wiplove Juneja	40
8	Smt Jyotsna Juneja	38
9	Master Prashant Juneja	12
10	Master Akshay Juneja	8

### 3-3 Damage To The Aircraft

The aircraft was totally destroyed due to impact and fire. The wreckage pieces of the aircraft were found scattered over an area of about 800m in length and about 250m in width.

### 3-4 Other Damages

About 12 numbers of Oak trees at the site of crash were damaged as a result of the impact of the aircraft.

### 3-5 Personnel Information

#### Pilot-in-Command

Name	Capt. Raj Devinder Singh Sandhu
Date of Birth	16.10.1945
Place of Birth	Barnala

#### Licences Held

i.	S.P.L. No.	:	1983
	Date of issue	:	23.9.1966
ii.	Private Pilot Licence No.	:	1083
	Date of Issue	:	30.1.1968
	Valid upto	:	26.8.1994
iii.	Commercial Pilot Licence No.	:	671
	Date of Issue	:	03.12.1970
	Valid up to	:	21.8.1994

iv.	RTR No.	:	2181
	Date of Issue	:	22.8.1969
	Valid up to	:	20.8.1995
v.	FRTO No.	:	1544
	Date of Issue	:	03.12.1970
	Valid up to	:	21.8.1994
vi.	G.P.L. No.	:	433

Ratings

i.	AFIR (A) No.	:	144
	Date of Issue	:	27.11.1971
ii.	FIR(A) No.	:	224
	Date of Issue	:	19.5.1976
	Valid up to	:	21.8.1994
iii.	Instrument Rating (For King Air C-90)	:	854
	Date of Issue	:	08.9.1985
	Valid up to	:	21.8.1994

As per Records, no Instrument Rating on type King Air B-200 was taken.

Open rating on all conventional types of aeroplanes having an all-up-weight not exceeding 1500 kg issued on 14.9.89.

Last medical of Capt R.D.S. Sandhu was held at CME on 24.1.94 which was valid upto 21.8.94. He was advised to wear corrective glasses while exercising the privileges of his licences.



Types of aircraft flown as PIC

- i. Pushpak
- ii. Bonanza G-35
- iii. Bonanza A-35
- iv. Auster Auto-car
- v. Chipmunk
- vi. Glider Rohini
- vii. King Air C-90
- viii. Cessna 152
- ix. Super King Air B-200

He was endorsed on King Air C-90 on 9.10.1985 and for Super King Air B-200 on 7.4.1994.

Flying Experience

Total Flying Experience	7503:05
Total on Type	113:45 Hours
As PIC	99:35
As Co-pilot	14:10
Last 30 days	29:05 Hours
Last 7 days	04:55 Hours
Last 24 hours	-

Flying Details since 1st June, 1994

<u>Date</u>	<u>Flying As</u>	<u>Sector</u>	<u>Flight Time</u>	<u>Type of Aircraft</u>
4.6.94	P1	VICG-VILD	00:15	B-200
	P1	VILD-VICG	00:15	-do-
5.6.94	P1	VICG-VIDP	00:45	-do-
	P2	VIDP-VICG	00:40	-do-

8.6.94	P2	VICG-VIAR	00:40	-do-
	P1	VIAR-VICG	00:40	-do-
9.6.94	P1	VICG-VIDP	01:15	-do-
	P1	VIDP-VICG	00:40	-do-
	P2	VICG-VIDP	00:45	-do-
	P1	VIDP-VICG	00:40	-do-
10.6.94	P1	VICG-VIDP	00:45	-do-
	P1	VIDP-VICG	00:45	-do-
	P2	VICG-VIDP	00:55	-do-
	P2	VIDP-VICG	00:40	-do-
11.6.94	P1	VICG-VIDP	00:40	-do-
	P1	VIDP-VICG	00:40	-do-
16.6.94	P1	VICG-VIDP	00:50	-do-
17.6.94	P1	VIDP-VICG	00:50	-do-
18.6.94	P1	VICG-VILD	00:15	-do-
	P2	VILD-VICG	00:15	-do-
	P2	VICG-VIDP	00:50	-do-
	P2	VIDP-VILD	00:50	-do-
	P1	VILD-VICG	00:15	-do-
21.6.94	P1	VICG-VIDP	00:45	-do-
22.6.94	P2	VIDP-VICG	00:40	-do-
23.6.94	P1	VICG-VAJU	03:05	-do-
26.6.94	P1	VAJU-VIDP	02:40	-do-
	P1	VIDP-VICG	00:40	-do-
	P2	VICG-VIAR	00:35	-do-
	P1	VIAR-VILD	00:20	-do-
	P2	VILD-VICG	00:15	-do-
27.6.94	P2	VICG-VIAX	00:20	-do-
	P1	VIAX-VICG	00:25	-do-
30.6.94	P1	VICG-VIPL	00:20	C-90
	P1	VIPL-VICG	00:15	-do-
1.7.94	P1	VICG-VILD	00:15	B-200
	P2	VILD-VICG	00:15	-do-
2.7.94	P1	VICG-VIDP	00:45	-do-
	P2	VIDP-VICG	00:45	-do-
3.7.94	P1	VICG-F'PUR	00:40	C-90
	P1	F'PUR-VIAR	00:30	-do-
	P1	VIAR-VILD	00:30	-do-
	P2	VILD-VICG	00:20	-do-

4.7.94	P2	VICG-VIDP	00:50	-do-
	P1	VIDP-SHIMLA	00:55	-do-
	P2	SHIMLA-VICG	00:10	-do-
7.7.94	P2	VICG-VIPL	00:15	-do-
	P1	VIPL-VICG	00:15	-do-
	P1	VICG-SHIMLA	00:15	-do-
	P1	SHIMLA-VICG	00:15	-do-
9.7.94	P1	VICG-KULU	Aircraft Crashed	

#### Training on Super King Air B-200 Aircraft

- (a) Capt R.D.S. Sandhu underwent training at Flight Safety International, Wichita, USA on Super King Air B-200 aircraft w.e.f. 31st Jan., 94 to 12th Feb. 94. The course of study is approved by FAA. He carried out a total of 20:00 hours of simulator flying covering emergencies and procedures.
- (b) Capt. R.D.S. Sandhu carried out flying training on Super King Air B-200 at Wichita (USA) w.e.f. 2nd Feb., 1994 till 15th Feb. 1994 and had flown for 17:00 hours including endorsement test for day with Capt. Larry Thomas and Dan Oslando. Endorsement for night flying was given in India after the test was conducted by Capt. Ali on 4th April, 1994 in a night flight of duration of 50 minutes.

As per Pilot's log book Capt. R.D.S. Sandhu had last flown to Kulu on King Air C-90 as P2 on 2.6.1992.

An incident of landing at wrong airport i.e. at Bihta airfield instead of Patna airport during the flight from Delhi to Patna on 10.10.1992 by Capt. R.D.S. Sandhu was reported. Final action in the matter was yet to be finalised.



Co-pilot

Name Capt. Pargat Singh Nanar

Date of Birth 13.4.1948

Licences Held

- i. S.P.L No. : 4208  
Date of Issue : 27.11.1969
- ii. PPL No. : 1582
- iii. CPL No. : 804  
Date of Issue : 5.1.1972  
Valid up to : 20.10.1994 (R)
- iv. COP/RTR No. : 2736  
Valid upto : 20.10.1994
- v. FRTO No. : 1732  
Valid upto : 29.8.1994

Ratings

- i. AFIR(A) No. : 156  
Date of Issue : 6.4.1972
- ii. FIR(A) No. : 199  
Date of Issue : 1.11.1973  
Valid up to : 29.8.1994
- iii. Instrument Rating No. : 738  
Date of Issue : 4.5.1982  
Valid upto : 29.8.1994  
(on King Air C-90)

As per record no Instrument Rating on type King Air B-200 was taken.

Open rating to fly all aircraft (conventional type) not exceeding all-up-weight 1500 kg.

Last Medical was carried out at C.M.E., New Delhi on 4.3.94 and was declared fit for renewal of C.P.L. subject to wearing of Bifocal/look over glasses while exercising privileges of his licence. Salt restricted diet and to produce monthly records of Blood Pressure during next medical.

Type of aircraft flown as PIC

- i. Pushpak
- ii. Auster J-5-B
- iii. Bonanza A-35
- iv. Cessna 152A
- v. King Air C-90
- vi. Super King Air B-200

He was endorsed on King Air C-90 on 31.7.1991 and for Super King Air B-200 on 7.4.1994.

Flying Experience

Total Flying Experience	6412:10 Hours
Total Experience on Type	46:35 Hours
As Pilot-in-command	15:30 Hours

As Co-pilot	31:05 Hours
In last 30 days	26:50 Hours
In last 7 days	01:55 Hours (on C-90)
In last 24 hours	-

Flying Details Since 1st July, 1994

<u>Date</u>	<u>Flying As</u>	<u>Sector</u>	<u>Flight Time</u>	<u>Type of Aircraft</u>
1.7.94	P2	VICG-VILD	00:15	B-200
	P1	VILD-VICG	00:15	-do-
2.7.94	P1	VICG-VIDP	00:45	-do-
	P2	VIDP-VICG	00:45	-do-
4.7.94	P1	VICG-VIDP	00:50	C-90
	P2	VIDP-SHIMLA	00:55	-do-
	P1	SHIMLA-VICG	00:10	-do-
9.7.94	P2	VICG-KULU Aircraft Crashed		

Training on Super King Air B-200 Aircraft :

- (a) Capt. Pargat Singh Nanar underwent training at Flight Safety International, Wichita, USA on Super King Air B-200 aircraft w.e.f. Jan 31 to Feb 4, 1994 comprising of 20:00 hrs. of simulator flying.
- (b) Capt. Pargat Singh carried out flying training on Super King Air B-200 at Wichita (U.S.A.) from 06.02.94 to 11.02.94 with Instructor Mr. Larry Thomas for 7.9 hours. Check for day flying was carried out at USA.

- (c) For grant of endorsement on Super King Air B-200 night endorsement check was carried out by Capt. Ali in India on 4.4.94 which included night flying test for duration of 00:50 hours. Three take-offs and landings were carried out in the night.

As per DGCA records Capt. Pargat Singh had incident/accident free record till date.

As per present Flying Log Book of Capt Pargat Singh which starts w.e.f. Aug. 1992, he had not flown to Kulu till the date of accident.

#### **Flight Attendant**

Shri Megh Nath Pandey was employed in the capacity of flight Attendant and he was accompanied the persons on board.

#### **3.6 Aircraft Information**

It is a high performance, T-tail, pressurised, twin-engine turboprop airplane designed and equipped for flight in IFR conditions, day or night and into known icing conditions and also capable of operating in and out of small unimproved airports within the POH operating limits. It bore manufacturers Sl.No.BB-1456. The aircraft was manufactured by Beech Aircraft Corporation Wichita, Kansas, USA, in the year 1993. It was brought in India on 28.2.1994 and was given Indian Certificate Registration No.2591 on 15.3.1994 in



category 'A'. The aircraft was given Certificate of Airworthiness No.2078, valid upto 13.1.1995 in passenger category. The minimum crew necessary to operate the aircraft is one and the maximum all-up-weight authorised was 5669.90 kgs. The aircraft was fitted with two Pratt & Whitney PT 6A-42 turboprop engines. The propellers used on this aircraft are Macauley type of model 4MFR34CT71 bearing Sl.No.930060 and 922698. The details of the aircraft are as follows :

**Specifications**

- a. Model Designation - Passenger B-200
- Passenger - Normal Group
- Configuration - 7

**Airframe**

Hours since new : 153:50 minutes  
 Hours since last C of A : 85:20  
 Number of landings since new : 186

**Engines**

The aircraft was fitted with two Pratt & Whitney Turboprop PT 6A-42 engines.

	<u>Port Engine</u>	<u>Starboard engine</u>
	PCE 94603	PCE 94602
Hrs.since new	153:50	153:50
Hrs.since C of A	85:20	85:20

Propellers

Port

Propeller Type : Mccauley 4HFR 34 C 771  
Propeller Sl. No. : 930060  
Blades Sl. No. : MI 003, MI 010, MI 009, MI  
040  
Total hrs since new : 153:50

Starboard

Propeller Type : Mccauley 4HFR 34 C771  
Propeller Sl. No. : 922698  
Blades Sl. No. : MI010, MI 011, MI 026, MI  
041  
Total hrs since new : 153:50

Seating configuration

The seating configuration of VT-EUJ consisted of one piece couch with one belt, one aft facing seat with belt, four seats with belts in club formation and a side facing seat with belt, in addition to pilots and co-pilots seats. The couch had space to seat more than one person, but seat belt provided is only for one person. The seating capacity of the configuration is seven passengers plus two crew.

Note: Baggage area has provision for installing two folding seats with belts. In the case of VT-EUJ, the folding seats were not installed and baggage area was used for baggage only.

Weight and Balance

a. Weight schedule :

1.	Aircraft empty weight (without folding chairs)	3649.00 kgs.
2.	Max. usable fuel 2059.04 litres (0.803 Kg/Lt)	1653.41 kgs.
3.	Max. useable oil	10.89 kgs.
4.	Max. All-up-weight (take-off and landing)	5669.90 kgs.
5.	Max. zero fuel weight	4989.50 kgs.
6.	Empty weight CG	472.92 cm of datum
7.	Datum	482.6 cm forward of wing main (forward) spar centre line
8.	Max. number of passengers	10

b. Load and trim sheet/passenger manifest for the flight to Chandigarh on 9.7.1994

No load and trim sheet or the passenger manifest was prepared, neither any practice exists for the same.

There were four children below the age of 15 and 7 adults in the cabin and two crew members in the cockpit. As per witnesses there were two hand baggages and one brief case carried in the cabin. The fuel in the wings at the time of take off was 900 kgs.

It is estimated that all-up-weight at the time of take-off was around 5500 kgs. and the zero fuel weight at the time of take-off was 4596 kgs. which were within the limits. The centre of gravity position was at 477.19 cm from the datum and this is also within the range of centre of gravity travel. The estimation of CG position has been done considering the children were accommodated on the couch and in the lap of passengers.

### Maximum Certified Weights

Maximum Ramp weight	-	12,590 Pounds
Maximum Take-off weight	-	12,500 Pounds
Maximum Landing Weight	-	12,500 Pounds
Maximum Zero Fuel Weight	-	11,000 Pounds
Maximum Weight in Baggage Compartment When equipped with Fold-up seats	-	510 Pound
When not equipped with Fold-up seats	-	550 Pounds

### Specific Loadings

Wing Load	-	41.3 Pounds per square foot.
Power Loading	-	7.4 Pound per Shaft horsepower.



### Upper Rating Speeds

As per the manufacturers, this aircraft qualifies as one of the most manoeuvrable corporate airplanes in the world. It can be handled with ease in all flight regimes and sturdy construction techniques contribute to the following figures (calculated at maximum take off weight) MTW - 12,500 Pounds.

### Rates of Climb

The Super King Air delivers an extra margin of confidence through the powerful PT6A jet-prop engines (the following figures of rate of climb are calculated at full gross weight) :

	<u>B200</u>
Two Engines (Sea Level), Standard Day)	2,450 fpm
One Engine (Sea Level, Standard Day)	740 fpm
One Engine (5,000 ft. Elevation, Standard Day)	670 fpm

### Service Ceiling

At maximum take-off weight, over-the-weather capabilities and greater mission dependability are possible with the Super King Air.

#### B200

Two Engines	above 35,000 ft.
One Engine	21,900 ft.
Cabin Pressurization	6.5 psi

### Range

The average stage length of most corporate flights is approximately 350 statute miles. The Super King Air can handle four such stage lengths, at maximum cruise power and with four passengers on board, without refuelling. You may never need the 2,272 mile range of the B200, but it will help save time between stages by cutting turn-around time to only minutes.

### Reported Defects of the Aircraft

As per the statement of Shri M.P. Chacko AME 2803 the aircraft had no reported defect since it came to India.

### Modifications and life limited components

1. No mandatory modifications/inspections were outstanding at the time of the accident.

2. Life limited components of the aircraft and engines were within the prescribed/approved limit.

### **Communication Instruments**

The communication equipment aboard the airplane is integrated into various systems utilised to convey audible information between ground facilities, the airplane's crew, and passengers. The VHF radios provide airport and airways communications.

### **Auto-Flight**

The auto-pilot provides stabilization in pitch and roll during normal climb, cruise and approach conditions. Functions of the auto-pilot include heading and altitude control, VOR beam coupler, glide-slope coupler, and turbulence penetration. The basic mode of the auto-pilot operation permits the pilot to introduce pitch and roll commands to the auto-pilot through movement of the control column and control wheel. This feature is known as control wheel steering and is utilised in place of the turn and pitch controller.

## **3.7 Weather Information**

### **Weather Conditions**

In Kamruanag Valley, the mountains were covered with low clouds at the time of crash. It had rained at the site few minutes before the crash.

The general conditions weather was reported to be low clouds at the valley.

Chandigarh weather

As per the Met Report, Chandigarh, issued at 0730 IST, 0800 IST and 0830 IST visibility was 6 Km, 6 Km and 8 Km respectively. The cloud amount was 6 Octa, 4 Octa and 4 Octa at a height from 3000' to 12000'.

<u>Met. Report</u>	<u>0730 (IST)</u>
Wind	Variable/03 Knots
Visibility	6 Km
Clouds	1/8 SC 3000' 5/8 AC 10,000' 2/8 Ci 25,000'
Total Cloud	6/8
Temperature	26.8 Deg. C
QNH	1000 mb 29.55"/750 In/mm
QFE	963 mb 28.46/723 In/mm

<u>Met Report</u>	<u>0800 (IST)</u>
Wind	Variable/02 Knots
Visibility	6 Km
Present Weather	Partly Cloudy
Clouds	4/8 AC 12000'
Total Cloud	4/8
Temperature	28.4 Deg. C
QNH	1000 mb 29.55/750 In/mm
QFE	963 mb 28.46/723 In/mm
Trend	No significant weather



<u>Met Report</u>	<u>0830 (IST)</u>
Wind	Variable/02 Knots
Visibility	8 Km
Present Weather	Partly Cloudy
Clouds	4/8 AC 12,000'
Total Cloud	4/8
Temperature	29.4 Deg. C
QNH	1000 mb 29.55/750 In/mm
QFE	964 mb 28.47 In
Trend	No Significant Weather

In the Flight Forecast, Chandigarh, valid from 0700 IST to 1030 IST, the Significant weather forecast was cloud with haze. Clouds were isolated one Octa Cumulonimbus at 2500 feet.

Aerodrome Forecast

0130 Tempo 140/05 3	Haze	3SC 1200 4AC 10,000' 1CU 2000
0500 Tempo 140/15 3	Rain	5ST 1000 6AS 10,000' & 1CB 3000 Thunder shower

Enroute Weather (Chandigarh-Kulu)

- a) Flight Forecast for Chandigarh - Kulu route  
Valid for departure 0130/9.7.94 i.e. 0700 IST  
Valid for arrival 0500/9.7.94 i.e. 1030 IST

<u>FL</u>	<u>Temp(deg.C)</u>	<u>Wind</u>
100	13	100/20 Kts
070	18	090/20 Kts
050	21	090/10 Kts

Cloud Scattered	3-4/8 SC CU, 2500' Isolated 1/8 CB, 2500' 2-3/8 ST, 1000'
	Scattered 5-6/8 AC, 10,000' 1-2/8 CI, 20,000'
Visibility	Scattered 6-8 Kms, Isolated 3-5 Kms
Significant Weather	Cloud with Haze, isolated rain/ thundershower
Flight Level of O Deg. Isotherm	16,000'
Lowest MSL Pressure	1000 HPA

b) Satellite Picture and enroute weather

As per the report received from the Director, Satellite Meteorology, IMD, the enroute weather at 0300 UTC (0830 IST), from Chandigarh to Kulu was Broken Low/medium clouds.

c) Weather briefing from Archana Flight operating Kulu-Simla

Capt V. Mehta of Archana Airways was operating flight from Kulu to Simla. He has stated that shortly before landing at Simla he got an RT call from VUJ on Chandigarh approach frequency 122.7 MHZ requesting Kulu weather. He told that Kulu valley was clear, there was patch of clouds between Bilaspur and Sunder Nagar. After Sunder Nagar there was a break.

He has stated that the enroute weather on that day was partly cloudy only and easily negotiable. The clouds were mostly broken 2 to 3 octas stratus and strato-

cumulous; except between Bilaspur and Sunder Nagar, there was continuous layered clouding covering the hill tops. In fact at level 80 (on QNH), he had to deviate about 5 NM right of track to stay above the clouds, between Sunder Nagar and Bilaspur.

The tape transcript indicates that at time 0846 IST VUJ contacted VTB (Archana Airways aircraft) while departing from Chandigarh and the following weather was passed by VTB to VUJ at Chandigarh :

"There are Cumulous clouds between Bilaspur and Sunder Nagar, Kulu valley is clear."

d) Eye witness at the site of Accident

According to the statement of an eye witness at the site of accident, there was thick fog at the time of accident.

e) Police Diary about weather

The Police Dairy, Sunder Nagar, also indicates that there was fog at the time of accident.

f) Weather at Shimla at 0830 hours IST

Clouds :

Amount in Octa	Type	Height
1	SC	-
2	Cu	420 metres

Weather Remarks : There was fog at the station from 0640 to 0800 hours IST and Mist from 1000 to 1200 hours IST. From 0800 to 1000 hours IST weather was clear.

g) Weather at Mandi at 0830 hours IST

Clouds :

Amount in Octa	Type	Height
5	Cumulus	1000 metres to 1499 metres

Kulu Weather

The Met report, Kulu, issued at 0800 IST, 0900 IST and 1000 IST, indicates the visibility to be 10 Km and scattered clouds at 2000'. The wind in all the three observations have been shown as calm.

Met Report - 0800 Hours IST

Wind	Calm
Visibility	10 KM
Clouds	SCT 2,000 FT. (600m) SCT 3,000 FT. (900m)
QNH	1006 HPA
Temperature	24 deg C



Met Report - 0900 Hours IST

Wind	Calm
Visibility	10 KM
Clouds	SCT 2,000 FT. (600m) SCT 3,000 FT. (900m)
QNH	1007 HPA
Temperature	27 deg C

Met Report - 1000 Hours IST

Wind	Calm
Visibility	10 KM
Clouds	SCT 2,000 FT. (600m) SCT 3,000 FT. (900m)
QNH	1005 HPA
Temperature	30 deg C

**3.8 Aids To Navigation**

The only navigational aid available at Bhuntar airfield (Kulu) is NDB frequency 334 Khz, which was serviceable on the date of accident. The accident flight though as per the Flight Plan was intended to be conducted under IFR, but as per the submissions made by learned counsels appearing for the parties, it had been conducted under visual references. No navigational aids were involved in the accident in question. However, there were no reported difficulties with the aids at the material time.

### 3.9 Communications

There were no reported difficulties between ATC and the aircraft or alpha control and the plane in question.

Chandigarh airport is equipped with tower and approach frequencies. The tower frequency being 120.5 MHz and that of approach being 122.7 MHz. The aircraft was in two-way communication as Chandigarh till 0857 IST, after which it switched over to 'A Control'. The tape transcript of the communication with Chandigarh ATC has also been produced in evidence.

The aircraft in question then came in contact with 'A' Control Barnala in two-way communication with it which is equipped with Radar. The tape transcript of the communication has also been submitted as a part of the documentary evidence in the report of Shri V.K. Chandna, PW-66, the said report being PW-66/A. The Flight Path followed by the aircraft was also observed by the Radar Controller and the diagram showing the flight path has also formed part of the report aforesaid. It would be appropriate to state that we also conducted an exercise to know the flight path followed by the usual aircraft going in routine from Chandigarh to Bhuntar airfield. We found that the aircraft in question had deviated from the route path from the routine flights which are conducted in accordance with visual flight rules.

The radio range at Bhuntar airport is limited due to mountainous terrain. As per the statement of Shri Amit Goel, Aerodrome Officer of Bhuntar airport, PW, he had no firm details of Governors flight nor aircraft was in contact with Air Traffic Control

He had also not received any official message from Chandigarh nor Delhi on telephone regarding the VIP flight.

Record shows that normally the aircraft remain in radio contact with ATC till it reaches about 20 kilometres within the vicinity of airport.

### 3.10 Aerodrome Information

#### Chandigarh

Chandigarh airport is about 12 kms from the city at an elevation of 1029 feet. It has one runway 11/29. The length of the runway is 9,000 feet with a width of 150 feet. The Safety Services are provided by Indian Air Force.

ARP :                    3040 N        7647 E

IAF (1)        Location 3040N 7647E Elevation 1029 feet 314 M.

Rwy	Elev.	Length	Width	Surface	Strength
11/29	1029'	9,000'	150'	Concrete	LCN40

### **Bhuntar**

Bhuntar aerodrome situated in Himachal Pradesh is controlled by Airports Authority of India. The runway is 3650 feet long and hence only small aircraft operate from it. It is manned by Aerodrome Officer and one Aerodrome Assistant. The airfield as indicated above, is equipped with NDB. In July, 1994, one flight was being operated daily to and from this airport by an Air Taxi Operator. As per Aeronautical Information Circular 16 of 1992, this aerodrome is fit for VFR operations only.

While proceeding from Chandigarh, Mandi town comes on the way to Bhuntar airfield. This town has a small strip, which is casually used as airfield but it does not have essential aids like ILS (Instrument Landing System) or VOR (Visual Omni Range).

#### **3.11 Flight Recorders**

Flight Recorders were neither available nor were required to be installed in this type of aircraft as the all-up-weight of the aircraft is below 5700 Kgs.

#### **3.12 Wreckage Information**

The information about it has already been given in extenso under the heading 'Details of Crash' (A-1-3(i)). Inspection of the wreckage site indicated the chopping up of 12 trees



located just below the top of the hill at an estimated angle of about 40 degrees. The aircraft disintegrated at the impact point and the wreckage pieces of the aircraft fell in the direction of the flight path. A sketch of the wreckage scattered pattern of main component of the aircraft has been appended to the report of Shri V.K. Chandna, PW-66/A. Wreckage examination of the aircraft at the spot reveals the following:

#### Wing Portions

- i) Midpart of Left Hand outer wing with aileron bell crank, push pull rod, cable attachment and spar web
  - All parts lightly charred, twisted and torn.
  - Flap actuator with 90 degree drive in fully IN position and the flexible drive was found pulled out
  
- ii) Left hand centre wing with LH landing gear
  - Landing gear in fully UP position complete with actuator
  - Area burnt behind engine nacelle
  - Inboard flap part - twisted and smoked
  - Part of outboard flap with ends broken
  - About 15 ft. of broken forward spar piece
  
- iii) Centre wing part of right wing with RH landing gear
  - RH landing gear in up position
  - Landing gear strut lower part broken
  - LG actuator in position
  - Flap track part broken and twisted

iv) RH wing leading edge parts, engine mount parts, cabin seat parts.

- Wing leading edge parts broken and twisted
- Engine mount strut broken with mount bolt in position
- Cabin seat tracks broken

Horizontal Stabiliser

i) LH horizontal stabiliser with elevator, tab and part of vertical stabilizer

- LH Horizontal stabiliser sheared and broken from the fin
- Elevator twisted
- Elevator tab in neutral position
- Tab actuator in neutral with cables in position
- Vertical stab. part broken

ii) RH horizontal stabiliser with elevator, tab.

- Elevator buckled, torn and twisted
- Tab in neutral position
- Actuator with cables in position

Fuselage

i) Fuselage RH side with three windows and RH. Inboard flap

- Fuselage side twisted, torn and broken
- Flap twisted
- Flap track twisted

ii) Fuselage rear portion aft of first window in front of entrance door from about station 230 to station 437

- Rear fuselage is complete with top of fin and rudder broken.
- Forward skin and structure broken and torn.
- Dorsal fin is bent.
- Rudder torque tube and cable connections are in position
- Rudder tab is in position
- Tab actuator is broken
- All control cables are stretched and cut at the points of separation

iii) Cabin centre part

- Part twisted and torn
- Flap gear box with LH side drives pulled out and RH side drive in position
- Flap motor separated from gear box
- Aileron centre quadrant in position with all cables in position
- Cables broken at points of separation

Cockpit

i) Cockpit area with wire looms, instrument panel, part of main spar, D-window, Nose LG strut top part, control column and engine control quadrant

- Instrument panels twisted, instruments broken. Following instruments recovered and readings noted.

- (a) Attitude Indicator
  - Pilot's side            20 degree nose up with a slight left bank Command bars visible
  
- (b) Co-pilot's HSI
  - Course setting        -        016 degree from north
  
- (c) RMI
  - Single pointer        -        Heading 210 degrees
  - Double pointer       -        Heading 300 degrees
  - Heading Bug           -        010 degrees from north
  
- (d) Radio Altimeter   -        35 ft.
  
- (e) Air Speed Indicator-        189 knots
  
- (f) Altimeter            -        9400 ft.

Engine Control Quadrant

- Power levers in forward position, bent with impact, impact marks on the side of the quadrant.
  
- Prop levers in forward position, levers bent.
  
- Condition levers out of detent and between high idle and low idle, levers bent.



- Elevator tab control wheel broken .
- Rudder tab control in neutral position.
- Aileron tab control in neutral position.
- Flap selector in UP position.

### Engines

- i) RH engine with part of nacelle
  - Props and hub separated
  - RGB broken
  - Engine mount truss broken
  - Exhaust case buckled and broken
  - Gas generator case buckled
  - Intake case buckled and burnt
  - Accessory section burnt
  
- ii) LH engine with part of LH centre wing and LH landing gear
  - Props and hub separated
  - Engine split separating power section
  - Intake case buckled
  - Accessory section burnt
  - LH landing gear complete in UP position - smoked
  - LH 1B flap twisted and burnt
  - LH OB flap part twisted

- Wing spar part about 15 ft. in length broken at both ends.

### Propellers

#### Propeller hub part, prop. blades, prop. return spring.

- Prop. hub broken
- Six prop blades recovered. Prop. return spring housing broken
- Props. blades bent, cut and twisted, pitch change levers bent/broken

From the inspection of the Air Speed Indicator, the speed of the aircraft was indicated at 189 kts. which prime facie show that the aircraft was travelling at high speed. The aircraft was found to be at a climbing attitude at about 40 degrees. At the time of impact with the trees as indicated by the attitude indicator and the cutting angle of the trees which was cut at an upward slope by the aircraft and its path. All trim tabs were in near neutral position indicating that controls were functioning normal. The aircraft could be pulled up in nose up position only by a properly functioning elevator. Flap selector and flap actuator were in 'UP' position. All control cables were stretched and broken indicating all adjustment points were properly secured. As per the report of the Inspector of Accidents (PW-66), damages on propeller blades indicated high speed rotation damage, condition lever were out of detent and were between high idle and low idle indicating engines but not cut off. Both power levers and propeller levers were in cruise (high power) positions. Altimeter was showing 9,400 feet and radio altimeter showed 35 feet. RMI

indicated the heading at 010 degree and the single pointer revealed bearing of 210 degrees. The HSI of the Co-Pilot indicated a selection of 016 degrees heading.

The landing gears were in fully retracted position at the time of impact. In fact, the entire aircraft had been damaged due to its having gutted in fire accepting the instruments which were found in the wreckage on the site in the condition explained above.

### 3.13 Examination for Explosion

The Bomb Detection and Disposal Squad, Bureau of Civil Aviation Security, Delhi, on carrying out investigation at the wreckage subsequently has submitted that none of the typical characteristics associated with the on-board explosion, such as metal fractures, split fragments, fissuring, vaporisation on fragment surfaces, pitting, erosion, flooring and curling was observed. The examination of the human bodies also did not reveal explosion related signatures. The left out and rear cargo holds and retrieved baggages also did not give any traces of explosion.

### 3.14 Pathological Report

The post mortem examination of dead bodies of the crew members was conducted at civil hospital Sundar Nagar and in respect of other dead bodies autopsy was waved off by the

order of the District Magistrate, Mandi. The examination of the post mortem report of the crew members indicate that the bodies of both the pilots had suffered impact and fire injuries whereas that of the Flight Attendant, the whole of his body was having second degree burn and impact injuries. As per the opinion of the medical experts, the cause of death of all the crew members was found to be due to multiple injuries and burn respectively. In respect of the passengers, the cause of death was opined to be impact and fire damage.

### 3.15 FIRE

The aircraft after disintegration on initial impact with trees and thereafter collision with the hill top, had caught fire mostly in wing portions. However, it had extinguished and its own.



## CHAPTER - III

### 4. ANALYSIS OF EVIDENCE TENDERED BEFORE THE COURT OF INQUIRY

The evidence tendered before the Court of Inquiry for the purpose of correct appreciation can be viewed from the angle of the possibility of sabotage, airworthiness of the aircraft, submission of flight plan and the operational route followed and the role of Pilot-in-Command and Co-Pilot during the flight.

During the course of hearing, strenuous submissions have been made not only by the Airports Authority of India mainly, but also by other parties including the operator. Facts have been brought to the notice of this Court vividly, at length in order to establish that the direct and proximate cause of the accident in question was gross-negligence of the crew members i.e. the Pilot-in-Command and the Co-Pilot. The record shows that both the pilots were experienced in flying in other aircraft(s) other than B-200 VT-EUJ. Both the pilots got training in flying in the aircraft in question but both of them lacked experience of flying on this type of aircraft in the mountainous region. From the analysis of the available records, it would be worthwhile to state that change of the aircraft as also that of the Co-Pilot had been done not only without consulting the organisational authorities but also without observing the codal formalities exclusively by the Pilot-in-Command Capt. R.D.S. Sandhu. Both the pilots appeared to have undertaken a maiden flight in this aircraft and they did so even without prior landing or knowing the nature of the terrain as also without consulting the map

or other documents pertaining thereto. The data produced before this Court in the shape of evidence leads to such an inference. In the instant case, none of the passengers and the crew members is alive and this Court has to draw inferences on the basis of the oral as also other documentary connected evidence produced before it.

In the previous part we have detailed all the factual information regarding the ill-fated aircraft collected from various sources through investigation. Now, under this part, our task would be to analyse the material which has been brought on the record from all the sources, namely, by collecting information through investigating groups as well as the material produced before us by various agencies in terms of affidavits, documentary evidence and the oral evidence recorded by this Court. The overall critical analysis of the entire material indicates that the following factual details are either not in dispute or have been well-established:-

#### 4.1 Facts Admitted or Established

- a) Beech Super King Air B-200 aircraft VT-EUJ belonged to the Punjab Government. The aircraft was new and had a valid Certificate of Registration granted on 15.3.1994.
- b) The aircraft VT-EUJ was registered in passenger category and the Punjab Government was the Operator of the Aircraft.

- c) The aircraft was airworthy as per certifications. The maximum all-up-weight was 5669.90 kgs. i.e., below 5700 kgs.
- d) As per Flight Plan filed with ATC, Chandigarh IAF, the aircraft was to operate Chandigarh-Bhuntar-Chandigarh-Ludhiana-Chandigarh. ETD Chandigarh on the first leg was 0800 IST and ETA Bhuntar was 0820 IST.
- e) The enroute weather as informed to the fateful aircraft at 0846 IST by Archana Airways Aircraft, which was on its flight from Kullu to Shimla, was, cumulous clouds between Bilaspur and Sundar Nagar and Kullu Valley clear.
- f) The aircraft had no pending snag and had adequate fuel for the flight.
- g) The aircraft took off from Chandigarh at 0850 IST. Capt. R.D.S. Sandhu, Chief Pilot of Punjab Government was the PIC and Capt. P.S. Nanar was the Co-Pilot. Apart from the Flight Attendant, Shri Pandey, there were 10 passengers, comprising the late Governor of Punjab and Himachal Pradesh and 9 members of his family, including four children.
- h) Chandigarh Tower cleared the aircraft to depart to Bhuntar on flight level 90 via flight plan route.

- i) At 0853 IST, the aircraft reported overhead Chandigarh at 7,000 feet and set course for Bhuntar. The estimated timings, as given by PIC to Chandigarh Tower and to Alpha Control, were abeam Bilaspur 0902 IST and arrival Bhuntar 0910 IST.
- j) At 0856 IST, the aircraft reported 10 miles from Chandigarh and being in contact with Alpha Control, Barnala and changed over to Alpha Control.
- k) At 0901 IST, the aircraft reported checking abeam Bilaspur and maintaining flight level 90.
- l) The aircraft was in contact with Alpha Control till 0902 IST, when the PIC was told to call Alpha Control when in contact with Bhuntar. This transmission was acknowledged by the aircraft at 09:02:45 IST and this was the last contact with the aircraft.
- m) As per AIC 16/92, Bhuntar airfield is fit for VFR operations only, since it is surrounded by hills. Bhuntar airfield is controlled by AAI, while Chandigarh is an IAF airfield.
- n) As per AIP India, for the sector Chandigarh - Bhuntar of the ATS Route W-35, the upper/lower limits of flight level are 460/150 and the minimum flight altitude is 12600 feet.



- o) Bhuntar airfield did not receive at any time the flight plan or ETA of the fateful flight from ATC Chandigarh or through FIC Delhi, or from any other agency.
- p) The site of crash is within the designated airspace VIR 150, which airspace as per AIP India RAC 5-22 constituted the local flying area of Chandigarh and the controlling authority being ATC Chandigarh.
- q) At no stage of the flight, the aircraft notified any real/anticipated emergency, nor did it report any sudden deterioration in enroute weather.
- r) The PIC had total flying experience of over 7,500 hrs., of which about 100 hrs. was on type B-200 as PIC. Neither the PIC, nor the Co-Pilot had Instrument Rating on Beech Super King Air B-200.
- s) As per log books, the PIC had last flown to Bhuntar on 2.6.1992 in C-90. There is no known record of the Co-Pilot having flown to Bhuntar.
- t) The first information of the accident reached official agencies at Sundar Nagar at about 1130 IST same day. Due to absence of precise details of site and the hilly terrain, the ground rescue team could reach the site only by 1530 IST or so. There were no survivors.
- u) Heliborne search for the aircraft was mounted by two helicopters at 1205 hrs. and 1230 hrs. respectively, but

due to cloudy weather, hill tops could not be searched and the wreckage was not sighted, but distress signals were being received.

- v) As per Order of the Punjab Government No.9/39/92-4T(3)/17277, dated 10.10.1992, which were in force on 9.7.1994, relatives of the Governor were not authorised to use the Government aircraft, except with the permission of the Chief Minister of Punjab. As per available evidence/records, including affidavits filed by Officials of the Punjab Government, no such permission had been granted in the present case.
- w) The aircraft did not have a CVR or FDR fitted in it. Nor did the aircraft have a Ground Proximity Warning System (GPWS).
- x) There is no evidence or suspicion that the accident has been directly or indirectly caused by sabotage, internal explosion or causes external to the crew and the aircraft.

There being no survival in the instant accident, the Court has an onerous task to determine the causes thereof. The absence of CVR and DFDR, in fact, is a severe inhibiting factor in determining the causes of the accident. Thus omissions of the cockpit crew have to be ascertained from the realm of possibilities and derivatives. It is not practicable to consider each of these possibilities in great depth, since the ATC/Alpha

Control tape transcript and other derived data has been taken into consideration to narrow down and pick out the reasons contributing towards the accident.

Records show that flight was originally planned in C-90 and even the flight movement was given to ATC by Shri Balwinder Singh, PW-68. It was after about 22.00 hrs. IST on July 8, 1994, that the aircraft was changed to Super King Air B-200 and Co-Pilot Capt. Pargat Singh was substituted for Capt. Vivek Mehra, who had no training and experience in flying on the fateful aircraft. Learned counsels appearing on behalf of the Airports Authority of India and Indian Air Force have forcefully argued that though the flight plan reflects IFR movement by the crew members of the aircraft in question, yet they followed VFR (Visual Flight Rule). They have repeatedly submitted that notwithstanding the aspect indicated by the flight plan regarding the flight to be under IFR conditions, the available indications are that the Pilot-in-Command flew the aircraft in VFR conditions.

It is well settled and accepted principle that during a flight the responsibility for terrain clearance is that of the Pilot-in-Command. Rule 141 of the Aircraft Rules, 1937 clarifies this fact. The Pilot-in-Command is not responsible for such terrain clearance only when the aircraft is being vectored under radar control, but his responsibility becomes more onerous when the flight is being operated under VFR conditions. In the subsequent paras, I would be dealing with this aspect specifically. The initial question for viewing the causes of accident arises firstly, as to whether the flight in question was

**being operated upon under VFR conditions and secondly what is the sanctity of the submission of the Flight Plan?**

The available information reflected from the record shows firstly that Capt. Sandhu, the Pilot-in-Command as also the Co-Pilot did not have instrument rating in Super King Air B-200. Secondly, the position reports given to Alpha Control by the aircraft also show that the aircraft was being flown at flight level 90 which is the level given in the flight plan too. I fully agree with the submissions of the learned counsels appearing on behalf of the parties that in case the aircraft was being flown under IFR route conditions, the aircraft had to maintain at least level 135. Thirdly, Bhuntar airfield is only fit for VFR operations. Fourthly, that the flight in question was of a short duration i.e. 20 minutes or so, and that too in the mountainous region. Bhuntar airfield to the knowledge of one and all is an aerodrome located in-between the valleys at a height of about 3,200 feet from the mean sea level. Thus, the flying operations to the above said airfield involved flight under VFR conditions only. Judicial notice can also be taken of the fact that Rohtang Pass in this mountainous region is at a height of 13,500 feet from the sea level and its crow flight distance from the Bhuntar airfield is only about one nautical mile. In other words, the height of the top hill of the mountain in which Rohtang Pass is located is about 15,000 feet and flying operation in this area requires the aircraft to be flown at least at a level of 170. In the circumstances appearing from the record as also the topography of the mountainous region, it appears unlikely that the Pilot-in-Command had contemplated the first segment to be operated upon in IFR conditions and



the other segment i.e. the landing part in VFR conditions. Fifthly, the Pilot-in-Command had come to know even before taking off from Chandigarh that there were cumulous clouds between Bilaspur and Sundar Nagar which required stricter precautions to be taken by the Pilot-in-Command in flying a high dignitary and his family to an aerodrome like Bhuntar in almost bad weather. It has also come in evidence of PW-68 that after the submission of the flight plan, he had handed over its one copy to the Pilot-in-Command with the request to correct the entry with respect to the aircraft in question being flown in VFR conditions which had wrongly been shown to be under IFR conditions. According to this witness, he had also requested him to submit a new flight plan with respect to the use of the aircraft in question but the later did not do so. No other evidence in rebuttal to this fact has been produced. Thus, PW-68 has to be believed to this extent. However, despite all these circumstances, the fact remains that the Flight Despatcher as per his own admission and coupled with other evidence, was not authorised by the DGCA to be an approved Flight Despatcher, earlier also he used to submit the flight plans. This unauthorised act has not in any way contributed to this accident. In any case, for the purpose of inferring the nature of the flight in question, whether it was under VFR conditions or IFR conditions, the cumulative effect of the above said circumstances, to my mind, do lead to an irresistible conclusion that it was under VFR conditions.

Despite having come to this conclusion, I cannot help observing that none of the technical persons like Capt. Balwinder Singh, (PW-68) or Pilot-in-Command as also the

Co-Pilot or even the Indian Air Force ATC Controller, who accepted the flight plan or the authorities of the Airport Authority of India's Flight Information Centre understood the sanctity of the flight plan. The wrong data in the flight plan so submitted is needed to be identified and thus by introducing a strict rule whereunder accountability attracting disciplinary action should clearly be foisted against the concerned defaulter(s). It is expected that DGCA would take immediate corrective steps in this respect. It would be desirable to point out that the underlying object of the filing of the flight plan is to make the authorities like ATC, FIC, or other officers connected therewith, aware with respect to its correctness the nature of the route being followed by the Pilot-in-Command so that case of distress message from the pilot or otherwise, he may be helped/guided in a proper manner by the controlling authorities. In otherwise case, it would be in the discretion of the Pilot-in-Command to deviate from the pre-determined route already indicated by him and fly the aircraft to any place according to his whims which would definitely endanger not only the safety of the crew members, but also that of the passengers thereof. The awareness of the pilots should also be drawn to the importance of the submission of the flight plans and for this purpose the Director General of Civil Aviation should also issue relevant instructions.

#### 4.2 Maintenance & Security Aspects as per Evidence

Having dealt with the nature of the flying conditions of the aircraft in question, it would also be proper to deal with the **maintenance and security aspect of the aircraft in question.** From the available records, it appears that this particular aircraft VT-EUJ was newly purchased and thereafter it was not involved in any incident necessitating any major or minor structural repair. Statements of PWs Balwinder Singh, Mrs. A.C. Duggal, S.K. Kasle and J.S. Maini (PW-68, 67, 70 and 89 respectively) besides others, would show that there were no mal-functioning or deficiencies in functioning of the aircraft because of the sudden development or maintenance lapses. From the analysis of the sworn testimony of PWs-67, 73 and 89, it is apparent that the overall incharge of the maintenance was Chief Engineer Shri Lakhbir Singh. The aircraft in question had been purchased only about three months before the accident i.e. in March, 1995. The old practice continued even in respect of this aircraft. However, as Shri Lakhbir Singh, PW-73, was not fully conversant with the technical equipments of the newly purchased Super King B-200, the maintenance of the said aircraft had been entrusted to M/s Indamer Company, who had deputed Shri M.P. Chako, PW-91 for this purpose. In other words, M/s Indamer Company, the agent of M/s Beechcraft had been substituted to regularly maintain the aircraft in question for its use by its operator, the Punjab Government, and none of the persons in the civil organisation of the operator had been made responsible for any lapse of the so-called Incharge of the maintenance wing or any other person under any specific rules. This system had

been continuing with the Punjab Government vis-a-vis the earlier aircraft like C-90 also. This organisational vacuum on the part of the operator needs to be corrected by the regulatory authority i.e. DGCA. It is expected that regulatory authority shall take all possible steps to improve the working in this behalf by issuing requisite instructions. From the available record, it appears that the operators appeared to have been working as per practice and not in conformity with the rules which also did not come to the notice of the regulatory authority as well. The said factors do not seem to have been the direct or proximate cause of the accident in question, yet strict vigilance by the regulatory authority is required to be kept in future.

At this stage, we deem it fit to scrutinised the conduct of PW-91, the overall incharge of the aircraft in question. Shri Chako (PW-91) is an engineer in the private company styled as Ms/ Indamer Company, Bombay, but he also seems to have given a varied version as to the maintenance job of the aircraft undertaken by him. No doubt, he appears to be perfect in his technical knowhow yet he has failed to understand the basic object attached to his duties. As already pointed out, original flight was planned in C-90 regarding which flight movement had also been submitted. Regarding the aircraft in question, which was substituted for C-90 at the last moment by the Pilot-in-Command, PW-91, namely, Shri Chako has stated that he had been told by the Pilot-in-Command to keep the said aircraft in proper shape at 1530 hours IST on 8.7.1994. He also states that he had been apprised with respect to the purpose for which aircraft in question was required on the



following morning. This part of the testimony of the PW-91 is not very confidence-inspiring in as much as he had no satisfactory explanation as to why he preponed the flight release check to 7.7.1994. He claims that on July 8, 1994, some time after being told by the Pilot-in-Command that B-200 aircraft will be required the next morning, he went to the hangar and carried the Daily Inspection, but did not endorse in the records to such effect. Record on the contrary show the inspection of the aircraft in question by him having been so conducted on 9.7.1994. The endorsement on the certificate to this effect also cements this fact. However, on an overall analysis of his evidence coupled with statements of PWs-69 and 70, the preponderance of probability is that Shri Chako on being merely told by the Pilot-in-Command on 8.7.1994 of the possibility of requiring B-200 aircraft the next morning, went to the hangar and endorsed the record on 8.7.1994, as if he had carried out the necessary check and put the date as 9.7.1994. Earlier flight release check of the aircraft in question was conducted on 25.6.1994. This witness has also admitted that originally he had planned to leave Chandigarh on 8.7.1994. He as per his own admission was residing in one of the sets of Punjab Bhavan, Chandigarh. Though he claims to have left Chandigarh on 9.7.1994, yet the attenuating circumstances when read together, lead to the inference that this witness had left Chandigarh to Delhi as planned on 8.7.1994. Be that as it may, S/Shri J.S. Maini and Capt. Vivek Mehra have categorically stated that aircraft of the type C-90 was requisitioned for the flight in question and that Capt. Vivek Mehra was directed to be available as a Co-Pilot on 9.7.1994. This direction as per his statement had been given

to him on 8.7.1994 after 15.30 hours IST when there had been a meeting of the Pilot-in-Command with Shri J.S. Maini, PW-89. It is worth-noting that Mrs. A.C. Duggal, PW-67 was on leave in the second week of July, 1994. According to the sworn testimony of the witnesses, the change with respect to the aircraft as also that of the Co-Pilot was affected at about 2200 hours IST on 8.7.1994 by the Pilot-in-Command himself without taking into confidence other persons connected therewith. If that be so, how and under what circumstances Shri Chako, PW-91 could be informed of the change of the aircraft or he could be directed to keep the aircraft Super King B-200 to be in proper order for its use by the Operator or any other person earlier to 2200 hours IST as deposed by him. In the circumstances, it is safe and reasonable to presume that Shri Chako did leave Chandigarh on 8.7.1994 itself and his statement to the contrary to this extent is inherently improbable. Be that as it may, there is little doubt that the PIC either on his own, or at the instance of perhaps, the Honourable Governor, decided to operate B-200 Aircraft instead of the C-90 aircraft in view of the load factor. Such change of the aircraft is significant to the extent that the passenger load of 10 persons was apparently known to the PIC the previous night itself, whether or not he shared this information with Shri Maini (PW-89). No iota of evidence with respect to the mal-functioning of the aircraft in question or deficiencies in its functioning had been brought to my notice. On the contrary, the flight release check does indicate that inspections used to be carried out periodically. The conduct of Shri Chako, PW-91 though has not contributed in any manner towards the accident in question is yet deplorable.

Whosoever appears before a Court of Law, is expected to tell the truth and bring the true facts to the notice of the Court with the object of assisting it to infer correct conclusions. I need not dwell upon this aspect of the statement any further, because it would not in any way help me in inferring the cause of the accident.

The next question which arises for consideration as to why the **Pilot-in-Command had deviated from the visual flight route?** There appears to be no straight forward answer to this query except the one that either he was over-confidence of his flying experience or he did not know the terrain or he never consulted the Jeppesen map in order to know the location of the Bhuntar airport or the dangerous mountains located nearby the aerodrome or its location. The record shows that more than two years back in June, 1992, the Pilot-in-Command Capt. R.D.S. Sandhu did fly as a Co-Pilot (P2) to Bhuntar aerodrome and that too once. It also indicate that neither he nor his Co-Pilot Capt. Pargat Singh had any instrument rating on B-200 aircraft. It is also clear that Co-Pilot never had trial landing to Bhuntar aerodrome either as Pilot-in-Command or a Co-Pilot on any type of aircraft. In the circumstances, why Pilot-in-Command chose Capt. Pargat Singh to be Co-Pilot is answered by the fact that only he had been trained to fly the aircraft in question and none else. I would be dealing with the functions of the Co-Pilots separately in subsequent paras. However, even for the purpose of the query in question suffice it to say that all the circumstances taken together lead me to infer that even Pilot-in-Command Capt. R.D.S. Sandhu was not aware of the terrain topography



surrounding Bhuntar airfield to which he had proceeded. He became a victim of over-confidence coupled with mental pressure to complete the flight and to meet the subsequent flight commitments. The other reason for the crash appears to be his gross-negligence in as much as despite he having been made aware of the cumulous clouds existing between Bilaspur and Sundar Nagar, he continued his flight. The moment he saw the clouds in thick layers interfering with his visibility to proceed further, he should have negotiated the aircraft from a distance before entering into it. The sabotage aspect, I would be dealing at length separately, yet at this stage I may remark that the attempt of Pilot-in-Command in having pulled up the aircraft in question to a certain degree rules out such possibility. Also the Pilot-in-Command cannot be labled to be a terrorist in as much as per the reports submitted by the Government of Punjab, both the pilots hailed from respectable families and they were reported to have no connection with terrorist activities in any manner. I need not dilate upon the other part of the oral or documentary evidence.

The fundamental purpose of the court of Inquiry is to determine the probable cause of an aircraft accident, so that appropriate steps may be taken up to prevent recurrence of similar accidents. The nature of the enquiry into an aircraft accident is not accusatory and its object is to take remedial rather than punitive action. In this connection, a reference may also be made to Rule 75(6) of the Aircraft Rules, 1937 (hereinafter referred to as 'the Rules') framed under the



Aircraft Act, 1934 (hereinafter called 'the Act). Sub-Rule (6) of Rule 75 reads as under :-

"75(6) The Court shall make a report to the Central Government stating its findings as to the causes of the accident and the circumstances thereof and adding any observations and recommendations which the court thinks fit to make with a view to the preservation of life and avoidance of similar accidents, in future, including a recommendation for the cancellation, suspension or endorsement of any licence or certificate issued under these rules."

Keeping in view this paramount consideration, now, we wish to analyse the evidence and material which have been brought on the record from various sources through the assistance of various agencies and their Counsel.

Our attention was also drawn by the learned Counsel appearing for NAA (hereinafter called NAA). Mr. N.A.K. Sharma to the following paragraph from ICAO Annex-13, para 53 the Manual of Aircraft Accident Investigation (DOC No.6920/AN/855) in Chapter-I under heading 'Purpose of Enquiry':

"The basic cause of an accident and the remedial action necessary to ensure that it will not recur, does not always emerge from the physical facts of the case. For example, a failure of some mechanical part may be due to a failure to inspect or faulty inspection technique in a factory or a maintenance shop where the defective

part should have been detected thereby preventing its failure in service. Similarly, if human error appears as a possible cause of the accident all factors which may have influenced the actions should be examined. The inquiry should not cease, if or when it is established an error has been made: the inquiry should endeavour to establish why the error occurred. Poor design indifferent human engineering, inadequate or improper operational procedures could well have confused or misled the person. Experience has shown that the majority of aircraft accidents have been caused or compounded by human error, often by circumstances which were conducive to human error; this applies to design, manufacture, testing, maintenance, inspection and operational procedures both ground and air. Identification of this element is frequently difficult but it may be revealed by careful, skilful and persistent investigative methods.

Some aircraft accidents have resulted from organisational defects or weaknesses in management; for example, an operator may have prescribed or condoned procedures not commensurate with safe operating conditions in practice. Similarly, ambiguous instructions, and those capable of dual interpretation may also have existed; these factors may well have stemmed in the first instance from uncritical scrutiny by regulating authorities. It may, therefore, be necessary to inquire closely into other organisations or agencies not immediately or directly concerned with the

circumstances of the accident but where action, or lack of it, may have permitted or even caused the accident to happen.

Where the cause of an accident is obscure, it may be necessary to pursue as many hypotheses as could seriously be regarded as possibilities and each pursued to the limits of its usefulness, or to the limit where it can be excluded as a possibility. This approach will often result in some degree of speculation and prolonged exploration but it may be the only course open to the investigator. By carefully considering each possibility in the light of the evidence adduced, and the existing state of aeronautical knowledge, a number of hypotheses will be eliminated; the credibility of those which survive the process is thereby increased and experience has shown that these will generally relate to one particular area or group of possibilities.

Findings which have been arrived at by more than one line of inquiry, by more than one person each reasoning independently, are more likely to be correct than those conclusions arrived at by pursuing one narrow field of activity."

Keeping in view the aforesaid guiding principle, we need to view the inquiry broadly from three angles, i.e. :

- i) Was there a sabotage by explosive or otherwise?

- ii) Was it a structural failure, i.e. mechanical failure; and
- iii) Was it on account of human failure and if the answer is 'yes', then what contributed to human failure?

4.3 Was There a Sabotage by Explosives or Otherwise?

This possibility has to be completely ruled out. There is no material whatsoever to suggest a sabotage by explosive or otherwise. It is no one's case either Pursuant to DGCA's order dated July 13, 1994, Major T.V. Narayanan, Deputy Commissioner of Security, Bomb Detection and Disposal Squad, Bureau of Civil Aviation Security, New Delhi, inspected the accidented plane and the site. According to his report which is legally admissible, the crash of the aircraft in question due to an explosive device is a remote possibility. To identify the explosives from the wreckage, he used explosive detection chemical kits and the tests so carried did not reveal the presence of any explosives therein. The examination of secondary metallic fragments did not reveal any diagnostic signatures of explosion such as spiked tooth edge, surface deposit, gas washing, reversed slant fracture, wire and rod fragment, spall, curved fragment or fissure, fragment cupping nor examination of wreckage and scanning of crash scene could indicate any primary fragments of the bomb such as part of detonators, detonator wire explosive, batteries, micro switches, remote controls receivers or any other substance which can be identified as having been as used for preparation and activation of an explosive device. As per him, normally an



explosion in the mid-air causes the wreckage being blown off at vast area along the flight path. However, the dispersement pattern of wreckage revealed that almost every part of debris were scattered within a funnel from the point of initial impact. No wreckage behind the area of initial point of impact was observed. None of the characteristics associated with on-board explosion were observed by this witness who is an expert and holds a responsible post. There is nothing to disbelieve the testimony of this witness. Dr. J.R. Gaur, Assistant Director, Himachal Pradesh Police Forensic expert had also carried out examination of the wreckage for explosion aspects prior to the visit of crash site by the Inspector of Accidents. His findings are also to the same effect. Also other persons who witnessed the occurrence state that the general weather conditions in the valley were bad and hills were covered with low clouds. They categorically state that there was thick fog and visibility was almost nil. None of the eye witnesses heard any loud noise of explosion nor saw any fire before the aircraft had crashed. The fire observed at the site was limited to a certain area and not very intense. Also the surrounding area below the initial impact of aircraft with the trees and leaves of the trees as also bushes were found blackened due to spillage of fuel. Besides lighter and fragile wreckage were found scattered in the immediate vicinity along the flight path direction. Besides, the report of the Inspector of Accidents Exhibit PW 66/A reveal that the examination of angle of slope of the stems of chopped off trees and the throttle position show that the pilot made an effort to climb probably when he realised that the trees and hill were within close vicinity. This fact is substantiated by the fact that during the wreckage examination, the pilots altimeter

reading was found to be 9400 feet. As the baro setting was disturbed, Shri V.K. Chandna, PW-66 also carried out experiment at the crash site by using a serviceable altimeter to estimate the value of baro setting. This exercise was also conducted on the simulator of the aircraft in question at Flight Safety Foundation, Wichita, U.S.A., where too it was observed that for 9400 feet, a baro setting of 1005 HPA (Hectopascal) was required. With 1000 HPA setting, the reading came to 9,260 feet and with 1013.25, the altimeter gave reading at 9,610 feet, keeping in view the information given to the pilot as 1,000 HPA in view of the QNH value of CHD on the date of accident and thereof Kulu airport QNH value was 1006 HPA at 0800 IST. Also as per the measurement of angle, exercise at which the aircraft had cut the trees, carried out by the officials of the Forest Department under the supervision of Shri Chander Shekhar Singh, Divisional Forest Officer, PW-10, it was estimated that the 12 trees had been cut at 40 degrees pitch up attitude. This fact also showed the aircraft was at a climbing altitude of about 40 degree at the time of impact with the trees before it hit the hillock. Besides, no abnormality was observed either in the altimeter showing 9400 feet as also Radio Altimeter showing 35 feet. The stick was found to have been pulled backward with full force which shows that pilots had made an attempt to gain instantaneous vertical speed. The entire material emerging from the testimony of the various witness does not give any indication of explosive device to be the proximate or direct cause of the accident in question.

## Sabotage

Last but not the least the next question that arises for determination is "whether any circumstance emerging from the evidence tend towards sabotage politically motivated or otherwise?"

The public sector usually take note of the misleading publicity through newspaper media. Conflicting views so expressed through advertising media pertaining to the accidents in question has impelled us to inquire this aspect elaborately. At the very outset, it may be stated that there is no iota of evidence on record to indicate any politically motivated conspiracy nor there appears to be any family feud as to be the cause of accident. No doubt Shri Ranjit Malhotra, one of the sons of late Shri Surendra Nath, is married to a Muslim lady which act caused differences in between the father and the son. Also Late Shri Surinder Nath took certain drastic steps to maintain law and order not only in Kashmir but also in Punjab but these facts ipso facto in the absence of any cogent and convincing evidence, are not sufficient to conclude the possibility of sabotage. Both pilots, as per record, possess commendable antecedents. Both hail from respectable Sikh families of Patiala. Both were highly qualified and had worked for long in the aviation establishments at different places in this country. Their annual confidential record do not reflect any stigma on the honesty, integrity or efficiency of either during the tenure of their long service nor they are stated to be the members of any terrorist gang or either of them or any of their family members are found to have any



connection with such group. Merely that both belong to Sikh community does not lead us to draw any such inferences. We have already observed above that suspicion, howsoever, strong cannot take the place of proof. Even otherwise various circumstances like the cutting of trees on initial impact of the aircraft in question, the attempt to uplift the plane at the delayed moment and the absence of distress message during the communication exchanged between the crew members (pilots) and ATC Chandigarh or 'Alpha Control' Barnala corroborates our conclusion regarding the absence of sabotage as the basis of the accident. The factum of the pilots flying the aircraft at Flight Level 90 feet on IFR on a whisky 35 route contrary to the Circular No.16 of 1992 referred to above, merely shows that either of the pilots were neither acquainted with the terrain nor the altitude of hills located there in VFR route nor either of them had consulted the concerned map. This fact is also indicated by the fact that the pilot had deviated from the actual VFR route. Thus from whatsoever angle we may view this aspect, the omissions and commissions on the part of the pilots merely tend to show their gross negligence in which the aircraft was being piloted by them.

#### 4.4 Was it a Structural Failure i.e. Mechanical Failure?

The another possibility is the possibility of failure i.e. sudden appearance of mechanical defect in the aircraft in question at the material time or prior thereto. Admittedly the aircraft in question was purchased in March, 1994, i.e. about three months prior to the accident from M/s Beechcraft, U.S.A. It



was a new and it was being maintained by their duly authorised agent in India. The aircraft in question had been maintained and inspected in accordance with approved maintenance schedule and the same was certified to be safe for flight during the currency of the certificate. It is to be noted from the certificate of flight release that earlier flight release check was conducted on 25.6.1994 and ARME inspection was valid upto 24.7.1994. The aforesaid certificate was also valid till 9.7.1994 or upon completion by the aircraft of 25 flying hours from the date of its issuance i.e. 25.6.1994. I have already discussed above that pre-flight inspection had been conducted on 8.7.1994 though shown to have been endorsed on 9.7.1994 at 0700 hours IST. In his cross-examination, PW-91, has categorically stated that even flight release check is current and the aircraft is not due for the next flight check. If aircraft is planned for a sortie, pre-flight check up is required to be done. No approval from the witness used to be required by the Punjab Government for the use of the aircraft in question or to plan a sortie. He has categorically stated that no complaint with respect to snag had been made to him by the Pilot-in-Command. Rather on the other hand he had been continuing the flight release check or pre-flight release check in due course. We have also not found any evidence to infer that there appeared to be any structural defect/mechanical failure. Shri Chako, PW-91 is believable to this extent only that the aircraft in question was thoroughly checked by him and duly maintained for the purpose of its use in flights by the operator. The details with respect to parts already noted earlier indicates that the aircraft in question was technically superb and thus airworthy at the relevant time.

Normally, it is expected of a pilot before he takes over the command, to go for a pre-flight briefing and thereafter when he sits in the seat of the Pilot-in-Command to check all the parameters and any grave mistake if comes to his notice, he is required to report the same to the engineers before taking off from the aerodrome. PW-91 has categorically stated that there was no snag in the aircraft nor he received any complaint. Over and above, even the tape transcript does not show of any distress message or complaint with respect to sudden appearance of mechanical defect in any part of the machinery of the aircraft in question. All these factors show that upto the time of impact with the trees at the crash site, there was no mal-functioning or any defect found in the aircraft. From the survey of these datas the possibility of structural failure is completely ruled out.

**4.5 Was it on Account of Human Failure and if Answer is 'YES', What Contributed to the Human Failure?**

Having briefly dealt with the structural or mechanical failure as also explosive and sabotage aspects, we, now, switch over to the next most important and crucial aspect of human failure.

From the material available on the record, it is apparent that this is a clear cut case of error of judgment on the part of the cockpit crew members. In this connection, it may be useful to refer to the flight plan in the first instance. A perusal of the flight plan and the ATC tape, i.e. conversation record at the Air Traffic Control Tower, Chandigarh under Air Force Authorities and as reproduced in the preceding part it is clear

that the aircraft manned by both the flight crew was going on the scheduled path upto the boundary of Bilaspur, but the moment it entered Sundar Nagar area, it appeared to have moved off the track (pre-determined flight path). As already pointed out Chandigarh-Bhuntar flight being whisky 35 route, the flight to Bhuntar Aerodrome was fit for VFR operations only as per Aeronautical Information Circular 16 of 1992. Both pilots were sufficiently experienced persons in flying. It is, thus, prima facie to be presumed that the nature of route and VFR operational flight was within their knowledge. Also as per Pilot's log book, Capt. R.D.S. Sandhu, the Pilot-in-Command alone, had last flown to Kullu on King Air C-90 as P2 on 2.6.1992 whereas as per the Flying Log Book of capt. Pargat Singh, he had not flown to Kullu till the date of accident. In fact, it was their maiden flight in the aircraft in question. The record also reveal that initially on 8th July, 1994, King Air C-90 was requisitioned for the flight in question and Capt. Mehra was asked to remain available as Co-Pilot. This fact finds support from the flight plan filed with Chandigarh ATC by Shri Balwindar Singh PW68 who also in his testimony deposed the same fact. Apart from this witness, S/Sh. J.S. Maini, PW 89 and Capt. Vinod Mehta, PW 89 also state to the same effect. Sh. Maini, PW 89 has categorically stated that the (Pilot-in-Command), PIC, was the incharge of the operational cell and he had nothing to do with it. He also shows his ignorance as to how and under what circumstances the aircraft was changed. Rather according to him, he had permitted the Chief Pilot to take C-90 aircraft only. As regards, the number of persons who were to accompany Late Sh. Surendra Nath, he stated that discussion



with PIC confined only about the tour of the aforesaid dignitary as a sole passenger. How other persons/members boarded the plane, is only known to him (PIC since diseased). Apart from it, none of the crew members had I.F. Rating in this aircraft. Both the Commanders were in possession of information regarding enroute weather conditions even before take off clearance given by Chandigarh ATC. In addition, Capt. V. Mehta of Archana Airways, who was operating flight from Kullu to Shimla, states that shortly before landing at Shimla, he got an RT call from VUJ on Chandigarh approach frequency 122.7 MHz requesting Kullu, whereto he informed that Kullu valley was though clear but the enroute weather was partly cloudy and easily negotiable. As per him, the clouds were mostly broken 2 to 3 octas strat-us and strato-cumulus except between Bilaspur and Sundar Nagar; also that there were continuous layered clouding covering the hill tops and that at level 80 (on QNH), he had to deviate about 5 NM right of track to stay above the clouds, between Sundar Nagar and Bilaspur. The Chandigarh ATC tape transcript also offers the same fact about weather conditions.

Besides the record tends to show that there was an organisational vacuum in the upper echelons of the Punjab Government, so far as operational control and supervision of aircraft in question was concerned. Though organisational vacuum cannot at all be blamed to have in any way contributed towards this accident yet in this inquiry we also feel it our bounden duty to expose the extent of irregularities of the operator in this regard. The Punjab Government was an operator of the passenger category. It was, thus, the



statutory duty of the Punjab Government to evolve means by which the statutory responsibilities of an operator could be complied with. While Director Civil Aviation, Punjab (PW 67) repeatedly stated that the operational flights of the aircraft were controlled by the Secretary (PW89) and he used to give directions to the Chief Pilot directly. The Secretary (PW89) not only stated that the overall control of the Civil Aviation Department of Punjab rested with its Director (PW67), but also that PW67 was responsible to ensure that DGCA's instructions are complied with in letter and spirit. Even as regards, maintenance - PW89 - says that the Chief Engineer (PW73) stationed at Patiala with respect to C-90 was overall incharge of this section. However, the record reflects that with respect to the aircraft in question, Punjab Government had no engineer, qualified and approved for carrying out maintenance and resultantly this task was entrusted to M/s Indamer Co., but pathetically there was no supervisory authority. This Chief Pilot (PIC) late Capt. R.D.S. Sandhu, for all intents and purposes, was the Incharge of operational flight control. In other words the Civil Aviation Department of the Punjab Government was a divided house with respect to operational control and supervision of aircraft in question. May that as it be, a duty has also been cast on the pilots. Rule 141 of the Rules lays down, the duties of the Pilot-in-Command which lays down a very onerous duty on him. It reads as under :-

"141. Duties of Pilot-in-Command

1. Subject to the provisions of Clause (b) of Sub-Rule (2) of Rule 140-B, the operator shall

designate for each flight, one pilot as Pilot-in-Command, who shall supervise and direct the other members of the crew in the proper discharge of their duties in the flight operations.

2. In addition to being responsible for the operation and safety fo the aircraft during flight for the safety of the passengers and cargo carried out and for the maintenance of flight discipline and safety of the members of the crew.
3. The Pilot-in-Command shall have final authority as to the disposition of the aircraft while he is in command.

Sub-Rule (3) above - this gives a last word to the PIC. It is he who is the final authority so far as the command of the flight is concerned.

Aircraft in question was a registered passenger aircraft. Regarding its use, a Circular dated 10.10.1992 had also been issued by the Punjab Government which listed seriatum-wise eight category of dignitaries who could requisition the aircraft (s) for their use protocol-wise.

Now, as per evidence, the aircraft in question was requisitioned not only for the use of late Shri Surendra Nath, but also for taking the Chief Minister of Punjab from Chandigarh to Ludhiana and back immediately after leaving the then Governor at Kullu. Thus as per flight plan, the

aircraft in question was to take off from Chandigarh aerodrome initially at 0800 hrs. IST and then after its return from Kullu, it was to go on its flight to Ludhiana at 0830 hours IST. Thus, time factor pressure occasioned by the tight schedule also appears to have contributed indirectly in causing this accident. In addition from the conduct of the PIC, it appears that he was a docile and a pliable person, who always adapted himself to the needs of his political bosses, may be for selfish ends, and thereby he had become their blue-eyed boy. In other words, Pilot-in-Command had political protection for all of his actions and that may be one of the reasons for his habit having so been inculcated to take independent but poor, faulty and risky decisions mismatching in task-time relationship. As all the above-said facts have bearing on analysing the human failure as one of its major cause, we have considered it better to narrate the same at this stage. Thus, it is in the above said background that we now proceed to analyse the crucial aspect of human failure.

The above said discussion leads to the question as to what is really understood by the expression "human error". How many types of such errors are there and in what way they contribute in causing accidents. The analytical scrutiny of this expression from various books and opinions of the various aviation experts reflected through their articles, indicate that the human errors are of three kinds :

1. Deliberate errors;
2. Skill errors; and
3. Inadvertent errors.



These errors encompass conscious intellectual decisions to carry out imprudent acts such as a flight into known severe weather, landing in weather conditions below minima etc. Aggressive nature and risk taking habit also contribute to such errors. The way in which pilot thinks enroute flying. Such errors generally result from poor decision making.

Skill errors are due to lack of knowledge, inadequate training, lack of experience etc. Such accidents generally occur during initial training or when a pilot switching over from one type of aircraft to another.

Inadvertent errors are like mistakes and errors of judgment. They usually occur due to various reasons like intention of commander not clear to other crew members, faulty communication, mis-match in task-time relationship, poor man - machine interaction, external environmental factors etc.

Thus critically scanning the material which has come to the notice of this Court during evidence, the inescapable conclusion which can be inferred is that PIC late Capt. R.D.S. Sandhu committed the following acts of omissions and commissions which considered cumulatively formed the basis of the accident in question:-

Firstly, as per the evidence he suomoto not only changed the aircraft from C-90 to B-200 without taking into confidence any other responsible person much less the Secretary Civil Aviation, but also associated Capt. Pargat Singh as a Co-pilot on the maiden flight by changing a new type of aircraft on



whisky 35 route to Bhuntar aerodrome even without trial landing contrary to para 6.4 of Civil Aviation Requirements (CAR) Section 2 (Airworthiness) Series 'O', Part I, Issue IV dated 24th April, 1992 which being of mandatory nature, requires that the first pilot (PIC) shall have made at least two flights either as first pilot without passengers or as second Pilot along the route over which he is required to fly on conditions permitting visual contact flying. It appears that in this case, PIC was not aware of this safety requirement or he conveniently brushed aside all the statutory norms even. The material emerging from record reveals that he had undertaken a flight to Bhuntar in C-90 on 9.6.1992 and none thereafter. This mandatory safety requirement has been violated. It further appears that the change of aircraft was necessitated because of the increase of number of passengers. Obviously C-90 had lessor seating capacity with belts than B-200. This decision also seem to have been taken by him independently may be in consultation with his political bosses.

Secondly, that PIC allowed four extra passengers contrary to the maximum seating capacity of the configuration of VT-EUJ which is nine in toto i.e. seven passengers and two crew members. The seating configuration in this aircraft considered of one piece couch with one belt, one aft facing seat with belt, four seats with belts in club formation and side facing seat with belt, in addition to pilots and co-pilots seats. The couch had space to seat more than one person, but seat belt is only provided for one person. As per the oral testimony as also the report of PW66 (Shri V.K. Chandna) though baggage area had provision for installing two folding seats with belts, yet these

additional seats had not been installed and baggage area was used for baggage only. The number of persons accommodated in the plane totalled 13 (thirteen). Admittedly, late Shri Surendra Nath was accompanied by his nine family members. Naturally, in view of the seating configuration all of them appear to have been accommodated in the cabin. In other words, children were sitting either on the couch or in the lap of their parents or on the space in club formation along with their co-passenger but without any seat belt. Out of the ten passengers, four were children with ages ranging from 12 years, who also needed separate seats with sleeping in view the capacity of the belts, it cannot be presumed that all passengers had put on belts. It is the considered opinion that keeping in view the status of passengers, nature and character of the pilot-in-command and other attenuating circumstances, at least 4 passengers were accommodated without safety measure belts. Over and above as per the certificate dated 10.10.1992, the aircraft could only be used for the then Governor and his wife and none other. It is not clear under what circumstances PIC permitted other passengers contrary to the seating configuration of the aircraft. It is best known to him. May it be that it had been done at the behest of the then Governor, but the said arrangement defeated not only the underlying object of Rule 141 referred to above, but it also endangered life and safety of persons on board as also their property including the aircraft.

Thirdly, that the PIC neither himself filed the flight plan nor effected corrections therein. Even flight was originally planned in C-90 regarding which the flight movement was

given to ATC Chandigarh by Shri Balwindar Singh, PW68 who claimed himself to be a flight despatcher, but did not have the authorisation or approval of DGCA in this regard. Simply the fact that he had Commercial Pilot's Licence did not alter the situation. His evidence shows that earlier too, he used to file the flight plan with ATC Chandigarh. This defalcation does not seem to have come to the notice of anyone i.e. Director Civil Aviation (PW67), the Secretary (PW89) both of Punjab Government, Air Traffic Control, Chandigarh, Flight Information Centre or even DGCA. This may be an irregularity in exercising the supervisory authority on the functioning of the operators and supervisory authority but it cannot be said to be the proximate or even remote cause of accident. However, it does reflect upon the conduct of Pilot-in-Command in as much as that he used to take the things lightly in routine manner without caring for the consequences thereof. In any case, this fact does tend to show that he was habituated to discharge his prime duties negligently. This conclusion is further substantiated from the fact that wrong description has been given in the flight plan as in the instant case PW68 (unauthorised Flight Despatcher) indicated the flight to be under IFR conditions contrary to AIP India Circular No.16 of 1992 whereunder flight to Bhuntar airfield could only be under VFR conditions. Also the level was shown to be 90 whereas it being a Whisky 35 route, the minimum level as required should have been 12,600 feet as laid down by AIP India for IFR flights on the sector Chandigarh-Bhuntar. The wrong information provided to ATC through Flight Plan shows that neither PIC nor Co-Pilot or even PW68 understood the sanctity thereof.



Fourthly, there was neither any arrangements for check-in of passengers nor that of pre-embarkation security check. As per the evidence, the luggage was loaded simultaneously with the checking-in of the passengers, who had arrived at the airport just about five minutes before it took off from Chandigarh Aerodrome. Had there been such arrangement, it might not have allowed such number of persons to accompany the high dignitary. In this regard, it is desirable that DGCA should take corrective measures directing the private operators to make requisite arrangements for check-in of passengers and pre-embarkation of security check.

5. OTHER ASSOCIATED ASPECTS OF AIR SAFETY MEASURES

5.1 Whether cultural differences come into play in air disasters in the stage of maddening tensions?

Culture difference does play a significant role in air disasters. There is no gain-saying the fact that excellence in any organisation does not depend upon machines, material and building alone. It also depends upon the quality of personnel who are associated with them. All these years, the emphasis has been to improve technology in the air traffic, communication, navigation and safety services in the organisation of Civil Aviation. Yet the experience reveals that controlling air traffic in the skies is a serious business for which a high standard of professional competence is a pre-requisite. Professional expertise demands on-going



appreciation of new technology, values, concepts, laws, organisational forms and many other influences including culture.

The answer to this question is in the positive. According to the study by the aviation experts, scientists and anthropologists as also recently undertaken by Boeing Commercial Group on the basis of the rate of accidents per million take-offs, which of course, needs in-depth and detailed analysis, countries with high rate of individualism have low accident rates, while countries where people in lower position tend to depend more on superiors, have higher accident rates. Various circumstances emerging from the above noted facts, give rise to a very important question as to "what is the role of culture in air mishaps?" According to aviation experts, if Rules and norms governing aviation are not broken, there would "almost be no accidents". Most of the accidents take place while (i) Taking-off; (ii) Landing; and (iii) In mountainous terrain.

All these accidents take place not because of mal-functioning of the machinery or equipment, but also because of the pilots error. Here the importance of Co-Pilot has to be realised. If he is technically sound, knowledgeable, alert and provides his support, the chances of accidents will be considerably reduced. But, if the commander has no faith or confidence in the Co-Pilot or if two are not friendly, the mishap is bound to occur. It appears that in recent accidents in India, two main functionaries in the cockpit have mostly failed to work as a team. Survey by the experts pointed out that 73.7 per cent

accidents are related to the flight crew. In this view of the matter, the aviation authorities world over particularly in India, must undertake effective measures for errors and commissions on part of the commanders to reduce, for the safety of the passengers.

Apart from the "thin chain" leading to the part of the commander and also that of the management, there are many other contributory factors such as ill-equipped airports, inadequate navigational aids, inefficient weather reports, cumbersome crew procedures, indifferent maintenance, defective designs and lack of proper investigation. Thus, instead of analysing reasons for accident, there appears to be an urgent need to formulate more strict rules for adherence by the aviation officials concerned whether technical or non technical. In addition, according to my opinion, the need for revamping the air safety measures are never more urgent than today. One can ignore the outburst of a casual accident, but not the continuing and its frequent happenings. The increase in the rate of airline crashes has come about for various reasons to world which promote attention for improvement of discipline and air safety measures does not seem to have been given. Amongst others the age of the fleet, the quality of maintenance, decline in management standards and highly unionised staff which has been dictating terms to the management, have also played their role in contributing their share in airline crashes. Thus, the policy of comprising discipline, air safety and accountability is not a healthy solution in reducing the rate of airline accidents. The civil aviation needs to cast its net wider both in terms of discipline

and also air safety measures which needs not only a long term strategy but also immediate plan of action. It is no secret that aircraft is one item which is not available on a shelf. It is generally observed that from the management point of view, from the time of selection ordering including selection of various optimal equipment, training of pilots and engineers take time and such a gestation period runs into years and should not be reduced at short notice in aviation which leads to disasters. Thus, to improve discipline in air safety, civil aviation needs not a fresh coat of paint, but a major surgery.

Viewing it from another angle how can an organisation survive, let alone grow, when indiscipline is its hallmark and disunity its load-star? The different wings of aviation whether civil aviation or otherwise, need frequent interactions by way of mutual discussions on the subject to clear its ideological cobwebs which seems to have been deepened since long. It would be a healthy sign that all the organisational heads of different wings hold frequent conferences to discuss issues like air safety, discipline and management etc. During such discussions, they express their views frankly and fearlessly. We should not forget that when indiscipline takes over the goal is defeated. No doubt each wing of the aviation establishment has many honest, intelligent and efficient prime heads, but facts revealed from air crashes/happenings indicate that they lack unity, cohesiveness and aboveall to some extent discipline of these drawbacks deter from looking ahead.



It would be worthwhile to state the growth of domestic passenger traffic within the last eight years in a tabulated form.

<u>YEAR</u>	<u>PASSENGERS CARRIED</u> (In Millions)	<u>GROWTH FRATE</u> (%age)
1987-88	9.93	
1988-89	9.54	- 3.9
1989-90	9.39	- 1.6
1990-91	7.47	-20.4
1991-92	8.36	+11.9
1992-93	7.99	- 4.4
1993-94	9.73	+21.8
1994-95	10.88	+11.8

From the data relating to the growth of domestic and international passengers during the last eight years, submitted by the Office of Director General of civil Aviation, it is clear that Indian aviation is booming again after a long period of stagnancy. Today tourism has become a basic human right making it a world's largest industry. The close scrutiny of the data given to this court indicate an appreciable rise in domestic as well as passenger air traffic in this country. This Court can take judicial notes of the "Open sky" policy of the Government whereby private airlines have also been allowed



to participate to fly its fleet. The "three tier formula" propounded by Director General of Civil Aviation under which the private airlines are required to fly 10 per cent of their total services in the different areas like North-East, Jammu and Kashmir sectors as also non-trunk routes which do not yield profit, has not deterred the private entrepreneurs from joining the airline scenario. The aviation boom would have touched great heights, but for the plague which created a major set-back with international traffic coming down by as much as 30 per cent in the month of October, 1994. Yet the figures of the domestic as also international passengers air traffic is comparatively more than that of the year 1993. From comparative data, one can safely conclude digital air traffic growth in the days to come which would be the outcome of the growth in traffic alone. From this point of view as well the aviation establishments are required to ensure the air safety measures. In this regard, the role of DGCA becomes extremely significant and important. Presently it regulates merely the capacity or monitor fares but in the times to come its prime duty would be to ensure that operations are carried out without compromising safety. In the new situation, the DGCA will need cost accountants, expert fliers and practising engineers to impose its will on airlines and to educate them about the requirements. Thus, the very structure of DGCA needs also a drastic change in as much as it should become an independent and highly professional authority on the lines of Federal Aviation Authority (FAA), U.S.A. Resultantly, its staff is also needed to be recruited strictly on the lines of the Rules and Regulations framed by FAA. There is no gain saying the fact that DGCA is working in a democratic set-up,

but it is also true that out of various forms of Government democracy have found to be the most acceptable form of governance, it being the mother of highest virtue, wisdom and symbol of progress humanity. It is also a school of teaching, wisdom, self-respect, tolerance as also an instrument of prompt character and personality of all citizens. Unless a citizen whether in service or not does not build up his national character and discipline himself to discharge his duties entrusted to him faithfully, he cannot contribute towards development at process because in otherwise case, the reign of selfishness, absolute greed and irrelevance of the inteligentia in the present political conditions would dominate the will of one and all and the aviation establishments like others are bound to wither away. In this view of the matter, enforcement of self discipline, adherence to rules and regulations are the prime requirements regarding which efforts for raising the awareness of one and all working in the establishments is needed to be raised. To sum up there appears to be the need of adopting modern concept in air traffic management, keeping pace with the development in the field of aviation. It is from this point of view that we intend to recommend various suggestions relating to the improvement of air safety measures.

## 5.2 Search and Rescue

Search and rescue are the two most important aspects of the civil aviation industry in the country. With the rate of growth of the aviation in the country, this wing is required to be

strengthened. I am constrained to observe that the airport authorities at Kullu or at Delhi, despite having knowledge with respect to the tour undertaken by a high dignitary, did not emphatically try to find out as to what happened with the aircraft in question after its departure from Chandigarh. The Officers/officials of Bhuntar airfield may be absolved of the liabilities for the simple reason that the aerodrome is not fully equipped with the latest communication equipments and whatsoever equipments were in their possession like NDB, FC-10 and telephone, it did not work till 1030 hrs. IST. Civil authorities had also reached the aerodrome at Bhuntar and they were apprised of the time of arrival at Bhuntar airport and late Shri Surendra Nath, the then Governor. As per the oral testimony of various persons, Superintendent of Police, Kullu, other political persons had also come to receive the aforesaid dignitary at the aerodrome. Obviously, the flight was much delayed. They even did not care to know about the reason of delay. It is not only the duty of the civil aviation authorities, but also concerned State authorities as well to know about the programme of high dignitaries like the Governor travelling in an aircraft. However, the moment civil authorities were apprised of the accident through the police of Police Post Chowki on the basis of an FIR lodged by Shri Dittu Gujjar, PW 4, who witnessed the accident, they immediately initiated search and rescue operation without any delay. The part played by the Honourable Chief Minister of Himachal Pradesh Shri Virbhadhar Singh is commendable. While at Mandi, the moment he received this shocking information, he directed the civil authorities i.e. District Magistrate, Superintendent of Police and Chief Medical



Officer to send their respective teams to locate the crash site without loss of time and extend all possible help, medical or otherwise, to the needy persons. In the circumstances emerging from the available records, we feel that some sort of coordination are required to be developed amongst the civil aviation authorities and public in general so that both may work together in emergency.

As regards the FIC Delhi, Shri S.A. Ram, Director of Aerodrome, Delhi Region of AAI has in his affidavit stated that neither Bhuntar nor any other NAA controlled airfield had received any transmission from the aircraft of any emergency or difficulty at any stage and its flight; that the fateful flight was not under the radar control or surveillance of any NAA controlled units. He has also stated that for the flight from Chandigarh to Bhuntar, there are no intermediary reporting stations other than Alpha Control Barnala which is an Indian Air Force controlled agency. According to him, the first Air Traffic Service Unit receiving the flight plan is responsible for the acceptance of the flight plan or a change thereto in the following manner:-

- a) Check it for compliance with format and data conventions;
- b) Check it for completeness and to the extent possible for accuracy;
- c) Take action, if necessary, to make it acceptable to the Air Traffic Services; and



- d) Indicate acceptance of the FPL or change thereto to the originator.

He has neither given the time when information regarding missing of the aircraft in question reported by authorities of the Bhuntar aerodrome was received by FIC Delhi nor pointed out the time as to when search and rescue party was ordered to be deputed for the purpose of being sent to the area where the aircraft in question have been lost. However, as per the affidavit of Shri Amit Goel, PW-84, Aerodrome Officer, Bhuntar airfield, he stated that at about 1030 hours he came to know from those present in the VIP room that it had become impossible to get through Raj Bhawan, Chandigarh, and that the flight had departed from Chandigarh at 0847 hours IST, realising that the aircraft was already overdue, he contacted WSO Delhi. He also states to have informed the Superintendent of Police, Kullu for initiating search and rescue measures. He then states that he followed the emergency procedures by informing the local hospital and also the city fire service. Later on, according to him, search helicopters landed at Bhuntar at about 1430 hours for refuelling. Gp. Capt. Suman Chopra of IAF has also stated that on the fateful day Air Force Station, Chandigarh, had promptly initiated the actions as listed in his "Pre-Accident" plan, on receipt of the message from Alpha Control regarding aircraft call sign VUJ, not being in contact. He has not given any time but it appears that after 1030 hours IST two helicopters were launched for "search and rescue" from Air Force Station, Sarsawa at approximately 12.15 hours. From this statement, it appears that search and rescue operations were though initiated, yet it

was much delayed. Later on, on losing contact with the helicopters, AN-32 aircraft had also been sent from Chandigarh airfield to climb overhead and act as airborne ATC. Air Force Authorities, as per their version, were apprised of the recovery of the 13 dead bodies and that there was no survivors at about 1740 hours IST. These facts positively indicate lack of cooperation/coordination, cohesiveness and liaison in between the two organisational wings of the aviation i.e. civil and defence. This observation I am making after having gone through the entire correspondence exchanged in-between the Air Force authorities and Airports authority of India wherein civil defalcations having been committed by the crew members of the civil aircrafts have been reported, but despite requests from one another, i.e. the civil and Defence aviation authorities, no joint meeting could be held nor any common solution could be arrived at to solve the day-to-day problems. The correspondence reflects certain secret inquiries having been conducted by the respective authorities of which we do not consider to point out in our report at this hour. We feel, the constitution of a joint Board in respect of not only training, but also control and supervision of the technical, non-technical, operational, non-operational as also the executive personnel of the civil authorities working in Civil Aviation wing or with the Defence authorities on deputation, has become absolutely essential. It would be in the fitness of things that the Ministry of Civil Aviation also interacts with the Ministry of Defence and directs the holding of a joint meeting of the responsible members of all organisational wings of the aviation for constituting a board/apex body in relation

to the above said purpose. Creation of such a joint board is also needed for the reason that air space zones seems to have been already created under the Rules. Some airfields are being controlled by Air Traffic Controllers belonging to the Air Force Authorities (Defence) and others are exclusively being manned by ATC Controllers of Civil Aviation Authorities. Their zones have been defined. Under the rules, some air space zone comes under the FIC (Flight Information Centre). All of them claim that they are only responsible for imparting service information to the crew members in case of distress messages only and otherwise they cannot exercise their control over the flight as approved in the flight plan submitted to Air Traffic Controller. According to them, once the aircraft in question goes out of their Air Traffic Controlled Zone to the next zone either controlled by Air Traffic controller civilian or Defence or by the other information centre, their duty ends. It is only in distress call messages that they start functioning to extend the help to the crew members of the concerned aircraft.

In the instant inquiry, aircraft in question started from Chandigarh airfield, which is controlled by ATC Chandigarh belonging to Air Force. Under the Rules/regulations, their Air Traffic Control zone is upto 20 nautical miles. On the contrary, Bhuntar airfield is controlled by Airports Authority of India. Their control zone is upto 5 nautical miles. The distance between Chandigarh airport and Bhuntar airfield is more than 85 nautical miles. Both air traffic controllers at two different aerodromes say that in-between space zone is under control of Flight Information Centre, New Delhi. As already



pointed out, the later claimed that they are responsible to provide service information only at the behest of the Pilot-in-Command of the concerned aircraft, otherwise they are not empowered to direct the control on flight even in their zone. These different stands taken by different wings of the organisational authorities, do require the interaction in-between responsible persons heading the two organisational wings with the intervention of the Ministry of Civil Aviation as also that of Ministry of Defence to chalk out the ways and means to solve such like problems which daily arise. In case, it is not so done, increase in accidents, to my mind, are inevitable.

### 5.3 Accident Prevention Cell

There is a saying that 'prevention is better than cure'. This is more important in aviation as it may not be possible to cure the effects of an accident when many times result into large number of fatalities. It is, therefore, absolutely essential in aviation that all possible prevention measures be taken to ensure that safety measures are not only maintained but continuously enhanced. This aspect has been earlier examined by a Court of Inquiry headed by Justice U.C. Banerjee and after detailed deliberations the Court had recommended in 1989 that the Air Safety Directorate of the DGCA should be strengthened to set up a new dedicated cell for accident prevention work. During the course of investigation of the subject accident, it came to my knowledge that the Government created a post of one Deputy Director to



discharge functions of accident prevention in aviation. Justice U.C. Banerjee while investigating another accident in 1991 had again recommended that the one-man accident prevention Cell existing in DGCA is totally inadequate to discharge accident prevention and as such it should be restructured and strengthened without any loss of further time.

The aforesaid discussion pertaining to the accident in question indicate the ineffectiveness of the Prevention Cell of not only civilian but also Air Force authorities as well. Obviously, the civilian authorities located at Delhi simply contacted the Air force authorities and instead of initiating search and rescue operations at their won level, they felt satisfied with the attempt being made by the Indian Air Force authorities. The consumption of time in knowing the fact as to the recovery of the dead bodies as also that there were no survivors speak volumes of the efficiency of the search and rescue wing of both organisations i.e. civilian as also Indian Air Force authorities.

It has come to the knowledge of this Court that the Accident Prevention Cell despite earlier recommendations still continues to be manned only by one officer even though the aviation activities in India have been increased very fast (nearly 20% per annum). The present set-up of the DGCA handling the Air Safety subject is concentrating largely on accident/incident investigation which is more or less like a post mortem. Though it is very essential to investigate every accident and incident to find out the cause of such occurrences and to take preventive measures, it is inadequate to ensure

safety in aviation. If aviation safety is to be given the due importance and the safety of the travelling public is to be ensured, the Government must immediately strengthen the existing One-Man Accident Prevention Cell. The Cell should be headed by an Officer of the level of at least a Director and should consist of adequate number of professionals in the fields of flying and engineering. This Prevention Cell is immediately needed to be revamped in strength, howsoever cost-oriented it may be. From the past experience, we are observing the notable growth in aviation in the country which also requires that in the absence of perfect use of safety measure equipments, accidents are prone to happen in large numbers. At such emergent occasions, the existence of Accident Prevention Cell is absolutely essential. I again strongly recommend to the Ministry of Civil Aviation to look into the matter keenly on this aspect on top priority basis.

## CHAPTER - IV

### 6. FINDINGS OF FACTS

1. The flight from Chandigarh airfield to Bhuntar airfield was initially planned in Beechcraft C-90 aircraft, which was to be piloted by Capt. R.D.S. Sandhu, the Pilot-in-Command and Capt. Vivek Mehra, as Co-Pilot.
2. The C-90 aircraft was substituted by the newly purchased aircraft VT-EUJ Super King Air B-200 at about 2200 hours IST on 8.7.1994 by the Pilot-in-Command and Capt. Pargat Singh Nanar was directed to replace Capt. Vivek Mehra as Co-Pilot with him as Capt. Mehra was not qualified to operate the aircraft in question.
3. Beechcraft Super King Air B-200 aircraft VT-EUJ belonged to the Punjab Government. The aircraft was new and had valid Certificate of Airworthiness since 15.3.1994.
4. The aircraft VT-EUJ was registered in Passenger Category and its maximum all-up-weight was 5,669.90 kgs. i.e. below 5,700 kgs.
5. The aircraft in question was maintained in accordance with the approved maintenance schedules and it was

fully airworthy prior to its departure from Chandigarh and during the course of the entire flight till it crashed.

6. The Aircraft did not have a Cockpit voice Recorder (CVR) or Flight Data Recorder (FDR) fitted in it. Nor did the Aircraft have a Ground Proximity Warning System (GPWS). The existing regulations do not require fitment of these equipments on Beech Super King Air B-200 type of aircraft.
7. As per the Flight Plan filed with the IAF ATC, Chandigarh, the aircraft was to operate on the day of accident on sectors Chandigarh-Bhuntar-Chandigarh-Ludhiana-Chandigarh. ETD Chandigarh on the first leg was 0800 hours IST and ETA Bhuntar was 0820 hours IST.
8. The aircraft had no pending snag and had adequate fuel for the flight.
9. The enroute weather as informed to the fateful Aircraft at 0846 IST by an Archana Airways Aircraft, which was on its flight from Kulu to Shimla, was, cumulous clouds between Bilaspur and Sundar Nagar - Kullu Valley clear.
10. The flight crew were duly trained on the aircraft in question for the requisite period as per the syllabus laid down by Federal Aviation Administration (FAA), USA, by the Institution of the Flight Safety International



USA. However, both of them lacked sufficient experience in flying the aircraft in question in mountainous region.

11. The flight crew had neither instrument rating nor they had conducted trial landing at any of the aerodromes located in mountainous region in the aircraft in question. In fact, it was their maiden flight to Bhuntar airfield in this type of aircraft which is located in between narrow valleys.
12. The flight crew had appropriate and valid licences to operate the flight. Both the pilots had been declared medically fit throughout their flying career.
13. The PIC had total flying experience of over 7,500 hours, of which about 100 hours was on type B-200 as PIC. Neither the PIC, nor the Co-Pilot had Instrument Rating on Beech Super King Air B-200.
14. As per log books, the Pilot-in-Command had last flown to Bhuntar on 2.6.1992 in King Air C-90. There is no known record of the co-Pilot having flown to Bhuntar.
15. As per Order of the Punjab Government No.9/39/92-4T(3)/17277 dated 10.10.1992, which was in force on 9.7.1994, relatives of the Governor were not authorised to use the Government aircraft, except with the permission of the Chief Minister of Punjab. As per available evidence/records, including affidavits filed by

officials of the Punjab Government, no such permission had been granted in the present case.

16. Seating capacity with belts of VT-EUJ aircraft in question consisted of only seven passengers plus two crew members. There were in all ten passengers plus three crew members on board the aircraft during the fateful flight. Though baggage area had provision for installing two-folding seats with belts but they were not installed and baggage area was used for baggage only. Thus four passengers were travelling without safety belts.
17. Chandigarh Air Traffic Control Tower cleared the aircraft to depart to Bhuntar on flight level 90 via flight plan route.
18. The Aircraft took off from Chandigarh at 0850 hours IST. Capt. R.D.S. Sandhu, Chief Pilot of Punjab Government was the PIC and Capt. P.S. Nanar was the Co-Pilot. Apart from the Flight Attendant Shri Pandey, there were 10 passengers, comprising the late Governor of Punjab and Himachal Pradesh and 9 members of his family, including four children.
19. At 0853 hours IST, the aircraft climbed and reported overhead Chandigarh at 7,000 feet and set course for Bhuntar. The estimated timings, as given by PIC to Chandigarh Tower and to Alpha Control, were abeam

Bilaspur 0902 hours IST and arrival Bhuntar 0910 hours IST.

20. At no stage of the flight, the aircraft reported any real/anticipated emergency, nor did it report any sudden deterioration in enroute weather.
21. The flight crew did not adhere to the operational flight plan and rather deviated from the pre-determined route on entering Sundar Nagar area while proceeding to Bhuntar airfield.
22. At 0856 hours IST, the aircraft reported 10 miles from Chandigarh and being in contact with Alpha Control, Barnala and changed over to Alpha Control.
23. At 0901 hours IST, the aircraft reported checking abeam Bilaspur and maintaining flight level 90.
24. The Aircraft was in contact with Alpha Control till 0902 hours IST, when the PIC was told to call Alpha Control, when in contact with Bhuntar. This transmission was acknowledged by the aircraft at 0902.45 hours IST and this was the last contact with the Aircraft.
25. As per AIC 16/92, Bhuntar airfield is fit for VFR operations only, since it is surrounded by hills. Bhuntar airfield is controlled by Airports Authority of India, while Chandigarh is an IAF airfield.

26. As per AIP India, for the sector Chandigarh-Bhuntar of the ATS Route W-35, the upper/lower limits of flight level are 460/150 and the minimum flight altitude is 12,600 feet.
27. Bhuntar Air Traffic Control did not receive at any time the flight plan or ETA of the fateful flight from ATC Chandigarh or through FIC Delhi, or from any other agency.
28. No departure message of aircraft in question had been passed on by ATC Chandigarh to Bhuntar or FIC Delhi or any other concerned authority.
29. No communication from flight crew of the aircraft in question with respect to distress message was received either by ATC Chandigarh or Alpha Control Barnala or FIC Delhi, nor it had any contact with Bhuntar aerodrome authorities.
30. FC-10 in Flight Information Centre, Delhi Airport was not manned at material time. STD (Telephone) was though in working order, the Bhuntar airport authorities could not have any contact with Airport Authorities of Delhi except WSO till 1030 hours IST.
31. The first information of the accident reached official agencies at Sundar Nagar at about 1130 hours IST same day. Due to absence of precise details of site and the hilly terrain, the ground rescue team could reach the



- site only by 1530 hours IST or so. There were no survivors.
32. Heliborne search for the aircraft was mounted by two helicopters at 1205 hours and 1230 hours respectively, but due to cloudy weather, hill tops could not be searched and the wreckage was not sighted, but distress signals were being received.
  33. Before the impact with the standing trees at the crash site, the flight crew had attempted to pull up the aircraft and thereby on impact with the trees, it had cut and damaged the same at about 40 degree nose up before it ultimately hit against a boulder just below the top of Kamroo Nag Hill located in Sundar Nagar Sub-Division nearby Bhuntar airfield in Kullu district.
  34. The site of crash is within the designated airspace VIR 150, which airspace as per AIP India RAC 5-22 constituted the local flying area of Chandigarh and the controlling authority for the same being ATC Chandigarh.
  35. None of the crew members or the passengers had survived in the air crash in question.
  36. Search and rescue operations by the public in general, civil and Defence authorities could not be carried out immediately after the crash.

37. There was no evidence to indicate any sabotage or inflight structural failure of the aircraft.
38. At the relevant time, Capt. R.D.S. Sandhu, since diseased, was the overall incharge of the flying operations of Civil Aviation, Punjab in his independent capacity.
39. Capt. R.D.S. Sandhu, Pilot-in-Command being overall Incharge of the operations in his independent capacity, seems to have become the blue eyed boy of his political bosses as is evident from his conduct in having allowed other persons to travel with high dignitary i.e. the then Governor of Punjab and Himachal Pradesh without permission. From the subsequent flight scheduled for Ludhiana immediately after returning from Bhuntar airfield for carrying the VIP i.e. the Chief Minister of Punjab, it appears that he was under constant mental pressure from inception of the flight in question.

**7. PROBABLE CAUSE OF THE ACCIDENT**

The accident occurred due to serious error on the part of the flight crew by not strictly adhering to the VFR conditions for flight to Bhuntar airfield. As a result, the aircraft after encountering cumulous clouds enroute, deviated from the pre-determined route and collided with the hill top covered with clouds.

The contributory factors to the accident were:-

- a) Existence of bad weather enroute with cumulous clouds in layers covering the hill tops;
- b) Pilots not conversant with the topography of the mountains in the region;
- c) Failure on the part of the flight crew not to refer and follow the maps of the region;
- d) Mental pressure on the Pilot-in-Command to complete the flight in time with a view to meet the subsequent flight commitments; and
- e) Failure on the part of the Co-Pilot to bring out flight deviations to the notice of the commander.

## 8. RECOMMENDATIONS

Since accidents generally result from a chain of events leading upto a mishap, there is seldom a single cause. An accident can be prevented by breaking the chain of errors of any point. All of this provides a way to start looking at how small improvements can be made to the (aviation) system to provide benefit. Our discussions with Aviation authorities (both that of Government and private) at Zurich (Switzerland) reveal that they follow Cross-air (Swiss Aviation Operator) procedures which incorporate some accident prevention strategies being explored by the international group led by the Flight Safety Foundation, which is trying to reduce accidents involving controlled-flight-into-terrain (CFIT). As per these, it is possible to break this chain of events in a number of ways including improved training for the First Officers. BASIS allows the data to be sorted by aircraft type, registration number, type of event, airport, phase of flight, type of action taken and the type of aircraft system involved. These observations help to identify trends to prompt management action. A key part of the training involving teaching the captain, to make the right decision on whether to complete the steep approach and land on a short runway or execute a go-around. As per the information imparted to us, Cross-air Saab 340s operate into short runways in the Alps (Lugano, Sion and Bern airports) using specially developed procedures. Captains are required to have a year of experience in the left seat before taking the training, which starts with class-room work as well as viewing videos and terrain models. Thus operating regional aircraft on a scheduled basis to airports in the mountains requires experience, practice and the use of well-thought out procedures in this country. The airports located in the mountainous regions in India are more hazardous than referred to



above. In that view, strenuous training is needed to be imparted to all the concerned authorities including the pilots in particular. Thus, we have a lot of evangelical work to do. Winds of change are "Sweeping the globe." Thus national task force of flying safety, experts from aviation establishments should jointly work on a broad-based system to deal with a civil aviation flying safety problem for reducing accidents involving controlled-flight-into terrain (CFIT) in particular. The reason why it has become the focus of attention is that CFIT accidents account for the vast majority of fatalities in civil aviation. CFIT risk is generally higher in India than in other parts of the world. As told by Earl F. Weener, Chief Engineer for airplane reliability, maintainability and safety, at the Boeing Commercial Airplane Group to regional airline officials at a recent Flight Safety Foundation Conference that 100 people, besides other groups like International Air Transport Association, International Foundation of Airline Pilots Association, aircraft manufacturers, regulatory authorities and airlines and airport officials are now working on various aspects of the problem. In this regard, thus, my recommendations would be :

1. A critical review of all Controlled Flight Into Terrain (CFIT) accidents in India during the past 15 years should be carried out by DGCA urgently and factors leading to such accidents should be identified. The training curriculum of pilots should focus on actions on the part of flight crew to prevent such accidents in future.

2. All operators engaged in public air transport operations should develop programmes to create awareness amongst the pilots and corporate managers regarding the CFIT problem. For this purpose, CFIT risk assessment check-list should be prepared and followed as is being done by Flight Safety International of USA.
3. Minimum Safe Altitude Warning System (MSAW) is neither available nor being used by ATC in India like FAA approach control facilities in the U.S. It is an invaluable tool for helping controllers catch the type of mistakes that lead to CFIT accidents. The software based system alerts the controller when the airplane is flying too low for a particular area. Thus the airport authority should make sure that MSAW is added to ATC radar (wherever it exists) as part of upgrades, now in progress.
4. GPWS (Ground Proximity Warning System) is the key piece of equipment to help prevent CFIT accidents in the present day advanced technology though it serves as a last resort warning that a collision with terrain is imminent. It may be noted that GPWS false alarm rates are no longer a problem with the latest generation of equipment as they were with the original version. The equipment is though costly, yet it should be directed to be introduced in all airplanes of seating capacity of ten or more or all-up-weight exceeding 5,700 kgs.

5. In case of GPWS equipped airplanes, the pilot(s) should compulsorily be subjected to adequate training to acquaint himself regarding the use of such system as without proper pilots' training, GPWS is useless. Such pilot(s) should be trained to react immediately to GPWS warning until the GPWS warning stops except in visual meteorological conditions, when it is clear that there is no hazard.
  
6. Pilots required to operate flights in hilly terrain, should be given training, in addition to the normal training, on special precautions required to be taken while operating in the mountainous terrain which should include classroom training, viewing training videos and terrain models, practising on simulators the emergency procedures particularly, procedures to deal with engine-out situation etc. Before permitting pilots to operate independently as Pilot-in-Command flights to airports in the hilly terrain :
  - a) They should acquire at least one year's experience in such operations as Co-Pilot or under supervision.
  
  - b) They should undergo a minimum of two route checks for day flying and a minimum of five route checks for night flying to airports located in hilly region.

7. Standard operating procedures including minimum safe altitudes on routes in hilly terrain should be reviewed jointly by Airports Authority of India, DGCA and Defence Authorities wherever concerned. The operators and the Airport Authorities of civil and Defence should thereafter follow the revised procedures.
8. An Air Traffic Controller of Airports Authority of India or from Defence services trained in accordance with ICAO requirements should be positioned at each Air Traffic Control unit of Defence handling civil traffic like Alpha Control, Chandigarh Airport etc.
9. STD/Hot line facilities should be provided with the Duty Officers handling the civil air traffic at Alpha Control (i.e. Air Force Stations at Barnala and Amritsar) and other airfields in this region, but specifically at Chandigarh, Bhuntar, Shimla and Gaggal airports, so that proper coordination can be achieved with other Air Traffic Control units in the area.
10. Feasibility study of installing a suitable radar or satellite based surveillance system, to provide positive control over air traffic in Kullu/Himachal hilly areas, should be carried out and such facilities should be provided at the earliest, if found feasible.
11. Airports Authority of India should provide VOR/NDB on top of the hill located in between Mandi and Pandoh



in Himachal Pradesh to assist in safe navigation between Chandigarh and Bhuntar.

12. Pilots operating flights to/from airfields surrounded by hilly terrain should be specifically checked and cleared on the type of aircraft for each airfield for such operations before a pilot is allowed to operate independently in hilly areas.
13. The pilots should maintain recency of flying in hilly areas and should have operated a flight to an airport in such area at least once during the preceding twelve months. In the absence of this recency experience, the pilot should operate the flight to that airport under the supervision of an Examiner or carry out a refresher flight without passengers on board.
14. A system of joint review of air traffic control procedures followed for civil aircraft operating under Defence air traffic control systems, should be instituted to ensure that the standards laid down by International Civil Aviation Organisation for civil flights are fully complied with. For this purpose air traffic controllers of Defence services and Airports Authority of India should meet frequently.
15. A standing high level review group consisting of Chairman, Airports Authority of India, DGCA and Assistant Chief of Air Staff (Operations) should be constituted to take policy decisions regarding handling

of civil flights by Defence Air Traffic Control Units and provision of facilities at Defence airfields for the same. The Group should also frame such rules pursuant to the policy decision so as to keep a watch and work in tandem as a proctorial team.

16. The Government should immediately strengthen the existing One-Man Accident Prevention Cell in the office of the DGCA. The Cell should be headed by an Officer of the level of at least a Director and should consist of adequate number of professionals in the fields of Air Traffic Control, flying and engineering.
17. The State Government should consider giving better emoluments to their pilots keeping in view the higher salaries being given to the pilots in commercial airlines so that :-
  - a) the best talent is available to the State Governments whose planes are used mainly by VIPs; and
  - b) the pilots are accorded a superior status, which should help them to withstand pressure to fly against their better judgment.
18. The operators should ensure that all their executives are fully familiar with the aviation requirements and procedures. The Officer heading the aviation wing should have aviation background and should be given

full authority and responsibility to run the aviation wing in compliance of all safety norms. He may be given status of Additional Secretary.

19. All categories of employees of Airports Authority of India i.e. aerodrome, communication and managerial personnel should be imparted systematic and continuous but periodical training to cater to the individual developmental need as well as that of the organisation, in human supervisory behavioural and managerial skills by organising human resource-based as also continuing professional development-based training programmes with a view to make them excellent in their functional knowledge. Simultaneously, they should be motivated to have a dedicated approach and play an active role in the day-to-day affairs of the organisation to enhance their professional standing and raising the profile of their professional field in aviation.
  
20. It should be made mandatory by every operator for every employee to submit to them a self-appraisal format/proforma once every year during tenure of his service duly filled up and revealing as to:
  - a) Has he done well in his present job?
  - b) Could he do better?
  - c) Where and in what role does he see his future?

- d) What new knowledge or technical skill does he need for the future role?
- e) What resources are available to him?
- f) What development method should he use or suggest to acquire the new knowledge or skills?
- g) What deficiency does he feel that exists in the system which can improve the maintenance and safety standard.

The operator will review these reports and submit to DGCA their analysis and action taken on the important observations.

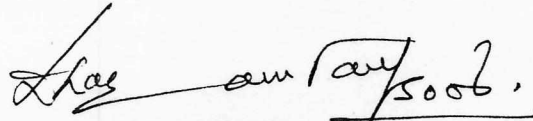
21. For gearing up in-house training activity to all employees, specially in air traffic control wings, the concerned aviation establishments of both civil as well as Defence should frequently organise joint development programmes in collaboration with each other by pooling their resources and efforts in this direction not only at the Headquarters but also at Regional headquarters.
22. In view of the significant rapid changes all around us like globalisation, liberalisation, total continuous improvement (TCI), total quality management (TQM) etc., DGCA should issue directions (mandatory in nature) laying down that every Air Traffic controller



must undergo Computer Based Training (CBT). The Air Traffic Control Officers who are upgraded as Radar Controllers should undergo training on CBT simulators for radar control for the laid down period to maintain high standard of his professional competence including the handling of emergencies in real time scenario.

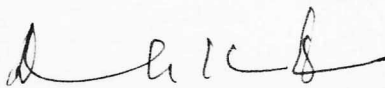
23. In order to overcome inherent restrictions and tendency of being subjective, the aviation establishments and Defence should induct/deploy Computer Based Technology equipments marketed under the brand name WOMBAT-FC or any other equivalent having the same capability for the selection of Air Traffic Controllers at the recruitment stage which is an ingenious device that measures the human capabilities and reflexes needed for a job as professional as such.
24. The operators engaged in public air transport should record and manifest, the passengers carried on each flight.
25. The operators should ensure that the pre-flight medical check of the pilots is carried out.
26. DGCA should be made an independent body like FAA of USA and should not be under the Ministry of Civil Aviation. Revamping and restructuring of the staff is also required on the same lines as in FAA, USA.

27. At Delhi airport, the Flight Information Centre should be manned and also the communication facilities like FC-10 etc. be made and maintained fully serviceable.



( D.P. SOOD )

JUDGE (RETD.) HIGH COURT, HIMACHAL PRADESH



( Capt. D.K. Sharma )  
Assessor



( Shri K.B. Batra )  
Assessor

New Delhi  
31st July, 1995

## ACKNOWLEDGEMENTS

Before parting with the inquiry, my sincere thanks to the Assessors Capt. D.K. Sharma, Chief Operations Manager (Air Safety and Training), Vayudoot Ltd. (Now Indian Airlines) and Shri K.B. Batra, Chief Engineer, Border Security Force for providing me their valuable but useful assistance in completing the inquiry by their expert knowledge on the subject.

Before I record my appreciation to the various civil aviation organisations in India, my sincere thanks go to M/s Raytheon Company (Beechcraft), Wichita, USA, particularly Mr. Dean Thompson, Manager, NTSB (Liaison); Mr. Edde Webber and their other associates. I also extend my appreciation for the extremely valuable and useful assistance given by Capt. Don Orlando of Flight Safety International, USA who extended all facilities to us for carrying out simulator exercises on the type of aircraft in question as also to acquaint ourselves with the procedure of training of pilots.

I must appreciate the useful information given to us by the Officers of Civil Aviation, Switzerland by Capt. Balsiger, Chief of Flight Operations, as also by Zemix Aviation, Swiss registered operator through Capt. Nick Hater. I am indeed happy to have met the above said officers more so by reason of their untiring efforts in coordinating the whole programme of study of the training culture in their country in flying as also the information provided to us regarding safety measures taken not only by regulatory authority of Switzerland, but also the operators being controlled by them.

I record my sincere thanks to the manufacturers of the aircraft (Raytheon Company), the sincerity with which the manufacturer of the aircraft in question responded to the queries of this Court of Inquiry needs special praise. The Company never showed any reluctance to assist the Court in any sphere. Special arrangements were made at Wichita with Flight Safety International for carrying out exercises in the simulator of aircraft in question at the request of this Court. The Company also sent their representative to India at the behest of the Court of Inquiry for the purpose of assisting us by his oral evidence and documentary presentation before the Court.

During the course of investigation, I came to know Shri H.S. Khola, Director General of Civil Aviation and in him I found an efficient, knowledgeable, devoted, hard-working and sincere and aboveall a highly competent technical official of the Central Government. It would not have been possible for me to complete the inquiry, had he not spared his staff or arranged for the facilities provided to me from time to time during the course of investigation. I found him extremely helpful in assisting me in critical analysis of highly complex technical and operational aspects in respect of accident in question. I sincerely wish him all success in life and pray to the Almighty that Shri Khola should continue to work with such devotion for all times to come.

I am very grateful to Shri V.K. Chandna, Director of Air Safety and Inspector of Accidents in this investigation who by his experience and expertise on the subject, provided sufficient material for initiating the investigation after conducting preliminary inquiry in the above said capacity. I would be failing in my duty if I don't express my appreciation for his sincerity and hard-work together with



his desire to fulfil all the needs of the Court. Shri Chandna has helped me to an enormous extent to bring to a fruitful end of the task assigned to me. The report submitted by him is also very comprehensive and assisted me in every sphere of my inquiry.

My sincere thanks go to Air Marshal D.R. Nadkarni, Inspector General of Air Force; Air Cmdr. I.J.S. Boparai, Director Flight Safety and other IAF Officers stationed at Delhi, Chandigarh and Barnala including Gp. Capt. T. Pannu and Wg. Cdr. V. Nagpal. I record with appreciation their sincere help and assistance given to me by all of them.

Needless to say that officers of the Airports Authority of India previously National Airports Authority and International Airports Authority of India extended all kinds of help and provided facilities to this Court in acquainting ourselves with the working of Air Traffic Control system, navigation and communication facilities. My sincere thanks go to Shri K. Ramalingam, Executive Director and other associated officers.

I also record my appreciation to one and all of Border Security Force (Air Wing) who extended this Court the facility of familiarisation of the Super King Air B-200 aircraft in their hangar.

I am also grateful to Air Cmdr. C.M. Singla, VrC, CMD Pawan Hans Limited for having made our visit fruitful in respect of simulator exercises and acquainting ourselves with the working thereof. It would not be out of place to mention that the arrangements made for this purpose were praise-worthy.

I must also extend my thanks and record appreciation to Capt. M.V.V. Rao and Shri P.B. Reddy of Central Training Establishment, Indian Airlines, Hyderabad for providing us very useful information regarding the training provided to the pilots on simulator. It would be worthwhile to record that not only we were acquainted with the mode of training on simulator, but also by actually carrying out the simulator exercises. Such effort on their part too also has contributed a lot for the appreciation of the material collected in the instant investigation and resultant preparation of the report.

I want to specially record my high appreciation to the useful assistance provided to this Court by the Government of Himachal Pradesh and its officers particularly S/Shri R.K. Anand, Chief Secretary to the Government of Himachal Pradesh; S.S. Negi, Secretary, General Administration; M.L. Chouhan, Joint Secretary and Tarun Sridhar, Deputy Commissioner, District Mandi. I also extend my thanks and record appreciations to Shri B.S. Thakur, the then Additional Director General, CID, Himachal Pradesh; Shri R.P. Kureel, DIG and other Police officers connected with the inquiry.

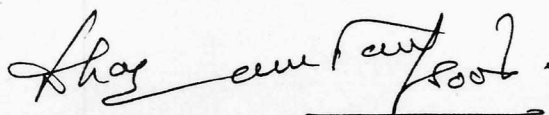
The Court of Inquiry records its appreciation for Shri Lalit Gupta, Assistant Director Air Safety, Office of the DGCA for his highly dedicated, sincere and devoted efforts in assisting the Court in all the spheres, whenever desired. I also record my sincere appreciation for the services rendered by Shri R.K. Kohli, PA, without whose assistance this report could not have been prepared within the target date. He has been an asset to the Court since the inception of this inquiry. I also extend my thanks to Shri S.K. Naik, Section Officer and Shri Madan Lal, Aircraft Mechanic for rendering

valuable assistance from the very inception of the inquiry till its completion.

I will be failing in my duty if I do not record my sincere appreciation of the services rendered by Shri Ashok Sahdev, Secretary of this Court, without whose assistance neither this inquiry could have been completed nor the report in question could have been prepared. The untiring energy of this young dynamic gentleman needs special mention and praise. I find in him an efficient, knowledgeable, devoted, sincere and hard-working officer. I wish him success in his life and pray to the Almighty that Shri Sahdev should continue to act with such devotion, dynamism and sincerity for all times to come.

While I thank all the lawyers who have assisted the Court in its inquiry, I record my special appreciation for the assistance rendered by Air Cmdr. N.A.K. Sarma; Ashok Aggarwal, Additional Advocate General to the Government of Punjab; Shri Lalit Bhasin; Shri Shishir Sharma; Ms. Mridul Sharma; for their invaluable service to this Court of Inquiry. The clarity with which Air Cmdr. N.A.K. Sarma represented the case on behalf of Airports Authority of India is really praise-worthy. All the lawyers and parties in this inquiry came forward to assist the Court which indicated their laudable gesture.

Finally, my heart-felt condolences to the members of the bereaved families, both of crew and of the passengers.



( D.P. SOOD )

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