AIRCRAFT SERIOUS INCIDENT FINAL REPORT

SI 06/22P

Air Accident Investigation Bureau (AAIB)

Ministry of Transport Malaysia

Piper PA28-181 Archer III, Registration 9M-SKF

at Malacca International Airport, Malacca

on 14 October 2022

Air Accident Investigation Bureau
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FINAL REPORT SI 06/22P

AIR ACCIDENT INVESTIGATION BUREAU (AAIB)
MALAYSIA

ACCIDENT REPORT NO.: SI 06/22

OPERATOR	**: MALAYSIAN FLYING ACADEMY**
AIRCRAFT TYPE	**: PIPER PA 28-181 ARCHER III**
NATIONALITY OF AIRCRAFT	**: MALAYSIA**
REGISTRATION	**: 9M-SKF**
PLACE OF OCCURRENCE	**: MALACCA INTERNATIONAL AIRPORT, MALACCA**
DATE AND TIME	**: 14 OCTOBER 2022 AT 1103 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 Malaysia's air accidents and serious incidents investigation authority 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 investigations 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 investigation nor the reporting process has been undertaken for that purpose.

In accordance with ICAO Annex 13 paragraph 4.1, notification of the serious incident was sent on 18 October 2022 to the National Transportation Safety Board of the United States of America (USA) as State of Design and State of Manufacturer. 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 29 November 2022.

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 taken

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GLOSSARY OF ABBREVIATIONS

A

A	Accident
AAIB	Air Accident Investigation Bureau
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

D

DFE	Designated Flight Examiner

E

ECU	Engine Control Unit

F

FDR	Flight Data Recorder
FEW	few
FI	Flight Instructor
FOI	Flight Operations Inspectors

G

GH	General Handling

H

HFACS	Human Factors Analysis and Classification System
HMA	HM Aerospace Flight Training Centre
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
LIA	Langkawi International Airport
LT	Local Time

M

m	metre
MASB	Malaysia Airports Sendirian Berhad
MAX	Maximum
MCO	Movement Control Order

MEMO	Memorandum
MFA	Malaysian Flying Academy
MOR	Mandatory Occurrence Report

N

NF	Night Flying
No.	Number

O

OEM	Original Equipment Manufacturer

P

PT	Progress Test

R

RH	Right Hand
RPM	Revolution per Minute
R/T	Radiotelephony
Rwy	Runway

S

SEP	Single Engine Piston
SOP	Standard Operating Procedures
SPL	Student Pilot Licence

T

TO	Take-Off

U

UTC	Coordinated Universal Time

V

VFR	Visual Flight Rule

SYNOPSIS

A Cadet Pilot (CP) onboard a Piper PA28-181 aircraft registration 9M-SKF took off from Malacca International Airport for circuits with the intention to do one touch-and-go and one full-stop landing as per the flight training syllabus. The CP made a normal landing from Runway (Rwy) 03 and started to roll for take-off. As the CP advanced the power, the aircraft started to yaw to the left because of the left yawing tendency effect. The CP did not anticipate enough right rudder and got panicked. The CP lost control and the aircraft continued to yaw which caused the aircraft to turn to the left of the runway centreline onto the grass. It came to a stop on a soft ground area between the intersection Delta and Charlie, approximately 95m left side from the centreline of Rwy 03.

The CP vacated the aircraft and did not suffer any physical injuries but was in a state of shock. The Airport Fire Rescue Services (AFRS) personnel brought the CP to safety and was immediately sent to Batu Berendam Clinic by Malaysian Flying Academy staff for post-accident medical check-ups.

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

Early on 14 October 2022, the CP callsign ACADEMY 7510 was practicing Take-Off and Landing alternatively known as Circuits and Landing at Malacca International Airport (WMKM) as part of training for a CPL/IR in accordance with the syllabus. After having been checked during a dual flight earlier in the day, CP Flight Instructor signed him out as per protocol to fly solo. After the flight on 14 October 2022, the CP will have a total of 41:30 hours of flight experience, of which 9:30 hours are solo time.

At 1030 LT the aircraft, Piper PA28-181 bearing registration 9M-SKF taxing out from Malaysian Flying Academy (MFA) apron piloted by CP for a solo circuit flight. Programme in the flight training syllabus as per Circuit 10. The tower controller cleared CP using callsign ACADEMY 7510 to take off from Rwy 03. The training detail on the day was to do one touch-and-go and one full-stop landing. The CP did normal circuits and reported downwind, and finals for touch and go. At 1103 LT, the ATC controller cleared CP for touch and go with surface wind from 220° at 06 knots for Rwy 03.

The CP makes a normal landing on Rwy 03 and starts to roll for take-off. CP then applied take-off power (full power) and began rolling down the runway. Due to the aircraft's tendency to yaw to the left, CP battled to keep the aircraft on the centreline. The CP did not anticipate enough right rudder and panicked. The CP applied break but due to its full power setting and speed, the aircraft proceeded to move onto the grass to the left of the runway

CP did not try to turn off the engine or close the throttle at any point when losing control of the aircraft. Because of this, the aircraft ended up rolling approximately 95m away from the centreline of the runway. Aircraft stop at the grassy soft ground between the intersection of Delta and Charlie.

The ATC controller immediately pressed the crash alarm at 1104 LT and the AFRS immediately responded. AFRS vehicle F23 was deployed to look for the ill-fated aircraft. AFRS located the crash site at 1105 LT and informed that the CP was

conscious with no physical injuries but in a state of shock. The MFA vehicle arrived on site and the CP was sent to Batu Berendam Clinic for a post-accident medical check-up.

On completion of runway inspection at 1200 LT, the runway resumed normal operations. The aircraft was cleared from the runway and placed in an MFA hangar by 1335 LT. It was impounded for AAIB investigation.

1.2 Injuries to Persons

Reported no severe injury to Cadet Pilot

Injuries	Crew	Passengers	Others	Total
Fatal	NIL	NIL	NIL	NIL
Serious	NIL	NIL	NIL	NIL
Minor/None	One	Nil	Nil	One

Figure 1: Injuries to persons

1.3 Damage to Aircraft

Nil

Photo after the incident **Photo after Inspection/Test**

Figure 2: Photos after the incident and after Inspection/Test

1.3.1 Post-Accident Damage Assessment Report

The Maintenance Organisation completed a physical damage assessment on the aircraft Detailed inspection were carried out on fuselage, port and starboard wing undercarriage, flight controls, vertical fin, stabilator, cowlings, engine, propeller, and avionics system and found satisfactory. The aircraft had been assessed as having no damage and fit to fly. The Post Accident Damage Assessment Report can be viewed in the Maintenance Organisation's file reference MFA/SKF/18864 dated 24 November 2022.

1.4 Other Damage

No reported damages to aerodrome facilities or other properties.

1.5 Personnel Information

1.5.1 Pilot in Command

Nationality		Malaysian
Age		21
Gender		Male
License Type		SPL
License Expiry		31 August 2023
Medical Expiry		23 August 2023
Aircraft Rating		PA-28
Instructor Rating		N/A
Flying Hours	**Total Hours**	41:30
	Total on Type	41:30

Figure 3: Personnel Information – Pilot in Command

1.6 Aircraft Information

1.6.1 General

The Piper PA-28-181 Archer III is a four-seater, piston-engine aircraft equipped with a fixed tricycle landing gear, 180hp at 2700 RPM, a four-cylinder engine, and a fixed-pitch propeller. It has a single door on the right side, which is entered by stepping on the wing. The aircraft is manufactured by Piper Aircraft, Inc. Florida, United States.

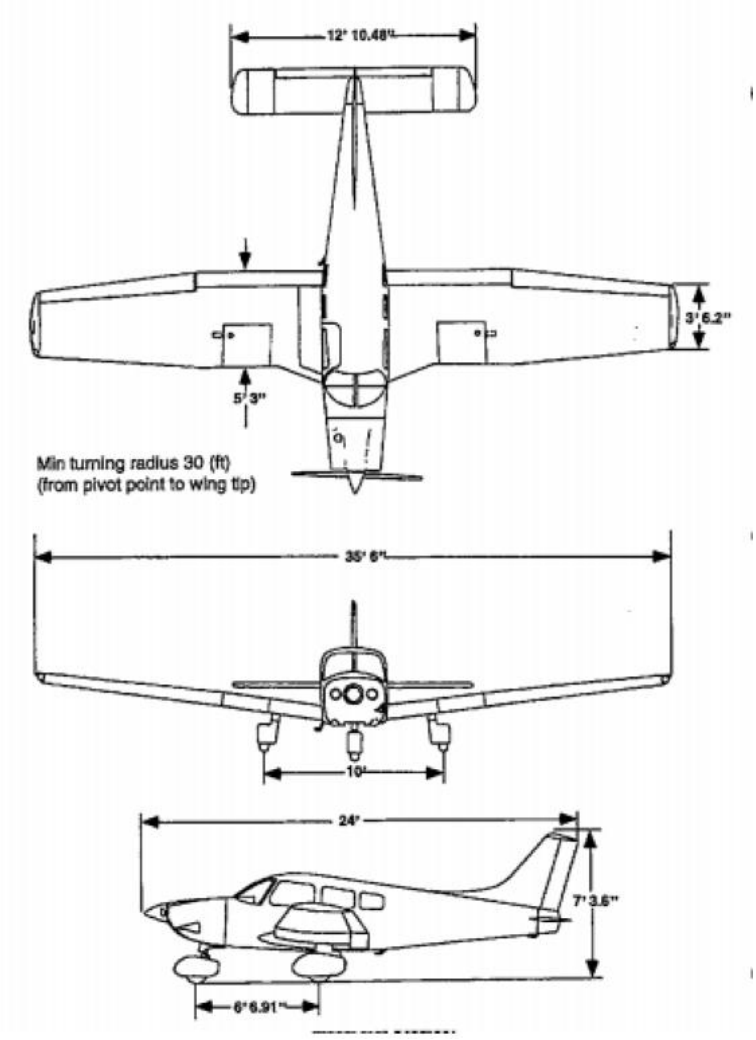


Figure 4: Three views of the aircraft

1.6.2 Aircraft Data

The aircraft flown that day was in airworthy condition. The pilot did not report abnormalities or malfunctions before and during the flight.

Aircraft Type	PA 28-181 ARCHER III
Manufacturer	PIPER AIRCRAFT
Year of Manufacture	2014
Owner	Malaysian Flying Academy Sdn Bhd
Registration No.	9M-SKF
Aircraft Serial No.	2843785
Certificate of Airworthiness Issue / Expiry date	11 Feb 2022 / 10 Feb 2023
Certificate of Registration Issue / Expiry date	22 Dec 2019 / 21 Dec 2022
Total Flight Hours	4213:30

Figure 5: Aircraft Data

1.7 Meteorological Information

The incident happened at 1103 LT. Actual weather was fine, visibility was reported as more than 10 kilometres and the wind was 240° at 06 knots.

1.8 Aids to Navigation

All navigation aids were operating normally.

1.9 Communications

All the communication operating normally and the Crash Alarm was activated by ATC Controller successfully as per SOP. Crash information was transmitted by ATC Tower to AFRS Watch Room via direct line and radio.

1.10 Aerodrome Information

Airfield	Malacca International Airport
Runway	03/21
Length	2135m
Width	45m
ICAO Designator	WMKM
IATA Designator	MKZ
Elevation	40ft

Figure 6: Malacca Aerodrome Information

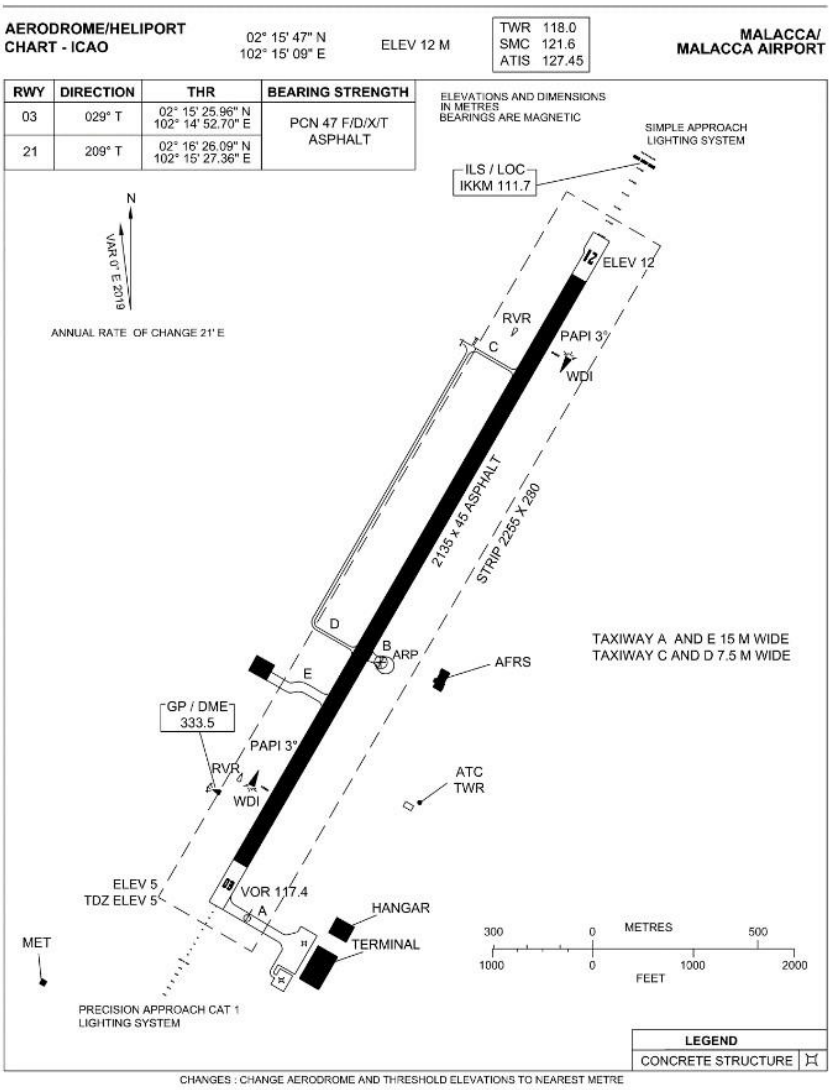


Figure 7: Malacca International Airport

1.11 Flight Recorders

Not applicable

1.12 Wreckage and Impact Information

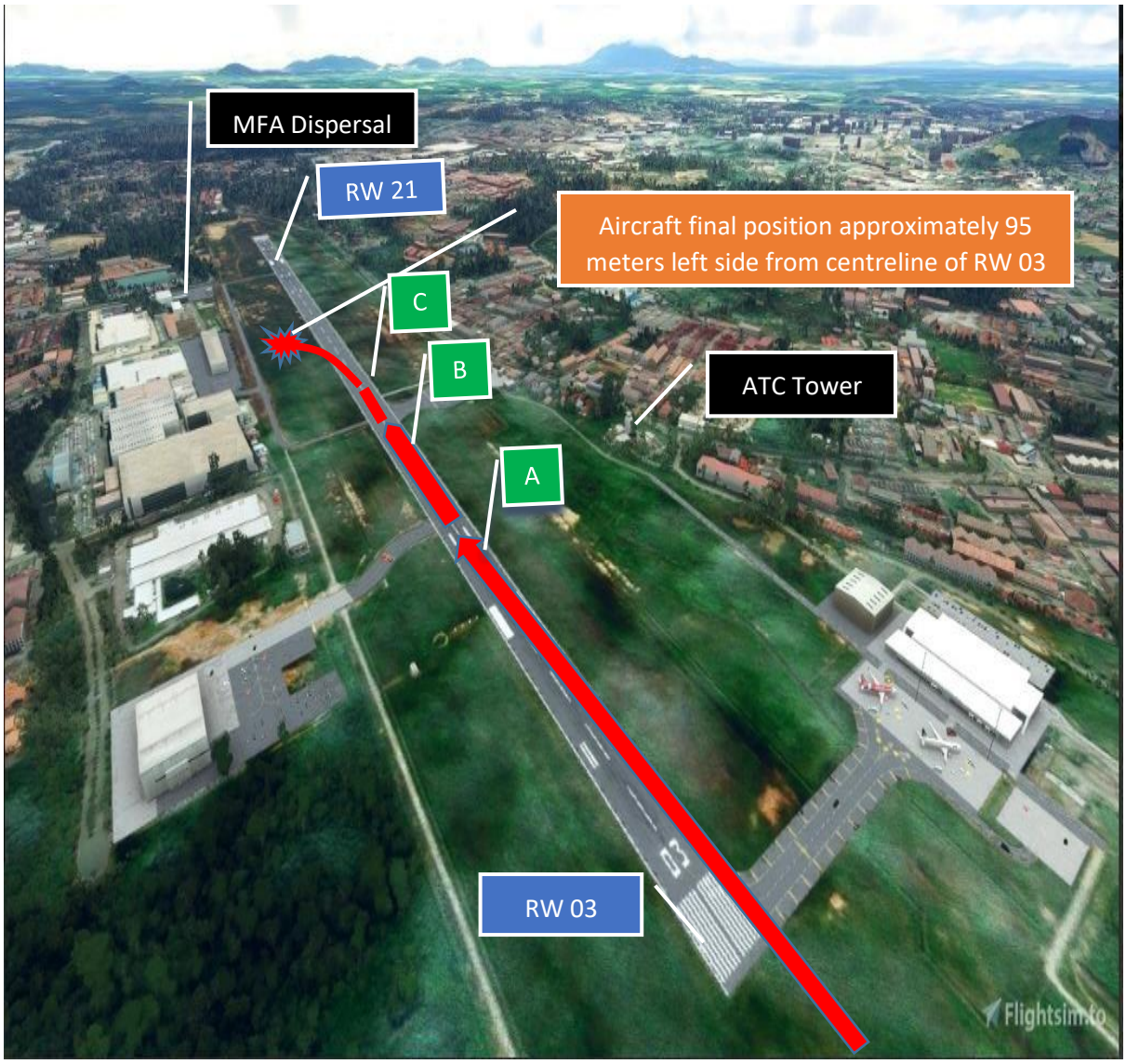


Figure 8: Landing path and roll for take-off and final position of aircraft (Diagram not to scale)

The aircraft touched down passed the 1000-foot maker Rwy 03 (**Point A**). The aircraft continue to roll on the centreline and the CP then applied take-off power (full power) and began rolling down the runway for take-off. At **point B** the aircraft had veered to the left due to the aircraft's tendency to yaw to the left.

The CP tried to keep the aircraft on the centreline with the rudder. The CP did not anticipate enough right rudder and panicked. At **point C**, the CP applied the brakes, but due to maximum power, the aircraft veered to the left into the grass area. Skid marks were observed on the runway and grass area till the stopping point. The aircraft came to a rest about 95m from the runway centreline with the aircraft nose pointing to the wind sock Rwy 21.

The aircraft recovery was performed on the same day by the Aircraft Operator and was successfully removed from the site of the runway. It was parked at the Aircraft Operator's hangar and impounded for investigation.

1.13 Medical and Pathological Information

The CP was evacuated by MFA staff vehicle to the Batu Berendam Clinic for post-accident examination. Cadet Pilot underwent a urine drug test with negative results for substance abuse**.**

1.14 Fire

No reported pre and post-impact fire.

1.15 Survival Aspects

The Cadet Pilot exited the aircraft after shutting down the engine by opening the aircraft canopy.

1.16 Tests and Research

1.16.1 Post-Accident Inspection and Test at the Runway

Post-accident inspection and high-speed taxy check carried out by the Investigation Team together with a FI at the MFA dispersal area and on the runway did not reveal any abnormalities on the aircraft steering and braking systems.

In conclusion, the high-speed taxy checks show that the aircraft was in an airworthy condition.

1.17 Organisational and Management Information

Malaysian Flying Academy (MFA) is an organisation approved by CAAM to conduct instructional flight training activities utilising Piper Archer PA 28-181, Piper Warrior PA 28-161, and Piper Seminole PA 44-180.

When it was established in 1983, MFA was part of the Royal Selangor Flying Club and was operating at the Sungai Besi Military Airbase in Kuala Lumpur. Two years later MFA was acquired by the Syed Kechik Group of Companies and moved to its current location at Batu Berendam, Malacca, since 1987.

The maintenance activities on the aircraft are conducted by MFA as an approved maintenance organisation under approval number AMO/2017/25.

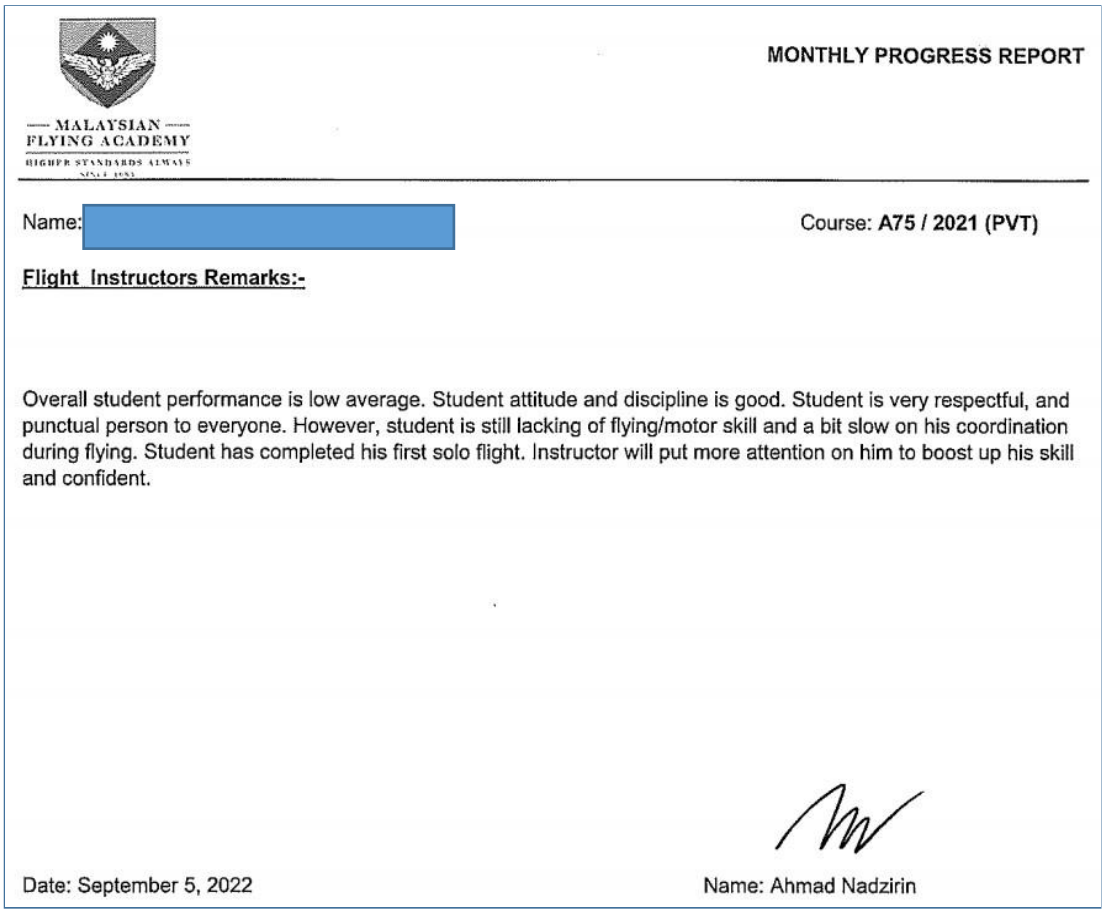
Malaysia Airport Sdn Berhad MASB is the organisation licenced by the Ministry of Transport to operate, manage, and maintain the airport.

1.17.1 Flight Instructor (FI) Competency for Cadet Pilot's Solo Flight

The FI is a 34-year-old pilot. The FI holds a valid Commercial Pilot Licence (CPL) with Instrument Rating (IR) and was a former FI at Philippine Flying School. The FI joins Malacca Fling Academy in the year 2017 and currently is the Personal Flight Instructor for CP. He has a total of about 4,400 hours of flying hours and 4,200 instructional hours.

1.17.2 Cadet Pilot Low Average Performance

A Low Average Performance Report in the Progress Report was raised by FI since the CP was in the Ground School until the present flying stage. The Monthly Progress Report dated 5Th September 2022 indicated the CP was "***still lacking flying/motor skill and a bit slow on his coordination during flying***."



MALAYSIAN FLYING ACADEMY
HIGHER STANDARDS ALWAYS

MONTHLY PROGRESS REPORT

Name: [redacted]

Course: **A75 / 2021 (PVT)**

Flight Instructors Remarks:-

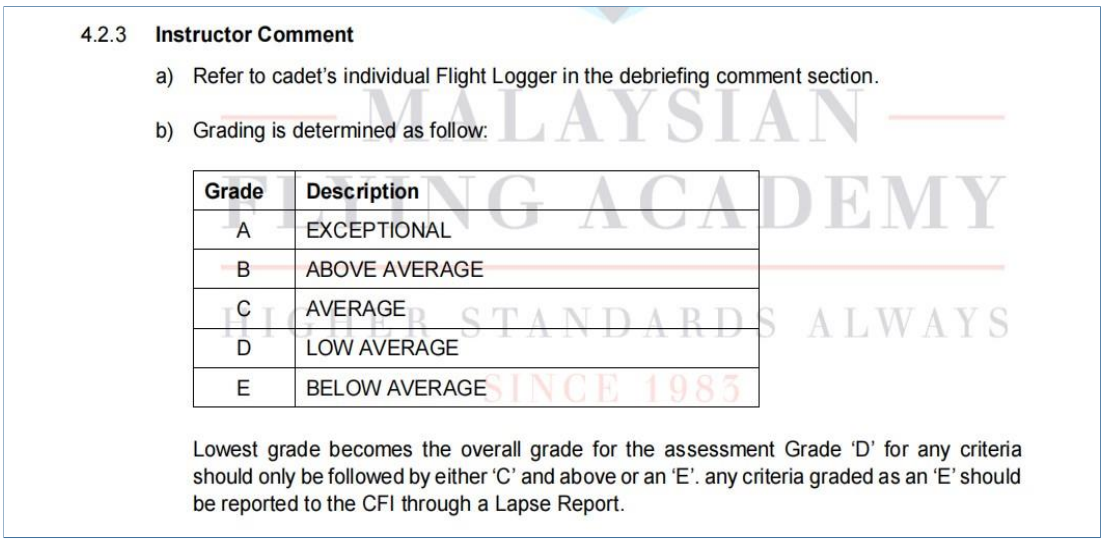
Overall student performance is low average. Student attitude and discipline is good. Student is very respectful, and punctual person to everyone. However, student is still lacking of flying/motor skill and a bit slow on his coordination during flying. Student has completed his first solo flight. Instructor will put more attention on him to boost up his skill and confident.

Date: September 5, 2022

Name: Ahmad Nadzirin

Figure 9: The Monthly Progress Report dated 5Th September 2022

But no specific action is needed for Low Average Performance unless the performance drops from Low Average (D) to Below Average (E) as per Figure 10.



4.2.3 **Instructor Comment**

a) Refer to cadet's individual Flight Logger in the debriefing comment section.

b) Grading is determined as follow:

Grade	Description
A	EXCEPTIONAL
B	ABOVE AVERAGE
C	AVERAGE
D	LOW AVERAGE
E	BELOW AVERAGE

Lowest grade becomes the overall grade for the assessment Grade 'D' for any criteria should only be followed by either 'C' and above or an 'E'. any criteria graded as an 'E' should be reported to the CFI through a Lapse Report.

Figure 10: Training and Procedures Manual Issue 03 Revision 01

1.18 Additional Information

1.18.1 Interview and Statements

AAIB investigation team conducted separate interview sessions with CP, FIs, Duty Commanding Officer AFRS, Duty Air Traffic Controllers, and Maintenance Organisation Engineers/Technicians. The interview sessions were all recorded under the express knowledge of all the parties. All of the above personnel had also submitted written statements.

2.0 ANALYSIS

2.1 On-Site Investigation

The aircraft was not installed with an FDR or a CVR. The on-site investigation was conducted to look for evidence that will assist in reconstructing the probable chain of events leading to this occurrence. Aircraft veering off the runway will always provide on-site evidence of aircraft tire track marks which are usually very obvious. These tire track marks and impact marks or the lack of marks will assist in providing crucial evidence and information on what actually happened. The sequence of events of the incident can be traced and reconstructed as in paragraph 1.12.

2.1.1 Tyre Track Marks

Figure 11: Aircraft tire track marks were observed on the runway at the landing area or exiting the runway towards the crash site.

Figure 12: Aircraft tire track marks were observed exiting the runway towards the crash site.

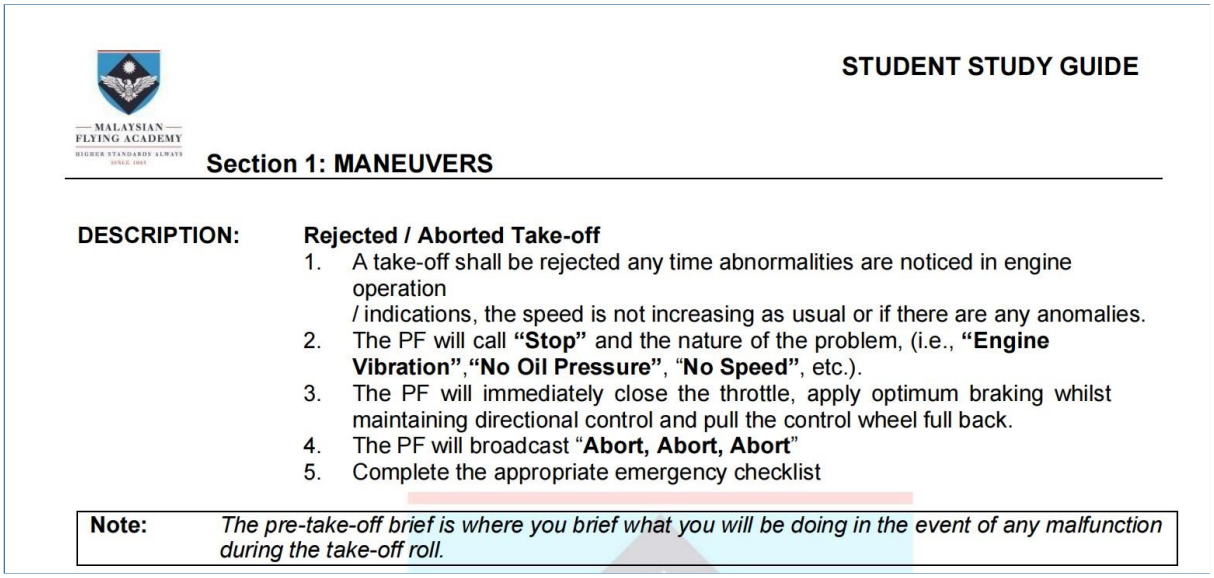
Figure 13: Aircraft final stop position

Figure 14: Aircraft final stop position 95m from runway centreline

2.2 On-Site Investigation Analysis

It is analysed that the CP had initiated a rolling take off but the execution of the rolling take-off did not comply with the **Rolling Take Off Procedure** stated in the SOP. The CP did not carry out actions as per SOP. It started when the CP was shocked and applied the wrong input of control. The result is the aircraft continues to veer to the left from the centre of the runway as shown in **Figure 11**. It shows that the CP did not apply the correct technique as taught by the instructor.

The aircraft continues veered to the left into the grass but CP end up **failing to carry out Abort Take Off Procedure** as described in **Figure 15.**



STUDENT STUDY GUIDE

MALAYSIAN FLYING ACADEMY

Section 1: MANEUVERS

DESCRIPTION: **Rejected / Aborted Take-off**

1. A take-off shall be rejected any time abnormalities are noticed in engine operation / indications, the speed is not increasing as usual or if there are any anomalies.
2. The PF will call **"Stop"** and the nature of the problem, (i.e., **"Engine Vibration"**,**"No Oil Pressure"**, "**No Speed"**, etc.).
3. The PF will immediately close the throttle, apply optimum braking whilst maintaining directional control and pull the control wheel full back.
4. The PF will broadcast "**Abort, Abort, Abort**"
5. Complete the appropriate emergency checklist

Note: *The pre-take-off brief is where you brief what you will be doing in the event of any malfunction during the take-off roll.*

Figure 15: Student Study Guide - Rejected/Aborted Take-off Procedure

The aircraft stopped 95m from the runway's centre (Figures 13 and 14). The CP just shut down the aircraft after it comes to a stop. No Aborted/Distress or Emergency call was made by CP.

Touch and Go is being introduced to the student to improve traffic flow in the circuit pattern and reduce time-consuming during their training phase (Figure 16).

Q2. Please briefly explain What is Touch and Go?
-Touch and go is basically practicing take-off and landing which is more than one take-off and one landing continuously without stopping on the runway for some period of time. This procedure is being introduced to the student to improve traffic flow in the circuit pattern and reduce time-consuming during their training phase.

Q3 Please briefly explain What is Go Around?
-A go-around is an aborted landing of an aircraft that is on final approach or has already touched down. A go-around can either be initiated by the pilot flying or requested by air traffic control for various reasons, such as an un-stabilized approach or an obstruction on the runway.

Figure 16: Questions 2 and 3 of FI Statement Page 3 of 3.

As mentioned in Para 1.1, the CP programme is in the flight training syllabus as per Circuit 10. The training detail on the day was to do one touch-and-go and one full-stop landing. But in the syllabus, the detail of Circuit 10 is to Practice normal & flapless circuits, Practice revise go-around and crosswind as necessary as per Figure 17. The word go-around is a totally different meaning and practice from the word Touch and Go.

17.	**Circuit 9** a) Revise normal & flapless circuits. b) Revision EFATO. c) Revise go-around. d) Crosswind as necessary.	0:30			17:00
18.	**Circuit 10** a) Practice normal & flapless circuits. b) Practice revise go-around. c) Crosswind as necessary.		0:30		17:30
19.	**General Handling GH 01** a) Normal/Performance take-off. b) Revise transit ro training area. c) Steep turns. d) PFL in training area & overhead. e) Radio failure procedure in TA. f) Discuss spin recovery.	1:00			18:30

Figure 17: Circuit 10 in MFA Flying Syllabus

3.0 CONCLUSION

3.1 Findings

3.1.1 The CP was properly licensed to fly the training flight.

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

3.1.3 The incident happened at 1103 LT. The weather was fine.

3.1.4 The CP reported no abnormalities on the aircraft during the flying training flight.

3.1.5 The aircraft veered to the left on roll for the next take-off flight and exited the runway.

3.1.6 The CP applied the wrong technique during the take-off roll which resulted in the aircraft veering left of the centreline.

3.1.7 The CP did not abort take-off when the aircraft was veering left and approaching out of the runway.

3.1.8 Crash alarm was activated by the ATC Controller on duty.

3.2 Causes/Contributing Factors

3.2.1 Causes

The cause of the accident is attributed to the CP applying the wrong technique for rolling take-off during a Touch and Go which resulted in the aircraft veering left of the centreline and subsequently did not abort take-off when the aircraft was approaching out of the runway.

3.2.2 Contributing Factors

The contributing factor is the CP did not do the action as taught in SOP. Lack of flying motor skills and slow coordination during flying.

4.0 SAFETY RECOMMENDATIONS

Training hazard. No safety recommendations for this Final Report.

INVESTIGATOR IN-CHARGE
Air Accident Investigation Bureau
Ministry of Transport Malaysia