FINAL
AIRCRAFT ACCIDENT REPORT
25 APRIL 2016

CESSNA 172L 9M-RFC
CRASHED AT ULU YAM, SELANGOR
10 JANUARY 2014

AIR ACCIDENT INVESTIGATION BUREAU OF MALAYSIA
MINISTRY OF TRANSPORT
MALAYSIA

AIR ACCIDENT INVESTIGATION BUREAU
MALAYSIA

ACCIDENT REPORT NO.: 02/2014

OPERATOR	:	ROYAL SELANGOR FLYING CLUB
AIRCRAFT TYPE	:	CESSNA 172L
NATIONALITY	:	MALAYSIAN
REGISTRATION	:	9M-FRC
PLACE OF ACCIDENT	:	ULU YAM, SELANGOR
DATE AND TIME HOURS LOCAL TIME	:	10 JANUARY 2014 AT 1645

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INTRODUCTION

The Air Accident Investigation Bureau of Malaysia

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

The AAIB conducts the investigations in accordance with Annex 13 to the Chicago Convention and Civil Aviation Regulations of Malaysia 1996.

In carrying out the investigations, the AAIB will adhere to ICAO's stated objective, which is as follows:

"The sole objective of the investigation of an accident or incident shall be the prevention of accidents and incidents. It is not the purpose of this activity to apportion blame or liability."

Accordingly, 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.

SYNOPSIS

On the 10 January 2014, a Royal Selangor Flying Club Cessna 172L aircraft bearing Malaysian registration number 9M - RFC took off from Simpang Airport, Kuala Lumpur on a private flight around Kuala Lumpur area. After some uneventful flying over Kuala Lumpur city area, they proceeded to Batu Dam area. As they reached Batu Dam area, they noticed that huge clouds were above them and they without realizing have descended to 500 ft. They decided to return back to Simpang airport and did a 180 degrees turn. As they were returning back, the pilot observed that his airspeed was low, i.e. 70 kts. Next, the pilot noticed that the aircraft was sinking and the stall warning horn was also audible. The pilot tried to recover from the stall condition by applying full engine power but the aircraft failed to climb and the aircraft crashed into the trees within Batu Dam area.

At time of the accident there were 3 people on board, consisting of the Pilot and 2 passengers. The Pilot and 2 passengers survived the crash with injuries. The aircraft was badly damaged with significant damage to the cockpit, fuselage, left/right wings, tail section and nose section.

Department of Civil Aviation Malaysia (DCA) was promptly notified of the accident via telephone by the Aircraft Operator. DCA had then notified Air Accident Investigation Bureau Malaysia (AAIB) of the accident. A Mandatory Occurrence Report (MOR) was also raised by the Aircraft Operator.

1. FACTUAL INFORMATION

History of the flight

On 10 January 2014 the Pilot and 2 passengers, a Cessna 172L was scheduled to fly on a private flight around Kuala Lumpur area. They departed at 1630hrs local time (LT) from Simpang airport and headed for training area R236. The flight was uneventful from takeoff to operation within R236. After obtaining Air Traffic clearance, they proceeded to Kuala Lumpur city area. The flight from R236 to flying within Kuala Lumpur city area was uneventful.

After obtaining necessary Air Traffic clearance, they proceeded to Batu Caves area. After reaching Batu Caves area, they descended from 1,500 ft to 1,000 ft. Again, the flight was uneventful. They then headed for Batu Dam area for further sight-seeing. As they reached Batu Dam area, they noticed that huge clouds were above them and they without realizing have descended to 500 ft. They decided to return back to Simpang airport and did a 180 degrees turn. As they were returning back, the pilot observed that his airspeed was low i.e. 70 kts. Next, the pilot noticed that the aircraft was sinking and the stall warning horn was also audible. The pilot tried to recover from the stall condition by applying full engine power but the aircraft failed to climb and the aircraft crashed into the trees within Batu Dam area.

The aircraft's nose including the engine and propellers was embedded on some bamboo trees and the aircraft was lying at a downward 45 degree slope. The aft fuselage section 47 was severely bent and twisted.

Both wings were damaged but intact with the aircraft. The engine and propellers were not accessible for damage assessment due to the dangerous terrain. As such, the battery located within the engine compartment was not disconnected to prevent future electrical power activation. The aircraft's fuel was drained to prevent future fire activation.

The Pilot and 2 passengers were rescued by the Fire and Rescue personnel and they were rushed to the Selayang Hospital for medical treatment.

1.2 Injuries to Persons

1.2.1 Table below shows the breakdown of the 3 injuries.

Injuries	Crew	Passengers	Total
Fatal	-	-	-
Serious	1	2	3
Scratches / Bruises	-	-	-
Total	1	2	3

1.2.2 The 3 injured were rushed to the Hospital on 11 January 2014. Based on doctor's report, the causes of injuries were due to or as a consequence of aircraft crash.

1.3 Damage to Aircraft

Listed below are the significant damages to the aircraft:

a) The aircraft's aft fuselage section 47 was severely bent and twisted.

b) Instrument Panel/Cockpit Area and the windscreen was shattered. The instrument panel was cracked and some instruments were also found cracked. The control column was found broken at the shaft section.

c) Aircraft's door and baggage door openings were found deformed and as such, the doors could not be closed.

d) Left Wing

The left wing's mid-section at WS 100.50 was found bent downwards. The wing tip was severely dented. The left wing's aileron and its mechanical linkage was bent with the left wing's flaps in 20 degrees position.

e) Right Wing

The right wing's lower skin section was dented at various sections along the wing. The right wing's aileron was partly crushed with the right wing's flaps in full up position.

f) The forward section of the horizontal stabilizer was severely dented and its associated elevator was found wrinkled throughout from one end to the other end.

g) The vertical stabilizer's rudder was dented and wrinkled.

h) The upper and lower sections of the fuselage were dented at various areas.

1.4 Other Damages

Nil

1.5 Personnel Information

Details	Pilot
Gender	Male
Age	22 years
Citizen	Malaysian
DCA License Number	PPL 7250
License Expiry	30 June 2017
Total Flying Hours	54:55 Hrs
Rest Period Since Last Flight	20:50 Hrs

1.6 Aircraft Information

1.6.1 Details

Aircraft Owner	Royal Selangor Flying Club
Aircraft Operator	Royal Selangor Flying Club
Aircraft Type	Cessna Aircraft Corporation 172L
Aircraft Serial Number	17259827
Nationality	Malaysian
Aircraft Registration	9M-RFC
Type of Flight	Private Flight
Persons on board	3

The aircraft was purchased as a used aircraft from United States of America. The aircraft model is Cessna 172L, high wing, single piston engine with Serial Number 17259827. It was manufactured in 1971 and registered in Malaysia as 9M – RFC on 23 November 2005 and has been put into active service since then.

The aircraft was maintained by Admal Sdn Bhd. The maintenance base for this aircraft is Royal Selangor Flying Club's Hangar, Simpang Airport, Kuala Lumpur as per DCA Approved Maintenance Schedule. 9M – RFC had clocked-in 7,866:35 hours as of 10 January 2014.

The aircraft had undergone a 50 hours Check on 17 December 2013 at Royal Selangor Flying Club's Hangar, Simpang Airport, Kuala Lumpur.

The aircraft technical log book, airframe, engine and propeller log books, are quarantined at Admal Sdn Bhd, Royal Selangor Flying Club's Hangar, Simpang Airport. They were thoroughly reviewed with no significant defects to the aircraft, engines and propeller systems, ref Technical Log pages 5,993 to 6,000 and 6,501 to 6,502.

1.6.2 Certificates

The following aircraft certificates are available in the Aircraft Certificate File. They are current and valid:

a) Certificate of Registration Number	M.1278
b) Certificate of Airworthiness Number	M.1087
c) Certificate of Airworthiness Expiry Date	18 March 2014
d) Radio License Expiry Date	31 December 2014
e) Certificate of Maintenance Review No.	0463
f) CMR Last Reviewed	18 August 2013
g) Next CMR Review Due	18 March 2014
h) Certificate of Release to Service Scheduled Maintenance Inspection (CRS-SMI) No.	0099
i) CRS-SMI Issue Date	17 December 2013
j) Aircraft Weight Schedule Date	26 June 2011

1.6.3 Engines

Details of the engine that was fitted on 9M-RFC at the time of incident are as follows:

Engine serial number	L-20202-27A
Time Since Overhaul (TSO)	1212:24 Hrs
Date Fitted	19 February 2011
Time Between Overhaul (TBO)	2000 Hrs/12 years

1.6.4 Propellers

Details of the propellers that were fitted on 9M – RFC at the time of incident are as follows:

Propeller Serial Number	ACG 44538A
Time Since Overhaul (TSO)	824:38 Hrs
Date Fitted	04 November 2011
Time Between Overhaul (TBO)	2000 Hrs / 6 years

1.6.5 Weight and Centre of Gravity

Basic Weight	836Kg
Crew Weight	150Kg (75Kg x 2 crew)
Passenger Weight (include hand carry)	200Kg
Baggage Weight (checked in)	10Kg
USL Equipment	Not Applicable
Fuel Weight	71Kg
Take-Off Weight on Departure	1043Kg
Maximum Authorised Take-Off Weight	1043Kg

1.7 Meteorological Information

Weather report was not available from the Meteorological Department for this accident.

1.8 Aids to Navigation

Simpang Airport does not have any navigation aids. As such, all departures and approaches are by visual reference only.

1.9 Communications and Radar Data

Simpang Airport Tower is equipped with VHF Radio System. The radio is operated by Royal Malaysian Air Force (RMAF) personnel.

Prior to the accident, there was no distress or emergency call received by Air Traffic Control or by any other aircraft on the frequency.

The emergency call was transmitted to Simpang Tower by personnel upon the accident.

1.10 Aerodrome Information

Runway Direction	04 / 22
Runway Length	1199 Meters

Runway Width	45 Meters
Elevation	33.8 Meters (111 ft)
Wind Socks Available	02 (01 each at runway ends)
Airport Fire and Rescue Services (AFRS)	Available

1.11 Flight Recorders

The aircraft was not installed with Flight Recorders as they are not mandatory to this aircraft; reference DCAM Airworthiness Notice No. 83.

1.12 Wreckage and Impact Information

The aircraft's nose including the engine and propellers was impeded on some bamboo trees and the aircraft was lying at a downward 45 degree slope with the standby compass showing the heading of approximately 240 degrees. The aft fuselage section 47 was severely bent and twisted.

Both wings were damaged but intact with the aircraft. The engine and propellers were not accessible for damage assessment due to the dangerous terrain. As such, the battery located within the engine compartment was not disconnected to prevent future electrical power activation. The aircraft's fuel was drained to prevent future fire activation.

The throttle lever was found in the full forward position i.e. maximum power position. Secondly, the mixture control lever was found in the fully forward position i.e. full rich position. The flaps selector lever was found in its neutral position. The left wing's flaps position was actually at 20 degrees position whereas the right wing's flaps position was actually at fully up position.

The airspeed indicator was reading zero airspeed. However, the altimeter was reading 8,500 ft. The master switch was in the 'ON' position. The alternator switch was in the 'OFF' position.

1.13 Fire

There were no reports of in-flight or post impact fire.

However, the aircraft's fuel was drained to prevent future fire activation.

1.14 Survival Aspects

Nil.

1.15 Tests and Research

Detail Examination of Components

The aircraft wreckage had not been removed from the crash site due to accessibility and financial reasons.

1.16 Additional Information

Nil.

2. ANALYSIS

2.1 Crew Qualifications

The Pilot was recently qualified.

2.2 Airworthiness of the Aircraft

The aircraft has a valid Certificate of Airworthiness and maintained by Admal Sdn Bhd. The maintenance base for this aircraft is Royal Selangor Flying Club's Hangar, Simpang Airport, Kuala Lumpur as per DCA Approved Maintenance Schedule. 9M – RFC had clocked-in 7,866:35 hours as of 10 January 2014.

The aircraft had undergone a 50 hours Check on 17 December 2013 at Royal Selangor Flying Club's Hangar, Simpang Airport, Kuala Lumpur.

2.3 Flaps

The physical left hand flap position was in flap 20 degrees down position. The physical right hand flap position was in flaps up (0 degrees) position. As the

aircraft was not removed for further examination, the entire flaps system could not be investigated further.

2.4 Engine Controls and Flight Controls

The throttle lever was in the fully forward (maximum power) position. The mixture lever was in the full forward (fully rich) position. As the aircraft was not removed for further examination, the entire engine control system could not be investigated further.

As the aircraft was not removed for further examination, the entire flight control system could not be investigated further.

2.5 Altimeter / Airspeed Indicator

The airspeed indicator was reading zero airspeed. However, the altimeter was reading 8,500 ft. As the aircraft was not removed for further examination, the entire pitot/static system could not be investigated further.

3. CONCLUSIONS

3.1 Findings

3.1.1 The weather was deteriorating with huge clouds building above the flying aircraft.

3.1.2 The pilot's flying low and slow was not normal piloting skills.

3.2 Probable Cause

Based on the information that were gathered through the interview with the aircraft captain and the other two aircrew that were onboard of the 9M – RFC on 10 January 2014, the probable causes of the accident are as follows:

a. **Non-Compliance by Aircraft Captain**. 9M-RFC was only cleared to descend to 1,000 ft but the aircraft captain descended to lower than 1,000 ft. In fact, the aircraft was descended to about 300 ft and the speed was low.

This also means that the aircraft captain did not comply with the lowest height limit, ie. 1,000 ft, that was cleared by the aircraft controller.

b. **Aircraft Captain Flew Aircraft at Low Speed**. At low altitude or height, ie. about 300 ft, the aircraft was flown at very low speed. In fact, it was only flown at about 65 kts. Although the Student Pilot License passenger who was sitting next to him told the aircraft captain about the low speed, the aircraft captain did not correct the situation, ie. he maintained the aircraft at low speed.

c. **Aircraft Captain Did Not Take Correct Actions to Recover from Incipient Stall**. When the stall warning horn came on at about 300 ft with low speed, this reflects that the aircraft was experiencing the incipient stall, ie. 4.34 kts to 8.68 kts above the stalling speed. However, during this situation, the aircraft captain did not carry out correct actions or drills immediately. He should just apply full power and the aircraft should then recover from the incipient stall condition or envelope. Owing to the incorrect actions or drills by the aircraft captain, the aircraft ended up in stalling. At about 300 ft with the aircraft in stall condition, the aircraft captain would not have sufficient height to recover from stall with full stall recovery actions.

4. RECOMMENDATIONS

The aircraft captain showed poor airmanship that resulted in the poor flying performance. In addition, the aircraft captain did not follow the emergency drill in recovering from the incipient stall situation. Owing to these, the Department of Civil Aviation should carry out appropriate actions against the aircraft captain to prevent similar situation to happen.