



# **INTERIM STATEMENT/REPORT**

**Aircraft Accident of Sakurai Aviation Limited, Cessna 172L Skyhawk  
bearing registration mark 4R-GAF crash landed  
at Kimbulapitiya, Negombo, Sri Lanka on 27<sup>th</sup> Dec 2021**



Released by the Civil Aviation Authority of Sri Lanka

Issued on 30<sup>th</sup> Dec 2022

### **Note to the Reader**

*The Authority has released an “Interim Statement/Report in a manner it thinks appropriate at the completion of the 12 months of the occurrence of this accident.*

This Interim Report contains the factual Information, analysis, findings and safety recommendations to the Air Operator, the PIC and the other occupant.

The Final report will be issued upon receiving the engine strip report.

The Final report may contain factual information, detailed analysis, conclusions with additional findings and probable cause(s) and additional safety recommendations to ALL areas pertaining to the Air Operator including approved post holders.

### **Publishing information**

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## Contents

List of Abbreviations and Acronyms .....	3
Synopsis .....	5
1 Factual Information .....	5
1.1 History of Flight .....	6
1.2 Injuries to Persons: .....	7
1.3 Damage to Aircraft: .....	8
1.4 Other damage: .....	9
1.5 Personnel Information: .....	9
1.5.1 Flight Crew (Pilot-In-Command) .....	9
1.5.2 Other Occupant .....	9
1.6 Aircraft Information .....	10
1.7 Meteorological Information: .....	11
1.8 Aids to Navigation: .....	12
1.9 Communication: .....	12
1.10 Aerodrome information/Landing area: .....	12
1.11 Flight Recorders: .....	13
1.12 Wreckage and Impact Information: .....	13
1.13 Survival Aspects: .....	14
1.14 Test and Research: .....	15
1.15 Organizational and Management Information: .....	15
1.15.1 The Air Operator .....	15
1.15.2 The Air Traffic Services Providers .....	16
2 Analysis .....	16
2.1 Flight Documents .....	16
2.2 Pre-flight checks .....	17
2.3 Security Procedures .....	17
2.4 Weight and Balance Analysis .....	17
2.5 Flight Dispatch .....	19
2.6 Subject Flight .....	19
2.7 PIC's Competency .....	19
2.8 Other Occupant .....	19
2.9 The Charter Flight .....	20
2.10 Flight Path Deviation .....	20
2.11 Notification of Technical Issue of the Aircraft .....	21





2.12	Air Navigation Services .....	22
2.13	Providing of Information to Security Authorities .....	22
2.14	Aircraft Fuel System: .....	22
2.15	Technical Documents .....	23
2.15.1	Aircraft Journey and Technical Log .....	23
2.15.2	Owner's Manual.....	23
2.16	Aviation Fuel.....	24
2.16.1	Testing of Fuel: .....	24
3	Observations .....	24
4	Findings .....	25
4.1	The PIC .....	25
4.2	Other Occupant .....	26
4.3	The Air Operator .....	26
4.4	Air Navigation Service Provider .....	27
5	Safety Actions.....	27
6	Safety Recommendations to Sakurai Aviation Ltd. ....	27
7	Safety Recommendations to ANSP, Sakurai Aviation Ltd, the PIC and the Other occupant (Already Issued) .....	28
7.1	Air Navigation Services Provider (ANSP) – (Issued on 25 <sup>th</sup> Feb 2022).....	28
7.2	The Air Operator (Issued on 25 <sup>th</sup> Feb 2022) .....	28
7.3	The PIC (Issued on 23 <sup>rd</sup> Nov 2022) .....	29
7.4	The Other Occupant (Issued on 23 <sup>rd</sup> Nov 2022) .....	29



**LIST OF ABBREVIATIONS AND ACRONYMS**

AASL	-	Airport and Aviation Services (Sri Lanka) Limited
AAC	-	Approach Area Control
ADC	-	Air Defence Clearance
AIS	-	Aeronautical Information Service
AJTL	-	Aircraft Journey and Technical Logs
ANR	-	Air Navigation Regulations
AOC	-	Air Operator Certificate
AME	-	Aircraft Maintenance Engineer
AMO	-	Approved Maintenance Organization
Approx.	-	Approximately
ATC	-	Air Traffic Control
ATO	-	Approved Training Organization
BIA	-	Bandaranaike International Airport
CAASL	-	Civil Aviation Authority of Sri Lanka
CAMO	-	Continuing Airworthiness Management Organization
CAT	-	Commercial Air Transport
CFI	-	Chief Flight Instructor
CPC	-	Ceylon Petroleum Corporation
CPL	-	Commercial Pilot Licence
CRS	-	Certification for Release to Service
DGCA	-	Director General of Civil Aviation
DME	-	Distance Measuring Equipment
ETD	-	Estimated Time of Departure
FAA	-	Federal Aviation Administration
FCL	-	Flight Crew Licence
FOM	-	Flight Operations Manual
Ft	-	Feet
FI	-	Flight Instructor
hrs.	-	hours
IR	-	Instrument Rating
IS	-	Implementing Standard
ITI	-	Industrial Technology Institute
Km	-	Kilometers
Kts	-	Knots
LT	-	Local Time
MSN	-	Manufacturers Serial Number
NAV	-	Navigation
NM	-	Nautical Miles
NTSB	-	National Transportation Safety Board
PIC	-	Pilot in Command
POB	-	Passengers on Board
RH	-	Right Hand
RPM	-	Revolution per minute
SCT	-	Scattered
SEP	-	Single Engine Piston
SLAF	-	Sri Lanka Air Force
SLCAD	-	Sri Lanka Civil Aviation Directive
SLCAP	-	Sri Lanka Civil Aviation Publication
SLCAIS	-	Sri Lanka Civil Aviation Implementing Standard
S/W	-	Surface Wind



STC	-	Supplemental Type Certificates
UTC	-	Coordinated Universal Time
VCBI	-	Bandaranaike International Airport, Katunayake, Sri Lanka
VCCC	-	Colombo International Airport, Ratmalana, Sri Lanka
VCKK	-	Koggala Airport, Sri Lanka
VCCS	-	Sigiriya Airport, Sri Lanka
VFR	-	Visual Flight Rules
VOR	-	VHF Omini Range
VHF	-	Very High Frequency





**Aircraft Accident of Sakurai Aviation Limited, Cessna 172L Skyhawk  
bearing registration mark 4R-GAF crash landed at Kimbulapitiya, Negombo,  
Sri Lanka on 27<sup>th</sup> Dec 2021**

**SYNOPSIS**

4R-GAF, Cessna 172L single engine aircraft operated by Sakurai Aviation Ltd was scheduled to operate as a charter passenger flight on 27<sup>th</sup> Dec 2021 as below;

- I. Colombo International Airport, Ratmalana (VCCC) to Sigiriya Airport (VCCS)
- II. Sigiriya Airport (VCCS) to Koggala Airport (VCKK)
- III. Koggala Airport (VCKK) to Colombo International Airport, Ratmalana (VCCC)

The charter flight was planned to operate from VCCC to VCCS to accommodate two passengers from VCCS and proceed to their destination, VCKK. Then it was planned to proceed to the final destination at VCCC after refueling at VCKK.

As per the ATC flight plan submitted to ATC Tower, VCCC on 26<sup>th</sup> Dec 2021, the ETD was 1145 hrs (LT) and later ETD was advanced by 30 minutes on 27<sup>th</sup> Dec 2021. The flight had departed VCCC at 1115 hrs (LT) to proceed VCCS as a charter VFR flight with two onboard (the PIC and the other occupant).

Two passengers (male and female of foreign nationals) were boarded to the aircraft at VCCS and the flight had departed at 1304 hrs (LT) with total four onboard.

As per the PIC, the aircraft had encountered an engine RPM fluctuation and subsequent engine failure. Although the flight plan destination was to VCKK, the aircraft had approached runway 22 at VCBI for an emergency landing. While approaching to VCBI, the PIC had declared “MAYDAY” and crash landed in a paddy field at Paththeyam Watta, Kimbulapitiya, Negombo at approx. 1352hrs (LT).

**1 FACTUAL INFORMATION**

Air Operator	:	Sakurai Aviation Ltd No, 118, Airport Road, Ratmalana, Sri Lanka.
Registered Owner	:	Capt. Gihan Anoma Fernando No 5A, Rock Wood Place, Colombo 07, Sri Lanka.
Aircraft Make	:	Cessna Aircraft Company
Aircraft Model	:	Cessna 172 L Skyhawk
MSN	:	17259798
Aircraft Nationality	:	Sri Lanka (4R)
Aircraft Registration mark	:	4R-GAF
Persons On Board (POB)	:	04 (Pilot in Command, other occupant and two passengers)
Place of Accident	:	Paththeyam Watta, Kimbulapitiya, Negombo, Sri Lanka
Type of Operation	:	Domestic Charter – Passenger
Date and Time	:	27 <sup>th</sup> Dec 2021; approx.1352hrs (LT) /0822 UTC
Local time zone	:	+ 0530hrs





### 1.1 History of Flight

Cessna 172L aircraft of Sakurai Aviation Ltd, bearing nationality & registration mark 4R-GAF was scheduled for a charter flight from VCCC –VCCS –VCKK- VCCC on 27<sup>th</sup> Dec 2021 as per the ATC flight plan.

The flight had departed VCCC with the PIC and the other occupant at approx. 1115 hrs (LT) to VCCS to accommodate two passengers (foreign nationals) who were expecting to travel from VCCS to VCKK.

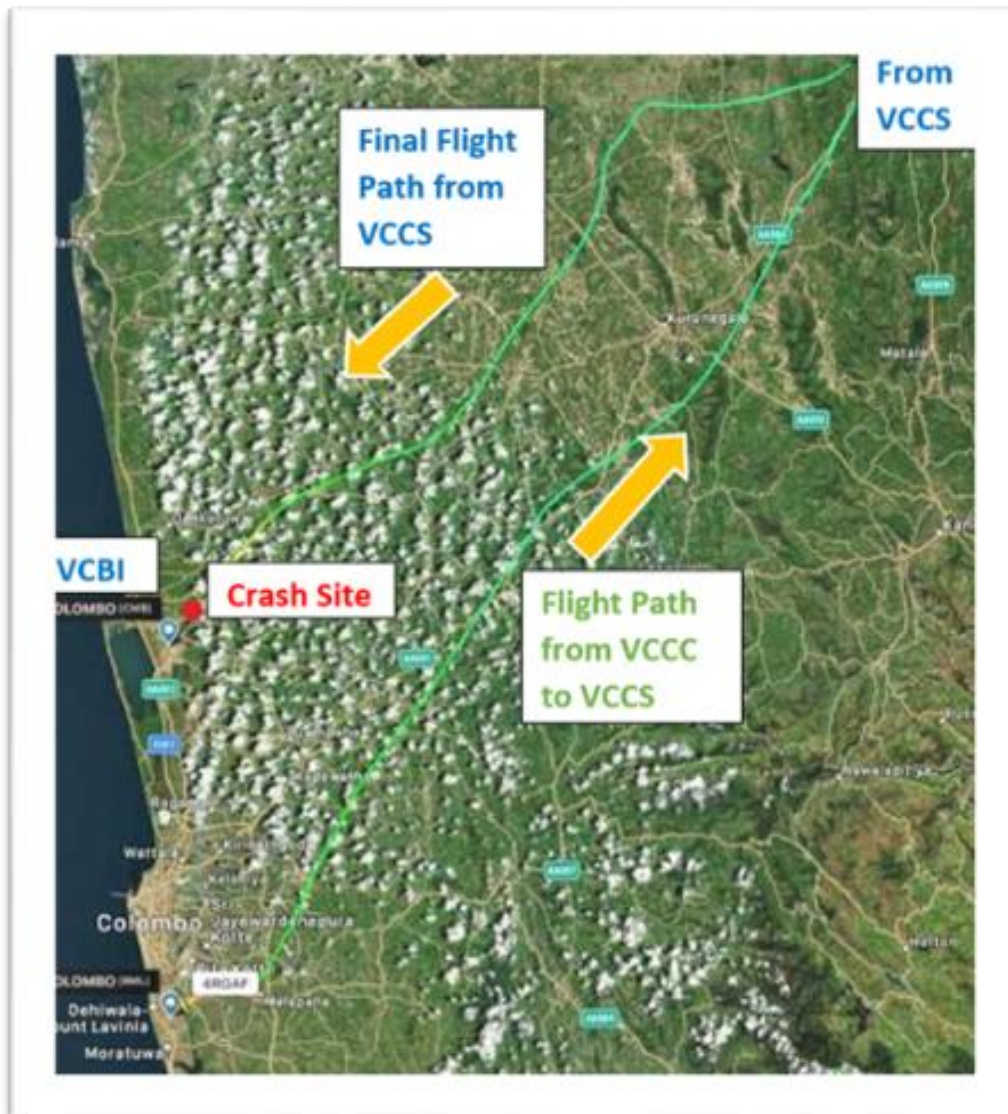


Figure 01: Flight Path (source: Radar 24)



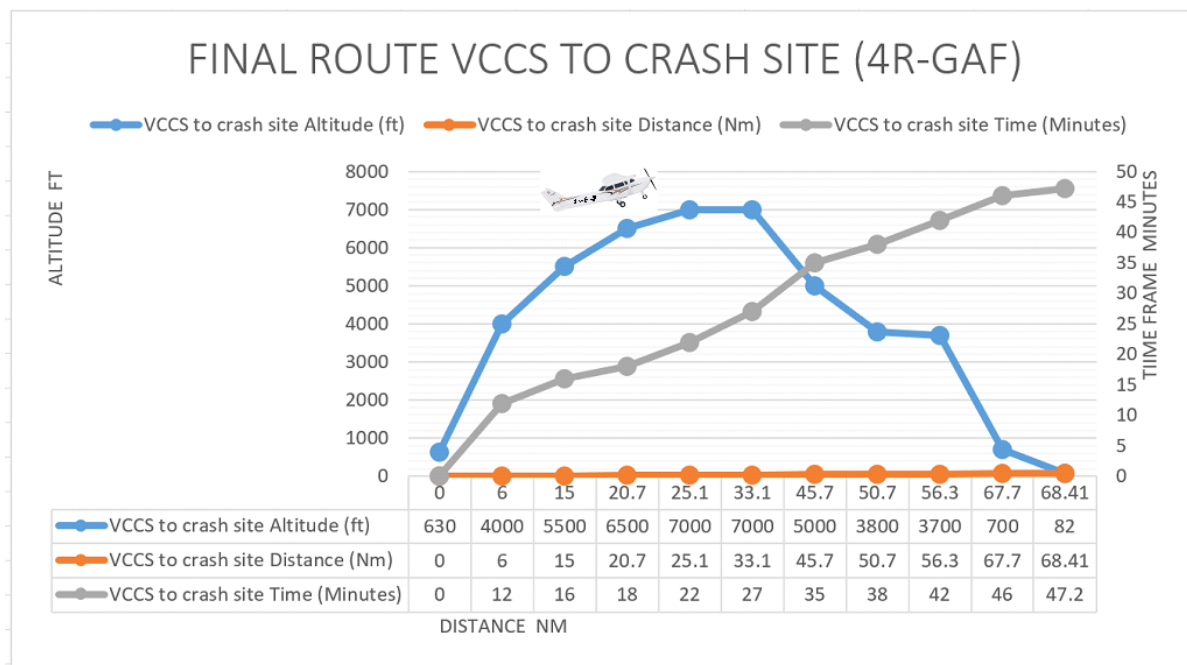


Figure 02: Final route from VCCS to crash site

At approx. 1304 (LT) hrs, 4R-GAF had departed VCCS with total four on board to proceed VCCK. During enroute to VCCK, the PIC had reported a technical problem to the Colombo Approach Control Centre while descending from 5000ft to 3500 ft. Subsequently, he had reported a partial engine failure at approx. 1341hrs (LT). The PIC had informed his intention to land at VCBI or else to carry out an emergency landing at a suitable place. The Controller at Colombo Approach Control Centre had advised the availability of both runways for landing at VCBI. The PIC had accepted runway 22 and informed that MAYDAY will be declared if necessary.

During further descending, the PIC had informed the controller that he had no control over the engine power. The Colombo Approach controller had transferred the flight to BIA Aerodrome tower controller at approx. 1346hrs (LT) and the Aerodrome Tower controller had cleared runway 22 for landing. While on final approach to runway 22 -VCBI, the PIC had initiated a “MAYDAY” call and crash landed in a paddy field, at Paththeyam Watta area in Kimbulapitiya, Negombo, Sri Lanka at approx. 1352 hrs (TL).

## 1.2 Injuries to Persons:

Injuries	Crew	Passengers	Others
Fatal	-	-	-
Serious	-	01(Female)	-
Minor/None	01	01	01*

Note: 01\* - the other occupant who was in a control seat.

### 1.3 Damage to Aircraft:

The aircraft sustained substantial damages to the RH main landing gear, the landing gear attachment structure and fuselage, propeller, engine mounts and cowlings.



Figure 03: Wreckage of 4R-GAF



Figure 04: Wreckage of 4R-GAF

#### 1.4 Other damage:

There was no other damage.

#### 1.5 Personnel Information:

##### 1.5.1 Flight Crew (Pilot-In-Command)

Licence	:	Valid CPL (CAASL-72-A-10303) issued by the DGCA, Sri Lanka;  Initial issue: 25 <sup>th</sup> June 2014 and valid till 31 <sup>st</sup> March 2023
Last Pilot Proficiency Check	:	Last PPC check for C- 172 on 11 <sup>th</sup> March 2021 and lapsed on 11 <sup>th</sup> Sep 2021.
Aircraft Ratings	:	SEP(Land) IR(A) FI(A)
Last Air Crew Medical date	:	03 <sup>rd</sup> Nov 2021 and valid till 06 <sup>th</sup> Nov 2022
Age and Gender	:	31 Years, Male

##### 1.5.2 Other Occupant

Licence	:	CPL (CPL/A/881) issued by the DGCA, Sri Lanka;  Initial issue: 31 <sup>st</sup> Dec 2015 and valid till 26 <sup>th</sup> Jan 2022
Last Pilot Proficiency Check	:	No PPC
Aircraft Ratings	:	C-172 (Last Skill Test was on 20 <sup>th</sup> Aug 2020 and valid till 26 <sup>th</sup> Jan 2022)
Last Air Crew Medical date	:	27 <sup>th</sup> Jan 2021 and expires on 26 <sup>th</sup> Jan 2022
Age and gender	:	27 Years, Female



## 1.6 Aircraft Information

Type and Model	:	Cessna 172L Skyhawk	
Year of Manufacture	:	1971	
Manufacturer's Serial No	:	17259798	
Certificate of Registration	:	No 327, Registered in Sri Lanka Civil Aircraft Register and valid up to 20 <sup>th</sup> Oct 2022	
Certificate of Airworthiness	:	No 290, Issued by the CAASL and valid up to 23 <sup>rd</sup> Aug 2022.	
Total Airframe Hours	:	4310.3 hrs (as at 27 <sup>nd</sup> Dec 2021)	
Engine	:	Single engine	
		Model:	Lycoming 0-320-E2D
		Serial Number:	RL-2868-27E
		Total Hours:	1490.3 hrs (as at 27 <sup>th</sup> Dec 2021)
		Fitted on:	26 <sup>th</sup> May 2016
		<i>Note: This engine was rebuilt from Lycoming engines, 652 Oliver St. Williamsport, PA 17701</i>	
Propeller		Model:	1C160/CTM7553
		Serial Number:	710850
		Total Hours:	1490.3 hrs (as at 27 <sup>th</sup> Dec 2021)
		Fitted on:	26 <sup>th</sup> May 2016
Type of fuel used	:	MOGAS (30%) AVGAS and (70%) 92 Octane Petroleum as per Petersen Aviation STC	
Type of engine oil used	:	Aeroshell W100 plus	
Fuel capacity	:	Total 42 US gal., usable 38 US gal.	
Weight & Balance	:	There was no evidence on weight & balance calculations.	



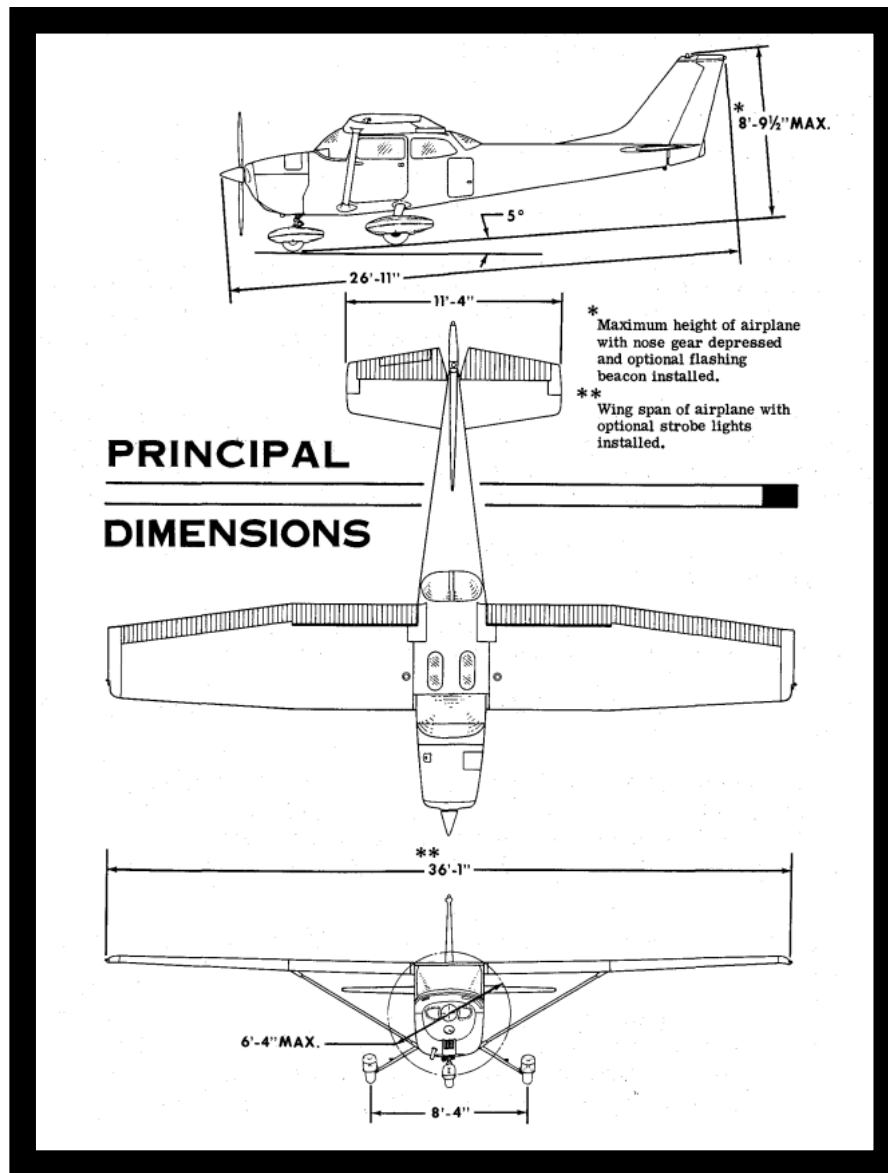


Figure 05: 4R- GAF three view layout (Cessna 172 L Skyhawk)

### 1.7 Meteorological Information:

The meteorological information given to the flight at respective ATC Towers were as follows;

VCCS	Surface wind: 060 <sup>0</sup> 5-8Kts; Visibility: 10 Km; Weather: Partially cloudy Clouds: Scattered 2600 Temperature: 31 <sup>0</sup> C QNH: 1011
VCBI	Surface wind: 120 <sup>0</sup> 4Kts; Varying between 070 <sup>0</sup> to 170 <sup>0</sup> Visibility: 10 Km; Weather: No significant weather Clouds: Sky clear Temperature: 33 <sup>0</sup> C Dew point: 18 QNH: 1012



### 1.8 Aids to Navigation:

As the aircraft was flying according to visual flight rules, the requirement to use NAV aids does not exist, however on route to destination the KAT-VOR/DME was available.

### 1.9 Communication:

As per the evidence, aircraft VHF communication units were functioning. The aircraft had communicated via VHF with relevant ATC Units. At the time of the engine failure, the PIC was in communication with Colombo Approach Control Centre and during final approach the control had been handed over to BIA Aerodrome Control Tower prior to the crash.

	ATC Sector	Frequency (MHz)
First Sector (VCCC- VCCS)	Ratmalana Aerodrome Control Tower	119.1
	Colombo Approach Control Centre	132.4
	Sigiriya Tower	118.9
Second Leg (VCCS- VCBI)	Sigiriya Tower	118.9
	Colombo Approach Control Centre	132.4
	BIA Aerodrome Control Tower	118.7

### 1.10 Aerodrome information/Landing area:

The aircraft had carried out a crash landing in a paddy field located at Paththeyam Watta, Kimbulapitiya, Negombo located in Gampaha District in Sri Lanka. There were prominent ground marks was visible in the rice paddy.

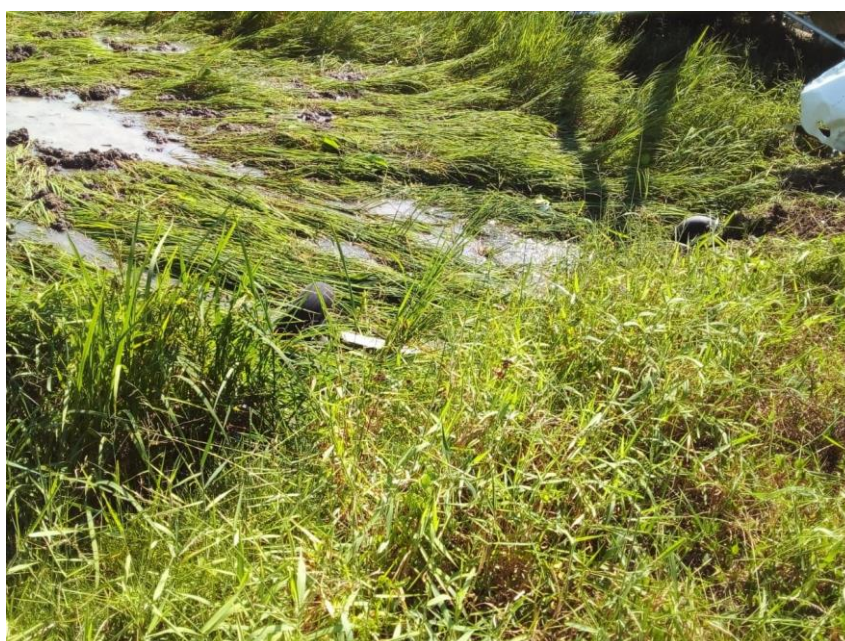


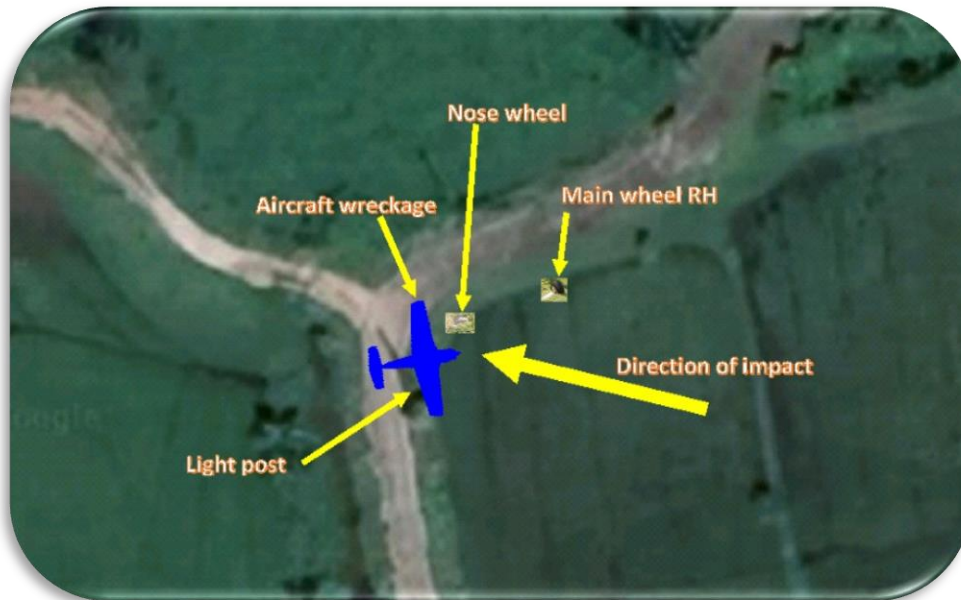
Figure 06: Landing area at Paththeyam Watta, Kimbulapitiya

### 1.11 Flight Recorders:

Not Applicable

### 1.12 Wreckage and impact information:

The aircraft had crash landed on a paddy field. The nose wheel and right-hand main wheel had been separated and fallen in the crash site at distance from 13m and 38m from the aircraft. A Prominent ground marks were visible after landing in the rice paddy.



*Figure 07: Landed area Paththeyam Watta at Kimbulapitiya*



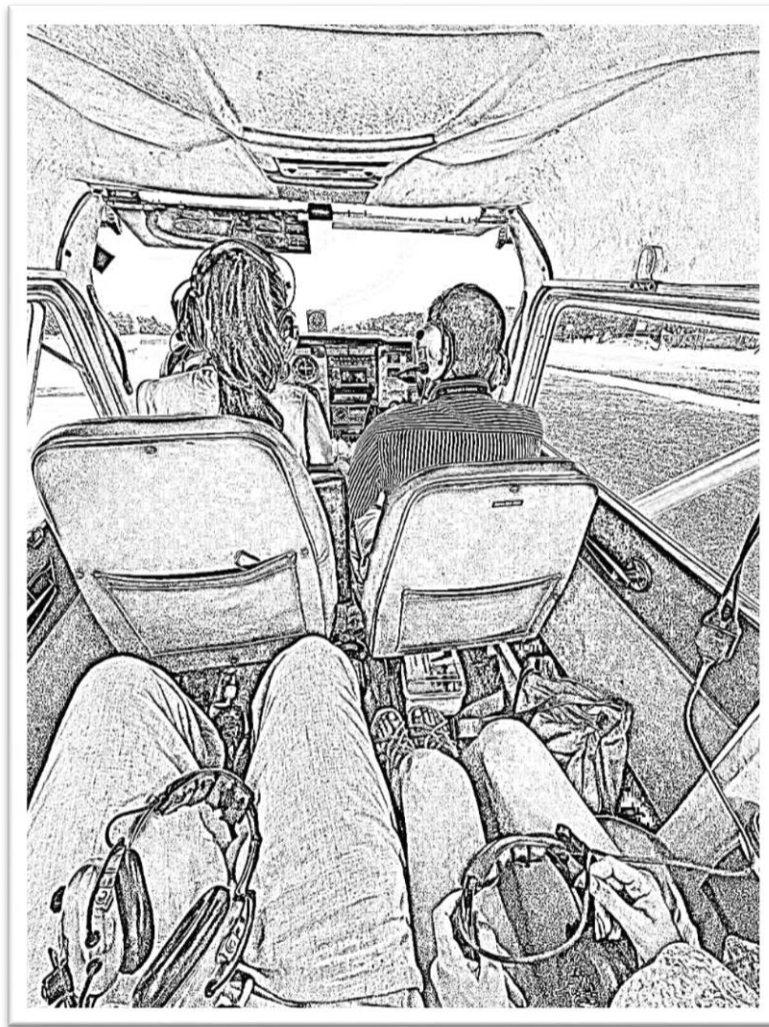


*Figure 08: Wreckage distribution chart*

### 1.13 Survival aspects:

There were three persons had been transferred to the Negombo General Hospital due to injuries except the male passenger.

With respect to the seating arrangements, other occupant was seated in L/H control seat whereas the male passenger was seated behind that seat. The female passenger who was injured was seated behind the R/H control seat which was occupied by the PIC.



*Figure 09: Seating View*

#### 1.14 Test and Research:

On-site inspection at crash site was carried out by the CAASL team shortly after the accident. Furthermore, two magnetos and carburetor of the Engine were sent to the NTSB for detailed examination & testing.

The fuel sampling tests were conducted by Ceylon Petroleum Cooperation of Sri Lanka (CPC) and Industrial Technology Institute (ITI) of Sri Lanka to check & determine the contamination and standards of the fuel used.

A detail inspection of aircraft wreckage, controls and engine were carried by the Investigation Board.

#### 1.15 Organizational and Management Information:

##### 1.15.1 The Air Operator

Sakurai Aviation Ltd is an AOC holder. The initial AOC was issued on 09<sup>th</sup> February 2017 and had renewed annually. It had been operated with One Cessna 172 aircraft and One R66 helicopter.

The Accountable Manager (AM), Head of Operations (HOO), Safety Manager (SM) and Quality Manager (QM) have been nominated as approved post holders according to the ANR of 1955 and SLCAP 4100.

#### 1.15.2 The Air Traffic Services Providers

Airport and Aviation Services (Sri Lanka) (Private) Limited (AASL) is the appointed Statutory Service Provider to provide Air Traffic Services, as per the Civil Aviation Act No, 14 of 2010. The Colombo Approach Control Centre, Ratmalana Aerodrome Control Tower and BIA Aerodrome Control Tower are operated by AASL.

Whereas, ATC Tower at VCCS Airport (which is a military airport) managed by SLAF.

## 2 ANALYSIS

### 2.1 Flight Documents

On reviewing the flight documents which were on board, the following were discovered;

- The Altitude as per the ATC flight plan was 3500ft which was the planned direct route and single flight plan was filed for all three sectors which had been accepted and disseminated by the AIS.
- The weight & balance sheet was found belongs to 4R-HDC (Previous registration of 4R-GAF) which was not applicable for the particular flight and the date.
- The pink colour copy of the passenger manifest found onboard was supposed to be at the relevant Airport (VCCS) for the 2<sup>nd</sup> sector (VCCS to VCKK). It included the names of two passengers. The yellow colour copy was not found on board.
- A trainee dispatcher had signed the passenger manifest and the PIC's name and signature was not in the passenger manifest.
- There was no dispatch release found on board.
- The ADC form submitted by the Air Operator indicated that the other occupant as a "pilot".
- The aircraft insurance policy was valid for one year with effect from 18<sup>th</sup> Dec 2021. The legal liability limit for a passenger provided in the Insurance Policy found on board 4R-GAF was inadequate and not in compliance with the Directive on "Limits of Liability & Insurance Requirements for Aircraft Operators" ref SLCAD 18 issued by the DGCA on 7<sup>th</sup> Oct 2021.
- There were discrepancies in items included in the laminated checklist with respect to the Owner's Manual which was on board. In addition, the pages of the onboard Owner's Manual were not in order.

In addition to the above,

- a copy of Ops Specs (certified as a true copy)
- a certified copy of the lease agreement
- the Flight Operations Manual
- the Aircraft Journey and Technical Log (AJTL)

Which are to be carried on a Sri Lankan Registered Aircraft within or outside the territory of Sri Lanka as stipulated in Chapter 10A.20 of Sakurai Aviation Ltd FOM and Appendix 1 of Implementing Standard SLCAIS 020 were not found on board the flight. This revealed that the PIC had not checked the flight documents when accepting the flight.

## 2.2 Pre-flight checks

During the investigation, the PIC stated that he had carried out the pre-flight checks and fuel quantity except the fuel drain at VCCC & VCCS. However, the fuel drain was a part of the preflight checks, which was required to be carried out prior to each flight by the PIC, as per the Section 1 of the Owner's Manual.

This aircraft had used the MOGAS which was a mixture of 30% AVGAS (Aviation gasoline) + 70% 92 Octane Petroleum (Automotive gasoline) as per the Petersen Aviation auto fuel STCs approved by the FAA. According to the Petersen Aviation STC instructions, it is required to Review procedures outlined in the owner's manual for dealing with carb ice and also, consult the probability charts during preflight planning which is required to be carried out prior to each flight by the PIC.

Further, as per the Chapter 10A, 2.5 fueling procedure of Sakurai Aviation Ltd FOM, no mixing of fuel is permitted for Sakurai commercial passenger operations.

The Authorized Engineer (Head of Engineering) had not performed the aircraft empty weight calculation which was a task related to the Engineering change order no SLA/172/GAF/02 planned on particular day (27<sup>th</sup> Dec 2021). This action has invalidated the Certificate of Airworthiness issued to 4R-GAF, according to the special conditions applicable to continuation of Airworthiness of Aircraft listed in item "b (vi)" of the Certificate of Airworthiness.

Furthermore, it was found that the aircraft had operated from VCCS without a valid Certificate of Release to Service. It was a mandatory requirement as per Chapter 10A.1.14 of Sakurai Aviation Ltd FOM.

## 2.3 Security Procedures

The PIC and the other occupant had not undergone the security screenings procedures at VCCC.

Furthermore, the passengers were not under gone the security screening procedures at VCCS as required by Part A of Chapter 12 of the Sakura Aviation Ltd FOM. Such action could have adversely affected to the aviation security.

## 2.4 Weight and Balance analysis

The PIC stated that he had not carried out the weight & balance calculations and performance calculations for the flights from VCCC and VCCS, prior to each flight. Which was a requirement given in Chapter 2.3.2 (q) (iii) and Chapter 10A. 1.7 (b,c,d,e,f,g) of Part A of the Sakurai Aviation Ltd FOM.

The weight & balance calculations were carried out by the Investigation Board, using the basic empty weight of the aircraft which was calculated in 2016 (Since there was no current valid weight & balance), the total fuel weight as per the technical log, two passengers' weight as per the passenger manifest and the actual body weights of the PIC and the other occupant from the last medical records available at the CAASL.

All calculations were carried out by using the weight & balance chart and graph given in the Owner's Manual, data from Air Crew Medicals, Passenger Manifest and other sources. Since the scheduled aircraft weighing as per the engineering change order no SLA/172/GAF/02 was



not carried out before the flight, the value of previous basic empty weight was used for this table for calculations.

As per the weight and balance graph, the Centre of Gravity (CG) value is 101 and the loaded moment was remained within the limits of (CG) defined by the Manufacturer.

Cessna 172L (4R-GAF)		AIRPLANE DETAILS	
WEIGHT & BALANCE		Weight (lbs.)	Moment (lb. -ins. /1000)
1. Licensed Empty Weight (Sample Airplane) . . .		1366.7	51.7
2. Oil (8 qts. - Full oil may be assumed for all flights) . . . . .		15	-0.2
3. Fuel (Standard - 38 Gal at 6#/Gal) . . . . .		186	10.9
Fuel (Long Range - 48 Gal at 6#/Gal) . . . . .			
4. Pilot and Front Passenger (Station 34 to 46) . . .		232	12.6
5. Rear Passengers . . . . .		330.7	24.8
6. Baggage (or Passenger on Child's Seat) (Station 82 to 108) . . . . .		88	1.2
7. TOTAL WEIGHT AND MOMENT		2218	101
8. Locate this point (2300 at 101.0) on the center of gravity moment envelope and since this point falls within the envelope, the loading is acceptable.			

Figure 10- Weight & Balance Chart – Cessna 172L (4R-GAF)

### Weight & Balance Graph – Cessna 172L (4R-GAF)

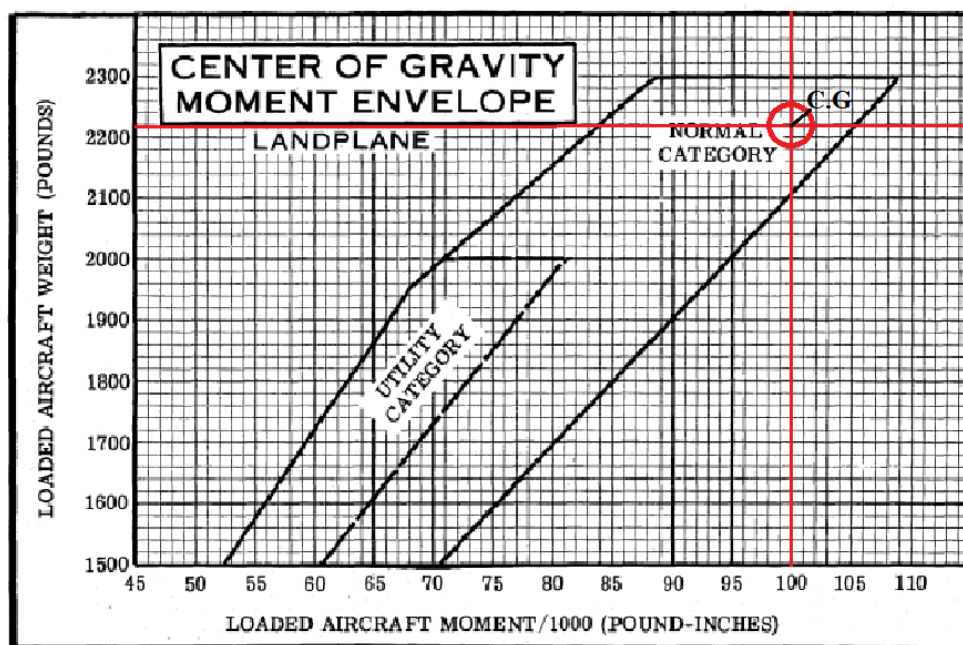


Figure 11: Weight & Balance chart, graph

## 2.5 Flight Dispatch

The flight was dispatched without a dispatch release at VCCC by a trainee dispatcher who had no Flight Dispatcher Licence issued by the DGCA. The relevant flight dispatch documents were signed by the trainee dispatcher. It was found from the statements given by the licenced Flight Dispatcher of the Air Operator that he had attended to other duties at that time.

The trainee dispatcher had one month experience in Sakurai Aviation Ltd and had been working under the supervision of the licenced Flight Dispatcher.

## 2.6 Subject flight

The PIC stated that during descend close to 5000 ft the aircraft engine was getting a bit of rough and then he had observed the engine rough running with the RPM fluctuation while descending further from 5000ft to 3500ft during enroute from VCCS (Approximately 1339hrs, area west of Kurunegala, Sri Lanka - Please refer *Figure 01: Flight Path -source: Radar 24 and Figure 13*).

As per ATC records, the PIC had initially reported a “small technical error”, subsequently “partial engine failure” and finally “no control of the power” to the Colombo Approach Control Center. While passing 3700 ft, the PIC had informed the controller that the engine was intermittent and he had no control over the engine power.

The PIC had used carb heat three times to control the engine rough running. During first two attempts the engine had responded to carb heat (RPM recovered around 2000), However, during the continuous descend with the Engine RPM fluctuation he was unable to restore the Engine power. The PIC had informed his effort to do an emergency landing to VCBI and his intention to carry out a force landing at the suitable place, if he cannot make it to VCBI. After he had reported a loss of Engine power. The Colombo Approach Control Center had transferred the flight to BIA Aerodrome Control Tower at approximately 1346hrs. The duty controller at the BIA Aerodrome Control Tower had cleared the aircraft for landing for runway 22. While on final approach to runway 22, the PIC had initiated a “MAYDAY” call, (approx. after 6 minutes of informing “no control of the power”) on short final to runway 22. Aircraft crash landed at approx. 1352 hrs (TL) on a paddy field, in Paththeyam Watta area in Kimbulapitiya, Negombo, Sri Lanka.

## 2.7 PIC's Competency

According to the Training Records, the PIC had not carried out Pilot proficiency checks (PPC) as required in Section 4.4.1 of the Implementing Standard SLCAIS 018. Thereby, he has not completed the recurrent training on normal, abnormal and emergency procedures given in Chapter 1.1.3 and 1.2.3(a) of Part D of Sakurai Aviation Ltd FOM.

It was evident that the PIC, had not fulfill his responsibilities as stipulated in the Sakurai Aviation Ltd FOM, applicable Implementing Standards & ANR of 1955 and had not enough knowledge on the Manufacturers' Owner's Manual.

## 2.8 Other Occupant

The other occupant who was onboard this flight from VCCC was a CPL holder and a ground instructor of the ATO of Sakurai Aviation Ltd.

The ADC form completed and submitted by the Air Operator to SLAF-ADCC had declared the other occupant as a “pilot”. However, the other occupant was not appointed as a “Pilot” under the AOC of the Sakurai Aviation Ltd and she had no valid PPC and currency for the type at the time of the accident.

Further, she was not included in the passenger manifest as a passenger. Hence, she was neither the crew nor the commercial passenger for this flight.

As per the ATC transcripts of the First Sector from VCCC to VCCS and the second Sector from VCCS, it was evident that the other occupant had handled the RT communication including start-up, taxi and take off clearances, in which she was not authorized to do so.

## 2.9 The Charter Flight

The Air Operator had scheduled & planned a charter flight from VCCC to VCCS to accommodate two passengers and to proceed to VCCK.

The PIC had verbally given instructions to the licenced Flight Dispatcher to amend the relevant documents as other occupant name was not there in the first ADC form.

According to the evidence, the PIC had occupied the right-hand seat and the other occupant had occupied the left-hand seat from the sector commenced from VCCS. Pursuant to the Section on “weigh & Balance” given in the Owner's Manual found on board requires the PIC to be occupied in left-hand seat as the aircraft being a single pilot operated aircraft.

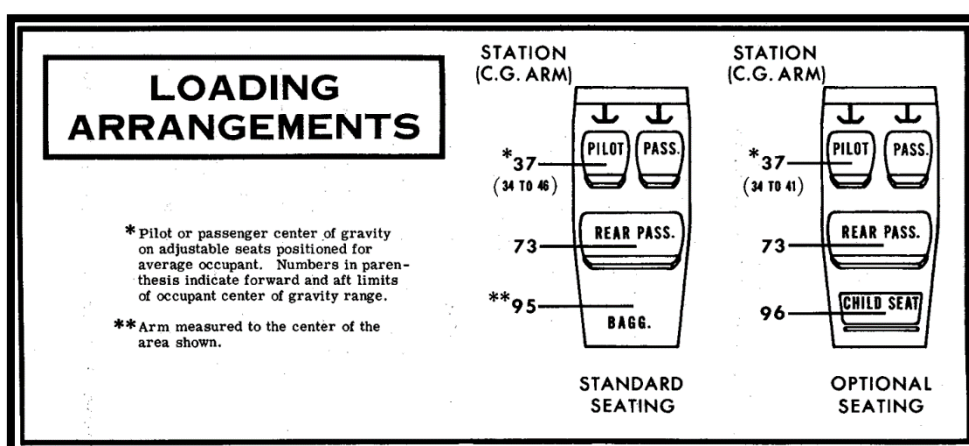


Figure 12: Loading Arrangement given in the Owner's Manual

Furthermore, as per the Regulations, the control seats of an aircraft equipped with fully functioning dual controls shall not be occupied in flight except by pilots, who are licenced in respect of the type of aircraft and the class of operations in which the aircraft is flown or who hold such other licences, endorsements and ratings, and are authorized by the DGCA.

## 2.10 Flight path deviation

As per the Radar image from AAC and Flight Radar 24, the 4R-GAF aircraft heading out of VCCS was observed to be not on the direct track towards its intended destination, VCCK as



per the flight plan. This deviation was further revealed from the interviews conducted with flight dispatch officers and the Air traffic controller.

During the interviews, the PIC stated that the reasons for the deviation was to avoid turbulences due mountain waves. The controller's statement stated that he noticed a 5NM deviation initially from the track. It was observed that the duty controller had not timely observed the traffic scenario to identify that there was a significant deviation of track, and to inquire from the aircraft as to why they were deviating off track. The PIC had also not made any attempt to inform the duty controller that they are deviating off track.

However, neither the PIC nor the Controller had verified the reasons for the deviations at any instances. Deviations of this nature can be a serious threat to the flight safety and the national security.

### 2.11 Notification of technical issue of the aircraft

As per the ATC records;

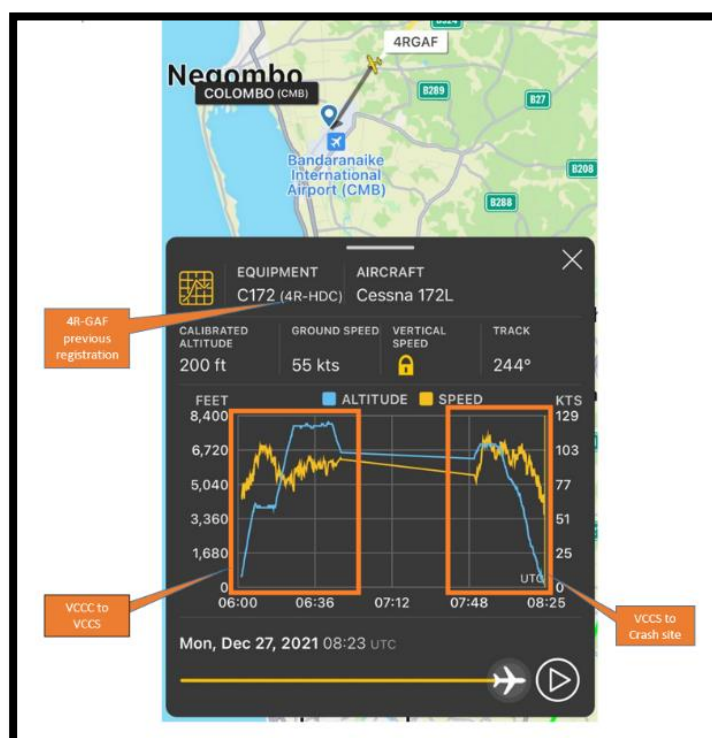
The other occupant had requested 9500ft from ATC before take-off from VCCS. On contacting Colombo Approach Control Center, the PIC had requested to maintain 7000ft, and then requested to descend and maintain 5000ft. At 1339 hrs (LT), the PIC informed the Approach Control "a small technical problem "and requested to further descend from 5000ft to 3500ft.

As per the PIC's statements;

He stated that close to 5000 ft the aircraft engine was getting a bit rough. He further stated that the issue continued during descend from 5000 ft to 3500ft.

As per the Eyewitness (Passenger) statements;

It was probable that the technical issue of the aircraft had started 35 minutes after take-off from VCCS.



(Note\*: 4R-HDC is the old registration of the 4R-GAF)

Figure 13: Altitude vs Speed chart (source: Radar 24)



### 2.12 Air Navigation Services

In respect of this accident, transferring of the distress aircraft from Colombo Approach Control frequency to the BIA Aerodrome Control Tower frequency (on finals to VCBI), whilst the tower controller did not have the sight of the aircraft in distress to better provide any other assistance, is a situation that should have been avoided. Further the risk of losing radio contact, during the transfer of communications from one frequency to another, is a factor which should have been considered before initiating the transfer of communication.

According to ICAO Annex 10 volume 2 distress (Mayday) and urgency (Pan-Pan) traffic shall normally be maintained on the frequency on which such traffic was initiated until it is considered that better assistance can be provided transferring that traffic to another frequency. In this type of scenario, it would have been advisable that aircraft was kept with the Colombo Approach Control frequency without transferring the aircraft to the BIA Aerodrome Control Tower frequency especially when the tower controller did not have the aircraft in sight.

### 2.13 Providing of information to Security authorities

The Air Operator had included an unauthorized person as a “pilot” and submitted to the SLAF via ADC form prior to commence the flight, which seems to be a loss of integrity towards the security authorities. In addition, as the other occupant had boarded the flight from VCCC without undergoing a proper Airport security screening procedure, her status for the flight had not been detected at the Airport Security.

### 2.14 Aircraft Fuel System:

The Fuel supplied to the engine from two tanks, one in each wing. The 4R-GAF was equipped with standard fuel tanks. The total usable fuel was 38 gallons (USG). Fuel from each tank flows by gravity to a selector valve. Depending upon the setting of the fuel selector valve, fuel from the left, right, or both tanks flow to a fuel strainer and carburetor to the engine induction system.



According to the PIC, he had placed the fuel selector valve to the "BOTH ON" position when departing VCCS and it was remained in that position until the accident. When the CAASL team arrived to the crash site, the fuel selector valve had been set to the "LEFT" position. The fuel selector valve in the aircraft is shown in Figure below.



*Figure 14: Fuel selector valve*

The wing tanks were opened and inspected. These were rigid removable fuel tanks which were attached to the inner surface of the wing. Each wing tank had two fuel outlets, one forward and one aft. During visual inspection, it was found the wing tanks were clean and the fuel outlets were appeared normal. The Fuel Tank Vent checked for any blockage and it was found free of obstacles.

## 2.15 Technical Documents

### 2.15.1 Aircraft Journey and Technical Log

It was found that the Aircraft Journey & Technical Log format used by the Air Operator was not in comply with the format given in the Chapter 10A.1.15 of Part A of Sakurai Aviation Ltd FOM.

There was no maintenance release issued at VCCS and the aircraft had operated out of VCCS without a Certificate of Release to Service (CRS) which is a mandatory requirement as per the paragraph 1.14 of Chapter 10A of Sakurai Aviation Ltd FOM.

### 2.15.2 Owner's Manual

The PIC stated that he had followed his own check list in the i-pad and not used the check lists which were on board. However, the Air Operator had not obtained approval from the CAASL to use Electronic Flight Bag as per the requirement stipulated in Section 7 of Implementation Standard SLCAIS-015.

## 2.16 Aviation Fuel

The Fuel approved by the engine manufacturer Lycoming through Service Instruction Number 1070AB, dated 08<sup>th</sup> April 2020, which has listed the fuels that can be used from the effective date for the Lycoming 0-320-E engine, authorizes the use of;

- Leaded Aviation Fuels,
- Unleaded Aviation Fuels and
- Automotive Fuels
- Unleaded MOGAS, provided it meets the specifications in ASTM D4814 and EN228.

However, Lycoming does not permit fuel containing ethanol to be used for their engines.

As per the records, this aircraft had been used MOGAS, a combination of 30% AVGAS (Aviation gasoline) + 70% 92 Octane Petroleum (Automotive gasoline) according to the Petersen aviation auto fuel STCs which was approved by FAA for non-CAT operations. The CAMO had not taken the STC acceptance from the CAASL.

Furthermore, mixing of fuel is not permitted for Sakurai commercial passenger operations as stipulated in the Chapter 10A, 2.5 on fueling procedure of the Sakurai Aviation Ltd FOM.

According to the evidence during the investigation, 4R-GAF aircraft had refueled by using Avgas de-fueled from 4R-ASE and 92 octanes Petroleum of automotive fuel (MOGAS). This was confirmed during the review of the fuel stock monitoring form maintained by AMO.

### 2.16.1 Testing of Fuel:

The following fuel samples were tested as a part of the investigation.

- A sample from 4R-GAF aircraft
- A sample from Lanka filling station, Ratmalana
- A sample from Drum 1 (Mogas)
- A sample from Drum 2 (Mogas)
- A sample from fuel cart (Avgas)

The fuel samples were tested by two independent facilities. As per the test reports there was no evidence of contamination.

## 3 OBSERVATIONS

- a) The aircraft had a valid certificate of Registration.
- b) The Air Operator had a valid AOC issued by the DGCA.
- c) The aircraft was maintained by an approved AMO and CAMO.
- d) The AMO and CAMO of the Air Operator had valid CAASL approvals.
- e) The PIC had a CPL issued by the DGCA.
- f) The Accountable Manager of the Air Operator was the Accountable Manager for Sakurai Aviation AMO, CAMO, ATO and the Head of Operations of the Organization.
- g) The center of gravity of the aircraft was within the prescribed limits according to the calculation done by the Investigation Board.
- h) There were navigation charts and other documents found on board not relevant to this aircraft.



## 4 FINDINGS

### 4.1 The PIC

- I. The PIC did not comply with the Regulation 223(2) (a) and (b) of Air Navigation Regulations of 1955 as he had flown almost three months without a valid operational Pilot Proficiency Check (PPC) as per the requirement stipulated in the Paragraph 4.4.1 of Implementing Standard SLCAIS 018, Chapter 9.4.4 of ICAO Annex 6 to the Convention and Chapter 6.4.1 of Sakurai Aviation Ltd FOM.
- II. The PIC had not completed the recurrent training on normal, abnormal and emergency procedures as per the Chapter 1.1.3 and 1.2.3a of Part D of Sakurai Aviation Ltd FOM.
- III. PIC had not complied with the Appendix 1 of Implementing Standard SLCAIS 020 by not carrying mandatory documents required to be on-board.
- IV. The PIC did not comply with his duties & responsibilities stipulated in Chapter 2, 2.3, Part A of Sakurai Aviation Ltd FOM, for commercial air transport operations as described below;
  - a. There was no evidence that the PIC had calculated the weight & balance, and performance calculation prior to the flight from VCCC and VCCS as required in Chapter 2.3.2 (q) (iii), Chapter 10A 1.7 (b, c, d, e, f, g) of Part A of Sakurai Aviation Ltd FOM.
  - b. PIC had not signed the passenger manifest of the Commercial Flight as per the Part A of Chapter 3.4 (d) of Sakurai Aviation Ltd FOM.
  - c. PIC had not checked the dispatcher documents when accepting the flight as per the Part A of Chapter 3.4 (d) of Sakurai Aviation Ltd FOM.
  - d. There were discrepancies in items included in the checklist (laminated) and the copy of the Owner's Manual which were on board. The pages of the copy of the Owner's Manual were not in order.
- V. It was evident that the PIC had followed his own check list in an i-pad. The Air Operator had not obtained approval to use Electronic Flight Bag as per the Section 7 of Implementation Standard SLCAIS 015 by the CAASL.
- VI. During the investigation it was found that the PIC had not followed the "rough engine operation or loss of power" emergency procedure as per the on-board manufacture's Owner's Manual (given in page 3-2 of the Owner's Manual).
- VII. The fuel drain checks had not been carried out by the PIC, which was a requirement as per the Operating Check List of Section 1 of the Owner's Manual.
- VIII. The PIC had not followed the security screenings procedures at VCCC and he had not ensured the security screening of passengers as required in Chapter 12.13 of Part A of Sakurai Aviation Ltd FOM.
- IX. The PIC had not adhered to the aircraft release procedure and had operated the aircraft out of VCCS without a Certificate of Release to Service (CRS) as per the Chapter 10A 1.14 of Sakurai Aviation Ltd FOM.
- X. The PIC had not occupied the left-hand seat throughout the commercial flight, whereas he was checked out as a commercial pilot in a left-hand seat. The reference is given in the Owner's Manual "Weight and Balance" Section.
- XI. The PIC had allowed other occupant who was occupied in Left hand seat to handle the Radio Telecommunication.
- XII. The PIC had changed the planned route without obtaining prior approval from the ATC Tower as required in Chapter 10A 1.8(b) of Sakurai Aviation Ltd FOM.





- XIII. The PIC had not declared the MAYDAY at the time of the distress of the single engine aircraft and he had declared MAYDAY at last moment just prior to the crash landing.
- XIV. The PIC had not carried out the performance calculation as per the Owner's Manual 'Operational data chart' in maximum glide data, in order to plan for the glide and emergency landing to a suitable field.

#### 4.2 The Other Occupant

- I. As a CPL holder, the other occupant who was declared as a "pilot" in the ADC Form and joined the flight, had not complied with the Regulation 223(2) (a) and (b) of Air Navigation Regulations of 1955.
- II. She had not gone through the security screenings at VCCC.
- III. As a CPL holder, she had not complied with the Part 2 of paragraph 4 (I) of Implementing Standard SLCAIS 50 and FCL.305 of Implementing Standard SLCAIS 72 issued by the DGCA.
- IV. The other occupant had carried out RT communications during flight which could have endangered the flight safety.
- V. She had occupied the left hand control seat.

#### 4.3 The Air Operator

- I. The Air Operator had not ensured the compliance to the Regulation 223(2) (a) and (b) of Air Navigation Regulations of 1955 by including the other occupant as a "pilot" in the ADC Form and allowing unauthorized person to travel in a Commercial flight.
- II. The Air Operator had not ensured the carrying out the Weight & Balance check prior to the departure from VCCC and VCCS.
- III. The Air Operator had not ensured the completion of Flight Documentation as per Sakurai Aviation Ltd FOM.
- IV. The Air Operator had not ensured the approved flight dispatching procedure as per Sakurai Aviation Ltd FOM.
- V. The Aircraft had been released for the flight without weighing after relevant maintenance task related to the Engineering change order no SLA/172/GAF/02
- VI. The aircraft was accepted without weight and balance checks and had been released without a flight dispatch release.
- VII. The Air Operator had not effective mechanism to check the licence validity and competency of the PIC.
- VIII. The Mass & Balance sheet found in the flight bag was not for the subjected flight.
- IX. The Air Operator's FOM does not specify that the Pilots to be in uniforms in CAT operations.
- X. The Air Operator had not complied with the Section 6. (a) of CAASL Directive on "Limits of liability & Insurance requirements for Aircraft Operators", SLCAD 18 issued by DGCA on 07<sup>th</sup> Oct 2021.
- XI. The aircraft had been used the MOGAS, a combination of 30% AVGAS (Aviation gasoline) + 70% 92 Octane Petroleum, which is a non-compliance to Sakurai Aviation Ltd FOM.



- XII. The aircraft had been refueled by using Avgas defueled from 4R-ASE to make MOGAS, which is a non-compliance to Sakurai Aviation Ltd FOM.
- XIII. There was no maintenance release issued at VCCS and no CRS issued at VCCS, which is a non-compliance to Sakurai Aviation Ltd FOM.
- XIV. The Air Operator had not arranged security screening process at VCCS.
- XV. The Air Operator, had no mechanism to brief Pilots during commercial operations and ensure strict compliance to applicable rules & regulations when cross utilized in commercial flights as evident by CFI of ATO who was the PIC in this particular flight had no concerns to regulatory requirements and approved procedures.

#### 4.4 Air Navigation Service Provider

- I. Transfer of communications should not have taken place from Colombo Approach Control Center to BIA Aerodrome Control Tower during the final stage of flight as the Aerodrome controller was not able to visually sight the aircraft in distress at the time of transfer.
- II. The deviation of flight track identified through the analysis, which was significant in nature, was not inquired by the duty controller.

### 5 SAFETY ACTIONS

A Safety Bulletin on Carburettor Icing Prevention was issued by DGCA to all AOC and ATO holders on 21<sup>st</sup> Feb 2022.

### 6 SAFETY RECOMMENDATIONS TO SAKURAI AVIATION LTD.

- I. The Air Operator shall establish a mechanism to check the pilot's competencies prior to each flight.
- II. The Air Operator shall ensure not to engage any other person in any activity which requires a licence, rating, certificate of competency or permit.
- III. The Air Operator shall ensure not to accept any aircraft for a flight in any un-airworthy condition.
- IV. The Air operator shall ensure that Pilots (PIC) to be occupied in left-hand seat in dual control flight in CAT operations.
- V. The Air Operator shall ensure that all docs to be carried onboard as stipulated in Chapter 10A.20 of Sakurai Aviation Ltd FOM and Appendix 1 of Implementing Standard SLCAIS 020.
- VI. The Air Operator shall ensure that the ATC flight plans are submitted with accurate details.
- VII. The Air Operator shall ensure that all commercial pilots to be in uniform and Sakurai Aviation Ltd FOM to be amended accordingly.
- VIII. The Air Operator shall ensure that the fuel draining is carried out by pilots prior to each flight.
- IX. The Air Operator shall ensure that the proper dispatch procedure is being practiced.
- X. The Air Operator shall ensure to comply with the Insurance Directive issued by the CAASL in terms of the third-party coverage.



- XI. Air Operator shall not use MOGAS for any CAT operations and shall ensure the use of fuel (not mixed fuel) as stipulated in Chapter 10A, 2.5 on fueling procedure of the Sakurai Aviation Ltd FOM.
- XII. The Air Operator shall ensure to implement a mechanism to brief Pilots during commercial operations and ensure strict compliance to applicable Implementation Standards & regulations by them.

## **7 SAFETY RECOMMENDATIONS TO ANSP, SAKURAI AVIATION LTD, THE PIC AND THE OTHER OCCUPANT (ALREADY ISSUED)**

### **7.1 Air Navigation Services Provider (ANSP) – (Issued on 25<sup>th</sup> Feb 2022)**

- I. Traffic In distress (MAYDAY) or an Urgency Situation (Pan-pan) shall be maintained on the frequency on which such traffic was initiated until it is considered that better assistance can be provided by transferring that traffic to another frequency.

In respect of this incident, transferring of the distress aircraft from Colombo Approach Control frequency to the BIA Aerodrome Control Tower Frequency, whilst the Tower Controller did not have the sight of the aircraft in distress to provide better assistance needed at that moment of time. Further the risk of losing the Radio Contact, during the transfer to another frequency is another factor which should have been considered before making such a decision.

### **7.2 The Air Operator (Issued on 25<sup>th</sup> Feb 2022)**

- I. Sakurai Aviation to cease the operation of entire fleet of aircraft until investigation is completed.
- II. Sakurai Aviation shall be responsible to issue strict guidelines to the flight crew to inform any form of track adjustment/deviation under any circumstances to the relevant Air Traffic Control Unit.
- III. Sakurai Aviation shall ensure to submit ATC Flight Plan with correct heights and crew details.
- IV. Sakurai Aviation shall ensure to submit Air Defence Clearance Form with approved crew of the particular flight.
- V. Sakurai Aviation to ensure all commercial pilots to be adhered with the requirements stipulated in the Implementing Standard 018 “compliance to Annex 6 – Part 1 - Aeroplane flight crew” on the validity of the ratings /competencies and Chapter 6.4.1 of Sakurai Aviation Ltd FOM.
- VI. Sakurai Aviation shall ensure that the Flight Dispatcher to assist and furnish information to the PIC prior to each flight.
- VII. Sakura Aviation shall ensure that all pilots to declare “MAYDAY” at the initial point when the PIC identified that the aircraft is in distress.
- VIII. Sakurai Aviation shall ensure that the Weight & Balance checks are completed at each destination and PIC to check the weight & balance sheet by considering possible last minute changes prior to release of the flight.

- IX. Sakurai Aviation shall ensure that relevant & current navigational charts are kept onboard and use of same by the flight crew during operations.
- X. Sakurai Aviation shall ensure that all crew and passengers to undergo security checks when boarding the aircraft.
- XI. Sakurai Aviation shall ensure whenever an aircraft is refueled, the Journey log entry shall be raised by an authorized AME/ authorized PIC certifying the fuel mixture used (if applicable) and/ or other fuel used (AVGAS).
- XII. Sakurai Aviation shall ensure to carry journey log on board on all flights.
- XIII. Sakurai Aviation shall ensure to train all pilots on normal, abnormal and emergency checklist procedures.
- XIV. Sakurai Aviation shall ensure to carry only passengers with the PIC in single pilot operations.
- XV. Once an aircraft is released by an authorized AME from the Main base, Sakurai Aviation shall ensure to issue a certificate of release to service (CRS) by an authorized AME or authorized PIC in all other sectors.

### 7.3 The PIC (Issued on 23<sup>rd</sup> Nov 2022)

#### Recommended trainings for the PIC

- I. Air Law examination, Implementing Standards (ISs) relevant to Commercial Air Transport Operation and licensing requirements.
- II. Duties and responsibilities of a PIC, including the procedures on Security, weight & balance and performance calculation as per the Flight Operations Manual (FOM) of the Sakurai Aviation Ltd.
- III. Aircraft release procedure specified in Sakurai Aviation Ltd FOM and the Implementing Standard, SLCAIS 080 (IS-M).
- IV. A comprehensive study of the Owner's Manual including Operating Check Lists, aircraft performance, weight & balance, loading arrangement and emergency procedures.
- V. Aviation Security training programme applicable to Flight Crew.
- VI. A training on normal, abnormal and emergency procedure as per the Part-D of FOM of the Sakurai Aviation Ltd with the DGCA nominated instructor.
- VII. Approved Safety Management System training.
- VIII. Refresh on all subjects in Air Transport Pilot Licence Knowledge Examinations
- IX. After completing above trainings/examinations an assessment to be conducted by the DGCA.

### 7.4 The Other Occupant (Issued on 23<sup>rd</sup> Nov 2022)

#### Recommended below trainings for the other occupant;

- I. Air Law examinations
- II. CPL holders responsibilities in Implementing Standards SLCAIS 50 and SLCAIS 72 related to Flight Crew Licensing.
- III. Approved Safety Management System training.
- IV. After completing above trainings/examinations an assessment to be conducted by the DGCA.