



PAKISTAN CIVIL AVIATION AUTHORITY

AIRCRAFT ACCIDENT INVESTIGATION REPORT



CRASH OF ULTRALIGHT ZODIAC-CH-601 HD

REG. # AP-ZBB ON 29 SEPTEMBER 2006

WALTON AERODROME

LAHORE AIRPORT

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CRASH OF ZODIAC-CH-601-HD) WALTON AERODROME
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Authority: Director General Civil Aviation Authority Memorandum
HQCAA/1901/311/SIB dated 6th October 2006.
(Appendix "A").

Synopsis

1. On 29th September, 2006 an Ultra-light aircraft (ZODIAC-CH-601-HD) Registration No. AP-ZBB (Appendix "B") took off from Walton Aerodrome Lahore at 1445 LT. The aircraft was piloted by Captain Abdul Majeed Bhutta. The Captain had passenger carrying rating. He took his friend S. Munawar Husain with him as passenger. Mr. Bhutta had total flying experience of 125 hours. On the eventful day after making 02 touch and go, he announced full stop landing. Tower cleared him for full stop landing. The aircraft however did not land safely rather it crashed close to a place approximately 100 meters left to the airstrip and close to Lahore Flying club. It's nose mounted engine broke away during impact, the fuel tank ruptured and the aircraft caught fire. Pilot and passenger both died on the spot.

Aircraft History

2. AP-ZBB Ultralight was owned by President Ultralight and Sports Flying Club, 65 Shahrah-e- Quaid-e-Azam Lahore and was manufactured by Zemith Aircraft Company, Mexico Airport Missouri, USA. Aircraft was given a serial number 6-4137 and manufactured in 2001. Aircraft was given permit No. 28 by Director Airworthiness, CAA (Appendix "C"). Aircraft had a gross weight of 1058 lbs, Wing span of 27 ft, and power loading of 15 lbs/hp. ON the mishap flight, the aircraft was serviceable. The aircraft documents show no accident history.

Aircraft Details

Registration	: AP-ZBB
Certificate of Airworthiness	: From 17.6.06 to 16.6.08
Airframe Hours	: 517:10
Engine Hours	: 286.50
Dry Empty Weight	: 550 lbs
Engine Type	: Rotax 912 UL (HP)

General Description

3. Zodiac CH-601 has all metal construction, stressed skin, single curvature metal skin riveted to stiffener. Zodiac CH- 601 has low place side by side seating in a 44 inch wide cabin with good visibility. Pilot and passenger have easy access from either side with the double hinged clamshell canopy which opens first one way, than the other way. Baggage area is located behind the seat and there are additional wing lockers baggage compartment. It has a tricycle gear configuration and the Rotax power plant.

Air Frame

4. Air Frame is of aluminum sheet metal riveted to aluminum angles with Avex rivets. High strength aluminum alloy provides long life and low maintenance cost. Wings has a high lift airfoil and Hoerner wing tips to maximize the wings span.

Wing Span	27 feet
Wing area	130 sq ft
Length	19 feet
Empty Weight	550 lbs
Gross Weight	1058 lbs
Fuel Capacity	16 US Gallon

5. Basic Performance

Stall Sped	44 mph
Normal Operation speed	44-112
Maneuvering Speed	97
Max speed	150

Load Factor	+4, -2
Stall Speed	44 mph (aircraft simply "mashes" in at stall)
Take off distance at SL	400 feet
Climb speed at SL	60 mph
Service Ceiling	12,000 ft
Best Rate of Climb	60 mph
Best angle of climb	55 mph

General Description of Engine

6. Rotax 912 Engine was installed which gives 80 HP of thrust and are equipped with dual carburetors. Each carburetor has a sediment bowl with an additional fuel strainer. Fuel pump is mechanically operated. Battery is mounted on the fire wall. Engine is mounted within the sleek cowling and provides easy access for pre flight inspection. Dual throttles of the push / pull type with adjustable friction clamp. Choke is located near the pilot throttle control. Master switch connects the electrical system to 12 volt battery and charger / coils.

Controls

7. Zodiac CH 601 is equipped with a dual flight control stick between the pilot and the passenger which branched in the form of convenient 'Y' shape handle. The rudder paddle connected to a large diameter steer able nose wheel. Full vertical tail is all moving.

Maintenance Schedule

8. Aircraft is an all metal aircraft built from aluminum alloy which have good corrosion resistance characteristics, little care to the airframe is required. Polyurethane paint keep the high gloss for many year. Beside the routine maintenance, 25 hour and 100 hrs maintenance cycle and inspection is suggested by the Manufacture. Detail steps to inspect at 25 and 100 hrs are given in the aircraft

manual. The insurance was done through Asia Insurance Company limited (Appendix "F").

Wreckage Analysis

9. The wreckage examination revealed that aircraft impacted with ground at its left wing tip and then on right wing leading edge. The nose mounted engine separated / during these impacts. The cockpit and closely located fuel tank were completely ruptured during impact. The splashed fuel was immediately ignited due to hot engine. There was a concentrated localized aviation fuel fire. The fire caused death to pilot and passenger. The cockpit, middle fuselage, left wheel area and engine were extensively burnt. It was observed that there was no significant damage to aircraft wheels, struts or any airframe structure. All the tyres, struts and aircraft tail and nose cone were without any damage. See photographs for damage details.

Crew Information

10. Mr. Abdul Majeed Bhutta had been a member of the Ultralight & Sports Flying Club Pakistan for two years. He had a (MCC) Micro light Competency Certificate, license to fly ULV/Sports planes (Appendix "D"). The license was issued by Pakistan Civil Aviation Authority, under MCC NO. 0071 valid up to May 2007. The pilot was medically fit. He carried out the pre flight as per Appendix "E". He had a passenger carrying rating and his friend Syed Munawar Hussain was also on board. It is learnt that both of them were fasting. Appendices are attached.

Airstrip Layout

11. Walton Aerodrome has a length of 6200 feet and width of 150 feet. However only 4000 feet is useable. The taxi track is 400 x 75 feet. ATC is manned from dawn to dusk. AWA Type 2287 VHF channels are fitted in ATCO office. Mollie Suzuki Van is fitted with AWA UHF channels. Walton Aerodrome had a total land of 696.74

Acres which is now reduced to 192.13 Acres Residential Colonies have come up all around the Walton Airfield. Runway surface has deteriorated however 4000 feet is still fit for Ultralight and Sport aircraft.

Witnesses Statements

12. There were number of eye witnesses who saw the accident. All of them are of the opinion that the aircraft made a normal approach and after touch down the aircraft bounced and fell on the left side close to the runway. **However it could not be substantiated from aircraft damage pattern.** Aircraft caught fire immediately on impact. Crash tender reached the site in 3-4 minutes however it did not work. Water Bowzer was brought in and extinguished the fire.

ANALYSIS

13. Captain Abdul Majeed Bhutta was a regular visitor to the flying Club. He had a valid certificate and medical category. On 29 September he arrived at Ultralight & Sports Flying Club Pakistan along with his friend Syed Munawar Husain. After fulfilling Pre flight Performa and thorough Pre Flight of the aircraft, he took off at 1445 local time. Take ^{off} was normal. Mr. Bhutta made two touch and go landings before making a full stop landing at 1504 hours local time. **Approach was normal. However, it appeared that the pilot could not appreciate the final sink. As the aircraft sank, trying to make a smooth touch down, he abruptly pulled back on the control column which aggravated the situation even further. Aircraft bounced by 14-15 feet with power at idle and landing speeds close to the stalling speed, the aircraft stalled. The throttle was pushed forward, (stated by eye witnesses which can not be substantiated due to burning) but before the power could come the left wing dropped due to stall and aircraft crashed close to Runway in between runway and Ultralight**

hangar. Aircraft caught fire on impact. At the time of impact there were 48 liter of super fuel in the aircraft. Captain and the occupant tried to open the canopy but due to extensive fire they were unable to open it from inside. The knob which is used for locking and unlocking melted from inside. Why an abrupt change during landing?

14. The relationship of touch down area and the place of impact indicate the aircraft controls and engine power must have undergone an abrupt change during final stages of landing. Whether the aircraft touched the ground or not, is not relevant but unless there is change in lift, yaw and power it can not deviate from its final flight path of landing to head towards the place of impact. Of course it had to stall for completing the crash sequence. It is suspected that the passenger might be having the controls for landing and the pilot took over controls suddenly to correct the approach thereby an overreaction caused the aircraft to roll up and yaw to the left. There could be many scenarios but the laws of physics have to be satisfied. The aircraft while it was going to make landing, had suddenly experienced a pitch up, left yaw and finally lost lift and fell down on its left wing tip. The most probable cause of such abrupt inputs to aircraft control surfaces is application of sudden corrective controls by pilot or passenger.

Poor State of Maintenance - Emergency Vehicle RIV

15. The vehicle which was detailed for emergency, did not work. Investigations revealed that, it had a leak between high pressure valve and pressure gauge, the same was not detected earlier. It's physical examination also revealed that panel was not properly identified. Even the fire fighter was unable to explain the functions of a number of valves on the control panel. The internal diagram and other related documents to maintain such an important vehicle were not available with the fire flight. Appendix "H" records the observations which are as follows:

- a. RIV was locally fabricated and was inducted in CAA in 1984.
- b. It was transferred from Faisalabad Airport to Walton Airport Lahore in April 2006.
- c. There is no SOP to carry out operational check of Fire Extinguishing equipment, mounted on the said vehicle.
- d. There is no Daily Inspection (DI) form for serviceability check of the said vehicle. The DI is carried out on the basis the experience of CFRO.
- e. The regulator of Nitrogen cylinder and associated pressure gauges were not found calibrated.
- f. The Fire extinguishing unit was operated in order to check its serviceability. High pressure hose pipe (From regulator to pressure gauge) was found leaking at one end. The concerned were directed to replace the affected pipe with a new one. After replacement the vehicle was inspected again. The replaced pipe was also found leaking from one end. This reflects the sub standard material used on the specialized vehicle.

16. Performance of Air Traffic Controllers: Investigations revealed that the fire fighting vehicle was not serviceable. It had a defect and since when it can not be ascertained. As per CAA stations Air Traffic Instruction Manual for AllAP Lahore, Chapter 3. Approval and Area Control Paras 3.14.2 Administration duties (see Appendix "G"), the DATCO is responsible to ensure that a serviceable fire fighting vehicle is available. He (DATCO) failed to ensure it. It is also a serious lapse on part of fire fighting services operating under Chief Fire Officer that a vehicle of such importance was unserviceable.

17. Findings

- a. The aircraft had valid certificate to fly as recreational vehicle and was serviceable in all respects.
- b. Aircraft was registered on the name of Mr. Rauf Ahmed Shah with registration mark AP-ZBB.
- c. Pilot had valid rating and license to fly and was medically fit. Captain had approx 125 hours of total flying experience.
- d. Walton airfield has only 4000' of useable runway which is considered sufficient for such aircraft.
- e. Both Pilot and his friend were fasting.
- f. Pilot took off at 1445 hours and made two touch and goes before making a full stop landing.
- g. To control the final sink, the pilot pulled the control column abruptly back.
- h. Aircraft gained about 15 feet with throttle at idle.
- i. With speed dropping below stalling speed aircraft stalled.
- j. Left wing dropped and aircraft impacted the ground and caught fire.
- k. Crash tender was dispatched to the site which took 4-minutes to reach.
- l. RIV did not operate.
- m. RIV was defective and could not be operated during examination by inquiry committee in presence of Chief Fire Officer, Chief Operations Officer, ATCO and technician of CAA.
- n. The RIV is not maintained properly, there is no daily inspection procedure.

- o. The DATCO failed to ensure the serviceability of a fire fighting vehicle.
- p. Fire extinguisher of Ultralight club were used to extinguish the fire, however due to the intensity of fire, they were unable to extinguish the fire.
- q. Fire was extinguished with the help of water Bouzer which arrived after 8 minutes.
- r. Both occupants could not open the canopy due to inoperative locking mechanism which had melted with heat.
- s. Both occupants died inside the Cockpit.

18. **Finalization**

- a. The accident is finalized as aircraft stalling after **an incorrect landing** – Poor landing technique – Human Factor Avoidable.
- b. RIV failed to operate during emergency – Poor Training and Maintenance- Avoidable.

19. **Recommendations**

- a. Duty Air traffic Officer should not merely depend on the statement of MTD or Fire Fighter that vehicles are serviceable. They should in compliance with their administrative duties as per their manual, ensure serviceability of vehicles through physical checks, inspections and fire fighting drills.
- b. Fire Fighter, MTD and DATCO should be well familiar with the operation of fire fighting vehicles.
- c. Fire Fighting Vehicles must be maintained in high state of preparedness through inspection, drills and fire fighting exercises.

- d. Vehicles should be maintained in accordance with technical literature.
- e. The technical literature of each vehicle must be available with the operator.
- f. GM Licensing to issue instructions for passengers' safety briefing by flying clubs. The safety briefing should not be left at the discretion of pilot alone for UL and sports clubs.
- g. The criteria for passenger rating needs to be strict and vigilant.



MAIN WRECKAGE EXTENSIVE BURNING IN CENTRE TAIL AND RT WING UN-
BURNT



RT WHEEL AND STRUTS NO BREAKAGE OR BURSTING DURING TOUCH DOWN



NOSE MOUNTED ENGINE SEPARATED ON IMPACT AND BURNT



RIGHT WING LEADING EDGE PAINT FLAKED OFF BUT NO TELESOPING



LEFT WING TIP BENT ON INITIAL IMPACT AND NOSE TIP SEPARATED

LAPSES

- 1 WHERE IS THE MOLTEN CANOPY LOCK.?
- 2 Why Post Mortem was not carried out as per Form 41 Requirements.
- 3 No Comments Whether failure of fire services contributed to the deaths or not?