

INVESTIGATION REPORT INTO FATAL ACCIDENT TO GOVERNOR
OF BALUCHISTAN CESSNA-421 AIRCRAFT BEARING
NATIONALITY AND REGISTRATION MARKS AP-AYQ
WHICH OCCURRED ON 6-7-84 NEAR MANKERA
AT 170608 P.S.T.

1. Aircraft information

1.1. Aircraft type & Manufacturers S.NO. Year of Construction.	Cessna-421/B 0899 April, 1975
1.2. Registration Marks	AP-AYQ
1.3. Engine type, installation and manufactures S.No.	Continental G.T.S. 10-520 H Wing mounted Port 607048 Star Board 607049
1.4. Certificate of Reg.No. & date of issue.	No.489 31-7-1975
1.5. Certificate of Airworthiness No. & date	No.442 24-8-1975
1.6. Date of last renewal of C.of A.	26-11-83 (valid for one year)
1.7. Certificate of maintenance & Validity.	2-7-84 (valid upto 1.8.84)
1.8. Owner	Govt.of Baluchistan
1.9. Date of last weighing	14-7-82
1.10.Empty weight	5155 Lbs
1.11.Maximum gross weight permitted	7450 Lbs
1.12.C of G.	Within limits

2. Crew Information:

2.1. Pilot-in-Command

2.1.1. Name	Capt.Hyder Ali Baluch
Alias	Capt.Hyder Alliani
2.1.2. Date of Birth	25-6-1930
2.1.3. Type of Licence held with No.	ALTP Licence No.301.
2.1.4. Date of last medical with status	14-6-84 (valid subject to use of corrective glasses)
2.1.5. Rating current	Cessna-421/B
2.1.6. Flying Experience:	

/2.1.6.1.Grand

2.1.6.1. Grand total	7254.30 hrs
2.1.6.2. Total in Command	6932.00 hrs
2.1.6.3. Total on the type accident occurred.	2147.02 hrs (P-I)

2.2. Co-Pilot

2.2.1. Name	Nadir Imtiaz Saigal
2.2.2. Date of Birth	10-12-1955
2.2.3. Type of Licence held with No.	CPL No.734
2.2.4. Date of last medical with status	17.6.84 (valid)
2.2.5. Rating current	Cessna-421/B P-1
2.2.6. Flying Experience	
2.2.6.1. Grand total	2129.30 hrs
2.2.6.2. Total in command	1578.30 "
2.2.6.3. Total on the type of accident occurred.	P-1 1201.30 hrs P-2 177.00 hrs

3. Summary

- 3.1. On the 6th July, 1984 Cessna-421/B aircraft bearing Nationality and Registration Marks AP-AYQ owned and Operated by the Government of Baluchistan departed Islamabad at 1409 PST, for Quetta routed Via Mianwali, Dera Ismail Khan, and Zhob. The aircraft was flown by Mr.Haider Ali Baluch with Mr.Nadir Imtiaz Saigal as his Co-pilot. Lt.General Sardar F.S.Lodi, Governor of Baluchistan and Capt.Amir Akbar, A.D.C. to the Governor,were passengers on board this aircraft.
- 3.2. After take-off from Islamabad the aircraft climbed to Flight Level 160, its flight planned altitude. The pilot flew the aircraft left of its desired track due to adverse weather enroute. Consequently he reported abeam Mianwali, keeping the airfield on his right, instead of reporting overhead. When abeam Mianwali, due bad weather the Pilot requested descent to FL 95. Descent was approved by Mianwali ATC. After reaching flight level 95, the pilot requested descent to 4500 ft. This request was also approved by the Mianwali Air Traffic Control. However at this stage local atmospheric pressure was not passed to him by the Air Traffic Control Officer Mianwali,nor did he make any request.

/3.3. At 1655

- 3.3. At 1655 P.S.T, the pilot informed Air Traffic Control Mianwali that he was diverting to Multan, which was one of his flight planned alternate airfields. Radio Telephone frequency of Multan ATC was passed to the Pilot by ATC Mianwali & he was requested to intimate his estimated time of arrival Multan. The Pilot asked Mianwali Air Traffic Control to standby. This transmission took place at 1656 hours. Nothing was heard from the aircraft after this transmission.
- 3.4. At approximately 1712 hrs when Mianwali A.T.C tried to contact the aircraft, they received no response. At 2145 hrs Bhakar Police informed Multan that the Governor's aircraft had crashed near Mankera, District Bhakar.
- 3.5. In the accident Lt.General Lodi survived with serious injuries. The other three occupants sustained fatal injuries. The aircraft was destroyed due to impact and post impact fire.

4. Injury to Persons:

- 4.1. Lt.General Sardar F.S.Lodi, Governor of Baluchistan, who was a passenger on board this aircraft, received several injuries. Details of which are placed at appen-"X"-2.
- 4.2. Mr.Haider Ali Baluch , also known as Mr.Haider Alliani, the Pilot-in-Command, Mr.Nadir Imtiaz, the Co-Pilot, and Capt. Amir Akbar, A.D.C. to Governor, a passenger on board, sustained fatal injuries. Their death certificates were issued by Mr.Inamul Haq Khan, Senior Medical Officer, Distt. Bhakar, who received and examined the bodies (Appendix - J₁, J₂, J₃).

5. Damage to Aircraft

- 5.1. The aircraft was destroyed as a result of its impact with the ground and subsequent fire. The debris were scattered in an area of 1000' x 1483'. Damage report is placed at appendix - 'W'. Site diagram is placed at appendix - X₁ & X₂

6. Other Damage

- 6.1. None

/7.Meteorological Conditions

7. Meteorological Conditions

- 7.1. Weather conditions provided by Duty Meteorological Officer Chaklala to Mr. Nadir Imtiaz, Co-pilot before departure of this ill fated aircraft, were as follows. Thundery condition alongwith isolated thunder storms and local dust raising winds upto South of Mianwali. Scattered Clouds, medium and low, with base at 4000 ft, lowering to 3000 ft in isolated cumulonimbus clouds. Visibility 5-7 Kilometers. Light variable winds were estimated at low level. Actual weather reports at different stations at 0800 PST were also read out to him. (Appendix-Q₃).
- 7.2. Actual weather recorded at Mianwali at 1700 hours on 6.7.84 was as follows:- "Clouds CB 3500' one octa, SC 4000' 5 Octa and AC 10,000' 3 octa. Vis 5 Kilometers with winds blowing from the NE at 16 Kts" QNH 995.9.
- 7.3. Pilot Officer Bhatti, Duty Met. Officer on duty at weather office Chaklala Airport has stated that Mr. Nadir Imtiaz, the Co-pilot of AP-AYQ, visited his office for a very brief period of two to three minutes. The Prevailing weather was read out to him. The Duty Met Officer has also stated that no booking for the route weather forecast or forecast for destination airport was made by the crew of this ill fated aeroplane (App- 'Q₁, Q₂).
- 7.4. Weather at Multan, one of the flight planned alternate airports, was also bad. The investigators have found no evidence to show that the pilot obtained Multan weather before he decided to divert. Decision to divert to Multan appears to be entirely based on the weather observation of the Pilot-in-Command. When Mianwali ATC obtained weather for Multan and attempted to pass it to the Pilot at 1659 PST, no contact could be made.
- 7.5. Weather at PAF base Sargodha was reported fair. A Cessna-172 of the PAF arrived this base from Rafiqi base at 1710. Sargodha was at a distance of 50 NM from Cessna-421 aircraft when the Pilot made decision to divert to Multan.

/8.Aids

8. Aids to Navigation:

8.1. All Navigational and landing aids were reported to be operating normal at the station of departure, Mianwali and Multan. No report had been received about their unserviceability.

8.2. Aids to Navigation were not a factor in this accident.

9. Communication:

9.1. Normal radio Communications were maintained by the Pilot with the appropriate ATC units. The Pilot remained in contact with Mianwali tower till ten minutes prior to the accident.

9.2. Radio Communication was not a factor in this accident.

10. Aerodrome and Ground Facilities:

10.1. Aerodrome of departure, enroute aerodromes, flight planned alternate airports and destination airports were equipped with the facilities to accomodate aircraft of this category.

10.2. Aerodrome and ground facilities were not a factor in this accident.

11. Flight Recorders

11.1. Flight Recorders were not fitted in this aircraft. Nor there is a requirement for Flight Recorders to be fitted on board this category of aircraft.

12. Wreckage

12.1. The scene of accident was visited by the investigation team. The member from the PAF, Wing Commander Riazul Haq, joined the team when it returned to Mianwali and did not visit the accident site.

12.2. The wreckage was identified as Cessna-421/B bearing Nationality and Registration Marks AP-AYQ, owned and operated by the Government of Baluchistan. Logo of Governor of Baluchistan could be seen clearly on the aircraft (app. AN-6).

/12.3. Inventory

- 12.3. Inventory of the aircraft parts was prepared (App - AW₁ & AW₂). All parts of the aircraft were accounted for at the scene of accident indicating that no part/parts detached prior to impact with the ground.
- 12.4. The wreckage was spread in a large area. The furthest part, alternator from starboard engine, had travelled 1384 feet. The main wreckage had covered a distance of 1248 feet after its first contact with the ground before coming to rest (Appendix- X₁ X₂)
- 12.5. Strong winds blowing from the right side of the aircraft path and the manoeuvres adopted by the aircraft after its contact with the ground had scattered the disintegrated parts towards the left of the main wreckage trail. Some of the parts had been blown away as far as 1700 feet to the left of the main wreckage trail (wreckage distribution diagram is placed at Appendix- AW₁ AW₂).

13. Fire

- 13.1. No signs of fire were observed in the cockpit or passenger cabin. The doctor also did not find any evidence to show that any of the occupants had inhaled carbon monoxide. Lt. General Sardar F.S.Lodi has also not mentioned in his statement that he observed any fire in the cabin.
- 13.2. At initial impact with the ground, the right wing contacted the ground first and disintegrated. This released fuel which caught fire. Since the fuselage travelled through the fireball, and the right side of the fuselage had probably opened, this caused flash burns found on the occupants which were on the right side of the bodies. The doctor who examined the bodies described the burns as flash burns.

- 13.3. On impact of the left wing with the ground the left fuel cells also disintegrated. Fuel contained therein got released and on its release, this fuel caught fire. When the left wing came in contact with ground the main wreckage changed its direction by 180° to its original path of travel. Since the wind was blowing from the west, it was approaching the aircraft wreckage from the left. It has been testified by the witnesses that a heavy down pour start at this time. This heavy down pour not only restricted the fire from spread but also extinguished it. Had it not been extinguished, it would have spread out consuming the whole fuselage.
- 13.4. Fire caused no significant damage to the aircraft, except to the left wing, or severe fire injuries to the occupants.
- 13.5. No evidence of in flight fire were found on any part of the wreckage. All fire was post impact.

14. Survival Aspects:

- 14.1. Examination at the scene of the accident indicated that after initial contact of the Starboard wing, the aircraft bounced into the air and commenced rolling to the right. Upto this stage the occupants were probably not seriously injured. After light impact at the top of the dune the wreckage again bounced into the air whilst continuing rolling to the right. On the third impact the aircraft struck the ground, nose and left wing first, with cockpit right side up. This impact was heavy. It is probable that the grave injuries sustained by the occupants occurred at this stage.
- 14.2. From the examination of the wreckage it is the opinion of the investigation team that it should not have been a survivable accident. Survival of General Lodi was miraculous.

15. Test and Research:

- 15.1. There was only one altimeter fitted in the aircraft. It had detached from the instrument panel. It was picked-up from the wreckage. It was indicating an altitude of 4000'. The sub scale was set to 29.92 corresponding to 1013.2 m.b.(App.-AN) which is standard atmospheric pressure. A Pilot is required to set this standard atmospheric pressure when the aircraft passes through the transition altitude during its climb phase. Purpose of this procedure is to ensure that all aircraft are flown on a uniform setting to maintain vertical separation between the aircraft. The Pilot is required to set the local atmospheric pressure (Q.N.H.) in the sub scale when passing through transition level during the descent phase. This helps the pilot to determine his actual height over the terrain.
- 15.2. This altimeter was examined in the instrument shop by technicians of PAF base Mianwali under the supervision of the Investigators. After thoroughly examining the instrument, they were of the view that there was a possibility of its failure at 4000' causing the pointers to stay at this reading. The technicians further stated that they had observed similar failures in the PAF. However when questioned, they indicated that the failure was caused due to excessive "G" loads in the region of 10 "G". Fighter aircraft can sustain such loads, but a Cessna-421 would fail itself before such loads could be attained.
- 15.3. The same altimeter was sent to the instrument shop of M/s.PIAC. Findings of engineers of the National Air carrier are contrary to the one arrived at by the technicians of PAF base Mianwali. M/s.PIAC Engineers have opined that it was a post impact failure. According to them the height shown was due to travel of the needles after they got free on impact.
- 15.4. Since M/s.PIAC deals with Civil Aircraft Operation, their findings could be considered more acceptable.

/16.5.The

- 15.5. The altimeter failure is therefore not considered to be a cause factor in this accident.

16. Observations:

- 16.1. This aircraft was equipped with only one set of instruments including one pressure altimeter. In the event of a failure of the altimeter during an I.M.C. flight, the pilot would have no altitude information. It is recommended that aircraft engaged in VVIP and VIP flying should be equipped with two sets of basic flight instruments. Consideration to the use of a radio altimeter may also be given.

17. Investigation:

- 17.1. Information with regard to this fatal accident was conveyed to the President AIB, by the Director General of Civil Aviation Authority at 1030 P.M. on the 6th July, 1984. This message was passed by the President AIB to Pilot Chief Investigator immediately with the instructions to make travel arrangements for travel to Islamabad and for onward journey to the scene of accident.
- 17.2. In spite of all efforts, Airport Manager Karachi Airport could not be contacted by the Pilot Chief Investigator due to his non-availability in the office or at his residence. Duty Controller of M/s.PIAC was contacted for help. He also did not provide any assistance in procuring the tickets. However, he used his good offices to reserve two seats on Flight PK-300 of the 7th July, 1984. With no other alternative the tickets were bought by Capt.Farmanuddin by paying cash having borrowed that amount at midnight.
- 17.3. Air Commodore (Retd) Patrick D.Callaghan and Captain Farmanuddin departed Karachi at 7 AM on the 7th July, 1984 by PK-300. They arrived Islamabad Airport at 9 AM the same day. Mr.Taj Muhammad Senior Airworthiness Surveyor Islamabad, appointed as investigator in this investigation, joined the team at Islamabad Airport on arrival of the two officers from Karachi.

- 17.4. Initial meeting was held at Islamabad Airport by the investigation team. Action with regard to recording of statements of DATCO, Duty Met Officer, Ops. Officer and action to collect tape extract from VHF/RT (PAF Base Chaklala) was initiated. An aeroplane was chartered from Rawalpindi Flying Club for conveyance of the investigation team to Mianwali.
- 17.5. The team left Islamabad Airport at 1 PM and arrived PAF Base Mianwali at 2:15 PM. On arrival discussions were held with Group Captain Ghauri, O.C. Flying of this base. Later Air Commodore Basit, Base Commander, was contacted on his return from the scene of accident. Requirements with regard to recording of statements of DATCO Mianwali were conveyed to him, and arrangements for travel of the investigation team to the scene of accident were made.
- 17.6. The team left Mianwali at 3 PM in a rented Car and arrived the scene of accident, Mankera, at 5.15 PM. Immediately on arrival Mr. Hassan Tarar, Assistant Commissioner Mankera, Mr. Anwar Cheema, Resident Magistrate and Mr. Karam Hussain Shah, S.H.O., who were available at the scene, were contacted. They had set-up a Camp near the scene of accident. Initial meeting was held with them to obtain first hand information and plan activities for next day.
- 17.7. After the meeting mentioned in the preceding paragraph, preliminary examination of the wreckage and its trail was carried out by the team. The area along the axis of the path covered by this ill fated aircraft, starting from the resting place of the wreckage towards the reported initial point of contact of the aircraft, was visited. During this visit the area prior to the reported first point of impact was also scanned. No evidence was seen to show that the aircraft had touched the ground earlier than this point. Some photographs were also taken.
- 17.8. Due to lack of day light the investigations were discontinued. The team proceeded to Bhakar, the District, Headquarters for night stop.
- 17.9. On the 8th morning the team left Bhakar at 5.30 AM. It arrived at the scene of accident at 7.30 AM. On arrival the main wreckage was visited by the team. Area around

/the main

the main wreckage was inspected. It was noted that the starboard engine less its propeller was lying one hundred feet beyond the main wreckage. Its generator was lying furthest from the point of initial impact (App. AW2). Left engine along with the propeller was damaged but had not dislodged from its position fixed at the wing.

17.10. Parts from the Radome were seen lying scattered in an area of 60' x 100' short of the final resting place of main wreckage. Ground marks indicating that the nose of the aircraft came in contact with the ground at this point. The impact was heavy with the nose and the left wing striking the ground almost simultaneously.

17.11. The team examined the first point of impact. Marks of impact of the aircraft with the ground were noted near a bush (App- AN) located 1384 feet from the final resting place of the starboard engine. These marks had been made by the starboard wing and engine. The wing tip light was found intact, but broken off first, ahead of this impact point. The fact that the light was not broken indicates that it did not strike the ground directly, further indicating that the aircraft impacted the ground with a shallow right hand bank. The wing disintegrated at first impact - releasing fuel ignited. Parts of the disintegrated wing were blown to the left of the aircraft wreckage trail. Parts of the starboard aileron were located 1,700 feet to the left of the centre line of the wreckage trail. Witnesses had indicated a strong wind from right to left of the aircraft direction. The scatter of the right wing parts confirms the direction of the wind and gives an indication of its velocity (Probably exceeding 40 knots). After holding discussions on the spot it was decided to visit the approach funnel area of the aircraft.

17.12. The Investigator incharge left in a jeep provided by the District authorities to visit the area prior to the first point of impact. He covered a distance approximately of 7 miles. He saw no evidence to show any impact marks in this area. He talked to the villagers on both sides of the presumed path of the aircraft. He was informed by the witnesses that the aircraft was heard flying low in that area during a severe dust storm. It was also determined

/by him,

by him, based on the statements of available witnesses, that the aircraft was following the path which finally led to the impact point.

- 17.13. The Investigator Incharge returned to the scene of accident. He along with the other investigators scanned the entire area on the right and left side of the path covered by the aircraft. All the parts of the aircraft were accounted for at the scene of accident (App- X₁, X₂). A site diagram was prepared and is placed at (App- X₁ & X₂). Photographs of the parts were also taken. Only those photographs which are considered necessary for this investigation report have been used in this report.
- 17.14. Altimeter of this aircraft, which was detached from the instrument panel and was lying near the main wreckage, was picked up. This altimeter was examined. It was noted that the sub scale was set at 29.92 " (App-AN) corresponding to 1013.2 MB. This is a standard setting selected by the pilots when the aircraft passes through transition altitude during climb phase, in this case 3000 feet. Standard setting is retained during further climb, cruise and part of the descent phase. Local atmospheric pressure is selected in the sub scale when the aircraft passes transition level during descent, which in this case should have been flight level 85. It was also noted that the altimeter was reading 4000 feet. Glass of the instrument was partly broken and sand had got into the dial (App - AN). However, the needle could move from 4000 to 4500 feet freely. The standard atmospheric setting is a requirement which enables the aircraft to maintain vertical separation between the A/C flying on the same route.
- 17.15. A Citizen watch was picked up from within the wreckage which had stopped at 5 hours 6 minutes and 8 seconds (1706'08") (App - AA). This time is considered to be time of the accident. It was confirmed later that this broken watch belonged to Mr. Nadir Imtiaz Saigal, the Co-pilot of this aircraft.
- 17.16. The investigation team after collecting all the information on the second day proceeded to Bhakar for night stop. On arrival at Bhakar, statement of Dr. Inamul Haq, Senior Medical Officer, was recorded in respect of the injured General. The doctor also supplied copies of the death certificates issued by him in respect of the other three occupants who had died in the crash. Dr. Inamul Haq was on duty at the

/Civil

Hospital when one injured person and three dead bodies were received at the Hospital. He had provided Medical assistance to the injured person and he had also examined the dead bodies. His statement and the death certificates are placed at Appendix - 'H' and Appendix - J₁, J₂ & J₃, respectively

- 17.17. On the 9th May, 84 the team left Bhakar to find answers to questions arising from the discussion session held in the evening on the preceding day. On arrival at the scene of the accident, the wreckage was examined again. During this examination the fuel cocks were noted to be in off position. (App- AN). This did not co-relate with the fact that their corresponding engines were operating at high speed at the time of impact. The matter was further probed into. During examination of the fuel system it was noted that pulling force on the inter-connecting levers/cables to the engine fuel cock results in the indicator in the cockpit changing its position towards off position. It was therefore established that the forces on these cables as a result of impact and break-up of the aircraft resulted in the fuel selector position altering to off at impact. The condition of the engines indicate that they were operating at a high power upto time of impact.
- 17.18. A damaged wrist watch, Citizen Quartz, which had been recovered from the debris, was taken into custody by the team for the purpose of investigation (App-AA). After the wreckage was examined thoroughly and it was no more required by the team, Mr. Tarar, Assistant Commissioner Mankera was informed by Air Commodore (Retd) Patrick D. Callaghan, the Investigator Incharge, that the wreckage was no more required for the purpose of investigation. He was requested to communicate this message to the Governments of Punjab and Baluchistan for their disposal action.
- 17.19. After a final inspection of the wreckage the team left the scene of accident at 11.30 AM and arrived Mianwali at 2.30 PM. At Mianwali the team was joined by Wing Commander Riaz-ul-Haq, who had also been appointed as an investigator on this investigation team.
- 17.20. At Mianwali the Base Commander was requested to arrange strip examination of the pressure altimeter and vertical speed indicator with a view to establish cause of their

/failure.

failure. He directed his Officer Commanding Technical to provide necessary assistance.

- 17.21. The instruments were opened in the base workshop by the base technicians under supervision of their technical officers (App- AN). These instruments were examined thoroughly. During the examination of the damaged altimeter it was noted by the technician that pivot of mechanism had sustained damage. Report prepared indicates that this damage may have been sustained during flight. After such damage, hands of the altimeter would be free to move to any position (App - AB). During discussions with the technicians they indicated that they had experienced a similar failure of the pivot mechanism due to high "G" forces in a fighter aircraft. "G" force indicated by them was about ten. It was concluded that such forces could not have occurred in flight with out break up of the aircraft in the subject accident.
- 17.22. On return to Karachi the altimeter and V.S.I. were sent to M/s.PIAC instrument shop for examination. At the instrument shop both the instruments were examined by the engineers under the supervision of Mr.Taj Mohd. Senior Airworthiness Surveyor, an Investigator appointed on the team. Report prepared after examination of the instruments by M/s.PIAC engineers is contrary to the one prepared by the PAF (App- AL). M/s.PIAC report indicates that the damage sustained by the altimeter was a post impact damage. Since M/s.PIAC deals with instruments used by the Civil aircraft, conclusions drawn by them are considered to be acceptable.
- 17.23. On the 11th July, 1984 the investigation team departed Mianwali for Islamabad on board a chartered Cessna-180 aircraft. It arrived Islamabad on the same day. On arrival at Islamabad all the documents pertaining to this aircraft were collected. These included statements, reports, copies of pages showing booking of weather forecast, copy of ATC Clearance Form, copy of AT.S.I I/83 and 2/83, page 63 of AFM etc.
- 17.24. A visit to PAF Base Sargodha was also planned for the following day. Purpose of the visit was to collect statements of all those who had any information about

/this aircraft

this Cessna-421 aircraft, including radar controllers on duty. Visit could not materialise on the planned day because of adverse weather enroute. However the team departed for Sargodha the following day.

17.25. At Sargodha statement of Duty Air Traffic Controller was recorded. Statement of one of the two pilots, who flew a mission from Rafiqi base to Sargodha base in a Cessna-172 type of aircraft was also recorded (App - E). This Cessna-172 aircraft had landed Sargodha almost the same time when the Cessna-421, AP-AYQ had crashed. No significant information could be provided by these pilots in respect of AP-AYQ. The team departed for Lahore enroute to Karachi the same day.

17.26. Near the scene of accident there was a dwelling at approximately 90° to the flight path at a distance of 100 feet from the point of first impact. Mr. Umar Din, a qualified Hakim, resided there along with his family comprising of sons and daughters, their wives/husbands and children. He is commonly known as Chacha Umar Din. At the time of occurrence he was inside his house because of strong wind and blowing sands. The visibility had reduced to almost nil. The light was so low that One could not see his finger tips when he extended his hand (App N)

17.27. At first impact when the fuel got released from the right wing during its disintegration, it caught fire. It caused a loud noise with a bright flash of light. Chacha Umar Din has stated that at first he thought that probably it was lightning. However soon after, fumes of gasoline were smelt by him. These fumes had travelled to his house due to strong winds. At this stage he suspected that it could be some-thing other than what he had thought earlier. He came out of his house alongwith his son and son-in-law to take stock of the situation. He soon found aircraft parts lying on the ground. To him it was now evident that an aircraft had crashed. He decided to report the matter to the local authorities. Consequently he detailed his son and son-in-law to proceed immediately and inform the nearest police station. Both of them left to follow the instruction passed by their elder. Chacha Umar Din himself followed trail of the wreckage.

/18.28. On reaching

- 17.28. On reaching the main wreckage, comprising of fuselage and left wing, he saw a person tied to the seat with a belt trapped in wreckage. Some other people from his house also arrived at the scene of the accident to help in rescue operations. This rescue party could not release the injured person from the seat.
- 17.29. When the son and son-in-law of Chacha Umar Din reached the main road after covering a distance of approximately 4 Kilometers, they saw Malik Ghulam Rasool standing near his house. They informed him of the occurrence and requested his assistance. Malik Ghulam Rasool directed his three sons namely Malik Ghulam Sabir, Malik Ghulam Jaffar and Malik Ashiq Hussain to proceed to the scene of accident and provide necessary assistance. Malik Ghulam Rasool placed a tractor and tractor trolley at their disposal for their conveyance and help in rescue operation. Malik Ghulam Rasool himself proceeded to the police station to report the matter to the Station House Officer.
- 17.30. The rescue party led by Malik Ghulam Sabir soon arrived at the scene of accident. On arrival they managed to release the injured person by unlocking the seat belt which was holding him. The injured person was carried on a Charpai to the residence of Chacha Umar Din for first aid. On arrival at residence of Chacha Umar Din, the injured person was provided hot milk for drinking. Soon it was decided by the rescue party that medical help was required immediately. Therefore the injured person, carried on a Charpai, was driven in tractor trolley with an aim to be transported to the nearest hospital. When the trolley had covered approximately one and a half mile, it was stopped by a Datsun pick-up approaching from the opposite direction. Resident Magistrate, Station House Officer Mankera, Tehsildar and Malik Ghulam Rasool were on board this vehicle. The pick-up was vacated by them. The injured person was transferred to this transport. Malik Ghulam Sabir S/o Malik Ghulam Rasool was requested to accompany the injured person to Civil Hospital, Bhakar, located 42 KM from the scene of the accident. The Datsun pick-up sped away to the Hospital with injured person and the attendant on board.

- 17.31.. The party, which had arrived in Datsun pick-up, proceeded to the scene of accident after the Datsun pick-up departed for hospital. On arrival at the scene of occurrence they helped the party already engaged in rescue operation. They removed the three dead bodies from the wreckage. They also saw logo of Governor of Baluchistan on the aircraft. During further search they found uniform bushshirt with a name tag of Sardar F.S.Lodi. Since none of the dead bodies was identified as the Governor, they realised that the injured person was the Governor. They proceeded to the police station with the dead bodies. On arrival at the police station they arranged to send the dead bodies to Civil Hospital Bhakar. They also informed D.C.Bhakar on telephone that the injured person was Governor of Baluchistan.
- 17.32. As a result of efforts made by the local inhabitants, pointed out in the preceding para, it became possible to rescue the sole survivor, and to provide medical assistance in time. Prompt action taken by the local authorities helped in providing timely medical assistance to the injured person thus saving the life of Lt.General Sardar F.S.Lodi.
- 17.33. At the Hospital the injured person was received by Dr. Inamul Haq, Senior Medical Officer Bhakar, working as Medical Superintendent, District Headquarters Hospital Bhakar. He was the duty Medical Officer. When the injured person arrived in the hospital, he was unconscious, in a state of shock. His blood pressure was just recordable (60/40 mm hg). Till this time no one knew that the injured person was Gen.Lodi. Whilst the Doctor was busy in providing medical assistance, he was informed by the Deputy Commissioner Bhakar that the injured person was Lt.Gen. Sardar F.S.Lodi, the Governor of Baluchistan. The Deputy Commissioner had been informed by the station House Officer, Mankera, who during the rescue Operation had found evidence to the effect that Governor of Baluchistan was on board this aircraft.
- 17.34. Lt.General Sardar F.S.Lodi was kept over night at the Civil Hospital Bhakar. He was flown to C.M.H.Rawalpindi on the morning of the 7th July, 1984 in a army helicopter. Before release from the hospital, his blood pressure was taken. It had reached a healthy figure of 130/80. The General stayed in C.M.H. Rawalpindi till he recovered.

/The General

The General was in state of unconsciousness when he was transported to Rawalpindi.

- 17.35 On arrival at Islamabad airport the Investigator Incharge Cont-acted the Officer Commanding C.M.H. Rawalpindi to inquire about the health of the injured General and to know as to when would it be possible to see him for the purpose of recording his statement. No definite answer could be provided by the Officer Commanding C.M.H. Rawalpindi.
- 17.36. Gen.Lodi was the sole survivor of this accident. It was therefore considered necessary to record his statement, which could throw sufficient light on the events preceding the occurrence. The Investigator Incharge therefore delayed the process of investigation with the hope to record or receive a written statement. His numerous efforts made through the Airport Manager Islamabad and Senior Airworthiness Surveyor, Islamabad however brought no results. Later he was informed by the Airport Manager Islamabad that the General had been released from C.M.H. Rawalpindi and had shifted to the Baluchistan house for convalescing. At this stage the Investigator Incharge wrote a D.O. letter to Gen.Lodi requesting him to send a written statement, describing the events which preceded the occurrence, as he remembered them. It was sent to the General at Baluchistan House Residence (App- AQ).
- 17.37. When no reply was received in a reasonable time, the Investigator Incharge decided to complete the investigation with-out this statement. At this stage the Ministry of Defence directed (App-AS) that further efforts be made to record the statement. Good Offices of the Ministry were used and written statement from the General was received. (AR₁ & AR₂).
- 17.38. During the course of investigation Wing Commander Riaz-ul-Haq was requested to consult the Pakistan Airforce Manual and produce the portion which deals with the movement of VVIP/VIP aircraft. He produced copy of Chapter-10 of AFM 60-13/ (Page-63). There is no mention of handling of VIP flights (App-AG) in this document.
- 17.39. G.M.(ATS) CAA has issued two Air Traffic Services Instructions, No.1/83 and No.2/83 (App.AJ & App. AH) on the subject of handling VVIP/VIP flights. At para-2

of Air Traffic Services Instruction No.1/83 it is mentioned that in the past a V.I.P. flight to Quetta was handled in a casual manner without effecting positive Co-ordination with destination in respect of its operation Viz-a-Viz weather. Consequently, the flight had to return/divert to departure station from enroute, thus resulting in considerable inconvenience to the VIP. A situation similar to what has been stated in A.T.S.I. under reference was created when Cessna-421 AP-AYQ departed for Quetta on 6-7-84. It resulted in a fatal accident.

17.40. In the Air Traffic Service Instruction No.1/83 (App. AJ) there is no mention of action required to be taken by the Airport Manager Islamabad. At para 3(f) of these instructions it is mentioned that not-with-standing the responsibility of the pilot to obtain relevant Met. briefing, Duty Flight Information Officer, within whose F.I.R. the VIP/VVIP flight is originating, shall make sure that the pilot has been furnished the following:-

- i) Actual weather prevalent at destination aerodrome.
- ii) Weather forecast for destination aerodrome.
- iii) Actual/forecast weather along the route of the flight.

3 g). Progress of the flight be watched vigilently

17.41. On the 10th January, 1983 Air Traffic Services Instruction No.2/83 were issued on the subject of VVIP/VIP flight (App. AH). Scope of these instruction do not extend to cover VIP flights. However in these instruction it is not mentioned anywhere as to who will inform the Airport Manager of the Airport from which the flight will originate.

17.42. In the case of this flight the first officer Mr. Nadir Imtiaz Saigal submitted his flight plan to Chaklala ATC prior to departure of this Cessna-421. Following is written in bold letters against column 18 against other information. (App - AU).

18	OTHER INFORMATION
	GOVERNMENT OF BALUCHISTAN
	VIP
	GOVERNOR OF BALUCHISTAN

- 17.43. Except for the signature of the person approving the flight plan all columns of parts-II are blank. Time of submitting the form could not be determined. Information with regard to Actual take-off gross weight and freight on board also could not be determined.
- 17.44. Inspite of the fact that it was in the knowledge of the Air Traffic Control Chaklala that a VIP was on board, the flight was handled in a casual manner.
- 17.45. Contents of Air Traffic Services Instructions of 1/83 & 2/83 are not comprehensive. These instructions require to be re-written with the aim to cover all the aspects of flights with special emphasis on weather and responsibility of various agencies.
- 17.46. Mianwali weather & weather warning was passed to the Pilot of AP-AYQ when he came in contact with Mianwali. However Mianwali A.T.C. did not have actual Multan weather at the time of diversion. Considering the prevailing adverse weather conditions the weather of Sargodha (which was enjoying good weather) should have been passed to the pilot. This information could have enabled the pilot to plan his diversion before he encountered adverse weather south of Mianwali.

18. Witnesses

18.1. Statement of Gen.Sardar F.S.Lodi

- 18.1.1. While the team was at Islamabad, prior to its departure for Sargodha, the Investigator-in-Charge contacted the Officer Commanding C.M.H. Rawalpindi to find out the welfare of the injured General. He also enquired as to when it would be possible for the investigation team to interview the General. He was informed that the condition of the General was such that no visitors could be premitted for some time.
- 18.1.2. On arrival at Karachi several attempts were made through the Airport Manager Islamabad to contact the Officer Commanding C.M.H. Rawalpindi for obtaining an appointment. Permission was not granted.
- 18.1.3. When it became known that the General had

/shifted

shifted to Baluchistan House, efforts were made through the Airport Manager and Senior Airworthiness Surveyor Islamabad to record statement but no contact could be established. Since the report was getting delayed a D.O. letter was sent to the General at his Baluchistan House address (App - AQ). There was no response to this D.O. letter.

- 18.1.4. Failing to receive a response, it was decided to finalise the report without recording statement of the General. At this stage the Ministry of Defence directed (App - AS) that a final effort be made to record the statement, which had all along been considered very vital and which may provide usefull information about the events that preceded the occurrence. Due to intervention and good offices of the Ministry it was possible to receive a written statement (App - AR₁ & AR₂) which was based on the questionnaire provided by the Investigation Team.

18.2. Other Statements

- 18.2.1. Statement of the other witnesses were also recorded. List of these appear in the list of appendices.

19. Discussion:

- 19.1. It is a practice that atleast twenty four hours before a scheduled departure, a pilot is required to make a booking with the weather office for weather forecast for the route to be flown, the destination & the alterate airports. An hour before the departure the pilot is required to pay a visit to the weather office. He collects the weather folder and receives briefing from the Duty Meteorological Officer. Records maintained by the Meteorological Office at Islamabad Airport do

not show that any booking for Cessna-421 AP-AYQ for departure on the 6th July, 84 was made. (App.Q1 to Q7). However the Co-pilot of AP-AYQ visited the weather office for a brief period of 2 to 3 minutes. It was done shortly before departure of AP-AYQ to Quetta on the day of occurrence. Exact timing of the visit could not be determined because they were not recorded in part II of the clearance form.

- 19.2. Captain Haider Ali Baluch pilot of this ill fated aircraft had been flying this aircraft for nine years preceding the occurrence. He had logged over 2000 flying hours. Most of this flying was done on Quetta Islamabad route. This aircraft was also equipped with a weather radar. It appears that the pilot relied on his flying experience of this route and availability of the weather radar. The pilot when unable to penetrate enroute weather, decided to divert to Multan. This decision was also made by him without obtaining weather for Multan and route to be flown.
- 19.3. Altimeter of this aircraft, which was picked up from the wreckage, showed that it had a setting of 29.92 inches on its sub scale (App-AN). This figure of 29.92" corresponds to 1013.2 mb. This setting has been adopted universally for the purpose of uniformity for achieving vertical separation between aircraft during climb after it has passed the transition altitude, cruise and descent to transition level phases. Descent below transition level is performed with selecting local atmospheric pressure in the sub scale. (App-AM). It is done so that the pilot knows his height above the terrain.
- 19.4. Altimeter of this Cessna-421 aircraft showed a reading of 4300ft on its sub-scale. Broken glass and the sand, which was stuck on the dial during the accident, had restricted movement of needles to the extent that the needle could move only between 4000' to 4500'.
- 19.5. The altimeter was subjected to instrument shop examination at the PAF Base Mianwali to determine cause of altimeter being stuck at 4000 feet. After examining the altimeter the technician found that the instrument capules were separated from each other. (App: AN). The sector pivot was also broken. Sector was disengaged

/from main

from main gear due to broken sector pivot. According to the technician it could have broken if the aircraft was subjected to high 'G' loads. During question/answer session the technician informed that it would take 'G' forces in the vicinity of "10-G" to cause such damage. However it could not have been possible in this case because aircraft of Cessna-421 category were not designed to with-stand such high 'G' forces. The aircraft would have disintegrated in the air had it been subjected to such heavy 'G' forces. The conclusion as to probable cause of failure of the Altimeter was not accepted and it was decided to have it checked in the M/s.PIAC Instrument shop at Karachi.

19.6. The same altimeter was sent to M/s.PIAC instrument shop for examination. At the instrument shop it was inspected under the direct supervision of Mr.Taj Mohammad, Senior Airworthiness Surveyor, who is an investigator on the team. M/s.PIAC report indicates that due to heavy shock and heat the diaphragm got desoldered and the mechanism broken. During the entire flight the aircraft was only subjected to heat when it impacted the ground. There was no evidence found indicating in flight fire or signs of fire in the cockpit or the instrument panel. It is concluded that since the heating took place after the wreckage came to rest, the altimeter which was found outside the wreckage, must have been subjected to heat at this stage resulting in the diaphragm getting desoldered. The mechanism broke at the time of 3rd impact when a heavy impact loads were imposed. Possibility of the altimeter breakage in the air is therefore ruled out.

19.7. Strong winds were blowing from the west at the scene of accident when the aircraft came in contact with the ground and during the period immediately preceding the occurrence. Witnesses and others present near the scene of the accident have stated that the wind speed was very high. It could be estimated in the neighbour hood of 40 knots - plus. Capt.Gardezi of PK-662 of the 6th July, who was approaching Dera Ismail Khan has stated that he informed ATC. Dera Ismail Khan that a storm was approaching their station (App- G). However the ATC in turn informed him that the winds at Dera Ismail Khan were light. After landing of PK-662, a storm hit D.I.Khan. Capt Gardezi has stated that the

/wind speed

wind speed was between 20 to 40 knots. This storm after hitting Dera Ismail Khan later travelled towards Mankera. Travel of storm at this high speed indicates a very low atmospheric pressure around Mankera. Atmospheric pressure at Dera Ismail Khan was 995 mb. With winds blowing at high intensity it can be concluded that pressure difference between Dera Ismail Khan and Mankera may have been 10 mb or more on the lower side. Pressure at the scene of accident could be estimated to be 985 mb or less. Difference between the standard atmospheric pressure and actual pressure would have been 28 mb (10132 - 985). Change of one mb causes a difference of reading by 30 feet on the altimeter. Difference of 28 mb will cause an error of 840 feet. The altimeter would therefore over read by 840 feet.

- 19.8. Elevation of the crash site is 545 feet. Added this to the induced altimeter error of 840 feet would make a total of 1385 feet. So when the altimeter read 1385 feet in the cockpit the aircraft would actually be scraping the ground. However, the pilot not aware of the fact that he had not changed the altimeter setting would take the figure of 1385 feet as correct altitude thinking he was nearly 1000 feet above the ground terrain.
- 19.9. Studying the flight profile flown by the pilot of this Cessna-421 it is noted that when he noticed the adverse weather on his route, he requested for descent to flight level 95 from flight level 160. It was approved by Mianwali Air Traffic Control. It appears that the pilot was unable to maintain contact with the ground at this lower level. He therefore requested for further descent to 4500 feet. This indicates that the pilot intended to fly in contact below the clouds.
- 19.10. At 1655 hours the aircraft called that he was diverting to Multan due bad weather. The pilot was asked to give his E.T.A. for Multan. He requested to standby for the information. Nothing further was heard after that. It is possible that the aircraft descended below 4500 feet which made it difficult for A.T.C. Mianwali to receive calls from the aircraft (App. - F). Since receipt of VHF/RT transmission are based on line of sight theory. At lower altitude and longer distance from the station poses problems in reception.

- 19.11. General Lodi has mentioned in his statement that low light conditions and poor visibility prevailed before the occurrence. He has also stated that the aircraft was engaged in descending turns prior to the accident. Witnesses on ground have testified that visibility was poor due dust/sand with strong winds blowing. It is likely that the pilot in attempting to remain contact with the ground descended to an altitude where he could not maintain clearance from the terrain. Over reading of altimeter contributed to this situation.
- 19.12. Mr.Amjad Ullah Khan, a pilot by profession, was employed by the Government of Baluchistan as a Co-pilot prior to employment of late Nadir Imtiaz. During his employment with the Government of Baluchistan he had the opportunity to fly as Co-pilot with Mr.Haider Ali Baluch for a reasonably long period. Later he left the job for a better career with the Department of Plant Protection, Ministry of Agriculture. During his service tenure with the Government of Baluchistan, he cultivated good friendship with Capt.Baluch. According to Mr.Amjad Ullah Khan (App-AF) late Capt.Baluch would avoid cloud flying by flying under them. He always advised his co-pilot to adopt the same practice. In fact one of the reason for his leaving the job is stated by Mr.Amjadullah to be unsafe conditions induced by such a practice.
- 19.13. At para-2 of his statement General Lodi has stated that at lunch time, while at Murree, he was conveyed a message that the weather was fine and he could depart at 4 PM for Quetta. According to the General, this message was conveyed from Islamabad either by his A.D.C or the Chief Pilot. Even if it was conveyed by the A.D.C., it must have been conveyed with the concurrence of the pilot, who was operating the flight. Enroute, when the pilot encountered bad weather, he did not bring this fact to the notice of the Governor (App-AR₁ Para-AR₂). In fact the curtain between the Cockpit and passenger cabin was drawn by the crew (App- AR). The Governor has stated that he was unaware that the flight was diverting to Multan.

/ 19.14.The Governor

- 19.14. The Governor has also stated (App- AR₂ Para - 6) that conversation of the pilots on the VHF/RT could not be heard by him. Position of passenger in the cabin of this aircraft is reasonably close to the cockpit. Transmission made by the pilot can easily be heard by the passengers. Not hearing transmission was due to fact that the pilots made brief transmissions. In total they made 4 calls (App.-V). The pilot did not ask for Multan weather at 1656 hours when he decided to divert to Multan. The foregoing points to the fact that since the pilots had not informed the General that the weather had deteriorated, they wanted to continue the flight at any cost. The Governor has stated that neither he was informed of the diversion to Multan nor he had directed such diversion testifies that the pilot wanted to complete the flight.
- 19.15. There was no in-flight failure of any part or component of this aircraft. This is supported by the fact that engines were noted to be developing high power before the impact (App- AN). All the parts and components were accounted for at the scene of occurrence. The aircraft struck the ground at flying speed, almost level. The General, who has been a pilot himself, did not notice anything unusual about the aircraft prior to the aircraft crashing. This leaves only one alternative that the pilot continued to proceed even after he had entered the storm and descended in an attempt to maintain visual contact with the ground till the crash occurred.
- 19.16. Examination of the aircraft engines indicated they were both developing high power at the time of the impact. The wings were almost level with right wing having a slight bank may be 5° to 10°. It is therefore concluded that the aircraft was under control of the pilot till it came in contact with the ground because the pilot was unable to maintain visual contact.
- 19.17. Although philosophy behind issuing Air Traffic Services instruction No.1/83 and 2/83 appears to be provision of weather information to the pilot in respect of routes to be flown, destination airport and alternate airports to assist him in operation of aircraft. The contents of these instruction are in-complete being silent as to who

will inform the Airport Manager, F.I.C., and who in turn will take necessary steps to comply by providing weather information to the aircraft.

20. Findings

- 20.1. The aircraft was properly certificated with valid certificate of Airworthiness, certificate of maintenance and daily inspection.
- 20.2. No modification was pending.
- 20.3. The aircraft was serviceable and capable of undertaking the flight. It had no defects.
- 20.4. Aircraft engines were developing high power at the time of accident.
- 20.5. Aircraft contacted the ground in almost level flight condition indicating that the aircraft was under the control of the pilot till it hit the ground.
- 20.6. Decent to unsafe altitude was probably in quest of contact flying.
- 20.7. The pilots were properly licenced and were holding valid rating for the type.
- 20.8. Pilots were medically fit to hold the flying licences.
- 20.9. Pilots were adequately experienced. Most of their flying on this aircraft was achieved on this route.
- 20.10. No weather forecast was booked by the pilots 24 hrs before the departure of flight.
- 20.11. The Co-pilot visited the weather office for a brief period of 2 to 3 minutes considered to be inadequate for proper weather briefing.
- 20.12. Although the weather & weather warning for Mianwali, Multan, Rafiqui Sargodha & T.A.F. for Mianwali and Multan were obtained by Capt. Nadir before departure. However actual weather of Multan was not available with Mianwali A.T.C. at the time of diversion.
- 20.13. When the pilots requested for descent below flight level 95, the concerned ATC unit failed to provide local atmospheric pressure.
- 20.14. The pilot failed to change setting in the sub-scale of the altimeter to local pressure.

/21.15. In correct

- 20.15. In-correct pressure setting on the sub-scale caused the altimeter to over-read by a large figure. (Approx-840 feet or more).
- 20.16. The pilot probably relied on the in-correct reading of the altimeter and descended to an altitude when he had almost nil clearance from the terrain which resulted in ground impact.
- 20.17. The altimeter was damaged due to fire and impact forces when the aircraft came in contact with the ground.
- 20.18. It was a non survivable crash. Survival of General Lodi is considered a miracle.
- 20.19. Action taken during heavy storm conditions by Chacha Umar Din, Malik Ghulam Rasool and his sons namely Malik Ghulam Sabir, Malik Ghulam Jaffar and Malik Ghulam Asiq saved the life of one of the occupants.
- 20.20. Captain Haider Ali Baluch, Mr.Nadir Imtiaz Saigal and Captain Amir Akbar sustained fatal injuries during the impact and subsequent manoeuvres of the aircraft.
- 20.21. Procedures inforce at the C.A.A. and the P.A.F. for handling such flights are inadequate.
- 20.22. The pilot decided to divert to Multan without the weather knowledge of the diversion airfield and the weather on the route to be flown.
- 20.23. There was only one set of basic instruments fitted in the aircraft including only one pressure alimeter.
- 20.24. Time of accident was 170708 hours on the 6th July, 1984.

/21.Cause

21. Cause

- 21.1. Collision with the terrain occurred whilst the pilot attempting to remain in contact with the ground descended to an unsafe altitude in extremely poor visibility conditions being unaware of his actual height over the terrain caused due to selection of incorrect pressure setting on the sub-scale of the altimeter resulting in its over reading by 840 feet or more.
- 21.2. Contributory factor:-
 - 21.2.1. Failure of pilot to appreciate prevailing weather.
 - 21.2.2. Failure of the flight crew to obtain full weather information including a route forecast prior to departure.
 - 21.3.3. Failure of Mianwali ATC to immediately provide weather information in respect of Multan Airport when the pilot decided to divert to this station.

22. Recommendations

- 22.1. Procedures in force in the PAF and the CAA in respect of handling VVIP/VIP flight needs revision in the light of discussion at paras - 17.38, 17.39, 17.40, 17.41 & 19.7.
- 22.2. ATC must not accept A.T.C. Clearance Form in respect of cross country flight unless it bears signature of the Duty Meteorological Officer as a testimony of the pilot having received weather briefing for route, destination and alternate airfields.
- 22.3. Whenever an aircraft is cleared to descend below transition level, even enroute, local Q.N.H. setting be passed to him without fail.

/22.4.Booking

- 22.4. Booking of weather forecast for destination or route to be flown and alternate airports is to be made mandatory.
- 22.5. Results of wrong altimeter setting be brought to the knowledge of all operators with the instructions to brief pilots employed by them.
- 22.6. Consideration be given to making a requirement that A.T.C. at all times should have latest weather for the adjoining Airports/P.A.F. bases ~~with~~ so that it can immediately be provided to the pilot to enable him to plan his diversion.
- 22.7. Where VVIP/VIP are to be flown in an aircraft it is to be ensured that two sets of flight instruments be available in the aircraft. It is to be ensured that this requirement is fulfilled when aircraft are purchased/inducted for V.I.P. flights.



Point of initial impact. In the back ground field Camp is visible. Dune where the aircraft had second impact can also be seen in the background.



Close-up of point of initial impact.

APP-'AN.3'



Point where the right engine bounced after detaching from wing.

76

APP-'AN.4'



Propeller detached from the right wing.

APP- 'AN.5'



Propeller of the left engine. It did not detach from the engine.

77

APP- 'AN.6'



Wreckage of Cessna-421. Broken parts from radome can be seen scattered before the main wreckage.

APP- 'AN.8'



Front view of the wreckage.

79

APP- 'AN.9'



Cockpit area.

APP-'AN.10'



Logo of Governor of Baluchistan.

80

APP-'AN.11'



Right engine and main wreckage seen from the direction opposite the travel path of the wreckage. Village from where people came for rescue can also be seen in the back-ground.



APP.'AN.7/B'



APP-'AN.7/C'



Wreckage of aircraft. Callsign of the aircraft AP-AYQ can be seen.

APP-'AN.12.'



Portion from the left wing consumed by fire

81

APP-'AN.13'



Wreckage seen from left side. Seat occupied by Gen.Lodi can also be seen.

APP- 'AN.14'



82

Fuel cock in off position.

APP-'AN.15'



Desoldered capsules of the altimeter.

APP-'AN.16'



Altimeter with broken glass sand stuck in the did can be seen. Setting of 29.92" on the sub-scale can be seen clearly. Knob for selecting setting is also missing.