



AIRCRAFT SERIOUS INCIDENT

FINAL REPORT

SI 02/23P

Air Accident Investigation Bureau (AAIB)

Ministry of Transport Malaysia

**Fixed Wing Aircraft Textron Aviation 172Q, Registration 9M-ZAB
at Sultan Azlan Shah Airport, Ipoh. Perak
on the 17 February 2023**



Air Accident Investigation Bureau
Ministry of Transport
No.26, Jalan Tun Hussein, Precinct 4
Federal Government Administrative Centre
62100 PUTRAJAYA
Phone: +603-8892 1072
Fax: +603-8888 0163
E-mail: AAIB@mot.gov.my
Website: <http://www.mot.gov.my/en>

Issued on 22 February 2024
MOT.(S).600-5/4/96

FINAL REPORT SI 02/23P

AIR ACCIDENT INVESTIGATION BUREAU (AAIB) MALAYSIA

REPORT NO: SI 02/23

OPERATOR : LAYANG LAYANG FLYING ACADEMY
AIRCRAFT TYPE : TEXTRON AVIATION 172Q
NATIONALITY OF AIRCRAFT : MALAYSIA
REGISTRATION : 9M-ZAB
PLACE OF OCCURRENCE : SULTAN AZLAN SHAH AIRPORT, IPOH.
PERAK (WMKI)
DATE AND TIME : 17 FEBRUARY 2023 AT 0957 LT

The sole objective of the investigation is the prevention of accidents and incidents. In accordance with Annex 13 to the Convention on International Civil Aviation, it is not the purpose of this investigation to apportion blame or liability.

All times in this report are Local Time (LT) unless stated otherwise. LT is UTC + 8 hours.

INTRODUCTION

The Air Accident Investigation Bureau of Malaysia

The Air Accident Investigation Bureau (AAIB) is the air accidents and serious incidents investigation authority in Malaysia and is responsible to the Minister of Transport. Its mission is to promote aviation safety through the conduct of independent and objective investigations into air accidents and serious incidents.

AAIB also conducts investigation into incidents when the occurrence shows evidence to have safety issues concerned.

AAIB conducts all accident and serious incident investigations in accordance with Annex 13 to the Chicago Convention and Civil Aviation Regulations of Malaysia 2016.

It is inappropriate that AAIB reports should be used to assign fault or blame or determine liability since neither the investigations nor the reporting processes have been undertaken for that purpose.

In accordance with ICAO Annex 13 paragraph 4.1, notification of the serious incident was sent out on 23 February 2023 to the National Transport Safety Board (NTSB), United States of America as the State of Design and Manufacture. A copy of the Preliminary Report was subsequently submitted to the above organisation, the Civil Aviation Authority of Malaysia (CAAM) and the Aircraft Operator on 23 March 2023.

Unless otherwise indicated, recommendations in this report are addressed to the investigating or regulatory authorities of the State having responsibility for the matters with which the recommendations are concerned. It is for those authorities to decide what action is to be taken

FINAL REPORT SI 02/23P

TABLE OF CONTENTS

CHAPTER		TITLE	PAGE NO
		TITLE PAGE	i
		INTRODUCTION	iii
		TABLE OF CONTENTS	iv
		GLOSSARY OF ABBREVIATIONS	vi
		SYNOPSIS	1
1.0		FACTUAL INFORMATION	2
	1.1	History of the Flight	2
	1.2	Injuries to Persons	3
	1.3	Damage to Aircraft	3
	1.4	Other Damage	4
	1.5	Personnel Information	5
	1.6	Aircraft Information	5
	1.7	Meteorological Information	6
	1.8	Aids to Navigation	6
	1.9	Communications	6
	1.10	Aerodrome Information	6
	1.11	Flight Recorders	7
	1.12	Wreckage and Impact Information	7
	1.13	Medical and Pathological Information	7
	1.14	Fire	7
	1.15	Survival Aspects	8
	1.16	Tests and Research	8
	1.17	Organizational and Management Information	8
	1.18	Additional Information	8
	1.19	Useful or Effective Investigation Techniques	9
2.0		ANALYSIS	9
	2.1	On-site Investigation	9
	2.2	On-site Investigation Analysis	12
3.0		CONCLUSIONS	14
	3.1	Findings	14
	3.2	Causes/Contributing Factors	15
4.0		SAFETY RECOMMENDATIONS	15

FINAL REPORT SI 02/23P

5.0		COMMENTS TO THE REPORT AS REQUIRED BY ICAO ANNEX 13 PARAGRAPH 6.3	15
------------	--	--	-----------

GLOSSARY OF ABBREVIATIONS

A

A	Accident
AAIB	Air Accident Investigation Bureau
ac	aircraft
AFRS	Airport Fire and Rescue Services
AGL	Above Ground Level
ATC	Air Traffic Controller
ATCO	Air Traffic Controller Officer
ATO	Approved Training Organisation
ATPL	Air Transport Pilot Licence

B

BMR	Base Maintenance Release
-----	--------------------------

C

CAAM	Civil Aviation Authority Malaysia
CAD	Civil Aviation Directive
CB	Cumulonimbus Clouds
CCT	Circuits
CFI	Chief Flight Instructor
CI/HOT	Chief Instructor/Head of Training
CP	Cadet Pilot
CPL	Commercial Pilot's Licence
CVR	Cockpit Voice Recorder

F

FDR	Flight Data Recorder
FEW	few
FI	Flight Instructor
ft	feet

FINAL REPORT SI 02/23P

G

GH General Handling

H

hrs hours

I

ICAO International Civil Aviation Organisation

i.e. id est or 'that is'

IF Instrument Flying

IR Instrument Rating

K

KLIA Kuala Lumpur International Airport

L

LH Left Hand

LT Local Time

LYG Layang

M

m meters

MASB Malaysia Airports Sendirian Berhad

MOR Mandatory Occurrence Report

P

PAPI Precision Approach Path Indicator

R

RH Right Hand

RPM Revolution per Minute

FINAL REPORT SI 02/23P

S

SOP Standard Operating Procedures
SPL Student Pilot Licence

T

TO Take-Off
TP Trainee Pilot
TPM Training Procedures Manual

U

UTC Coordinated Universal Time

V

VFR Visual Flight Rule

X

XC Cross Country

W

WMKI Ipoh (Sultan Azlan Shah Airport)

SYNOPSIS

A Trainee Pilot (TP) with callsign LYG 1435 was on a first solo on C172 for a circuit and full-stop training flight. The aircraft departed Sultan Azlan Shah Airport (WMKI) at 0949 hours for a circuit on runway 04.

Start up, Taxi, Take Off was uneventful. However, upon the first approach to land, the TP encountered a baulked landing and decided to go around. The TP then joined downwind and requested for another attempt to land. LYG 1435 managed to land the aircraft and taxied back to the bay without any further incident. The TP exited safely without any injuries. The aircraft sustained some physical damage to its propeller and some parts of the aircraft lower belly upon external checks after shutdown.

A Mandatory Occurrence Report (MOR) was submitted by the Aircraft Operator to the Civil Aviation Authority of Malaysia (CAAM) and Air Accident Investigation Bureau, Malaysia (AAIB) as notification of the incident.

1.0 FACTUAL INFORMATION

1.1 History of the Flight

The Trainee Pilot (TP) with call sign LYG 1435 was planned for First Solo circuit and landing on C172. It was a one-circuit and full-stop landing exercise for the transition from a different aircraft type, i.e. Piper 28 to Cessna C172.

Pre-flight checks, start up and taxi were normal. LYG 1435 took off at 0936 hours from WMKI Runway 04 for one circuit and full stop landing. Upwind, crosswind and downwind were uneventful. On approach for full stop landing, the TP reported there was a gust wind that pushed the aircraft up about 10 feet high which caused the TP to lose visual reference to the runway. The TP claimed that it was the TP's first-time encounter with an abnormal change of attitude during landing. The TP tried to control the aircraft by increasing power and applying slight back pressure to cushion the landing. The aircraft continued to sink fast and bounced upon touchdown and the TP executed a go around procedure and requested to join downwind for a second landing which ATC approved.

While climbing for the go around, the TP heard an abnormal sound coming from the engine and at mid downwind the TP noticed a fluctuation reading on Airspeed Indicator (ASI) from 65 kts – 125 kts with RPM 2200 and the aircraft was descending. The TP increased the power to regain height to 1000 ft and requested the ATC Tower for an emergency landing due to the unreliable airspeed Indicator reading. The crash alarm was activated and two AFRS vehicles were on standby at the holding point Taxiway Charlie and Delta. The TP managed to land the aircraft safely after 3 bounces and taxied back to Bay 1. Runway inspection was carried out at 1000 hours and normal operations resumed at 1020 hours. The TP was sent for a post-accident medical check-up. The aircraft suffered damage to the Propeller, Firewall Assembly, Lower Skin Forward Right and Left Floorboard Assembly. It was impounded for AAIB investigation.

1.2 Injuries to Persons

Injuries	Crew	Passengers	Others	Total
Fatal	Nil	Nil	Nil	Nil
Serious	Nil	Nil	Nil	Nil
Minor/None	1	Nil	Nil	1

Figure 1: Injuries to persons

1.3 Damage to Aircraft

Post-accident inspection revealed the following damages to the aircraft:

- a. Aircraft Propeller.



Figure 2: Blade tips bend inward

- b. Engine Firewall assembly.



Figure 3: Buckled and damage

c. Lower skin.



Figure 4: Lower Fuselage Skin dented



Figure 5: Aircraft condition in front LLFA hanger

1.4 Other Damage

Nil

1.5 Personnel Information

1.5.1 Pilot in Command

Nationality	Malaysian	
Age	34	
Gender	Female	
License Type	SPL	
License Expiry	31 December 2023	
Medical Expiry	31 December 2023	
Aircraft Rating	N/A	
Instructor Rating	N/A	
Flying Hours	Total Hours	56:30
	Total on Type	6:30

Figure 6: Personnel Information – Pilot in Command

1.6 Aircraft Information

The aircraft flown on that day was in airworthy condition. The last scheduled maintenance i.e., 50H and 100H (operation 2) at 5655:10 hours was carried out on 15 Feb 2023. The aircraft had flown 13 hours after the scheduled maintenance with no defect recorded till the accident date (17 Feb 2023).

Aircraft Type	Textron Aviation 172Q
Manufacturer	Textron Aviation Inc.
Year of Manufacture	1983
Owner	Layang Layang Flying Academy
Registration No.	9M-ZAB
Aircraft Serial No.	172 - 75959
Certificate of Airworthiness Issue / Expiry date	11 Dec 2022 / 10 Dec 2023

FINAL REPORT SI 02/23P

Certificate of Registration Issue / Expiry date	14 Feb 2022 / 13 Feb 2025
Total Flight Hours	5668:10

Figure 7: Aircraft Data

1.7 Meteorological Information

The actual weather on that morning was fine. Visibility was reported as more than 10 kilometres and wind was at 030° at 09 knots.

1.8 Aids to Navigation

All navigation aids were operating normally.

1.9 Communications

All ATC communications frequencies were operating normally.

1.10 Aerodrome Information

Airfield	Sultan Azlan Shah Airport (WMKI)
Runway	04/22
Length	2000 m
Width	45 m
ICAO Designator	WMKI
IATA Designator	IPH
Elevation	131 ft / 40 m

Figure 8: Sultan Azlan Shah Airport (WMKI) Aerodrome Information

1.11 Flight Recorders

The aircraft was not equipped with a Flight Data Recorder (FDR) or Cockpit Voice Recorder (CVR).

1.12 Wreckage and Impact Information



Figure 9: Landing path
(Diagram not to scale)

1.13 Medical and Pathological Information

The TP underwent a urine drug test and results were negative for substance abuse.

1.14 Fire

There was no pre or post impact fire.

1.15 Survival Aspects

There were no injuries to the TP.

1.16 Tests and Research

Nil.

1.17 Organizational and Management Information

The Aircraft Operator is an Approved Training Organisation (ATO) by the CAAM for pilot training since year 2019 and is situated at Sultan Azlan Shah Airport, Ipoh, Perak. It operates 3 types of aircraft ie 2 x single engine Textron Aviation C172, 2 x single engine Piper 28, and 1 x twin engine Piper 34. The main flying course conducted by the Aircraft Operator is the Integrated Course of Commercial Pilot Licence (CPL) / Instrument Rating CPL/IR (A).

The Aerodrome Operator for Sultan Azlan Shah Airport (WMKI) is Malaysia Airports Sdn Bhd (MASB). MASB is licensed by the Ministry of Transport Malaysia to operate, manage, and maintain all airports in Malaysia except Kuala Lumpur International Airport (KLIA).

1.18 Additional Information

1.18.1 Interview and Statements

AAIB investigation team conducted separate interview sessions with the TP, FI, Duty ATCO, Duty AFRS and Maintenance Organisation Technical Controller. The interview sessions were all recorded under the express knowledge of all the parties. All of the above personnel had also submitted a written statement to be included in this report as follows:

- a. Written statement for TP (Pilot In-Command) .
- b. Written statement for FI.

- c. Written statement for Duty ATCO 1.
- d. Written statement for Duty ATCO 2.
- e. Written statement for Duty AFRS 1.
- f. Written statement for Duty AFRS 2.
- g. Written statement for Technical Controller.

1.19. Useful or Effective Investigation Techniques

Nil.

2.0 Analysis

2.1 On-site Investigation

The AAIB Investigation team inspected the runway and found 2 scratched markings on the runway. The scratched marking was from the strike of the propeller (Figure 2) during the hard landing and was confirmed by the TP during the interview.

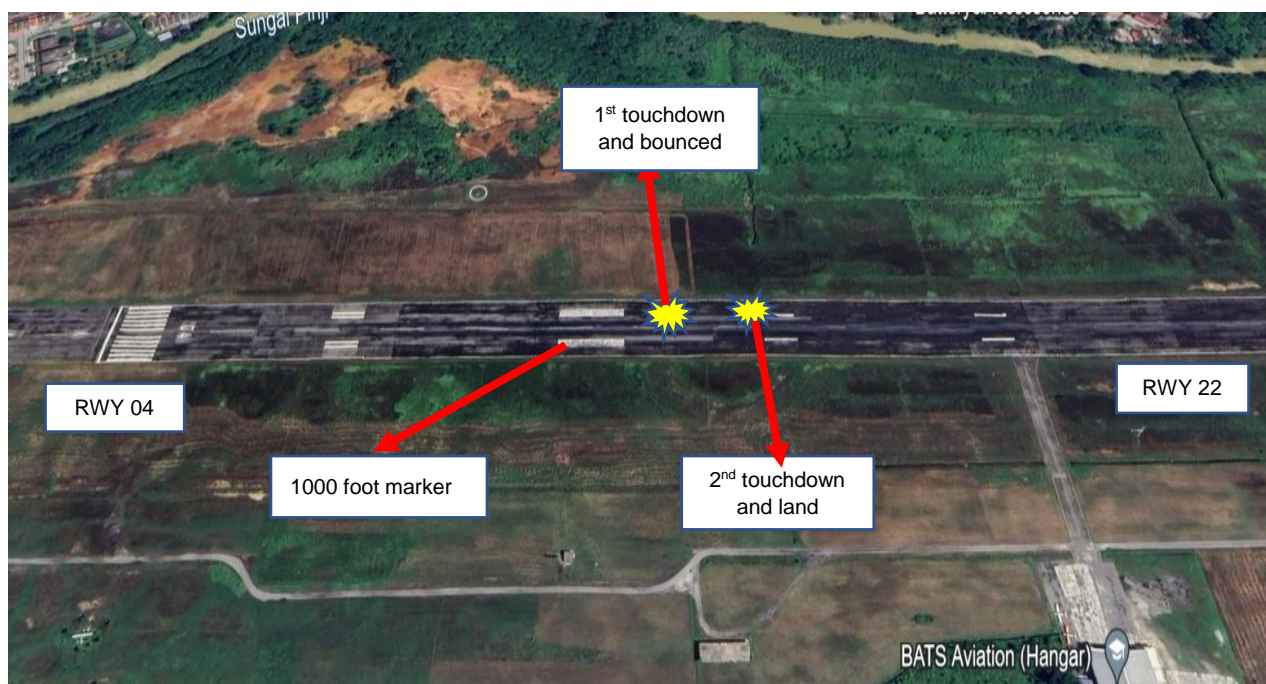


Figure 10: Location of the incident



Figure 11: Scratched marking from the propeller strike during the first attempt to land



Figure 12: Scratched marking from the propeller strike during the second attempt to land

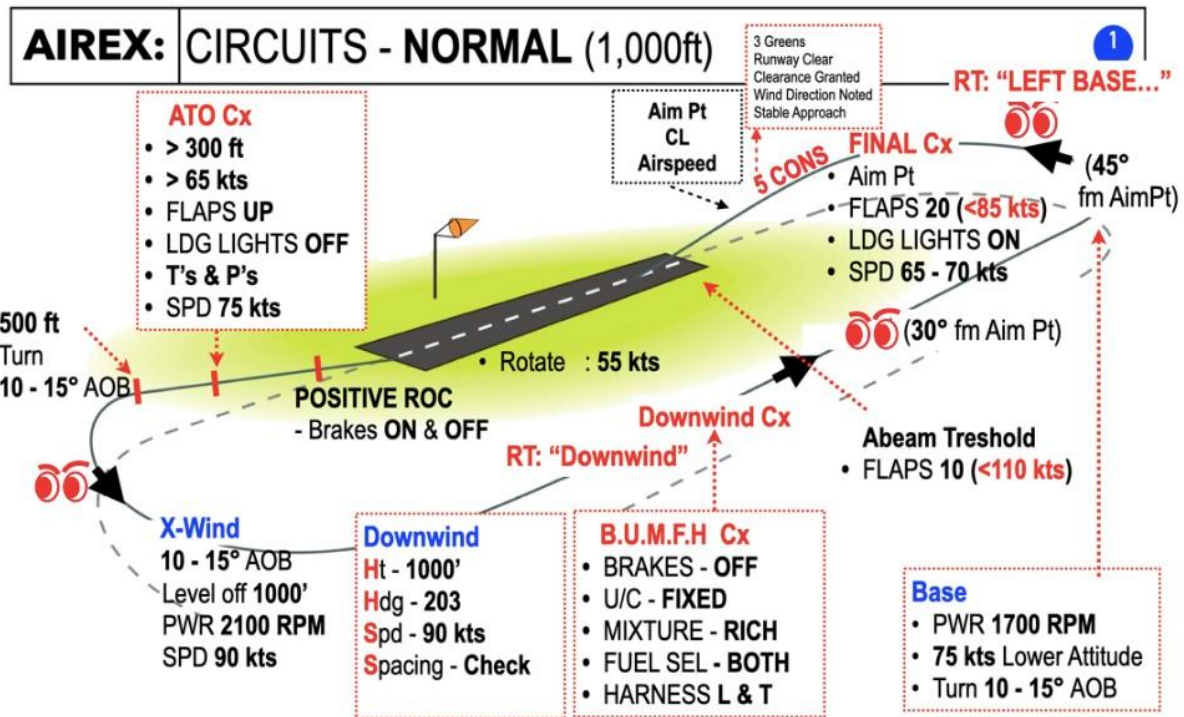


Figure 13: LLFA Student Study Guide – The circuits

2.2 On-site Investigation Analysis

The TP with call sign LYG 1435 was on the first solo flight on Cessna C 172, a conversion flight from Piper 28 to Cessna 172. Before the solo flight, the TP flew a dual sortie with the instructor for circuit touch and go on that morning before being cleared for the solo flight which was one (1) take-off and 1 landing (Figure 13).

The flight from taxi, departure until commenced for final to land were uneventful. While flaring the aircraft to land, the TP claimed to have encountered a wind gust that pushed up the aircraft about 10 feet and lost visual of the runway. The TP immediately increased the power and applied slight back pressure to cushion the landing. The TP was unable to control the aircraft and it continued to sink fast and the aircraft bounced during the first touchdown when the propeller struck the runway. Due to the hard and high bounce, the TP decided to execute a go-around as LLFA Student Study Guide SOP (Figure 14). After recovering the aircraft safely and stable, the TP informed the ATC of intention to go around and join the circuit for a second attempt to land.

FINAL REPORT SI 02/23P

On climbing to downwind, the TP heard some abnormal sounds from the engine, taking more time to level at 1000 ft, with the ASI reading fluctuating from 65 kts to 125 kts with RPM 2200 and noticed the aircraft descending. The TP had to increase the power to a maximum to maintain 1000 ft and request an emergency landing which the ATC Tower approved. The TP landed the aircraft safely with three (3) bounces.

The TP faced difficulties in controlling the aircraft after the go-round because the propeller was damaged from striking the runway during the first attempt to land. A bent blade or nick will severely affect performance and could even damage the engine and transmission. When a propeller has damage to its blades, it creates an imbalance which creates the vibration.

It is advisable all flights experiencing hard landing and the propeller striking the runway must land the aircraft.

13.3.5 The Go Around From Final

You might have to go around for any of these reasons:

- You have made a bad approach.
- You are told to do so by ATC.
- The approach is baulked.

To go around:

1. Level the wings.
2. Set MAX power and select a shallow climbing attitude.
3. When the aircraft is climbing safely, ensure flap at 10°. Raise the flap once you are above 70 KIAS/200 feet AGL
4. Look out above and behind and turn gently onto the dead side.
5. Carry out the after-takeoff checks.
6. Level off at 1000 ft and fly another circuit.

Figure 14: LLFA Student Study Guide – The Go Around from Final

3.0 Conclusion

The incident of the hard landing indicates an unsafe aircraft handling by the TP during the final approach to land. The TP was unable to control the aircraft on the first attempt to land when a sudden gust of wind was encountered which caused a hard landing and the propeller striking the runway. The TP executed a go-around as per the LLFA Student Study Guide although knowing that the propeller had struck the runway during the first attempt to land. The TP managed to land the aircraft safely on the second attempt with some difficulties.

3.1 Findings

3.1.1 The TP was properly licensed to fly the first solo training flight on C172.

3.1.2 The aircraft was properly maintained and airworthy for the flight.

3.1.3 The incident happened in the morning. The weather was fine.

3.1.4 The TP reported no abnormalities on the aircraft during the first circuit and landing training flight.

3.1.5 The TP encountered a gust of wind during the approach to land and was unable to control the aircraft which resulted in the aircraft bouncing upon touchdown.

3.1.6 The Trainee Pilot executed a go-round procedure after failing to land and reported abnormal sound from the engine and noticed the aircraft ASI fluctuation ranging from 65 kts - 125 kts with RPM 2200 during climbing to join the circuit.

3.1.7 The TP did not transmit any "PAN" or "MAYDAY" calls but only reported to the ATC Tower by requesting an emergency landing due to unreliable ASI readings.

FINAL REPORT SI 02/23P

3.1.8 The TP experienced 3 bounces and the propeller struck the runway during the second attempt to land and managed to land the aircraft safely.

3.1.9 The aircraft suffered damage to its Propeller, Engine Firewall Assembly and skin below the Fuselage.

3.2 Causes/Contributing Factors

3.2.1 The cause of the incident was the TP's **Handling Judgement and Decision-Making Error** during the approach for landing. This incident is categorised as abnormal runway contact (ARC).

4.0 Safety Recommendations

4.1 The Aircraft Operator is to carry out the following safety recommendations:

4.1.1 To review of the SOP on abnormal situations during the landing phase, i.e. gusts, crosswinds, tailwinds on the Final, and landing when the aircraft propeller has struck the runway, to prepare pilots and TP's to handle such abnormal situations.

4.1.2 To review the Layang Layang Flying Academy Training and Procedure Manual on the need to include the requirement to land the aircraft and terminate the flight immediately once to the aircraft has experienced a hard landing and the propeller had struck the runway.

5.0 COMMENTS TO DRAFT FINAL REPORT AS REQUIRED BY ICAO ANNEX 13 PARAGRAPH 6.3

In accordance with ICAO Annex 13, paragraph 6.3, the Draft Final Report was sent to State of Registry (CAAM), State of Manufacturer (National Transportation Safety Board of United States (NTSB), State of Manufacturer's

FINAL REPORT SI 02/23P

Technical Adviser (Textron Aviation) and the Aircraft Operator (Layang Layang Flying Academy) inviting their significant and substantiated comments on the report. The following are the status of the comments received: -

Organisations	Status of Significant and Substantiated Comments
Civil Aviation Authority of Malaysia (CAAM)	Report received and no comments.
National Transportation Safety Board (NTSB)	Report accepted and no comments.
Textron Aviation	Report accepted and no comments.
Layang Layang Flying Academy	Report accepted and no comments.

Figure 15: Status of Significant and substantiated comments.

Investigator in - charge
AAIB
Ministry of Transport
Malaysia