

FINAL INVESTIGATION REPORT



SERIOUS INCIDENT OF LAHORE FLYING CLUB CESSNA-172 AIRCRAFT, REG. NO. AP-BIX WHILE FLYING FROM LAHORE TO MULTAN ON 04TH APRIL, 2019

Dated: 20th September, 2023

SCOPE

Aircraft Accident Investigation Board (AAIB), Pakistan conducts investigations in accordance with Annex-13 to Convention on International Civil Aviation and Civil Aviation Rules 1994 (CARs 94).

The sole objective of the investigation and the final report of an accident or incident under above stated regulations is the prevention of future accidents and incidents of similar nature. It is not the purpose of such an investigation to apportion blame or liability. Accordingly, it is inappropriate to use AAIB Pakistan investigation reports to assign fault or blame or determine liability, since neither the investigation nor the reporting process has been undertaken for that purpose.

This report contains facts which have been determined up to the time of publication. Such information is published to inform the aviation industry and the public about the general circumstances of civil aviation accidents and incidents.

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ABBREVIATIONS

AAIB	Aircraft Accident Investigation Board
h	Hour(s)
ICAO	International Civil Aviation Organization
In	Inch
IOU	Incident and Occurrence Unserviceability Report
MIAP	Multan International Airport
NM	Nautical Mile
PCAA	Pakistan Civil Aviation Authority
RPM	Revolutions Per Minute
UTC	Universal Time Coordinated

INTRODUCTION

The serious incident was reported by Pakistan Civil Aviation Authority (PCAA) Incident Occurrence and Unserviceability (IOU) Report. Ministry of Aviation, Government of Pakistan issued Notification to constitute an Investigation Team to investigate the serious incident. The investigation has been conducted by AAIB, Pakistan. All corresponding timing are mentioned in Universal Time Coordinated (UTC).

SYNOPSIS

At 0512 hours (h) UTC, on 4th April, 2019, Lahore Flying Club Cessna-172 aircraft, Reg. No. AP-BIX took off for a training flight from Walton Airport, Lahore to Multan International Airport (MIAP), Multan. At 0646 h pilot reported engine vibrations and decided to return back. At 0710 h when aircraft was 38 Nautical Mile (NM) short of Multan Airport, aircraft started losing height. Pilot diverted the aircraft to nearest Military airfield, Vehari (OPVH). After a safe landing at Vehari, the engine flamed out.

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SECTION 1 - FACTUAL INFORMATION

1.1. History of the Flight

1.1.1. At 0512 h on 4th April, 2019, Lahore Flying Club Cessna-172 aircraft, Reg. No. AP-BIX took off for a training flight from Walton Airport, Lahore to MIAP, Multan.

1.1.2. At 0646 h, pilot reported engine vibrations and decided to return back.

1.1.3. At 0650 h, when aircraft was about 14 NM short of MOLTA (approximately 75 NM short of MIAP, Multan), Pilot requested to proceed direct to MIAP, Multan.

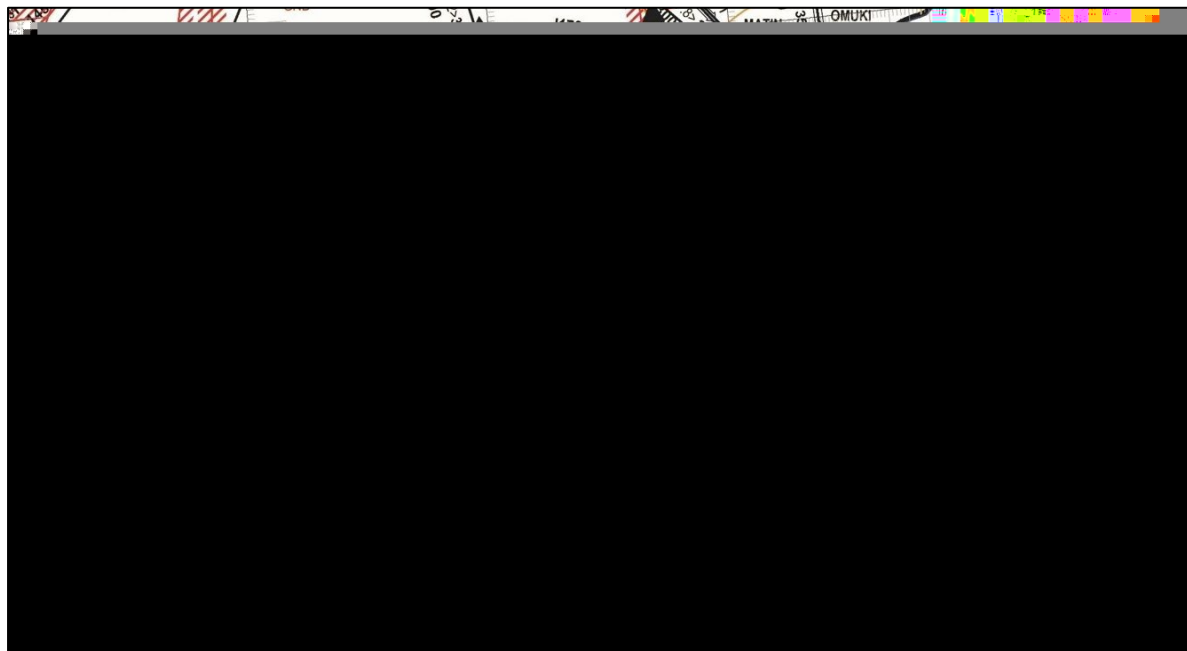


Figure 1 AP-BIX Route Plan

1.1.4. At 0710 h, when aircraft was 38 NM short of MIAP, Multan, pilot reported losing height and diverting to Military airfield, Vehari (OPVH).

1.1.5. At 0714 h, the pilot performed forced landing due to engine vibrations at Vehari airfield.

1.1.6. After landing at Vehari, the engine flamed out.

1.2. Injuries to Person(s)

Injuries	Crew	Passengers	Total in the aircraft	Others
Fatal	-	-	-	-
Serious	-	-	-	-
Minor	-	-	-	-
None	02	01	03	-
Total	02	01	03	-

Table 1 Details of Injuries to Persons

1.3. Damage to Aircraft

1.3.1. Not Applicable

1.4. Other Damages

1.4.1. Not Applicable.

1.5. Personnel Information

1.5.1. Pilot in command was a qualified pilot having valid license (CPL No. 3231).

1.5.2. Student pilot was holding private pilot License (PPL No. 3541).

1.6. Aircraft Information

Aircraft	
Aircraft Make & Model	Cessna – 172N Skyhawk
Registration Number	AP-BIX
Serial No.	17269645
Total Hours since new	6310 h
Engine	
Engine No.	RL-4418-76T
Engine Type	LYC-0320-H2AD
Date of installation	24 th October, 2013
Propeller	
Propeller Type	McCauley Propeller / Fixed Pitch
Model	PROP-1C160DTM-7557
Serial No	731947
Date of installation	17 th August, 2015
Total Hours Since New	1330 h

Table 2 Aircraft, engine and propeller information

1.7. Meteorological Information

1.7.1. No significant weather was reported at the time of serious incident.

1.8. Aids to Navigation

1.8.1. Not Applicable.

1.9. Communications

1.9.1. Not Applicable.

1.10. Aerodrome Information

1.10.1. Not Applicable.

1.11. Flight Recorders

1.11.1. Not Applicable.

1.12. Wreckage and Impact Information

1.12.1. Not Applicable.

1.13. Medical and Pathological Information

1.13.1. The crew had valid medical fitness to undertake the flight.

1.14. Fire

1.14.1. Not Applicable.

1.15. Survival Aspects

1.15.1. Not Applicable.

1.16. Test & Research

1.16.1. Cessna Model 172N Manual - Section 3 Emergency Procedure outlines following possible causes of rough engine operation or loss of power: -

1.16.1.1. **Carburetor Icing** – A gradual loss of RPM and eventual engine roughness may result from the formation of carburetor ice.

1.16.1.2. **Spark Plug Fouling** – A slight engine roughness in flight may be caused by one or more spark plugs becoming fouled by carbon or lead deposits.

1.16.1.3. **Magneto Malfunction** – A sudden engine roughness or misfiring is usually evidence of magneto problems. One of the reasons for the magneto malfunction is the out of limit contact point clearance.

1.16.1.4. **Low Oil Pressure** – If low oil pressure is accompanied by normal oil temperature, there is a possibility that oil pressure gage or relief valve is malfunctioning.

1.16.2. Dual Contact Magneto

1.16.2.1. **Introduction** – The magneto is a self-contained generator of high voltage that provides ignition to an engine through spark plugs. It is the source of power in light aircraft because they are self-contained and not attached to battery or electric systems in the aircraft, it allows the engine to continue to run even during a battery or electrical failure.

1.16.2.2. **Magneto Contact Condition** – Magneto Contacts are required to be inspected for surface condition, wear and clearance. The clearance must be 0.018 ± 0.006 inch (in). If clearance is over 0.024 in, readjust contact to 0.024 in opening. If clearance is under 0.012 in, readjust contact to 0.012 in opening. Inspect cam follower carefully to determine the cause of the wear. If the contact surface shows evidence of burning, and if the cam follower shows evidence of melting where it pushes on the contact spring, the capacitor needs replacement. The figure below is the magneto backend view, where right and left contact pints are also indicated: -

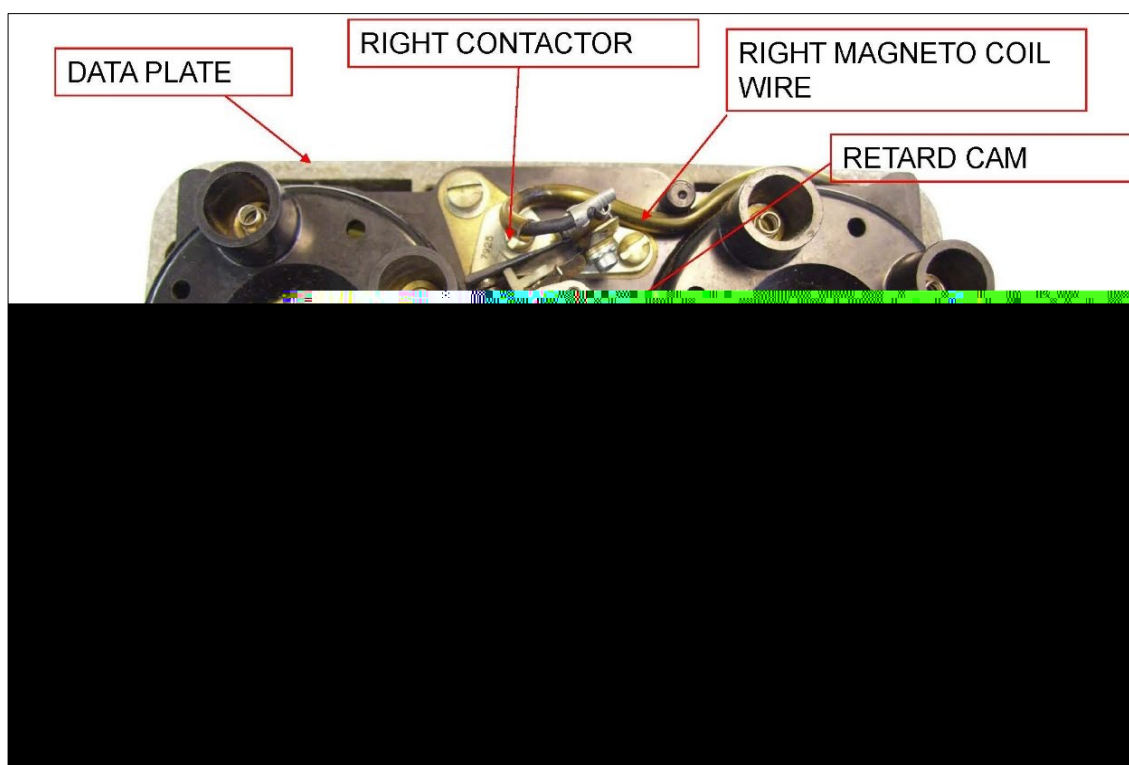


Figure 2 Magneto (Backend View)

1.17. Organizational and Management Information

1.17.1. Not Applicable.

1.18. Additional Information

1.18.1. Not Applicable.

1.19. Useful & Effective Investigation Techniques

1.19.1. Standard investigation procedures and techniques were used during the course of investigation.

SECTION 2 – ANALYSIS

2.1. General

2.1.1. Lahore Flying Club is established to

2.3.2.2. Magneto Contacts were inspected for surface condition, wear and clearance. The surface was in good condition and sign of wear was not observed.

2.3.2.3. Magneto Contact clearance was observed less than 0.005 in on both left and right side.

2.3.2.4. The Operator engineering staff adjusted the clearance on both sides at 0.011 in instead of 0.018 ± 0.006 in, carried out the ground run and declared the aircraft airworthy.

2.3.2.5. Adjustment of Magneto Contact clearance by the Operator Engineering staff was out of limit as per para 9.2.9 of System Support Manual S20/ S-200 Magneto Ignition System.

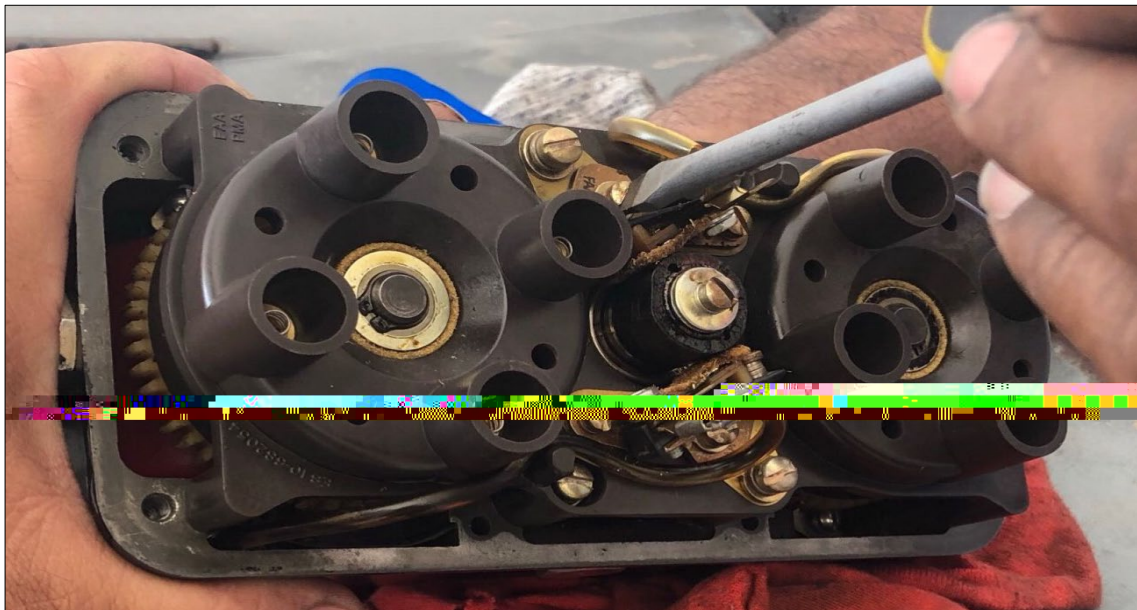


Figure 4 Adjustment of Contact Point of Magneto – Event Aircraft

2.4. Human Factors

2.4.1. Not Applicable.

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SECTION 3 – CONCLUSIONS

3.1. Findings

- 3.1.1. At 0512 h on 4th April, 2019, Lahore Flying Club Cessna-172 aircraft, Reg. No. AP-BIX took off for a training flight from Walton Airport, Lahore to MIAP, Multan.
- 3.1.2. At 0646 h, pilot reported engine vibrations and decided to return back.
- 3.1.3. At 0650 h, when aircraft was about 14 NM short of MOLTA (approximately 75 NM short of MIAP, Multan), Pilot requested to proceed direct to MIAP, Multan.
- 3.1.4. At 0710 h, when aircraft was 38 NM short of MIAP, Multan, reported losing height and diverting to Vehari airfield.
- 3.1.5. At 0714 h, the pilot performed forced landing due to engine vibrations at Vehari airfield.
- 3.1.6. After landing at Vehari, the engine flamed out.
- 3.1.7. Pilot decision to divert and land at Vehari airfield (nearest airfield) was appropriate and as per the pilot checklist.
- 3.1.8. Aircraft was fly worthy on the day of incident and its defect history did not contain any trend related to the engine defects.
- 3.1.9. Engine was investigated and evidence of carburetor icing, spark plug fouling and low oil pressure were not found.
- 3.1.10. Magneto Contacts were inspected for surface condition and wear. The surface was in good condition and sign of wear was not observed.
- 3.1.11. Magneto contact clearance was observed less than 0.005 in on both left and right side.
- 3.1.12. The Operator engineering staff adjusted the clearance on both sides at 0.011 in instead of $0.018 \pm .006$ in, carried out the ground run and declared the aircraft airworthy.
- 3.1.13. Adjustment of Magneto Contact clearance by the Operator engineering staff was out of limit as per para 9.2.9 of System Support Manual S20/ S-200 Magneto Ignition System.

3.2. Cause / Contributing Factor

- 3.2.1. Magneto contact clearance was observed less than 0.005 in on both left and right side which caused vibrations and subsequent flameout of the engine.

Note: Aviation Occurrence Category (ADREP Taxonomy)

IN-FLIGHT SHUTDOWN (IFSD) (SCF-PP-IFSD)

Engine ceases to function between aircraft rotation and touchdown and slows down to sub-idle whether self-induced, flight crew initiated or caused by an external influence.

SECTION 4 – SAFETY RECOMMENDATIONS

4.1. Safety Recommendations

4.1.1. The Operator may ensure compliance of instructions contained in Technical Manuals by its Engineering staff.