AIRCRAFT SERIOUS INCIDENT

FINAL REPORT

SI 06/23P

Air Accident Investigation Bureau (AAIB)

Ministry of Transport, Malaysia

Fixed Wing Aircraft Piper PA-28-181 Archer III

Registration 9M-ITQ

at Malacca International Airport, Melaka

on 18 August 2023

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AIR ACCIDENT INVESTIGATION BUREAU (AAIB)
MALAYSIA

REPORT NO.: SI 06/23

OPERATOR	**: INTERNATIONAL AERO TRAINING ACADEMY (IATAC)**
AIRCRAFT TYPE	**: PIPER PA-28-181 ARCHER III**
AIRCRAFT NATIONALITY	**: MALAYSIA**
REGISTRATION	**: 9M-ITQ**
PLACE OF OCCURRENCE	**: MALACCA INTERNATIONAL AIRPORT, MELAKA (WMKM)**
DATE AND TIME	**: 18 AUGUST 2023 AT 1216 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 accident and serious incident 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.

The AAIB conducts these investigations in accordance with Annex 13 to the Chicago Convention, the Civil Aviation Act of Malaysia 1969, and the 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 20 August 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 Civil Aviation Authority of Malaysia (CAAM), the National Transport Safety Board (NTSB), and the Aircraft Operator on 18 September 2023.

In accordance with ICAO Annex 13 paragraph 6.3, a copy of the Draft Final Report was sent on 24 May 2024 to CAAM as the State of Registry, the NTSB as the State of Design and Manufacture, and the Aircraft Operator inviting their significant and substantiated comments on the report.

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

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GLOSSARY OF ABBREVIATIONS

AAIB	Air Accident Investigation Bureau
AFTO	Approved Flight Training Organisation
ATC	Air Traffic Controller
CAAM	Civil Aviation Authority of Malaysia
CDI	Course Deviation Indicator
C of A	Certificate of Airworthiness
C of R	Certificate of Registration
CP	Cadet Pilot
CVR	Cockpit Voice Recorder
DME	Distance Measuring Equipment
FDR	Flight Data Recorder
FI	Flight Instructor
ft	feet
GPS	Global Positioning System
hrs	hours
IATA	International Air Transport Association
ICAO	International Civil Aviation Organisation
IR	Instrument Rating
Km	Kilometer
LT	Local Time
MAHB	Malaysia Airport Holding Berhad
MASB	Malaysia Airport Sendirian Berhad
mi	miles
MOR	Mandatory Occurrence Reporting
m	meter
PAPI	Precision Approach Path Indicator
SPL	Student Pilot License
VFR	Visual Flight Rules
VOR	Very High-Frequency Omni-Directional Range
WMKM	Malacca International Airport (IATA code)

SYNOPSIS

A Cadet Pilot (CP) was performing a solo navigation flight on a Piper PA-28-181 Archer III aircraft bearing registration 9M-ITQ. Immediately after airborne, the CP realised that the visibility was quite bad to continue with the solo navigation flight because the CP could not rely much on the map as well as the reference on the ground due to the weather.

As the aircraft was coming for landing at Malacca International Airport, Melaka (WMKM), as soon as the wheels touched the surface of the runway, the aircraft bounced several times and caused the nose landing gear (NLG) to collapse and eventually came to rest slightly to the right from the center of the runway.

The Aircraft Operator submitted a Mandatory Occurrence Report (MOR) to the Civil Aviation Authority of Malaysia (CAAM), and Air Accident Investigation Bureau, Malaysia (AAIB) as notification of the occurrence, and an investigation team was dispatched the next day.

1.0 FACTUAL INFORMATION

1.1 History of the Flight

On 18 August 2023, a Cadet Pilot (CP) was scheduled to perform a solo navigation flight at 0900 LT, and a flight plan to Johor was submitted to Flight Operations. Due to the unfavourable weather conditions at the time, the flight was later scheduled at approximately 1030 LT.

At 1000 LT, the CP requested that the Flight Instructor (FI) sign the release form authorising the CP to conduct the solo navigation flight, but the FI was hesitant to release the CP due to the adverse weather circumstances at the time. Meanwhile, the FI was scheduled to fly with another student, so owing to the time limitation, the FI consented to sign and release the CP to fly later. Nonetheless, the CP notified the FI that the flight would not take off until the weather improved.

As soon as the FI had completed the flight sortie, the CP once again asked the FI if the CP could commence with the flight, the request was declined by the FI as the weather still had not improved.

After the weather seemed to be cleared, the CP jumped into the aircraft and took off for the solo navigation flight. Immediately after airborne, the CP realised that the visibility was quite bad to continue with the solo navigation flight because the CP could not rely much on the map as well as the reference on the ground owing to the weather. As an alternative, the CP activated the Course Deviation Indicator (CDI)[1] and set the course with the Very High-Frequency Omni-Directional Range (VOR)[2] as well as utilising the Global Positioning System (GPS)[3]. Essentially, the CP relied on the instruments throughout the flight rather than following Visual Flight Rules (VFR)[4].

[1] A course deviation indicator (CDI) is an avionics instrument used in aircraft navigation to determine an aircraft's lateral position in relation to a course to or from a radio navigation beacon.
[2] Very High Frequency Omnirange Station (VOR) is a type of short-range radio navigation system for aircraft, enabling aircraft with a receiving unit to determine its position and stay on course by receiving radio signals transmitted by a network of fixed ground radio beacons.
[3] The Global Positioning System (GPS) is a space-based radio-navigation system consisting of a constellation of satellites broadcasting navigation signals and a network of ground stations and satellite control stations used for monitoring and control.
[4] VFR is short for 'visual flight rules', meaning the pilot primarily controls and navigates the aircraft using outside visual references.

As the aircraft approached the runway for landing, and the runway in use was Rwy 21, the aircraft bounced numerous times, causing the nose landing gear (NLG) to collapse. The CP called out for 'MAYDAY' twice to the tower after discovering the aircraft had a hard landing, and the aircraft nose dropped downwards and began scraping the surface of the runway. The aircraft eventually came to rest slightly to the right off the center of the runway.

After the aircraft came to a complete stop, in response to the emergency, the CP instantly evacuated the aircraft, fearing that it would explode, and waited at the runway's edge until rescue arrived.

The aircraft then was removed by the aircraft operator after obtaining approval and instructions from the AAIB, and the AAIB team arrived at the site on the very next day.

1.2 Injuries to Persons

Injuries	Crew	Passengers	Others	Total
Fatal	NIL	NIL	NIL	NIL
Serious	NIL	NIL	NIL	NIL
Minor	NIL	NIL	NIL	NIL
None	01	NIL	NIL	01

1.3 Damage to Aircraft

A general visual inspection was carried out to assess and identify the damage to the aircraft after the occurrence. Damage was found on both propeller tips, with scratches and bent on both sides of the propeller, the NLG broken, and some damage on the aircraft belly skin as can be seen in the pictures below.

Figure 1: Bent and scratches on both sides of the propeller

Figure 2: Broken nose landing gear (NLG)

Figure 3: Damaged belly skin

Figure 4: DME Antenna broken

1.4 Other Damage

There's no other damage sustained by any objects other than the aircraft.

1.5 Personnel Information

15.1 Pilot

Status	Cadet Pilot
Nationality	Malaysian
Age	23 years old
Gender	Female
License Type	SPL (14693)
License Validity	Valid until 31 December 2023
Aircraft Rating	N/A
Total Hours on Type	33:30hrs
Total Flying Hours	33:30hrs
Rest Period Since Last Flight	≥ 24hrs
Date of Medical Examination	24 December 2022

The CP was qualified and approved to perform the flight in accordance with existing regulations**.** The CP was medically fit and adequately rested to operate the flight.

There was no written statement taken from the CP during the interview session taking into consideration the CP who was still shocked and traumatised at that point in time. Nevertheless, the CP's account was obtained by using a voice recording device as a medium to gather the statement of facts and evidence.

Based on the observation and conversation, it was clear that the CP was dealing with personal issues/conflicts and was significantly distracted at the time. As a result, this aspect had a psychological impact on the CP, generating anxiety and panic attacks, which contributed to the degradation of the CP's performance.

During the interview session, when the CP was asked by the investigators about the CP's state of mind and readiness to resume flying, the CP admitted that taking a break temporarily would be a good idea as the CP is still traumatised and feeling anxious

resulting from the occurrence. The CP even agreed when the investigator recommended consulting a counsellor or a psychiatric practitioner for guidance.

Nevertheless, after several treatments and consultations, the CP was declared fit to resume flying and to exercise the privilege of its pilot license with prevailing limitation(s) on its medical certificate, if any.

1.6 Aircraft Information

Aircraft Type	Piper PA28-181 Archer III
Manufacturer	Piper Aircraft, INC
Year of Manufacturer	2019
Owner	International Aero Training Academy (IATAC)
Registration No.	9M-ITQ
Aircraft Serial No.	2881209
C of A Expiry Date	06 July 2024
C of R Expiry Date	27 January 2026

The aircraft was airworthy when dispatched for the flight. It has a valid registration, and Certificate of Airworthiness (C of A) and has been maintained in compliance with the regulations. The maintenance records indicated that the aircraft is equipped, and maintained in accordance with existing regulations and approved procedures.

1.7 Meteorological Information

The weather was reported at the time of the occurrence with a variable wind speed of less than 3kts, visibility of more than 10km, and few cloud coverages at the height of 2000ft.

1.8 Aids to Navigation

All navigation aids at WMKM were operational at the time of the occurrence. As for the aircraft, it is equipped with a fully integrated Garmin G1000 Cockpit.

1.9 Communications

All ATC communication frequencies were operating normally. The 'Crash Alarm' was activated by the ATC on duty as soon as the Mayday call was received.

1.10 Aerodrome Information

Malacca International Airport (WMKM) has a single asphalt runway, Runway 03/21 with a length of 2,135 metres x 45 metres. The elevation of the airport is 40 feet above mean sea level. Two flying academies are situated on and operating from this airport namely the International Aero Training Academy (IATAC) and Malaysia Flying Academy (MFA).

Figure 5: Aerial view of Malacca International Airport (WMKM)
(Source: Google Earth)

1.11 Flight Recorders

The aircraft is not equipped with a Flight Data Recorder (FDR) or a Cockpit Voice Recorder (CVR). However, the aircraft is installed with a Garmin G1000 System which records all the aircraft flight profiles throughout the flight until the occurrence happens. Data recorded by the system can be retrieved to provide a better insight into the unfortunate event.

1.12 Wreckage and Impact Information

Figure 6 below provides a general description of the site, the final portion of the flight path, the touch-down area, the impact sequence, and the location of impact impressions on the ground. The 'orange arrow' indicates the last flight path prior to touch-down, the 'yellow X' is the touch-down point, the 'broken orange arrow'

illustrates the aircraft bounce sequence, and the ‘red area’ shows the location of the last aircraft position after it stops

Figure 6: 9M-ITQ general description map of the incident (Source: Google Earth)

Figure 7: General description of the impact information

1.13 Medical and Pathological Information

The CP underwent a urine drug panel screen and the results were negative for substance abuse. Where else for the blood alcohol screening, the result was within the normal limits.

In addition, having been proposed by the investigators the CP agreed and voluntarily requested to be referred to a qualified aviation doctor and had gone through several treatments and consultations which subsequently the CP was declared fit to resume flying and to exercise the privilege of its pilot license with prevailing limitation(s) on its medical certificate, if any.

1.14 Fire

There was no evidence of fire inflight or after the impact.

1.15 Survival Aspects

Not applicable.

1.16 Tests and Research

The aircraft fuel was sent for analysis at the Science and Technology Research Institute for Defence (STRIDE) Kajang to rule out the possibility of issues related to the engine during landing due to fuel contamination, and the result obtained is negative**.**

1.17 Organisational and Management Information

1.17.1 Aircraft Operator

International Aero Training Academy (IATAC) is a Malaysian Approved Training Organization (ATO) situated at the Malacca International Airport (WMKM). It operates a comprehensive and well-equipped fleet of single and twin engines. All of its aircraft are equipped with GARMIN 1000 EFIS instruments as well as its flight simulator.

1.17.2 Proactive Measures Taken by the Aircraft Operator

Proactive measures have been taken by the aircraft operator to address the emotional stress that arose in the aftermath of the event. Recognising the importance of ensuring the well-being of their students, they organised a unique "Cadet One Day Health Program." The program, coordinated by the Flight Operations department, was methodically designed to address both the physical and mental health of their students.

The proactive measures used to promote a culture of well-being assist their students in managing any emotional stress they may be going through as well as aid in their overall development as future aviators.

1.18 Additional Information

1.18.1 Aiming point

During the interview, the CP was asked about the aiming point selected on the runway when approaching for the landing. The CP was unsure about the aiming point and stated that no aiming point had been selected and that all the CP wanted to do was to land the aircraft on the runway. The IATAC Piper PA-28 SOP provides specific instructions for selecting the aiming point during landing, as represented in Figure 8 below.

2.5.7	**Aiming Point**
2.5.7.1	The aiming point is the threshold markers where the round out is commenced. The aircraft should not touchdown before the aiming point. The touchdown zone is after the threshold, between the 500 feet markers and the 1500 feet markers.

Figure 8: IATAC Piper PA-28 SOP – Aiming Point

1.18.2 Go-Around Procedures

When coming in for the landing, despite having the knowledge that the aircraft was losing height, falling below the glide slope, and descending too quickly, no decision was made to perform remedial actions by the CP, and eventually no go-around attempt was made to manage the situation. The go-around procedures in IATAC Piper PA-28

SOP as shown in Figure 9 below, stated that “If at 200 feet AGL or above, and the approach could not be continued for any safety reason then the go-around procedure may be initiated”.

2.5.8	**Go Around Procedures**	
2.5.8.1	If at 200 feet AGL or above, and the approach could not to be continued for any safety reason then the go-around procedure **may be** initiated, as follows:	
	A	Throttle advance to full power and simultaneously select initial climb attitude. If full flaps have been selected, retract to **flaps 25° “flaps 2”**.
	B	Once the aircraft is stabilized in a climb **not below 200 feet AGL**, speed more than **65 kts** with **positive ROC** as indicated on the VSI and altimeter, retract to **Flaps 10° “flaps 1”**.
	C	At **300 feet AGL**. carry out a normal after take-off checks with airspeed more than **75 kts** and **positive ROC**, retract flaps to **zero**. Maintain speed **80 kts** for climb, trim as required.
	D	Turn the aircraft towards the non-traffic side of the runway and fly parallel to the runway.
	E	Make the appropriate radio call. (Going around)

Figure 9: IATAC Piper PA-28 SOP – Go Around Procedures

1.19 Useful or Effective Investigation Techniques

The investigation was based on tangible evidence i.e. the available Close Circuit Television (CCTV) footage, witness accounts and statements, data retrieved from the aircraft’s Garmin System, and the human factors analysis and classification system (HFACS) to establish the contributing factors as well as the probable cause of this event.

1.19.1 On-site Investigation and Witness Accounts

The aircraft is not fitted with FDR or a CVR. Thus, the on-site investigation was carried out to look for evidence that would assist in reconstructing the probable chain of events leading to this mishap. However, due to the lack of tangible evidence gathered during the on-site investigation, the investigating team had to depend on the CP’s statements, data retrieved from the installed Garmin G1000 System as well as the available CCTV footage.

1.19.2 Reason's "Swiss Cheese" Model

The Reason "Swiss Cheese" Model (Figure 10) is used to describe the layers of defences at which active failures/conditions and latent failures/conditions may occur in this event. Based on the evidence examined, it is determined that this mishap is Human Factor related.

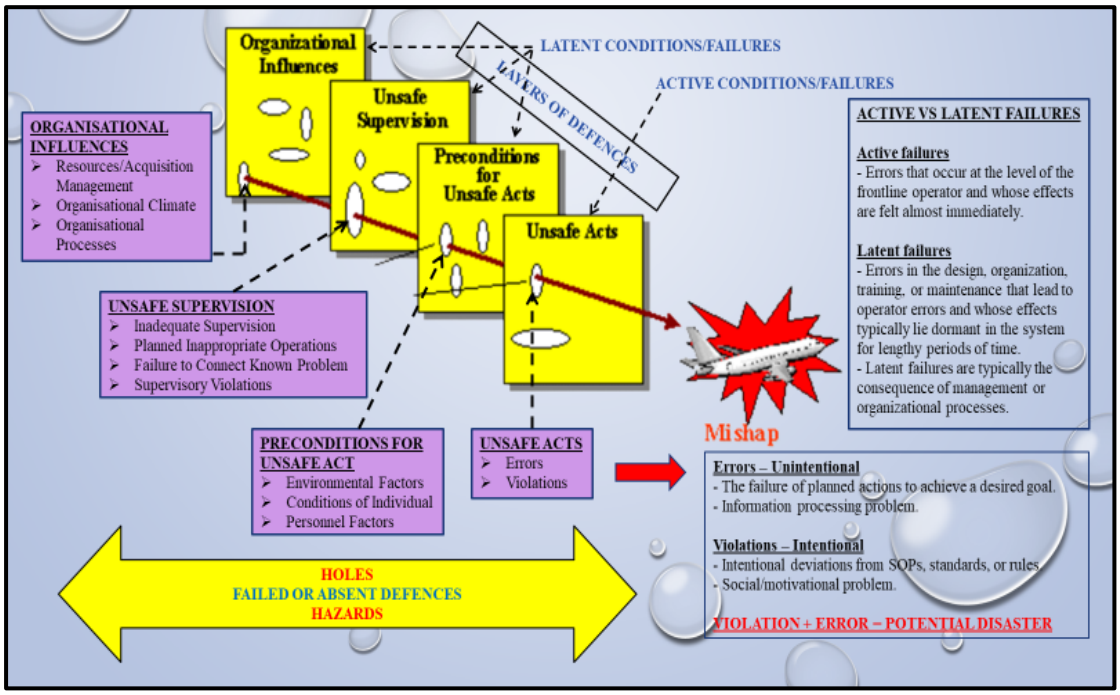

Figure 10: Reason's 'Swiss Cheese' Model Aviation

1.19.3 Human Factors Analysis and Classification System (HFACS)

Human Factors Analysis and Classification System (HFACS) is used to evaluate and rule in or eliminate the various preconditions that resulted in the unsafe act based on the described layers of defences in the Swiss Cheese model at which active failures/conditions and latent failures/conditions may have occurred in this event. The supervisory and subsequent organisational difficulties that contributed to the prerequisite will then be evaluated. Finally, as shown in Figure 11, this will provide a complete human factors picture of all the events that led up to the mishap.

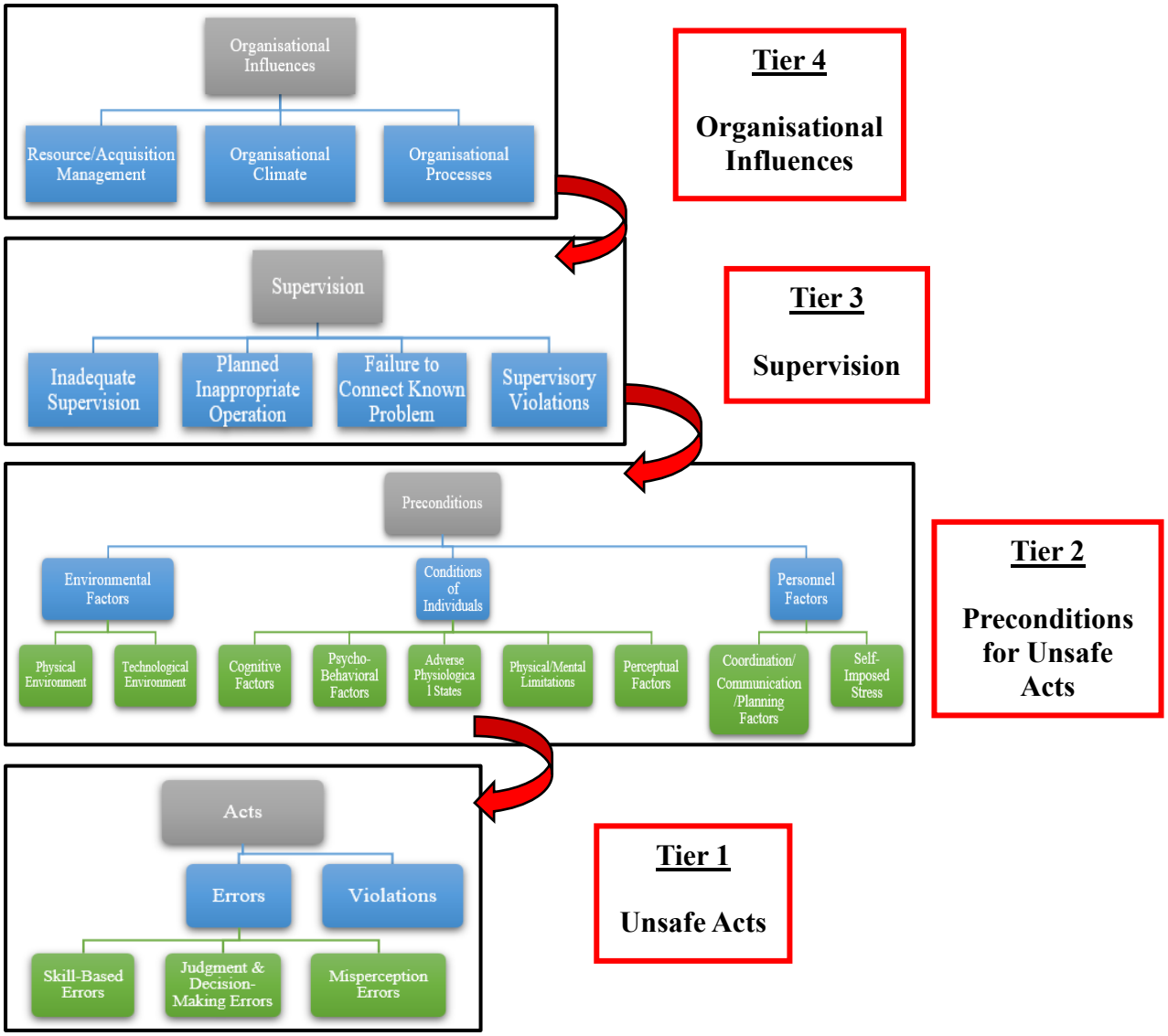

Figure 11: Human Factors Analysis and Classification System (HFACS) Model

2.0 ANALYSIS

2.1 On-site Investigation

In most occasions of aircraft experiencing a hard landing or an abnormal runway contact, there's always on-site evidence of aircraft tyre track traces and impact marks, which are usually highly visible. These tyre track traces, impact marks, or absence thereof, will aid in supplying critical proof and information on what actually occurred.

Nevertheless, in this case, due to the lack of the above-said pieces of evidence, the CP's statement will be analised and the sequence of events of the occurrence can be compared and verified with the data retrieved from the aircraft's installed Garmin G1000 System as well as the available CCTV footage.

2.2 CP's Statement, Garmin G1000 System Data, and Video Footage Analysis

During the interview session, the CP stated that the aircraft's speed during the approach was at 75-70 knots, at that time the Precision Approach Path Indicator (PAPI) indicated 2 whites and 2 reds which means the aircraft was within the glide slope for landing. As the aircraft approached closer to the threshold, the CP mentioned that the aircraft was losing height and the PAPI lights indicated 1 white and 3 reds which means the aircraft was below the glide slope. This suggests that the aircraft was descending too quickly or not maintaining the correct approach path. Owing to the situation, the CP did not make any corrections to remedy the situation and just let the aircraft sink until it touched the runway. Even so, there was no go-around attempt made by the CP to manage the situation.

As a result of the high rate of descent during the landing, as soon as the aircraft touched the runway, it bounced several times, and this phenomenon is commonly known as porpoising[5] or bounce landing. This is supported by the CP's statement, whereby the CP admitted that the aircraft was porpoising hard numerous times during the landing, which subsequently led to the collapse of the aircraft's nose wheel.

The evidence that the aircraft was porpoising several times during the touchdown is further substantiated by the data extracted from the Garmin G1000 System that was

[5] A porpoise landing is a bounced landing that, if not recovered, results in the plane touching down nose first. If it continues, it will set the plane off into a series of "jumps" and "dives", like a real porpoise.

installed onboard the aircraft and the video footage obtained from one of the CCTV from the Malaysia Flying Academy (MFA). The sequence of events during the landing retrieved from the CCTV is depicted in Figure 12.

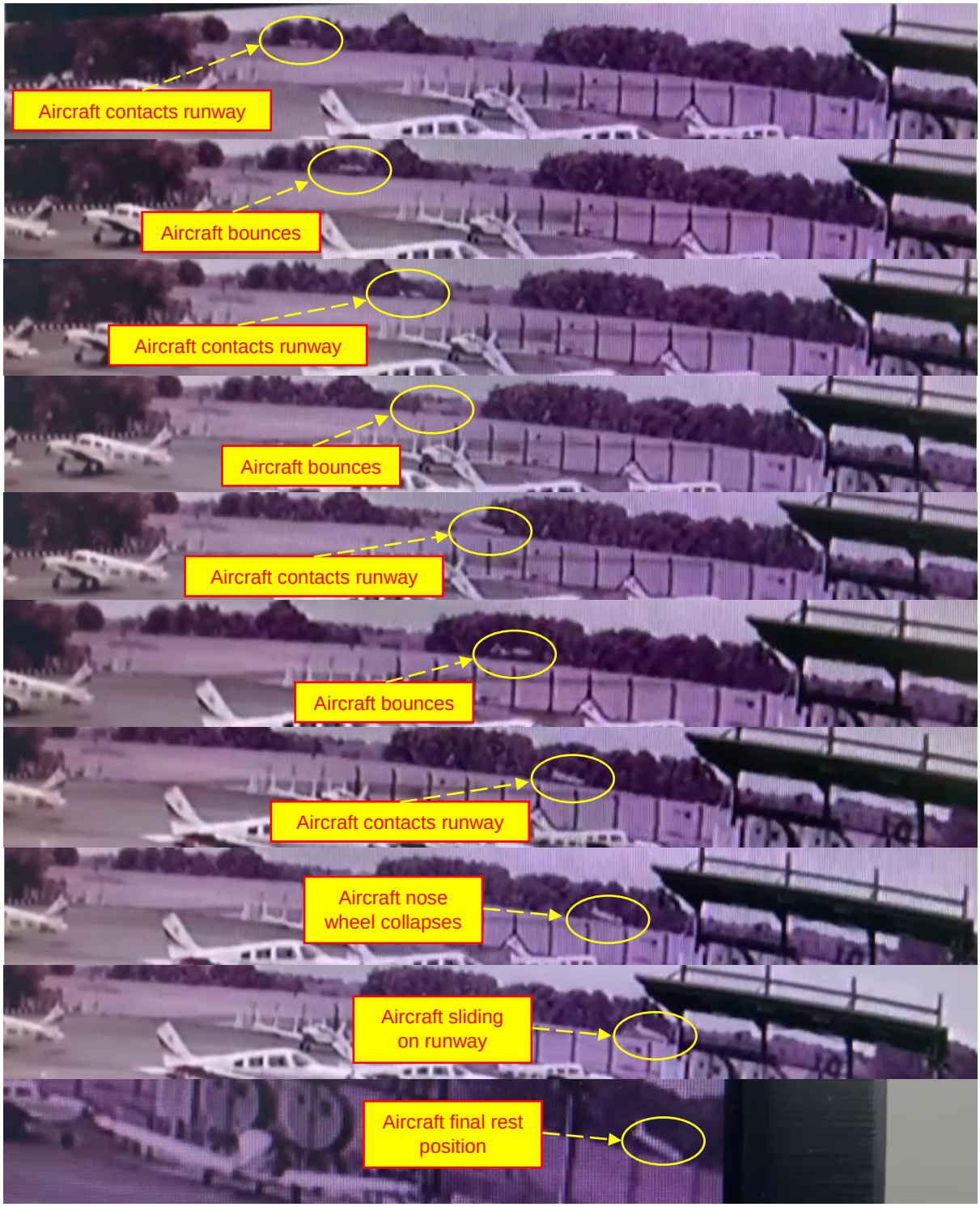

Figure 12: 9M-ITQ sequence of events during landing

2.3 Human Factor Analysis

Human factor issues related to this occurrence were examined using the Reason's Swiss Cheese model and HFACS worksheet as per Appendix F. From the HFACS worksheet in Appendix F, evidence statements will be provided for ratings of 2,3, and 4 as shown in paragraphs 2.3.1 to 2.3.2. The series of latent failures outlined in paragraph 2.2 that led to the unsafe acts that breached the safety barriers and ultimately caused the mishap will be revealed in paragraphs 2.3.1 and 2.3.2.

2.3.1 Tier 1 – Unsafe Acts

AE	ERRORS	EVIDENCE
AE 1	**Skill-Based Errors**	
AE 1.4	**Over-Control/Under-Control.** Over-control/Under-control is a factor when an individual responds inappropriately to conditions by either over-controlling or under-controlling the aircraft/vehicle/system. The error may be a result of preconditions or a temporary failure of coordination.	Over-controlling by forcing the aircraft to land instead of performing a go-around even though the aircraft had bounced several times during the landing attempt.
AE 2	**Judgment & Decision-Making Errors**	
AE 2.6	**Decision-Making During Operation.** Decision-Making During Operation is a factor when the individual through faulty logic selects the wrong course of action in a time-constrained environment.	Despite having the knowledge that the aircraft was losing height, falling below the glide slope, and descending too quickly, no decision was made to perform remedial actions, and eventually, no go-around attempt was made by the CP to manage the situation.

Unsafe acts are those that are most closely tied to the mishap and can be described as active failures or actions committed that result in human error or unsafe situations. These active failures or actions are identified as Errors and Violations.

In this case, it is evident that the unfortunate event occurred as a result of active failures or actions committed by the CP, which led to the unsafe situation.

Despite having the knowledge that the aircraft was losing height, falling below the glide slope, and descending too quickly, there was no decision made by the CP to perform remedial actions. The poor judgment and decision-making had led the CP through faulty logic select the wrong course of action in a time-constrained environment.

This situation was further escalated by forcing the aircraft to land instead of performing a go-around even though the aircraft had bounced several times during the landing, it was a deliberate skill-based error that the CP had committed inappropriately and this poor airmanship may be a result of preconditions or a temporary failure of coordination.

2.3.2 Tier 2 – Preconditions for Unsafe Acts

PC	CONDITIONS OF INDIVIDUAL	EVIDENCE
PC 1	**Cognitive Factors**	
PC 1.6	**Distraction.** Distraction is a factor when the individual has an interruption of attention and/or inappropriate redirection of attention by an environmental cue or mental process that degrades performance.	The existence of personal issues/conflicts had significantly affected CP's mentally hence degrading the performance.
PC 1.1	**Emotional State.** Emotional State is a factor when the individual is under the influence of a strong positive or negative emotion and that emotion interferes with duties.	Unable to focus due to insufficient knowledge and experience during the flight had created feelings of anxiety and panic attacks while performing duties.

The breach in the precondition for the unsafe act defense layer is a combination of cognitive and psycho-behavioural factors which had contributed to the unsafe act as analysed in paragraph 2.3.2. For some reason, the CP felt distracted from the start of the day and was unable to focus on the task at hand. This can be seen in the recorded CCTV footage, where, on ground before the flight, the CP was walking towards the aircraft and dropped some of the documents carried on the tarmac, and then a staff came by and rendered assistance.

The precondition for the unsafe act is further escalated by the emotional state condition suffered by the CP. Immediately after airborne, the CP realised that the visibility was quite bad to continue with the solo navigation flight because the CP could not rely

much on the map as well as the reference on the ground owing to the weather. This insufficient and lack of knowledge, as well as experience, had created feelings of anxiety and panic attacks while performing duties. Eventually, this emotional state condition led to the existence of stress and fatigue.

The detail medical examination report will not be disclosed in this report as it has to be treated as a confidential document.

3.0 CONCLUSION

3.1 Findings

The investigation findings should not be read as apportioning blame or liability to any particular organisation or individual. Some of the findings focus on safety factors (i.e., events and conditions that increase risk). Safety factors include ‘contributing factors’ and ‘other factors that increased risk’ (i.e., factors that did not meet the definition of a contributing factor for this occurrence but were still considered important to include in the report to increase awareness and enhance safety). In addition, ‘other findings’ may be included to provide important information about topics other than safety factors.

3.1.1 Pilot

3.1.1.1 The CP was qualified and approved to perform the flight in accordance with existing regulations.

3.1.1.2 The CP was medically fit and adequately rested to operate the flight.

3.1.1.3 The CP is still traumatised and feels anxious resulting from the occurrence.

3.1.1.4 The CP agreed to consult a counsellor or a psychiatric practitioner for guidance as recommended by the investigators.

3.1.1.5 Results for the urine drug panel screen test were negative for substance abuse and the blood alcohol screening test was within the limit.

3.1.1.6 The CP has no knowledge pertaining to the need to select an aiming point on the runway for landing as per stated in the company’s SOP.

3.1.1.7 Go-around was not performed by the CP after the aircraft bounced several times upon touching the runway.

3.1.1.8 The existence of personal issues/conflicts had significantly affected CP's mentally hence degrading CP's performance.

3.1.1.9 CP's insufficient knowledge and experience had created feelings of anxiety and panic attacks while performing duties.

3.1.2 Aircraft

3.1.2.1 The aircraft was airworthy when cleared for the flight.

3.1.2.2 The aircraft is certified, equipped, and maintained in accordance with existing regulations and approved procedures.

3.1.2.3 The aircraft has a valid C of A and has been maintained in compliance with the regulations.

3.1.2.4 The maintenance records indicated that the aircraft is equipped, and maintained in accordance with existing regulations and approved procedures.

3.1.2.5 The aircraft bounced several times causing the nose landing gear to collapse before coming to a complete stop.

3.1.3 Aircraft Operator

3.1.3.1 The aircraft operator has taken proactive measures to address the emotional stress that arose among their students in the aftermath of the event.

3.2 Causes/Contributing Factors

3.2.1 **Primary Cause**. From HFACS summary in Figure 13, the primary cause for the mishap is attributed to:

3.2.1.1 One (1) Unsafe Act (Tier 1) as follows:

a. Over-control / Under-control.

3.2.2 **Secondary Causes**. The secondary causes are attributed to:

3.2.2.1 Three (3) Preconditions for Unsafe Acts (Tier 2) as follows:

a. Decision-Making During Operation.

b. Distraction.

c. Emotional State.

TIER 1 – UNSAFE ACTS - ERRORS		4	3	2	1
AE 1	Skill-Based Errors	1			5
AE 2	Judgment & Decision-Making Errors		1		5
AE 3	Misperception Error				1
TIER 1 – UNSAFE ACTS - VIOLATIONS					
AV 1	Violations – Based on Risk Assessment				1
AV 2	Violations – Routine/Widespread				1
AV 3	Violations – Lack of Discipline				1
TIER 1 – UNSAFE ACTS SUB TOTAL		**1**	**1**	**0**	**14**
TIER 2 – PRECONDITIONS FOR UNSAFE ACTS – ENVIRONMENTAL FACTORS					
PE 1	Physical Environment				11
PE 2	Technology Environment				8
TIER 2 – PRECONDITIONS FOR UNSAFE ACTS – CONDITIONS OF INDIVIDUAL					
PC 1	Cognitive Factors		1		7
PC 2	Psycho-behavioral Factors		1		14
PC 3	Adverse Physiological State				16
PC 4	Physical/Mental Limitations				5
PC 5	Perceptual Factors				11
TIER 2 – PRECONDITIONS FOR UNSAFE ACTS – PERSONNEL FACTORS					
PP 1	Coordination/Communication/Planning Factors				12
PP 2	Self-Imposed Stress				6

TIER 2 – PRECONDITIONS FOR UNSAFE ACTS SUB TOTAL		**0**	**2**	**0**	**90**
TIER 3 – UNSAFE SUPERVISION					
SI	Inadequate Supervision				6
SP	Planned Inappropriate Operations				7
SF	Failure Correct Known Problem				2
SV	Supervisory Violations				4
TIER 3 – UNSAFE SUPERVISION SUB TOTAL		**0**	**0**	**0**	**19**
TIER 4 – ORGANISATIONAL INFLUENCES					
OR	Resource/Acquisition Management				9
OC	Organisational Climate				5
OP	Organisational Processes				6
TIER 4 – ORGANISATIONAL INFLUENCES SUB TOTAL		**0**	**0**	**0**	**20**
TOTAL UNSAFE ACTS		**1**	**3**	**0**	**143**

Figure 13: Summary of HFACS Worksheet

The primary cause of the serious incident is attributed to the CP's over-controlling by forcing the aircraft to land instead of performing go around even though the aircraft had bounced several times during the landing attempt. The contributing factors were attributed to:

- No decision was made by the CP to perform remedial actions, despite having the knowledge that the aircraft was losing height, falling below the glide slope, and descending too quickly, and eventually no go-around attempt was made to manage the situation.
- The existence of personal issues/conflicts had significantly affected CP's mentally hence degrading the performance.
- Unable to focus due to insufficient knowledge and experience by the CP during the flight had created feelings of anxiety and panic attacks while performing duties.

3.2.3 **Summary of Findings/Causes**. In summary, the primary cause of the serious incident is attributed to the poor airmanship shown by the CP by over-controlling and forcing the aircraft to land instead of performing go around even though the aircraft had bounced several times during the landing attempt., leading to the subsequent hard landing and collapsed of the nose landing gear. The serious incident is categorised as an **Abnormal Runway Contact (ARC)**.

4.0 SAFETY RECOMMENDATIONS

4.1 Immediate Safety Actions of Preliminary Report

4.1.1 The Preliminary Report for this serious incident issued on 18 September 2023 contained the following recommendation for immediate safety actions to the pilot:

"The CP shall consult a counsellor or a psychiatric practitioner for guidance as recommended by the investigators to remedy the trauma and anxiousness as a result of the occurrence."

Based on the above proposed immediate safety actions, the CP had undergone several treatments and consultations with a qualified aviation doctor, and subsequently the CP was declared fit to resume flying and to exercise the privilege of its pilot license with prevailing limitation(s) on its medical certificate, if any.

4.1.2 The Preliminary Report for this serious incident issued on 18 September 2023 contained the following recommendation for immediate safety actions to the aircraft operator:

"The aircraft operator shall facilitate the CP's necessity to consult a counsellor or a psychiatric practitioner."

The aircraft operator swiftly accommodated the CP's need to consult with a counsellor or a psychiatric practitioner by temporarily relieving the CP from training until the CP achieved positive progress.

4.2 Safety Recommendations of this Report

The Safety Recommendations to the respective organisations to address the safety concerns identified in this investigation are as follows:

4.2.1 Aircraft Operator

4.2.1.1 To re-emphasise to the flying instructors and the trainees the importance of adhering to the SOP, particularly in selecting the aiming point during landing.

4.2.1.2 To re-emphasise to the flying instructors and the trainees the importance of going around for any unstabilised approach/landing and when the aircraft experience bounces upon touching 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 the State of Registry (CAAM), the State of Manufacturer (NTSB), and the Aircraft Operator 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 accepted and amended accordingly
National Transport Safety Board (NTSB)	Report accepted and no comments
Aircraft Operator	Report accepted and no comments

Figure 14: Status of significant and substantiated comments

6.0 AAIB'S FEEDBACK AFTER COMMENTS RECEIVED FROM ORGANISATIONS ON THE DRAFT FINAL REPORT

AAIB would like to thank all respective organisations that have provided responses and comments to the Draft Final Report. The concerted effort by all organisations in meeting the standard required in ICAO Annex 13, paragraph 6.3 is much appreciated.

To improve the standard of future comments to any Draft Final Report, AAIB would like to highlight and impress upon the organisation's concern on the importance of meeting the standard stated in paragraph 6.3, which is to provide significant and substantiated comments. Organisations are welcome to highlight and point out if the facts, analysis, or evidence in the investigation report are incorrect or inaccurate, by providing the correct factual statement and substantiating it with the proper evidence.

To further improve the process action after receiving the Final Report from AAIB and in accordance with ICAO Annex 13, paragraph 6.10, **organisations are to inform AAIB within ninety days of the date of transmittal correspondence of this Final Report, of the preventive action taken or under consideration, or reasons why no action will be taken on the safety recommendations received.** Organisations are also required to implement procedures to monitor the progress of the action taken in response to the safety recommendations received in accordance with ICAO Annex 13, paragraph 6.12.

CONCLUDING STATEMENT

This investigation has revealed instances of non-compliance and errors; however, it is crucial to emphasise that these findings are not intended for the purposes of apportioning blame or liability. Rather, they are solely for the purpose of preventing accidents in the future and improving aviation safety on the whole. Addressing the identified findings and implementing the recommended safety measures will enhance aviation safety and mitigate risks associated with operational lapses and regulatory gaps. It is imperative that all stakeholders prioritise safety and commit to implementing the necessary measures to prevent recurrence.

INVESTIGATOR IN CHARGE (IIC)

Air Accident Investigation Bureau (AAIB)

Ministry of Transport, Malaysia