

NO.HQCAA/1901/222/SIB



**CIVIL AVIATION AUTHORITY
PAKISTAN**

AIRCRAFT INCIDENT INVESTIGATION

M/S RAWALPINDI FLYING CLUB

CESSNA-152 REG.NO.AP-BAW WHICH OCCURRED

ON 17TH JULY, 1997

AT

VILLAGE RAKH GHUKHRAN.

PUNJAB

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INVESTIGATION REPORT : M/S RAWALPINDI FLYING CLUB,
CESSNA -152 AIRCRAFT REG NO AP-BAW WHICH EXECUTED
AN EMERGENCY LANDING IN A PLOUGHED FIELD NEAR
VILLAGE RAKH GAKHRAN CLOSE TO MANDRA ON 17TH JULY, 1997

Authority:- Director General Civil Aviation Authority Memorandum
No. HQ CAA/1901/222/SIB dated 28th July, 1997 (Refer
Appendix 'A').

COMPOSITION OF INVESTIGATION TEAM

- | | | |
|-----|--|-----------------------|
| (a) | Air Cdre (Rtd) Rashid A. Bhatti
Pilot Investigator, SIB CAA | Investigator Incharge |
| (b) | Wg Cdr (Rtd) Sajjad Ahmed
Technical Investigator CAA | Investigator |

1. AIRCRAFT INFORMATION

- | | | |
|------|--|---|
| 1.1. | Registration Marks | : AP-BAW |
| 1.2. | Aircraft type and maker's
Sl. No. | : Cessna-152
SNo. 15282835 |
| 1.3. | Engine types, airframe
positions and maker's S No. | : Lycoming O-235L2C RL25129-15
Fitted front of fuselag. |
| 1.4 | Certificate of Reg No and
validity. | : C of R No.461 validity to date. |
| 1.5. | Certificate of Airworthiness
No and date of expiry, and
flight manual No. | : C of A No.499 validity 30.05.1998.
Manual No.D1136-13PH. |
| 1.6. | Certificate of Safety date
and time (GMT) of issue and
period of validity. | : Issued on 15.07.1997 valid upto
26.07.1997. |

- 1.7. Date of construction of : 1979
airframe.
- 1.8 Name and address of Owner : Rawalpindi Flying Club P.O. Box
No. 75, Rawalpindi.
- 1.9 Gross Weights. Maximum : Max. Gross Weight permitted:
permitted by C of A for this 1670 LBS 759.09 Kg.
flight, at the time of incident
- 1.10 Loading. Centre of gravity : CG: .995 m.aft of datum line.
limits in C of A and centre of
gravity position at the time
of incident and commence-
ment of flight.
- 1.11 Airframe history. (Give flying : Manufactured 1979. A/C met an
times since manufacture, accident on 01.07.1990 and was
last overhaul and last recovered and underwent C of A
periodic check. renewal inspection. A/C
completely inspected at the time
of C of A. total time 17602.45 hrs
last periodic check 17594.55hrs.
Modifications. AD80-01-06, AD80-
06-03, AD93-05-06. SEB 96-2.
- 1.12 Engine history. (Give flying : Engine completely OH. Hours
time since manufacture, last flown 203.25. Periodic inspection
overhaul and last periodic at 195.45 hrs. Modifications
check. AD96-09-10 and AD91-14-22.
- 1.13 Accessory history. (Operat : Accessories overhauled with
ing life and operating time engine and have same as engine
since manufacture and hours.
overhaul.

2. CREW INFORMATION

2.1 **Pilot-in-Command**

- 2.1.1. Name : Khuram Shuja Baig
- 2.1.2. Position in the cockpit : Captain
- 2.1.3. Date of Birth : 13.03.1968

/2.1.4.

2.1.4. Type of Lic and No : CPL No. 1686

2.1.5. Medical dt with status : 24.02.1997. CPL

2.1.6. Rating

2.1.6.1. Type(s) held : C-150/152/172, PA-23
and C-406.

2.1.6.2. Type current : As above.

2.1.6.3. Flt.Instructor : AFI

2.1.7. Flying Experience

2.1.7.1. Grand total : 2064: 05 Hrs.

2.1.7.2. Total -in - : 2025/30 Hours
Command

2.1.8. Where trained : Rawalpindi Flying Club. (RFC)

2.2. Co-Pilot

2.2.1. Name :

2.2.2. Position in the cockpit :

2.2.3. Date of Birth :

2.2.4. Type of Lic and No : NIL

2.2.5. Medical dt with status :

2.2.6. Rating

2.2.6.1. Type(s) held :

2.2.6.2. Type current :

2.2.7. Flying Experience

2.2.7.1. Grand total :

2.2.7.2. Total - in - :
Command

/2.2.8.

2.2.8. Where trained :

3. **SUMMARY**

3.1. On 17 July, 1997 M/s Rawalpindi Flying Club Cessna-152 aircraft Reg.No. AP-BAW executed a forced landing near Mandra due to loss of engine power. While flying a Navigation mission satisfactorily for about 50 minutes the student pilot observed severe engine RPM fluctuation at a height of about 4500 feet. On taking over the controls the instructor Pilot selected carburetor Heat System and moved the power lever to and fro several times but the situation didn't improve. Realising that aircraft was contineously loosing height a forced landing was executed safely on a rough ploughed field. No injury to any person or damage to property was caused to the aircraft or any life or property.

4. **INJURY TO PERSONS**

4.1. There was no injury to any of the crew members.

5. **DAMAGE TO AIRCRAFT**

5.1. Nil

6. **OTHER DAMAGES**

6.1. Nil

7. **METEOROLOGICAL CONDITION**

7.1. The weather was fair and visibility was good.

8. **NAVIGATION AIDS**

8.1. Not a factor in the incident

9. **COMMUNICATIONS**

9.1. Not a factor in the incident

10. **AERODROME AND GROUND FACILITIES**

10.1. Not a factor in the incident.

11. **FLIGHT RECORDERS**

11.1. Not a factor in the incident.

12. **WRECKAGE**

12.1. Nil.

13. **FIRE**

13.1. No smoke or fire was caused due to the incident.

14. **SURVIVAL ASPECTS**

14.1. Nil

15. **TEST & RESEARCH**

15.1. Nil

16. **OBSERVATIONS**

16.1 Rotary fuel pump used for refuelling had no cover for its proper stowage.

16.2 Chamois leather repaired at many places was being used for filtering the fuel during refuelling.

16.3. Upkeep of the refuelling equipment like funnels, pipes etc was unsatisfactory.

16.4. The aircraft refuelling was carried out by shifting barrels close to the aircraft on a trolley and transferring fuel to the aircraft without providing adequate settling time to the contaminants.

17. **INVESTIGATION**

17.1. On 17th July, 1997 M/s Rawalpindi Flying Club Cessna-152 aircraft Reg No. AP-BAW was scheduled for a navigation mission from Rawalpindi to Indek and back. After completing the formalities Mr. Khurram Zafar CPL Lic No. 1686 (IP) and Mr. Rahim Shah Alam Khan SPL No. 2003 took-off from Rawalpindi at about 1650 hrs PST. The engine performance

during take-off, climb and cruise was normal. After flying for about 50 minutes the student pilot who was on the controls felt severe engine coughing which was followed by significant drop in its rpm. On observing the emergency, the Instructor Pilot Mr. Khurram Shuja Baig CPL No. 1686 took over the controls and selected Carburetor Heating System but the engine performance didn't improve. Subsequently, he advanced/retarded the throttle several times but the engine performance didn't improve. At this stage the engine oil pressure and temperature parameters were within normal limits, however; the engine RPM dropped to 1200.

As the aircraft was losing height and had descended to about 3500ft the IP decided to execute a forced landing and informed the radar accordingly. At about 3000 feet the aircraft lost its contact with the radar and the pilot relayed message to PK-630 that forced landing was being carried out. After executing a forced landing in a ploughed field near village Rakh Gakhran close to Mandra, the Instructor Pilot informed PK-630 that both pilots and the aircraft were safe.

17.2. Prior to subject mission the DI certification of the aircraft Reg No. AP-BAW was carried out by Mr. Syed Muhammad Shah AME Lic. No. 7930 at about 0930 hours on 17th July, 1997. After the DI certification the aircraft was scheduled for subject mission at about 1600 hours. Before the incident the engine performance was satisfactory and no repeat engine malfunction was reported in the engine maintenance log book.

17.3 At site, soon after the incident Mr. Zafarullah Khan Controller of Airworthiness (North) observed that the fuel sample obtained from the filter was highly contaminated with water and suspended dust particles were visible. After draining sufficient quantity of fuel Mr. Zafarullah Khan gave

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a ground run and checked the performance of the engine at various power settings which was found satisfactory.

ANALYSIS

ENGINE PERFORMANCE

18. The lycoming engine O-23512C RL-25129-15 installed on the aircraft had logged about 203 hours since overhaul and its maintenance history record had no evidence of repeated entry on any engine system. Additionally, no service bulletin was outstanding for implementation and the performance of the engine was satisfactory prior to the incident. Moreover, during subject mission the performance of the engine during take off climb and cruise was satisfactory. However, after operating for about 50 minutes while flying at an altitude of about 4500 feet the engine started coughing with severe rpm fluctuation. Despite selection of carburetor heat system and advancing/retarding the throttle the engine didn't recover out of the situation and the rpm dropped finally to about 1200. Soon after the incident fuel sample was taken from engine fuel filter which indicated presence of water and suspended dust particles. Additionally, after draining sufficient quantity of fuel the engine was given ground run at all power settings and performance of the engine was found satisfactory. Therefore, the Board is of the opinion that the engine power loss was caused by presence of water in the fuel.

FUEL CONTAMINATION

19. While inspecting the aircraft fuel storage and dispensing facilities of M/s Rawalpindi Flying Club it was observed that the fuel was transferred into the aircraft from the fuel barrels kept at a distance from the aircraft parking area. As a normal practice the /barrels

barrels were brought on a trolley from the storage area to close vicinity of the aircraft and no settling time was given prior to refuelling. Additionally, it was observed that the pump used for transferring fuel had no cover for proper stowage and repaired chamois leather were in use for filtering fuel during refuelling. Moreover, the storage condition of the equipment used in fuel transferring (funnels, plastic pipe etc) was entirely unsatisfactory. The Board is of the opinion that the fuel storage, up-keep of refuelling equipment and refuelling operations was not carried out in accordance to the stipulated SOPs on the subject.

CONCLUSION

20. M/s Rawalpindi Flying Club Cessna aircraft Reg No. AP-BAW executed a forced landing near village Rakh Gakhran, Mandra due to loss of engine power which was caused due to presence of water in the aircraft fuel.
21. The fuel storage, refuelling equipment and its upkeep at M/s Rawalpindi Flying Club was entirely unsatisfactory.

FINDINGS

22. The Board finds that:-
 - 22.1. The documents of the aircraft were in order.
 - 22.2. Licence of the Captain was appropriate and valid.
 - 22.3. The weather was fair and there was no rain or adverse weather conditions at the time of occurrence.
 - 22.4. On 17th July, 1997 student pilot Mr. Rahim Shah Alam Khan SPL NO.2003 was detailed to fly a navigation mission with Instructor Pilot Mr. Khurram Shuja Baig /CPL No

CPL No. 1686 from Rawalpindi to Indek and back in Cessna-152 aircraft Reg. No. AP-BAW.

- 22.5. At about 1640 hrs PST the aircraft took-off for subject mission and performance of its engine during start-up take-off, climb and cruise was satisfactory.
- 22.6. After flying for about 50 minutes the student pilot while cruising at about 4500 ft observed severe engine rough running and IP on taking over the controls selected the carburetor heat system and simultaneously advanced/retarded the power lever several times. However, the engine performance deteriorated further and its rpm dropped to 1200 finally.
- 22.7. Realizing the aircraft was losing height continuously the IP decided to execute an emergency landing and informed the radar accordingly.
- 22.8. At about 1714 hours PST the IP landed the aircraft safely in a ploughed field near village Rakh Gakhran close to Mandra about 18NM short of Islamabad(Refer Appendix 'B1 to B4').
- 22.9. No injury to any person or damage to any property was caused due to the incident.
- 22.10. Prior to take-off the aircraft had sufficient fuel for about 4 hours endurance power settings.
- 22.11. Examination of fuel sample taken from the fuel strainer soon after the incident showed presence of water and suspended dust particles.
- 22.12. Ground run given after draining aircraft fuel at site by Controller of Airworthiness (North), displayed engine performance satisfactory at all power settings.
- 22.13. No cover for stowing the rotary fuel pump after use was held by M/s Rawalpindi Flying Club.
- 22.14. The condition and up-keep of the equipment used in the

/operation

operation of aircraft refuelling was unsatisfactory. The use of torn/repared chamois leather and un-satisfactory storage coditions of funnels, pipes etc are some examples.

- 22.15. Out of the 2 engineers employed by M/s Rawalpindi Flying Club the Chief Engineer was 73 years of age.
- 22.16. The role of Chief Engineer Mr. Syed Muhammad Shah AME LIC No. 7930 as a senior supervisor in providing professional guidance/implementing safe maintenance practices was virtually not existant.

RECOMMENDATIONS

23. The Board recommends that:-

- 23.1. Management of M/s Rawalpindi Flying Club must ensure that handling and up-keep of aircraft fuel and allied equipment is carried out in accordance to the SOP's on the subject.
- 23.2. Management of M/s Rawalpindi Flying Club must appoint a suitable person as Chief Engineer in place of Mr. Syed Muhammad Shah AME Lic No. 790
- 23.3. Director Airworthiness and Director Flight Standards Divisions should formulate a policy stipulating age limit for the appointment of person as Chief pilot/engineer in a flying organization.

APP. 'B₁'



SIDE VIEW:
NO DAMAGE CAUSED TO AIRCRAFT STRUCTURE

APP. 'B₂'



CESSNA-152 AIRCRAFT REG NO. AP-BAW
FORCED LANDING
NOTE:- SEE TRACK

APP. 'B3'



FRONT VIEW:
AIRCRAFT STOPPED CLOSED TO THE EDGE
OF THE FIELD

APP. 'B4'



CLOSE-UP VIEW:
NO DAMAGE CAUSED TO THE LANDING GEARS