

**INQUIRY INTO AIRCRAFT
ACCIDENT IN WHICH AIRCRAFT
CESSNA 310 AP-AVS WAS FIRED**



**UPON FROM THE GROUND
ON 7TH OCTOBER 2002,
RESULTING IN FATAL INJURIES
TO AN ONBOARD AIRCREW**

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CIVIL AVIATION AUTHORITY
PROCEEDINGS OF INQUIRY INTO AIRCRAFT ACCIDENT
IN WHICH CESSNA-310 WAS FIRED UPON FROM THE
GROUND ON 07-10-2002

1. AUTHORITY ORDERING INQUIRY: Air Marshal (Retd.) Aliuddin
Director General
Civil Aviation Authority

Reference No: HQCAA/1901/279/SIB/1412 Dated 12 October 2002.

2. Composition:

Investigation Incharge Capt S Ghazanfar Hussain
General Manager Gen. Aviation

Tech Investigator Eng'r. Nayyer Nawaz Khan
Senior Airworthiness Surveyor
Office of CAW (N), CAA

3. Terms of Reference:-

- (a) To investigate into the circumstances under which aircraft Cessna-310 AP-AVS was fired upon from the ground on 7th October 2002, resulting in fatal injuries to an on board aircrew.
- (b) To look into the adequacy of existing procedures relating to leaflet dropping by aircraft over towns etc.
- (c) To determine if any irregularity or violation led to the accident.
- (d) To recommend measures to avoid recurrence of a similar accident in future.

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4. General Information:-

- | | |
|--|---|
| (a) Date and time of accident | 07 th October 2002, at 1508 Hrs PST |
| (b) Place of accident | About 5 NM South of Peshawar Airfield |
| (c) Type of mission | Aerial Work (Leaflet Drop) |
| (d) Duration of mission | 02 Hrs |
| (e) Stage of flight | Dropping leaflets in designated area in a mild right turn |
| (f) Bearing and distance from airfield | 170 ⁰ , about 5 NM from OPPS |
| (g) Airfield and time of take off | Walton airfield at 1315 Hrs PST |

5. Aircraft Information:-

- | | |
|---|-------------------------------|
| (a) Owner of aircraft: | Hybrid Aviation |
| (b) Description of Aircraft: | |
| i. Type of Aircraft | Cessna 310-P |
| ii. Dual or Single Control | Dual |
| iii. Damage to Airframe | Four bullet holes (Exhibit A) |
| iv. Engines | Two |
| v. Damage to Engine | Nil |
| vi. Was aircraft fit to fly before accident | Yes |
| (c) Date of DI | 7 th October 2002 |
| (e) CG Limit | Within Limit |

6. General crew information and experience:-

- | | |
|----------------------------------|----------------------|
| (a) PIC | |
| i. Name | Capt Mohsin Syed |
| ii. Duty at the time of accident | PIC |
| iii. Where seated | Left seat |
| iv. Employer | Owner of the company |
| v. Total flying hours | 420:55 |

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- | | | |
|-------|--------------------------------|-------|
| vi. | P-1 Hours on C-310 | 50:55 |
| vii. | Actual Instrument Flying hours | 16:05 |
| viii. | Simulated Inst hours | 79:20 |
| ix. | Extent of injury | Nil |

(b) Co-Pilot information and Experience

- | | | |
|-------|----------------------------|--------------------|
| i. | Name | Capt Ahmed Asrar |
| ii. | Duty at time of accident | Safety pilot |
| iii. | Where seated | Right seat |
| iv. | Employer | Lahore Flying club |
| v. | Total flying hours | 1548:25 Hrs |
| vi. | P-1 hours | 1469:50 Hrs |
| vii. | P-3 Hours | 78:35 Hrs |
| viii. | P-1 hours on C-310 | 153:15 Hrs |
| ix. | P-3 hours on C-310 | 9:10 Hrs |
| x. | Instructional hours | 1005:35 Hrs |
| xi. | Actual Instrument hours | 30:10 Hrs |
| xii. | Simulated instrument hours | 65:45 Hrs |
| xiii. | Extent of injury | Fatally injured |

7. Information on other personnel on board:

- | | | |
|-----|--------------------------|---|
| (a) | Personnel on board | Two |
| (b) | Names | Mr. Farrukh Abbas
Mr. Shakeel Ahmed |
| (c) | Employer | Hybrid Aviation |
| (d) | Duty at time of accident | Helper and dropper of
leaflets respectively. |
| (e) | Extent of injury | Nil |

8. Weather observations

Refer Exhibit D

9. Is weather a factor?

NO

10. Is serviceability of Nav aids a factor?

NO

11. Is Serviceability of approach aids
a factor?

NO

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- | | | |
|-----|--|--------------------|
| 12. | Inventory of items (All items recovered from the aircraft) | Refer exhibit W |
| 13. | Investigation and analysis | Refer Section IV |
| 14. | Observations | Refer Section VI |
| 15. | Findings | Refer Section VII |
| 16. | Finalization | Refer Section VIII |
| 17. | Recommendations | Refer Section IX |
| 18. | Exhibits | Refer Section X |

19.



(CAPT. S GHAZANFAR HUSSAIN)
General Manager
General Aviation (N)
Investigation Incharge

20.



(ENG'R NAYYER NAWAZ KHAN)
Senior Airworthiness Surveyor
C A W (North) Office
Technical Investigator

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BRIEF DESCRIPTION

1. Aircraft AP-AVS, of Hybrid Aviation Lahore, was hired by Haji Mohammad Ayub Afridi, a candidate for National assembly seat from tribal area, to drop election campaign leaflets in Bara area.
2. The aircraft AP-AVS took off from Walton airport Lahore at about 1315 Hrs local time. Capt. Mohsin Syed was PIC and occupying left seat while Capt. Ahmed Asrar was occupying right seat as safety pilot. Mr. Shakeel Ahmed and Mr. Farrukh Abbas, employees of Hybrid Aviation, were assigned the duty of leaflet dropper and helper respectively. The mission was to drop leaflets at Bara area, close to Peshawar city.
3. At 143655 hrs local time, the aircraft was cleared by Peshawar ATC to join for R/W 35 of Peshawar airfield. Subsequently the aircraft was cleared to descend to 2000' indicated. At 1459 hours, the aircraft was cleared by ATC Peshawar to drop leaflets at right and left base leg of R/W 35 of Peshawar airfield, for ten minutes. The aircraft started dropping leaflets from beginning of right base R/W 35 and at about 1508 hrs, when turning on finals for R/W 35 at the distance of 5-7 NM from runway, four bullets hit the aircraft. One of the bullets fatally injured Capt. Ahmed Asrar, who was occupying right seat. The firing was done from the rally being conducted at Bara, by another candidate of National assembly. Capt. Mohsin Syed safely landed the aircraft at Peshawar airfield at 1514 hrs local time.
4. The injured pilot was taken to CMH Peshawar on CAA ambulance. Capt Ahmed Asrar was pronounced dead on arrival at CMH Peshawar.

INVESTIGATION AND ANALYSIS

1. **Brief about Capt Mohsin Syed (PIC)** Capt. Mohsin Syed, PIC of aircraft AP-AVS, is valid CPL holder with a total of 420:55 hours to his credit. He has a total of 50:55 hrs on C-310 and has flown 20:35 hrs within last six months. He is holder of valid medical and IR. He is businessman of Lahore and owner of Hybrid Aviation, the company to which aircraft AP-AVS belongs.

2. **Brief about Capt. Ahmed Asrar (Safety Pilot)**. Capt Ahmed Asrar, safety pilot of aircraft AP-AVS, was valid CPL holder and had a total of 1511:05 hrs to his credit. He was employed as flying instructor at Lahore flying club. He was holding FI-1 rating on C-310 aircraft and was qualified to occupy right seat even if he was not acting as safety pilot at the time of accident.

3. **Legality for undertaking the mission.** Aircraft AP-AVS belongs to Hybrid aviation (Pvt. Ltd), Walton airport Lahore. Hybrid Aviation is meeting following requirements of CAA:-

- (a) Is holder of valid charter and Aerial work licenses from AT Branch CAA.
- (b) Is holder of Valid AOC for charter (Exhibit E-5) and aerial works (Exhibit E-6) in accordance with Part XI, section 3 of CAR 94.
- (c) In aerial works, the company holds valid rating of aerial dropping on the operations specifications (Exhibit E-7 and E-7/1).
- (d) The procedure for leaflet drop has been approved by CAA and made part of Operations manual (Exhibit F).
- (e) The aircraft was insured as per rule 199 of CAR 94 (Exhibit E-12).
- (f) PIC of aircraft, Mr. Mohsin Syed was holding Valid CPL (Exhibit G) in accordance with rule 35 and 39 of CAR 94
- (g) Appropriate medical category (Exhibit H) in accordance with rule 40 of CAR 94 was also held by PIC at the time of accident.
- (h) The PIC was meeting recent experience requirements in accordance with rule 42 of CAR 94 (Question No 10 to witness no 1 and Exhibit I where copy of authorization book shows that he flew two sorties on 6th October 2002).

Hybrid Aviation therefore, was legally authorized to undertake leaflet drop missions on commercial basis.

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4. **Carrying Capt. Ahmed Asrar for the mission.** Capt Ahmed Asrar was not an employee of Hybrid Aviation. He was employed as instructor pilot at Lahore flying club. In accordance with para 7.3 of ANO 91-0017, C-310 aircraft falls in the category of single pilot aircraft operations. However, PIC of the mission decided to carry Capt Ahmed Asrar as safety pilot (Answer No 11 by witness No 1). Even if Capt Ahmed Asrar was not acting as safety pilot, he was qualified to fly from right seat as he was holding valid license with endorsement of C-310 on his license (Exhibit J). Carriage of qualified safety pilot was in the interest of safety and no CAA rule was violated while carrying Capt Ahmed Asrar as safety pilot on right seat. It is to be noted at this point that CAA regulations do not require permanent employee of an organization to take permission from the employer, if they wish to fly with other organizations.

5. **Permission to drop leaflets.** Election commission of Pakistan has amended S.R.O. 1376(I)/96 dated 17 December 1996 and permitted the candidates to use aircraft for drop of leaflets through aircrafts vide their letter dated 14 January 1997 (Exhibit K). Therefore, hiring of aircraft for election campaign by Mr. Ayub Afridi was legally permitted. CAA regulations required that the operator should have permission from local administration of the area where the leaflets are to be dropped. This requirement was being made part of operations manual of the operator. In this particular case the competent local administration authority was Political Agent of the Bara area and he granted the permission to drop the leaflets (Exhibit L-1 and L-2). The point to note is that the Political Agent had granted the permission to drop the leaflets of Mr. Muhammad Ayub Afridi by an aircraft and it is assumed that another National Assembly candidate, holding rally in same area, had also taken permission from same Political Agent. Therefore, the Political Agent should have either advised concerned personnel about the timing of the rally so that an appropriate time could be chosen for intended drop or he (Political Agent) should have cancelled the permission. This small action on part of Political Agent might have saved a precious human life.

6. During the course of the inquiry, CFI Multan flying Club informed that CAA (ATS Branch) has permitted operator to undertake leaflet drop missions without permission of local administration (Exhibit M). This permission, by ATS branch, was granted because some of the local administration authorities had refused to grant permission for leaflet drop saying that rule 26 of aircraft Rules 1937 required permission from local administration which was repealed vide rule 158 of CAR 1978. Rule 122 of CAR 94 authorizes CAA to permit drop of article or substance from the aircraft. Therefore, in accordance with rule 122 and 155 of CAR 94, DG CAA is the competent authority to issue the clearance, not local

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administration. This authorization by Operations Directorate was not intimated to Flight Standards Directorate, which controls all flying activities. As a result Flight Standards Directorate was requiring the operators to obtain permission from local authorities whereas Operations Directorate authorized the operator to undertake such missions without such permission. If Hybrid Aviation had not asked the client to produce leaflet drop permission from local administration, it would have been violation of Operations manual and violation of rule 191, 192 and 240 of CAR 94. The permission granted by Operations Directorate to undertake leaflet drops without permission of local administration was in best interest of operators but they (Operations Directorate) failed to intimate Flight Standards Directorate. This omission would have resulted in penalty to the operator without his fault. This speaks lack of coordination within CAA Directorates.

7. On 3rd October 2002, representative of Mr. Muhammad Ayub Afridi (would be referred as client) paid rupees fifty thousands to Hybrid Aviation (Exhibit N) for leaflet dropping in general area Peshawar. Subsequently, the client applied to political agent Khyber agency for permission to drop leaflets at Bara (Exhibit L-1). The permission was granted by Assistant Political agent (Exhibit L-2) for drop of leaflets in Bara area. At this point it is pertinent to note that application and permission were in the name of Peshawar Flying club (PFC), not Hybrid Aviation. In order to clarify the doubt whether Hybrid Aviation undertook the mission actually allotted to PFC or not, PFC was asked if the client approached them for the mission or not? Manager administration PFC stated that the client did not approach PFC for leaflet drop for this particular mission (Witness No 4). Same question was posed to Capt Mohsin Syed (Question No 1 to witness No 1), who said that the client, on a generic form, obtained the permission from political agent. The pattern of application and approval was obtained on the form produced and supplied by PFC, free of cost, to any prospective client (Witness No. 4 and Exhibit O). Irrespective of these reasoning, the fact remains that all responsible personnel i.e. Chief pilot Hybrid Aviation, PIC and ATCO Walton failed to see that the permission was not in the name of Hybrid Aviation. Resultantly, ATCO Walton Aerodrome approved the flight plan for leaflet drop, in spite of the fact that the permission by political agent was submitted to ATC along with the flight plan (Exhibit E-2). However, all the three personnel cannot be blamed for this omission in light of the discussion at para 6 above, in which the permission from local administration was not at all required.

8. **Personnel on board the aircraft.** Hybrid Aviation had detailed two personnel, in addition to PIC and safety pilot, to throw leaflets as and when ordered by PIC. The name of the thrower is Mr. Shakeel Ahmed, a

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technician, and Mr. Farrukh Abbas, a helper. The statements of both of them are attached as witness No 2 and Witness No 3 respectively. On inspection of the aircraft after the accident, it was found that there was only one passenger seat installed in the aircraft. On inquiry from PIC, it was discovered that one person was sitting on the seat while second was sitting on floor of the aircraft while fastening a rope to himself (Answer to Q No 25 by Witness No 1). Although carriage of such passengers for dropping leaflets is approved, but him sitting on the floor of the aircraft is violation of rule 246 (c) of CAR 94.

9. **The accident.** The aircraft took off from Walton airport at 1315 Hrs local time. First contact with ATC Peshawar was made at 1436 Hrs local time (Exhibit C). At 1439 Hrs the aircraft was cleared by ATC Peshawar to descend to 2500 feet Indicated and subsequently cleared to descend down to 2000 feet indicated at 144044 Hrs. The aircraft reported reaching the level at 144414 Hrs. In the mean time, at 144243 hrs, ATC also cleared the aircraft to drop leaflets 5 miles East of the airfield at 2000 feet indicated, which was not carried out by the aircraft as that was not the desired area of drop. After some hold, due to traffic, at 1459 Hrs, ATC Peshawar cleared AP-AVS to drop leaflet at right base and west of the airfield. The aircraft started dropping the leaflets from beginning of base leg for runway 35 and had planned to drop till finals of R/W 35 (Statement by Witness no 1). At 150816 Hrs the PIC reported that aircraft is being fired upon and requested for immediate landing on runway 35. At 150825 hrs he further reported that one of the pilots is seriously injured. Subsequently PIC decided to land through runway 17, as he thought R/W 35 to be unsafe for landing. The aircraft landed safely from R/W 17 and switched of at 151500 hrs. Injured Capt Ahmed Asrar was shifted to CMH Peshawar by CAA ambulance, where he was pronounced dead on arrival (Exhibit P). Copy of FIR by police and post-mortem report of Capt Ahmed Asrar is attached as Exhibit Q.

10. **Accident Area Information.** The pilot in his statement has mentioned that there was a circular water pond in the area of accident. There is only one circular water pond in the vicinity and the water pond referred by PIC (Answer to Q No 22 by witness No 1) is a PAF M.E.S. water supply pond that is located in Bara. Therefore it is confirmed that the aircraft was over Bara at the time of accident. Bara area is lightly populated area and general elevation is 1500 feet. At the time of accident there was a political rally being conducted in Bara area. This gathering, from where most probably firing took place, was being held next to the water pond boundary wall (Refer to Exhibit A-19). The location of water pond is approximately 213⁰ and 4.6 NM from beginning of runway 35 of Peshawar airfield.

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11. **Ordering of Inquiry.** At 1645 hrs Capt Ghazanfar Hussain, General Manager general Aviation (North) was asked by president SIB to immediately proceed to Peshawar as the accident involved general aviation aircraft. The officer had to proceed by road as next flight available was in the morning of 8th October. On arrival at APM Peshawar's office, at 2030 hrs, APM Peshawar informed Capt Ghazanfar that he has been detailed as investigation in charge and Engr. Nayyer Nawaz as technical member of the inquiry. At about 2100 hrs, Deputy Director General CAA, on telephone, briefed about the terms of reference for the inquiry.

12. **Post accident actions.** APM Peshawar had already taken over the possession of the aircraft and sealed it. He formally reported the accident to police (Exhibit R). A press statement was also released by him (Exhibit S). The investigation in charge obtained copies of the statement made to police by Capt Mohsin Syed, Mr. Shakeel Ahmed and Mr. Farrukh Abbas. The statements made by them to police are attached as Exhibits T-1, T-2 and T-3 respectively. The investigation officer took statements of PIC and Mr. Shakeel on 7th October, while statement of Mr. Farrukh Abbas was obtained few days later, as he was accompanying dead body of deceased pilot. The statements are numbered as witness Nos 1, 2 and 3 respectively. Capt Mohsin Syed was questioned on 8th October in the morning and some additional questions were put to him on 12th October 2002 (witness no 1). After the accident, CP Hybrid Aviation also intimated Director General CAA, in accordance with rule 271 of CAR 94 (Exhibit U).

13. **Inspection of Aircraft.** The aircraft was inspected on 8th October in presence of technical member of the inquiry, CFI PFC, CP FITS and Chief Engineer PFC. There were four bullet entry and three bullet exit holes on the aircraft body. One hole was on right aileron which went through the top of aileron, second was next to right nose gear door, third was slightly aft of left nose gear door while fourth bullet entry hole was on right pilot/passenger entry door, which after penetrating the door and padding on the door, hit pilot just below right ear and exited from left top of the skull (see post mortem report at Exhibit Q). This particular bullet, after coming out of the skull of the pilot exited the aircraft after rupturing padding and roof of the aircraft (Refer to Exhibit A). Right seat of the aircraft was found soaked in blood. The details of apparent damage to the aircraft are discussed in technical investigations and photographs are placed at Exhibit A. The detailed damage and repair scheme, approved by CAA Airworthiness directorate, is placed at Exhibit "X". The items recovered from the aircraft were collected in presence of witnesses and the list is

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placed at Exhibit "W". Million map, on which the navigation plan was drawn, was found drenched with blood of the deceased pilot, therefore, this map along with the battery charger of hand held GPS of PIC was buried.

Investigation and Analysis

14. The inquiry officer was firstly required to determine the circumstances under which the accident occurred, secondly to look into the adequacy of existing procedure relating to leaflet dropping by aircraft over towns etc, thirdly to determine if any irregularity or violation led to the accident and lastly to recommend measures to avoid recurrence of a similar accident in future.

15. **Circumstances Under Which the Accident Occurred.** The pilot In Command has stated that he was 5 to 7 miles from Peshawar airfield (Answer to Q No 7 by witness No 1) and there was a circular pond in close vicinity of the place of accident (Answer to Q No 22 by witness No 1). The only prominent circular water pond, at about 5 to 7 NM from undershoot of runway 35 of Peshawar airfield, is PAF MES water supply ponds. It is therefore, certain that the firing occurred from close proximity of this water pond. In order to see ground situation from where the firing occurred, investigation in-charge and technical member proceeded to Bara area to inspect the place of firing. It was learnt that at the time of firing there was a gathering of people who were conducting a rally in connection with election campaign of local MNA. It was further learnt that the rally belonged to the person who was opponent of Mr. Muhammad Ayub Afridi in National assembly election being held on 10th October 2002. It was thought that the firing might have taken place in retaliation to the leaflets of opponent being dropped in the area. The technical member, in local language, interviewed some of the eyewitnesses. One person said that the aircraft made one complete orbit and the aircraft was fired upon on first and second arrival i.e. on start and completion of the orbit. Another person said that he was having food inside a local hotel when he heard aircraft noise and firing. Somebody told him that the aircraft has been fired upon, thereupon he immediately came out of the hotel. After coming out, he did not see the aircraft but saw that some leaflets are floating in the air and are in process of touching the ground. Another witness said that he could see the hand of the person throwing the leaflets. All the witnesses refused to give statements in writing and being in tribal area, could not be pressed for the statements. Therefore, the conclusions drawn from these statements cannot be substantiated but can only provide leads for further inquiry.

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16. **Firing from Ground as Reaction to Contents of Leaflet.** The leaflets, approved by political agent, were not containing any objectionable material (Exhibit L-3). The contents were only having some canvassing words, urging area people to vote in favor of Mr. Ayub Afridi, in general election on 10th October 2002. It has been determined that the leaflets, even if dropped from 500 feet AGL, take 4 to 5 minutes to reach the ground, this time would increase if gentle wind were blowing. One witness said that the leaflets reached the ground after the aircraft had left the area.

17. The aircraft made one orbit with speed of 140 miles per hour (Answer to question No 13 by witness No 1) and 20° bank (Answer to question No 6 by witness No 1). Using rate of turn formula $g \tan \theta / v$, the time comes out to be 110 seconds or one minute and 50 Secs. for completing one 360° turn. Applying same formula with 15° bank, it would take 149 seconds or two minutes and 29 seconds to complete one orbit. It would not be possible for the leaflets to reach the ground followed by people reading and reacting to the contents of leaflets during this time. As a matter of fact, the leaflets would not have reached ground when the aircraft would have completed the orbit and departed the area. Moreover, one witness said that the aircraft was fired upon on first as well as second arrival over assembly. This further suggests that the firing did not take place as reaction to the contents of leaflets. If the firing was reaction to the contents of leaflet, then firing should not have taken place when the aircraft arrived over the assembly point for the first time. The statement of the pilot that he does not recollect making an orbit (answer to question No 18 by witness No 1) should also be kept in mind. Therefore, in light of the statements by ground witnesses, rate of turn calculations and statement of PIC, it is concluded that it is improbable that the firing on aircraft was reaction to the contents of the leaflets. It is also doubtful that aircraft made an orbit.

18. **Adequacy of Existing Procedures Relating to Leaflet Dropping by Aircraft Over Towns.** In accordance with rule 128 and 155 (b) of CAR 94, minimum height approved for Hybrid Aviation in aerial work operations was 500' AGL. The area, where leaflet drop mission was being undertaken, has small pockets of population and cannot be termed as congested areas (as required vide rule 128 of CAR 94). Rule 128 of CAR 94 further elaborates the conditions to fly below 2000' indicated and is quoted as "... unless it is at such height as will permit, in event of an emergency, a landing to be made without undue hazard to persons on the ground, shall not be flown closer than 500 feet to any person, vessel, vehicle or structure". Unquote. Therefore, the procedures for flying over different areas were adequate but flying at 500 feet, over tribal area where danger of fire from ground exists, were not envisaged in CARs. Even if

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the procedure for flying above 1000 feet AGL, in tribal area was enforced, this particular accident could not be avoided, as the weapon used against the aircraft was 12.7 mm AA gun (Exhibit V). However, it would be appropriate to enforce the regulation that in tribal area minimum height by all aircraft should be 1000 feet AGL, unless aircraft is being flown in conformity with take off and landing procedures.

19. **Determination of Height of the Aircraft at the Time of Accident.** ATC Peshawar had cleared the aircraft at 2000' indicated (Exhibit C time 144023 Hrs). Elevation of Bara is 1515 feet, meaning that the aircraft would have been 484 feet AGL, less than the height permitted by CAR 94. The pilot stated that he was maintaining 2500 to 3000 feet indicated / 1500 to 2000 feet AGL (Statement by witness No 1 and answer to Q Nos 2 and 15 respectively). In order to determine the height, the crucial factor in whole inquiry, following four options were available

- (a) Statement of pilot.
- (b) Statement of witness on ground that he could see hand of the person throwing leaflets.
- (c) Triangular method as pilot stated that he could see PAPI lights red and white at the time of accident and lastly.
- (d) Expert opinion from competent organization to determine the type of weapon used and height of the aircraft after inspecting the bullet holes on the aircraft.

All the four options were studied and given due weightage. Each one of them is discussed in succeeding paragraphs.

20. **Statement of Pilot.** Witness number 1 has stated that Capt Ahmed Asrar was at the controls of the aircraft at the time of accident (Statement and answer to question numbers 3 and 14 by witness No 1) and he (PIC) was looking out and trying to determine the area in which leaflets were falling. Therefore his statement cannot be taken for determining the height of the aircraft.

21. **Statement of witness on ground.** As discussed in para 15, one ground witness said that he could see hand of the person throwing leaflets. In order to determine the fact, Mr. Shakeel, the person actually throwing leaflets at the time of accident, was asked to throw some paper pieces from another C-310 positioned at Walton airport. Technical member of investigation was asked to sit in the aircraft while three local pilots, CP Hybrid Aviation, DM (Exam) from CAA and investigation in charge were to witness the throw from distance of 800 and 500 feet. All the observers were asked to count the number of throws made by the

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aircraft. After the throws were made, all the observers reported 7 to 11 throws while actually it was 8 times. Now the crucial question of anybody observing hand of the person was asked (they were not told what is actual requirement). Not a single person, including investigation officer, saw the hand. It therefore is concluded that statement of ground observer can not be used to determine whether aircraft was flying low or not.

22. **Triangulation Method With Help of PAPI.** Witness no 1, in answer to question No 7 stated that he could see two red and two whites of VASI (PAPI) of Peshawar airfield at the time of accident. It has been determined that the aircraft was flying at water pond next to Bara (para 10 and 15 above) at time of accident. The distance of water pond from the beginning of runway 35 of Peshawar airfield, as calculated from 1:50,000 scale map is 4.6 NM or 27968 feet. PAPI have angle of 3° . Therefore applying trigonometric ratios, the height of the aircraft, from PAPI of Peshawar airfield, can be calculated as 1465 feet. Adding this height to airfield elevation (1180 feet), the indicated height of aircraft comes out to be 2645 feet. If we subtract the elevation of Bara from this height i.e. 1515 feet, the height of aircraft above ground level comes out to be 1130 feet. This coincides with the height stated by the pilot. The statement of PIC was taken immediately after the accident therefore, it is highly improbable that the PIC got time to do all these calculations that coincides with the statement. However, these calculations, although reliable, are not concrete and cannot be made basis of finalizing the height of the aircraft at the time of accident.

23. **Expert Opinion for Determining the Height.** It was learnt that police department of NWFP has the capability to determine the distance from which the bullet is fired after examining the bullet holes. Therefore, IG police NWFP, was requested to assist in solving the problem. After lapse of about two weeks Chief of capital police Peshawar, informed that they do not have the capability and only Pak Army can help in this regards. Subsequently Vice Chief of General Staff GHQ, was requested to help in determining the height of the aircraft, which he very kindly agreed. The experts from Pak Army were taken to Peshawar to examine the aircraft. Three sheets of aircraft skin of different affected areas of the body of C-310 aircraft, with same metal alloy and thickness as of the C-310, were provided to armament experts of Army, after obtaining them from Aircraft Manufacturing Factory Kamra. The expert opinion received from General Headquarters (ITD directorate) suggests that the distance from which the weapon was fired is between 250 to 300 meters or 820 to 984 feet (Exhibit V). The calculations by experts were done after conducting trial in horizontal plane. The experts say that the weapon used for firing on the aircraft was 12.7 mm gun and they said that the distance of 250 to 300

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meters in vertical plane, would have negligible effect on reduction of velocity of the bullet with this type of weapon. Therefore, it is confirmed, beyond any doubt, that the height of the aircraft was 820 to 984 feet above ground level. When added to elevation of Bara area, the indicated height of the aircraft comes out to be 2335 to 2499 feet. Therefore, It can be said conclusively that the aircraft was flying at the height around 2500 feet indicated at the time of accident.

24. **Type of Weapon Used Against the Aircraft.** Although it was not in the terms of reference to determine the type of weapon used against the aircraft but in order to determine the height of the aircraft, weapon used had to be determined. The experts from Pakistan Army (ITD Dte.) determined that the weapon used against the aircraft was 12.7 mm AA machine gun (Exhibit V).

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TECHNICAL REPORT

1. **General Information and Description of the Aircraft:**

The Cessna Company, USA, manufactures the aircraft. Cessna 310 P is an all metal, low-wing, twin engine aircraft powered by two Continental six cylinders horizontal opposed, fuel-injection IO-470-VO engines driving constant speed, all metal, full feathered two blade propellers. The split type wing flaps are electrically operated. The aircraft is equipped with fully retractable, electrically operated, tricycle type landing gear.

2. **Aircraft Information:**

- a. Registration Mark: AP-AVS
- b. Aircraft type: Cessna 310 P
- c. Aircraft year of manufacturer : 1969
- d. Aircraft serial number: 310-0101
- e. Airframe history:
 - i. Time Since New (TSN) : 7057:20 hrs (as on 06th October 2002
 - ii. Last flying hours: 03 hour and 15 minute
 - iii. Last maint: Check I carried out at 7043:35 airframe hrs (as on 30-09-2002)
 - iv. Last major maintenance: Check III (as on 1st January 1998)
 - v. Major defects: Nil
 - vi. Life: On condition
- f. Details / history of engine No.1 (Right):
 - i. Type: Continental IO-470-VO
 - ii. Engine serial number: 171185-R
 - iii. Date of manufacture: September 23, 1997
 - iv. Engine installed on: 03-11-1997
 - v. Time Since New (TSN): as on 6-10-2002, 624:00 hrs
 - vi. Time Since Installation (TSI) as on 6-10-2002: 624:00 hrs
 - vii. Time Since Overhaul (TSO) as on 6-10-2002: 624:00 hrs
 - viii. Last flying hours: 03 hour and 15 minutes

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- ix. Last maint. as on 30-09-2002: Check I carried out at 7043:35 airframe hrs
- x. Major defects: Nil
- xi. Life: 1800 flying hours

g. Details/history of engine No.2 (Left):

- i. Type: Continental IO-470-VO
- ii. Engine serial number: 171139-R
- iii. Date of manufacture: April 4, 1996
- iv. Engine installed on: 22nd June 1996
- v. Time Since New (TSN) as on 6-10-2002: 624:00 hrs
- vi. Time Since Installation (TSI) as on 6-10-2002: 624:00 hrs
- vii. Time Since Overhaul (TSO) as on 6-10-2002: 624:00 hrs
- viii. Last flying hours: 03 hour and 15 minutes
- ix. Last maint: as on 30-09-2002: Check I carried out at 7043:35 a/f hrs
- x. Major defects: Nil
- xi. Life: 1800 flying hours

h. Propeller Details (Right):

- i. Type: McCauley two blade variable Pitch propeller.
- ii. Model: D2AF34C71-KMP/384JF-3.
- iii. Hub serial number: 687430.
- iv. Blade 1 S/No.: C-21671YS.
- v. Blade 2 S/No.: C-72838YS.
- vi. Diameter: 81 inches.
- vii. Time Since Overhaul 28:40 hours (as on 06th October 2002)
- viii. Major Defects: Nil
- ix. Life: 1200 flying hours or 5 years.

j. Propeller Details (Left):

- i. Type: McCauley two blade variable pitch propeller.
- ii. Model: D2AF34C71-KMP.
- iii. Hub serial number: 687564.
- iv. Blade 1 S/No.: B24620YS.
- v. Blade 2 S/No.: B24694YS.

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- vi. Diameter: 81 inches.
- vii. Time Since Overhaul 27:20 hours (as on 06th October 2002:
- viii. Major Defects: Nil.
- ix. Life: 1200 flying hours or 5 years.

3. **Aircraft Documents on board**

- (a) Certificate of Registration .(Refer to Exhibit E-8)
 - (a) Number 417
 - (b) Issue date 21st October 2001
- (b) Certificate of Airworthiness (Refer Exhibit 'E-9'):
 - (i) Number: 369
 - (ii) Category: Charter operation and Aerial work
 - (iii) Issue date: 31st December 2001
 - (iv) Validity: 20th February 2003
- (c) Weight and Balance Schedule:
 - (i) The aircraft was weighed on 30-12-1998 and will be re-weighed in the year 2004. As per weight schedule, the aircraft empty weight is 1597.72 kg and the CG is located 96.08 aft of the datum point.
 - (ii) The gross and landing weight is 5200 pounds.
- (d) Certificate of Maintenance Review and Maintenance Release:
 - (i) The CMR was issued on 30-09-2002 and was valid for 30 days or upon completion of 50 flying hours which ever comes first (Refer Exhibit 'E-4').
 - (ii) The MR was issued on 30-09-2002 on maintenance check I at 7043:35 airframe hours and was valid for 30 days or upon completion of 50 flying hours which ever comes first (Refer Exhibit 'E-3').

4. **No of seats installed:** 03 (Refer Exhibit A-17)

5. **Defect History:** As per last airworthiness return, no defects were reported.

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6. **Damage to the Aircraft:** Four bullet holes were found in the aircraft at different locations. For reference purposes, the bullets have been labeled as Bullet 'A', Bullet 'B', Bullet 'C' and Bullet 'D'. (Refer to Exhibit A-1 and A-2)
- a) Exhibit A-5 shows a bullet hole created by bullet 'A' entering the right cockpit door approx 7 inches behind the door hinge (also see Exhibit A-6) and exited from the cockpit roof (also see Exhibit A-7 and A-8) after injuring the co-pilot. This was the fatal bullet that killed the co-pilot.
 - b) Exhibit A-6 shows a bullet hole on the inner side of the right cockpit door created by bullet 'A' entering the right cockpit door.
 - c) Exhibit A-7 shows a bullet hole on the inner side of cockpit roof created by bullet 'A' after entering the right cockpit door.
 - d) Exhibit A-8 shows the bullet hole on the outer side of the cockpit roof created by bullet 'A' that entered through the right cockpit door.
 - e) Exhibit A-9 shows a bullet hole created by bullet 'B' entering the cabin from the lower left portion of the fuselage 5 inches forward of the 3rd bulkhead and exited from left side of the fuselage behind the 3rd bulkhead damaging some electrical wires (also see Exhibit A-10 and 11).
 - f) Exhibit A-10 shows a bullet exit hole created by bullet 'B' entering the cabin from the lower left portion of the fuselage and exited from the left hand side of the fuselage (also see Exhibit A-9 and 11).
 - g) Exhibit A-11 shows electrical wires and internal structure damaged by the bullet 'B' entering from the lower left portion of the fuselage and exited from the left hand side of the fuselage (also see Exhibit A-9 and 10).
 - h) Exhibit A-12 – Bullet 'C'
 - i) Bullet hole created by bullet 'C' entering vertical from the lower portion of the right aileron and exiting the upper portion of the aileron, only damaging the fuselage skin (also see Exhibit A-13).

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6. **Damage to the Aircraft:** Four bullet holes were found in the aircraft at different locations. For reference purposes, the bullets have been labeled as Bullet 'A', Bullet 'B', Bullet 'C' and Bullet 'D'. (Refer to Exhibit A-1 and A-2)
- a) Exhibit A-5 shows a bullet hole created by bullet 'A' entering the right cockpit door approx 7 inches behind the door hinge (also see Exhibit A-6) and exited from the cockpit roof (also see Exhibit A-7 and A-8) after injuring the co-pilot. This was the fatal bullet that killed the co-pilot.
 - b) Exhibit A-6 shows a bullet hole on the inner side of the right cockpit door created by bullet 'A' entering the right cockpit door.
 - c) Exhibit A-7 shows a bullet hole on the inner side of cockpit roof created by bullet 'A' after entering the right cockpit door.
 - d) Exhibit A-8 shows the bullet hole on the outer side of the cockpit roof created by bullet 'A' that entered through the right cockpit door.
 - e) Exhibit A-9 shows a bullet hole created by bullet 'B' entering the cabin from the lower left portion of the fuselage 5 inches forward of the 3rd bulkhead and exited from left side of the fuselage behind the 3rd bulkhead damaging some electrical wires (also see Exhibit A-10 and 11).
 - f) Exhibit A-10 shows a bullet exit hole created by bullet 'B' entering the cabin from the lower left portion of the fuselage and exited from the left hand side of the fuselage (also see Exhibit A-9 and 11).
 - g) Exhibit A-11 shows electrical wires and internal structure damaged by the bullet 'B' entering from the lower left portion of the fuselage and exited from the left hand side of the fuselage (also see Exhibit A-9 and 10).
 - h) Exhibit A-12 – Bullet 'C'
 - i) Bullet hole created by bullet 'C' entering vertical from the lower portion of the right aileron and exiting the upper portion of the aileron, only damaging the fuselage skin (also see Exhibit A-13).

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- j) Exhibit A-13 – Bullet 'C'
- k) Bullet hole created by bullet 'C' on the upper portion of the right aileron, entering vertical from the lower portion of the right aileron (also see Exhibit A-12).
- l) Exhibit A-14 shows a bullet hole created by bullet 'D' entering the nose wheel well from the right lower side of the fuselage. This bullet damaged the outer fuselage skin and a portion of the forward No.2 bulkhead channel (also see Exhibit A-15). The bullet continued by hitting the nose wheel well roof (refer Exhibit A-16), but did not penetrate the roof neither did it damage the nose landing gear which was retracted at the time. Only a small metal piece was found embedded in the nose tire.
- m) Exhibit A-15 shows bullet 'D' damaged a portion of the forward No.2 bulkhead channel.
- n) Exhibit A-16 – shows a small mark on the roof of the nose landing gear well created by the bullet 'D' that entered the nose wheel well from the left lower side of the fuselage.

7. **Airworthiness Violations:**

- a) ANO 92.0007 Issue-2, 8th August 2000 requires an aircraft to have a seat for each person who is aged two years or more. The seats found installed in the aircraft were three whereas the total personnel on board were four.
- b) As required by ANO 92.0007 Issue-2, 8th August 2000 require an aircraft to carry adequate first aid kit appropriate to the number of passengers. The 1st aid kit was found missing.
- c) The certificate of radio installation as required by ANO 92.0007 Issue-2, 8th August 2000 was found missing. The remaining documents found on board were photocopies and not in original.
- d) The revised C of R bearing number 417 issued on 10th January 2001 was not kept on board. Further more ANO 92.0007 Issue-2, 8th August 2000 requires original documents to be placed on board, whereas photocopies were found.

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8. Technical Discussion:

- a) Hybrid Company based at Walton Airport, Lahore, maintains, operates and owns the Cessna 310P AP-AVS aircraft. Three Aircraft Maintenance Engineers holding CAA (Pak) license certify the aircraft.
- b) Their maintenance documents such as log books, work sheets, etc., were found to be in order. All AD's and SB's were complied with. Prior to the incident the aircraft had flown 3 hours and 15 minutes with no technical problem. The right engine had completed 41.6 % of its life and the left engine had completed 81.4 % of its life. From the technical point of view, the aircraft and its maintenance were found to be satisfactory except for the violations carried out in para 7 above.

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OBSERVATIONS

1. Some observations made during the inquiry, which were not contributing towards the accident, are: -

- (a) Operations manual and passengers' manifest was not on board the aircraft, in violation of rule 253 of CAR 94.
- (b) One person was sitting on floor of the aircraft, in violation of rule 246 (c) of CAR 94 and ANO 92.007 dated 8th August 2000.
- (c) First aid kit and radio installation certificate were missing from the aircraft in violation of ANO 92.007 dated 8th August 2000.
- (d) Permission for undertaking the mission by political agent Bara was in the name of Peshawar Flying Club. All the three persons namely, Chief pilot of Hybrid Aviation, Pilot in Command and ATCO Walton failed to notice this and undertook the mission. However, all the three personnel cannot be blamed for this omission in light of the discussion at para 6 of section IV.
- (e) Flight dispatch certificate was not filled properly. In that following deficiencies were observed (Exhibit E-13)
 - i. Center passenger weight is given as 340 lbs and rear passenger weight as 170 pounds, whereas nobody was occupying center passenger seat.
 - ii. Weight of cargo (bundles of leaflets) has not been included in the chart.
 - iii. The certificate has not been signed by PIC.
 - iv. C of G moment envelope not filled.
- (f) Copy of current ops specs was not on board, in spite of them being available in company's office.
- (f) Copy of current insurance was not on board, in spite of them being available in company's office.
- (g) The aircraft was flying at 2500' to 3000' indicated, a safer altitude to fly, although it was cleared to maintain 2000' indicated by ATC Peshawar.

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- (h) Although existing procedure relating to leaflet dropping by aircraft over towns etc are adequately covered in CAA regulation but there is a need to restrict all aircraft flying below 1000' AGL in tribal area, except when in process of landing and take off.
2. Lack of co ordination with related directorates of CAA was found on part of Directorate of Operations.

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FINDINGS

1. The mission was properly authorized.
2. No irregularity or violation of any CAA rule and regulation, leading to the accident was detected.
3. It was found that rules 246 and 253 of CAR 94 were violated in which a person was sitting on floor of the aircraft and some required documents were either not on board or were not current.
4. CAA procedures governing leaflet drop over towns etc. are adequate for all area except for tribal belt.

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FINALIZATION

The accident is finalized as **UNAVOIDABLE** and an act of indiscriminate firing from ground by unknown personnel.

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RECOMMENDATIONS

1. Competent authority to issue instructions to all operators to maintain 1000' AGL or higher in tribal areas, except when the aircraft is being flown in conformity with take-off and landing procedures.
2. CAR 94 may be amended to include permission from local administration prior to dropping anything from the aircraft.
3. At present two directives by two different directorates of CAA, in relation to leaflet drop, exist. The operators are to be instructed about the correct procedure to be followed for leaflet drop.
4. Hybrid Aviation may be fined rupees 30,000 (rupees thirty thousand only), in accordance with rule 333 of CAR 94, for violating ANO 92.007, rules 246 and 253 of CAR 94.
5. PIC, Capt. Mohsin Syed be issued with a letter of warning for not complying with CAA rules and regulations.
6. AME, M. Ashraf Chaudhry may be issued with letter of warning for releasing aircraft without checking the emergency equipment / documents.
7. Local administration of Bara area may be asked to investigate and apprehend the culprit(s) for using prohibited bore weapons (12.7 mm AA gun) against the aircraft.
8. Permanent employees of an operator should be required to obtain permission from their employer before flying any kind of mission for another operator. This amendment maybe added in the ops manual.

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EXHIBIT A-3

Cessna 310P AP-AVS aircraft belonging to Hybrid Technics MCB parked at Peshawar Flying Club after the incident.



EXHIBIT A-4

Aircraft registration mark.

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EXHIBIT A-5

Bullet hole created by bullet 'A' entering the right cockpit door approx 7 inches behind the door hinge (also see Exhibit A-6) and exited from the cockpit roof (also see exhibit A-7 and 8) after hitting the co-pilot. This was the fatal bullet that killed the co-pilot.

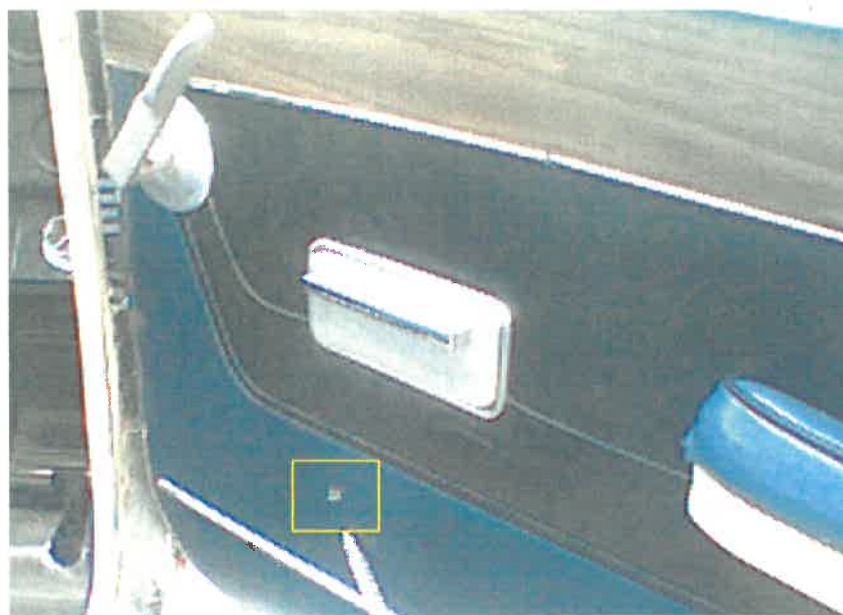


EXHIBIT A-6

Bullet hole on the inner side of the right cockpit door created by bullet 'A' entering the right cockpit door.

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EXHIBIT A-7

Bullet hole on the inner side of cockpit roof created by bullet 'A' after entering the right cockpit door.



EXHIBIT A-8

Bullet hole on the outer side of the cockpit roof created by bullet 'A' that entered the right cockpit door.

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EXHIBIT A-9

Bullet hole created by bullet 'B' entering the cabin from the lower left portion of the fuselage 5 inches forward of the 3rd bulkhead and exited from left side of the fuselage behind the 3rd bulkhead damaging some electrical wires (also see exhibits A-10 and A-11).



EXHIBIT A-10

Bullet hole created by bullet 'B' entering the cabin from the lower left side of fuselage and exited from left hand side of fuselage (refer to Exhibit A-9 and A11 also)

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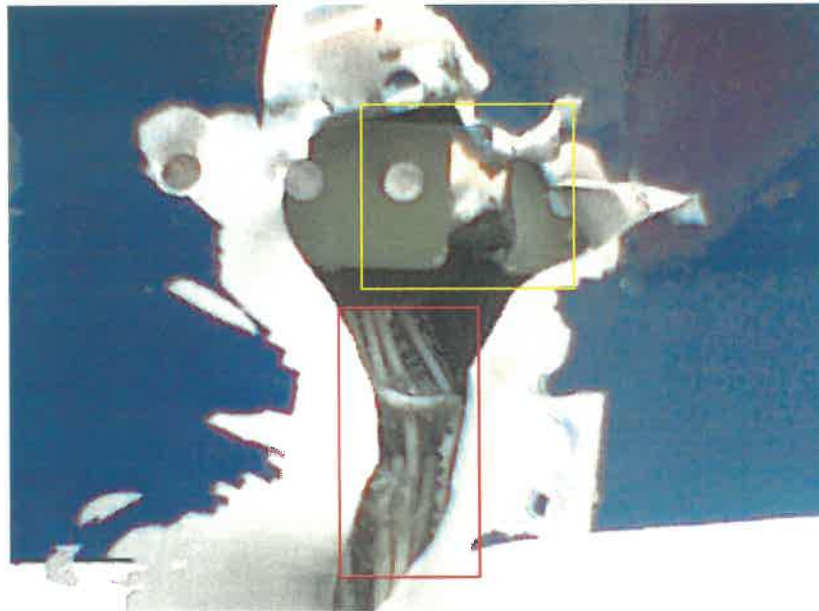


EXHIBIT A-11

Electric wire and internal structure damaged by the bullet "B" entering from the lower left portion of the fuselage and exited from the left hand side of the fuselage (also see Exhibit A-9 and 10)



EXHIBIT A-12

Bullet hole created by bullet 'C' entering vertical from the lower portion of the right aileron and exiting the upper portion of the aileron only damaging the fuselage skin (refer exhibit A-13)

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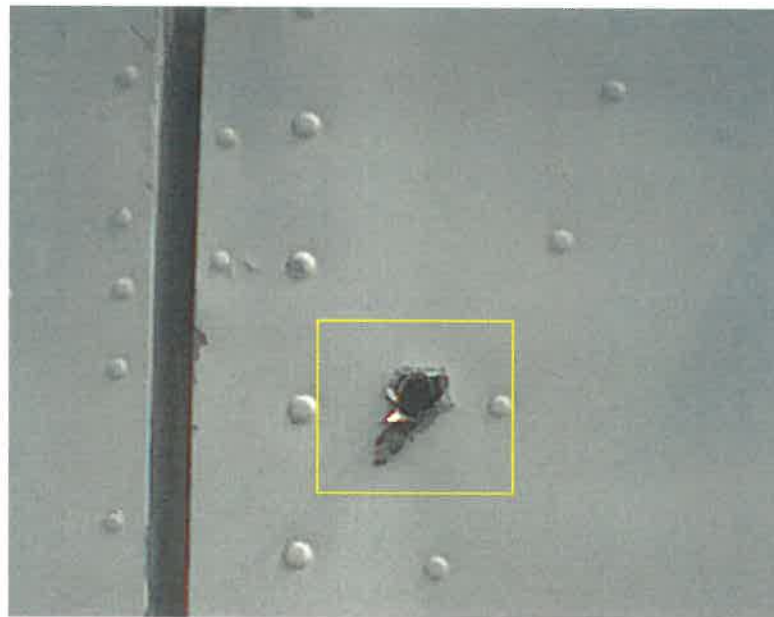


EXHIBIT A-13

Bullet hole created by bullet 'C' on the upper portion of the right aileron, entering vertical from the lower portion of the right aileron (also see exhibit A-12)



EXHIBIT A-14

Bullet hole created by bullet 'D' entering the nose wheel well from the right lower side of fuselage. This bullet damaged the outer fuselage skin and a portion of the forward No 2 bulkhead channel (refer to Exhibit A-15). The bullet continued by hitting the nose wheel well roof (Refer to Exhibit A-16), but did not penetrate the roof, neither did it damage the nose landing gear which was retracted at the time. Only a small metal piece was found embedded in nose tyre (refer to Exhibit A-17)

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EXHIBIT A-15

Bullet 'D' damaged a portion of the forward No.2 bulkhead channel.

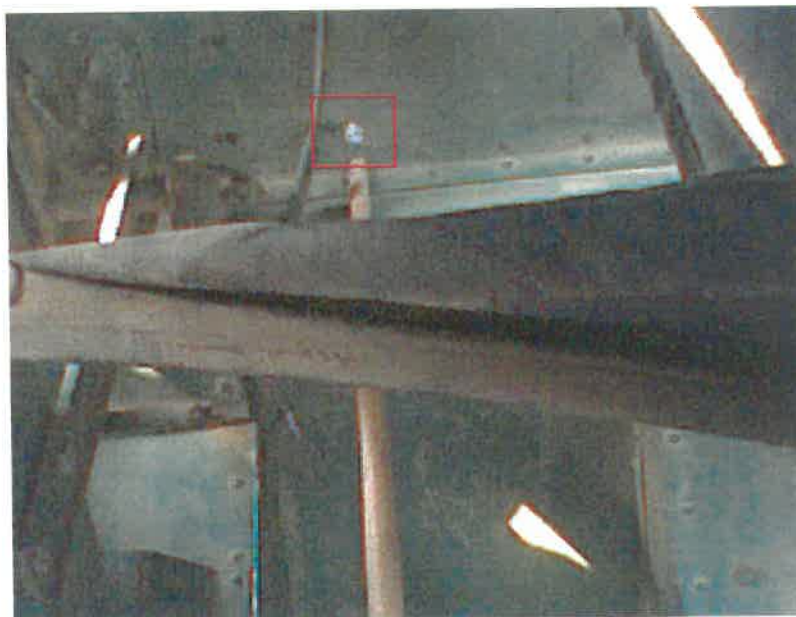


EXHIBIT A-16

A small mark on the roof of the nose landing gear well created by the bullet 'D' that entered the nose wheel well from the left lower side of the fuselage.

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EXHIBIT A-17

Three seats are shown whereas there were four passengers on board.



EXHIBIT A-18

Location from where the gun shoots were fired at the aircraft.

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EXHIBIT A-19

PAF circular water reservoir at Bara.

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