Republic of the Philippines
CIVIL AVIATION AUTHORITY OF THE PHILIPPINES

AIRCRAFT ACCIDENT INVESTIGATION AND INQUIRY BOARD

FINAL REPORT

RP-C2673
Cessna 152

OPERATOR: FLITELINE AVIATION SCHOOL, INC.

TYPE OF OPERATION: FLIGHT TRAINING

DATE OF OCCURRENCE FEBRUARY 10, 2024

PLACE OF OCCURRENCE: BARANGAY BARIHAN, MALOLOS, BULACAN, PHILIPPINES

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(Cessna 152, RP-C2673 Final Report)

FOREWORD

This report was produced by the Aircraft Accident Investigation and Inquiry Board (AAIIB), Civil Aviation Authority of the Philippines, MIA Road, Pasay City, Philippines.

The report is based upon the investigation carried out by the AAIIB in accordance with Annex 13 to the Convention on International Civil Aviation, Republic Act 9497 Section 42, and Philippine Civil Aviation Regulation Part 13.

Readers are advised that the AAIIB investigates for the sole purpose of enhancing aviation safety. Consequently, AAIIB reports are confined to matters of safety significance and may be misleading if used for any other purpose. It should be noted that the information in AAIIB reports and recommendations is provided to promote aviation safety, and in no case is it intended to imply blame or liability.

Furthermore, no part of the AAIIB report or reports relating to any accident or investigation shall be admitted as evidence or used in any suit or action for damages arising out of any matter mentioned in such report or reports.

FINAL REPORT

TITLE: A serious incident involving a Cessna 152 type of aircraft with Registry Number RP-C2673 owned and operated by Fliteline Aviation School, Inc that made a forced landing following a loss of power at Barangay Barihan, Malolos, Bulacan Philippines on February 10, 2024/1415H.

Notification of Occurrence to National Authority

The Notification of accident to AAIIB CAAP was relayed by the Operator of the aircraft at 1530H (LOCAL) on February 10, 2024.

Identification of the Investigation Authority

The Aircraft Accident Investigation and Inquiry Board (AAIIB), the mandated accident investigation organization within the Civil Aviation Authority of the Philippines (CAAP) as the state of Occurrence/Registry/ Operator conducted the investigation.

Organization of the Investigation

In accordance with provisions of Philippine Civil Aviation Regulation (PCAR) Part 13, an Investigator-In-Charge was appointed.

Authority Releasing the Report

The Final investigation report was released by Aircraft Accident Investigation and Inquiry Board (AAIIB) and published on the CAAP website on 2 April 2025.

Synopsis:

On 1415H, February 10, 2024, a Cessna 152 type of aircraft with Registry Number RP-C2673 made a forced landing following a loss of power at Brgy. Barihan, Malolos, Bulacan. On board was a flight instructor (FI) and a Student Pilot (SP). Both pilots sustained no injuries, and the aircraft also did not sustain any damage. The aircraft was operated by Fliteline Aviation School, Inc. The cause of the occurrence was attributed to Fuel exhaustion resulting to total engine loss of power.

LIST OF ACRONYMS AND ABBREVIATIONS

AAIIB	:	Aircraft Accident Investigation and Inquiry Board
AMO	:	Approved Maintenance Organization
ATOC	:	Aviation Training Organization Certificate
BRGY	:	Barangay
CAAP	:	Civil Aviation Authority of the Philippines
CPL	:	Commercial Pilot License
FI	:	Flight Instructor
IR	:	Instrument Rating
ME	:	Multi Engine
PPL	:	Pilot Private License
RPUX	:	Plaridel Community Airport
OFSAM	:	Office of the Flight Surgeon and Aviation Medicine
SE	:	Single Engine
VFR	:	Visual Flight Rules
VMC	:	Visual Meteorological Condition

1. FACTUAL INFORMATION

Registration No.	:	RP-C2673
Make and Model	:	Textron Aviation Inc, Cessna, C-152
Operator	:	Fliteline Aviation School Inc.
Address of Operator	:	Plaridel Airport, Lumangbayan, Plaridel, Bulacan Philippines
Date/Time of Occurrence	:	February 10, 2024 /1020H/0 UTC
Type of Operation	:	Flight Training
Phase of Flight	:	Descent
Type of Occurrence	:	Reciprocating engine-fuel starvation
Place of Occurrence	:	Barangay Barihan, Malolos, Bulacan, Philippines

1.1 History of Flight

On or about 1415H, February 10, 2024, a Cessna 152 type of aircraft with Registry Number RP-C2673 made a forced landing following a loss of power at Barangay Barihan, Malolos, Bulacan, Philippines. On board were a flight instructor (FI) and a Student Pilot (SP). Both pilots sustained no injuries, and the aircraft also did not sustain any damage. The aircraft was operated by Fliteline Aviation School Inc. Visual Meteorological Condition (VMC) prevailed at the time of the incident, and a VFR flight plan had been filed.

The incident occurred while the aircraft was returning from Subic International Airport on a cross-country navigation flight. The aircraft was descending to land at Plaridel Airport, Plaridel, Bulacan, Philippines when both pilots heard a sputtering sound from the engine. They noticed the engine RPM reducing, and eventually the

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engine lost its power. The FI took over the controls from the SP and attempted to restart the engine several times but to no avail. The FI decided to make a forced landing on a rice field at Brgy. Barihan, Malolos, Bulacan. The aircraft initially touched down on its main gears and continued to move forward for another 310 feet. The aircraft came to a complete stop in an upright position, with the final resting point located at 321 degrees and grid coordinates of 14°.871344 N and 120°.836634 E (Figures 1and 2).

Figures 1 and 2 - Aircraft's final resting position.

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1.2 Injuries to Person (s)

Injuries	Crew	Passengers	Others	TOTAL
Fatal	0	0	0	0
Serious	0	0	0	0
Minor	0	0	0	0
Missing	0	0	0	0
None	0	0	0	0

1.3 Damage to Aircraft

The aircraft did not sustained any damage.

1.4 Personnel Information

1.4.1 Pilot

Gender	:	Male
Date of Birth	:	04 June 1992
Nationality	:	Filipino
License	:	010700-CPL
Valid up to	:	31 December 2027
Type rating	:	Airplane: Single Engine Land C-152, C-172
Medical Certificate	:	Class I
Time on C152	:	550+ 00 Hours
Grand Total time	:	600+ 00 Hours

1.4.2 Student Pilot (SP)

Gender	:	Male
Date of Birth	:	08 April 2001
Nationality	:	Filipino
License	:	161979 SPL
Valid up to	:	31 December 2023
Type rating	:	Airplane: Single Engine Land C152, C-172, PA38-112
Medical Certificate	:	Class II
Time on C152	:	23+ 00 Hours
Grand Total time	:	23+ 00 Hours

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1.5 Aircraft Information

1.5.1 Aircraft Data

Registration Mark	:	RP-C2673
Manufacturer	:	Textron Aviation Inc
Country Of Manufacturer	:	United States of America
Type/Model	:	Cessna 152
Operator	:	Fliteline Aviation School
Serial No.	:	15281528
Date of Manufacture	:	1978
Certificate of Airworthiness Valid up to	:	23 September 2024
Certificate of Registration Valid up to	:	03 June 2024
Number of Crew	:	1
Number of Passenger Seat	:	2
Airframe Total Time	:	11,849+34 Hrs.

1.5.2 Engine Data

Manufacturer	:	Lycoming
Type	:	Piston
Model	:	0-235-L2C
Serial No.	:	L-13296-15
Time Since New	:	4,882+30 Hrs.
Time Since overhauled	:	242+18 Hrs.

1.5.3 Propeller Data

Manufacturer	:	Sensenich
Type/Model	:	72CK96-0-54
Serial No.	:	K11249
Time Since New	:	5,144+10 Hrs

1.6 Meteorological Information

Visual Meteorological Conditions prevailed at the time of the occurrence.

1.7 Aids to Navigation

The flight was carried out under Visual Flight Rules (VFR). Using VFR, the pilot must be able to operate the aircraft with visual references to the ground and visually avoid

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obstructions and other aircraft.

1.8 Communications

The aircraft was equipped with a standard radio transceiver, communications were carried out between the pilot and other aircraft within the area.

1.9 Aerodrome Information

Plaridel Community Airport (RPUX) is operated by the Civil Aviation Authority of the Philippines, and is listed in the CAAP approved aerodrome facility data as well the Philippine Aeronautical Information Publication.

1.9.1 General Information

Aerodrome Name	:	Plaridel Community Airport – RPUX
ARP coordinates and site at AD	:	145329.5445N 1205111.1410E.
Aerodrome Operator address, telephone, telefax, telex, AFS	:	Civil Aviation Authority of the Philippines Plaridel Airport, Plaridel 3004 Bulacan Province PHONE: (044) 795-0637 / (02) 879-9122 to 9125.
Types of traffic permitted (IFR/VFR)	:	VFR
AD category for fire fighting	:	CAT IV. One (1) fire truck - SIDES VMA28 and land rover.
Apron surface and strength		Surface: PCCP. Strength: Nil.
Taxiway width, surface and strength	:	Width: 9M. Surface: ASPH. Strength: Nil.
Aerodrome Obstacles	:	17/35 Trees and houses. Water tank, Meralco post Batching plant. Exercise caution during landing and take-off.
ATS Communication Facilities	:	Plaridel Control Tower
Frequency/Operation	:	122.4MHZ, 5447.5KHZ, 3834KHZ / 2300 - 0900
Airspace classification	:	Class B
Runway Direction	:	17/35
Runway Length	:	900 Meters
Runway Width	:	30 Meters
Surface	:	PCN 8 F/C/Y/U/ASPH

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1.10 Flight Recorders

The aircraft was not equipped with any flight recorders and existing CAAP regulation does not require it.

1.11 Wreckage and Impact Information

The aircraft initially touched down on its main gears and continued to move forward for another 310 feet. It came to a complete stop in an upright position, with the final resting point located at 321 degrees and grid coordinates of 14°. 871344 N; 120°. 836634 E.

1.12 Medical and Pathological Information

Following the incident, both pilots underwent a medical and drug test, which revealed no significant medical findings. The Office of the Flight Surgeon and Aviation Medicine (OFSAM) also conducted a post-flight accident medical examination on them. There were no medical impediment for the pilots that could have contributed to this incident.

1.13 Fire

No evidence of post impact fire was noted during on-site investigation.

1.14 Search and Survival Aspects

The pilots egressed safely on their own after landing in an open area. The FI was able to inform the operator of the incident. The operator's rescue personnel responded immediately and arrived at the scene after several minutes.

1.15 Test and Research

The aircraft was removed from the crash site and brought to the Operator’s hangar on February 11, 2024. The Operator's AMO conducted fuel and carburetor filter inspections of the engine in the presence of an AAIIB investigator. The engine's fuel and carburetor filter inspection revealed negative findings that may contribute to engine power loss (Figures 3 and 4).

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1.16 Organizational and Management Information

1.16.1 Operator

Fliteline Aviation School, Inc. is located at 1513 Metrica St. Sampaloc, Manila, Philippines as its primary place of business. The company has principal operations base at Plaridel Community Airport, Plaridel Airport. The school offers student pilots the following ratings, Primary and Commercial Flight Training Courses (PPL, CPL) Instrument Rating (IR) for fixed wing aircraft, Flight Instructor Course (FI) for Single Engine (SE) and Multi-engine (ME) aircraft. The institution is also duly approved and licensed by the Civil Aviation Authority of the Philippines (CAAP) with an Aviation Training Organization Certificate (ATOC) number # 2006-99. Currently it is operating four (4) Cessna 152, four (4) Cessna 172, one (1) Beech Baron BE58. It also operates one (1) PFC DCS-Max flight simulator.

1.16.2 Maintenance Organization

The maintenance function of RP-C2673 was undertaken by Fliteline Aviation Repair Station with a current Approved Maintenance Organization (AMO) Certificate number 66-07 located at Plaridel Community Airport, Lumang Bayan, Bulacan, Philippines.

2. ANALYSIS

2.1 Pilot's Action During Preflight

The accomplishment of a safe flight begins with a careful visual inspection of the aircraft. The purpose of the preflight visual inspection is twofold: to determine that the aircraft is airworthy and that it is in condition for safe flight. The determination of whether the aircraft is in a condition for safe flight is made through a preflight inspection of the aircraft and its components.

During the investigation, the SP admitted that prior to the navigation cross-country training flight to Subic International Airport, he performed the preflight inspection. He used the deep stick to confirm the fuel quantity and said there were nine (9) galloons each in both tanks. He also said that a small amount of fuel was drained from each tank to check for water, dirt, or contamination. He then reported to the FI the fuel quantity and oil level of the aircraft.

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On the other hand, the FI should not only rely on what the SP has reported. As FI, he should know how much fuel was needed and whether there was adequate quantity of fuel reserve for the flight. Had the FI recognized the aircraft's low fuel state, he could instruct the duty mechanics to refuel the aircraft. Further interview with the FI revealed that he instructed the mechanics to refuel the aircraft before the flight. However, the duty mechanics denied that they were instructed by the FI to refuel the aircraft. They also said that the FI was not seen conducted his preflight inspection and visually verified the fuel level.

With the observed FI performance deficiencies, based on the company's operational procedures on pre-flight inspection that was not complied with, led for the FI not to detect the aircraft's low fuel level before departing for the navigation cross-country training flight.

2.2 Pilot's decision to continue the flight

During flight, pilots need to monitor and manage the fuel system to ensure there is enough fuel to reach the destination safely and efficiently. This includes checking the fuel gauges regularly, using the fuel selector to switch between tanks as needed, and adjusting the power settings and airspeed to optimize fuel efficiency. Pilots should also keep track of fuel consumption and compare it with the planned fuel burn rate. If there are any significant discrepancies or changes in the fuel system performance, investigate the cause and take corrective action.

The investigation revealed that the accident aircraft was flown by the FI for a navigation cross-country training flight before the incident happened. This being the case, review of the aircraft documents revealed that the FI signed and released the aircraft without any discrepancy noted in the release form. The aircraft was flown and safely returned to the station without any untoward incidents. If there was a discrepancy, the FI should have reported it by writing in the maintenance logbook. Since there was no reported discrepancy by the FI, the second flight was pushed through as scheduled.

Meanwhile, both pilots said that after the engine started, there was no abnormality with the aircraft, and they continued with the flight towards their destination. Further investigation revealed both pilots continued with the flight but failed to monitor the fuel quantity. Apparently, the pilots lack in-flight monitoring and fuel management.

2.3 Fuel System Inspection

A post-accident site examination revealed that the aircraft landed safely and did not sustain any damage. Before the aircraft was removed from the site, both fuel tanks were defueled. However, no fuel was collected in the right tank, and a small amount of fuel, approximately two gallons, was recovered in the left tank (Figure 3). There was neither traces of fuel leakage under the wings nor smell of gasoline fumes (Figure 4).

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Figure 3 - RP-C2673 while being defueled.

Figure 4 - Aircraft's left and right wing after being removed from the fuselage.

During component inspection, small amount of unusable fuel was found inside the fuel strainer. The fuel sample was subjected to a visual inspection to detect any residue that might have led to engine failure. Based on the inspection, it can be said that the fuel used on the aircraft during the accident was free from any impurities (Figure 5).

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Figure 5 - Visual inspection of fuel strainer.

Engine fuel and carburetor filter inspections were also performed. The engine's fuel and carburetor filter inspection revealed negative findings that may contribute to engine power loss (Figures 6 and 7).

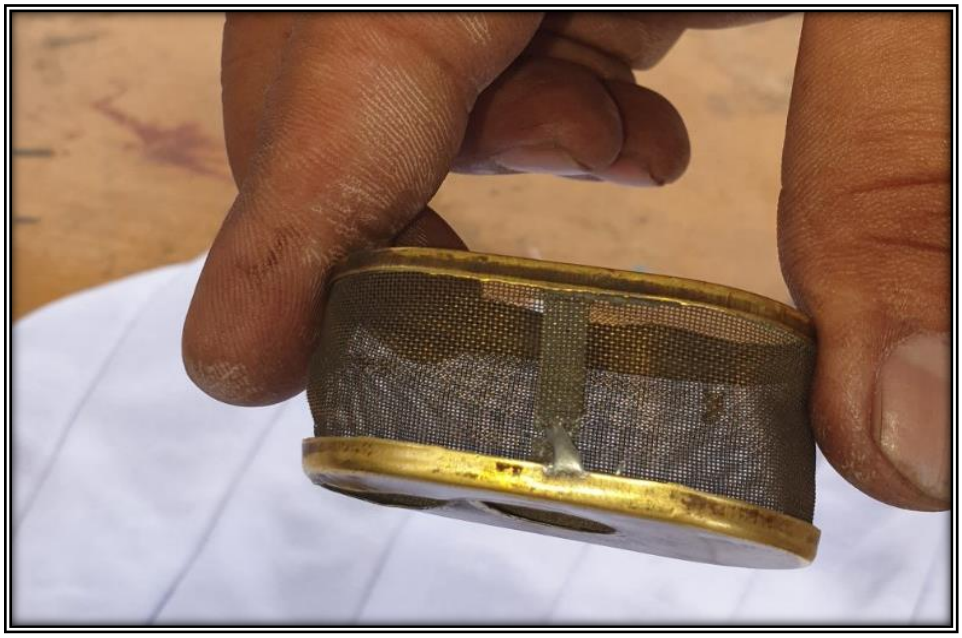

Figure 6 - RP-C 2673 fuel filter

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Figure 7. RP-C 2673 Carburetor filter

2.4 Aircraft Fuel System

The Cessna 152 aircraft have vented fuel tank in each wing. (Figure 8). Fuel flows by gravity from the two wing tanks to a fuel shutoff valve. With the valve in the on position, fuel flows through a strainer to the carburetor. From the carburetor, mixed fuel and air flow to the cylinders through intake manifold tubes. The manual primer takes fuel from the fuel strainer and injects it into the cylinder intake ports.

Blockage of the venting system will result in decreased fuel flow and eventual engine stoppage. Venting is accomplished by interconnecting lines from the right fuel tank to the left tank. The left tank is vented overboard through a vent line that is equipped with a check valve and protrudes from the bottom surface of the wing near the wing strut. The right fuel tank filler cap is also vented.

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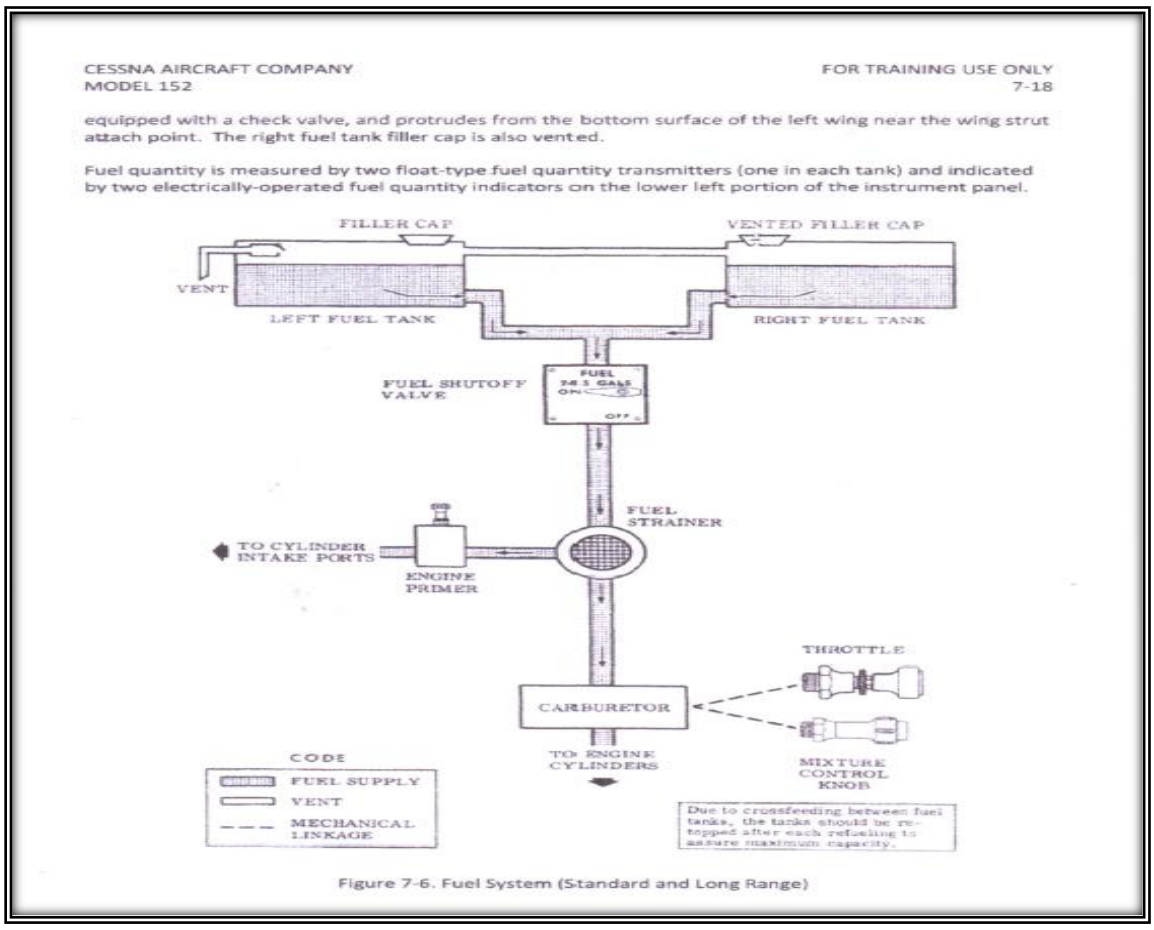

Figure 8 - Aircraft fuel system.

An empty tank is indicated by a red line and the letter E. When an indicator shows an empty tank, approximately 0.75 gallons remain in the tank as unusable. The amount of unusable fuel is relatively small due to the dual outlets in each tank. The total unusable fuel quantity, is about 1.5 gallons. Shown below is the fuel quantity data for the aircraft (Figure 9).

FUEL QUANTITY DATA (U.S. GALLONS)			
TANKS	TOTAL USABLE FUEL ALL FLIGHT CONDITIONS	TOTAL UNUSABLE FUEL	TOTAL FUEL VOLUME
STANDARD (13 Gal. Each)	24.5	1.5	26.0
LONG RANGE (19.5 Gal. Each)	37.5	1.5	39.0

Figure 9 - Aircraft fuel quantity data.

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Drain valves in the fuel system allow for the examination of fuel for contamination. The system should be examined before the first flight of the day and after each refueling, by using the sampler cup provided to drain fuel from the wing tank sump, and by utilizing the fuel strainer drain under the access panel on the right side of the engine cowling. Fill the fuel tanks after each flight to avoid condensation. When filled, each tank contains 13 gallons.

The fuel range and endurance per hour consumption of RP-C2673's previous flights was reviewed (Figure 10). The investigation revealed that the aircraft consumes an average of four (4) gallons of fuel per hour. Meanwhile on the accident flight, according to the FI statement, the aircraft's engine was started at 1245h and performed two (2) touch-and-go at Subic International airport before returning to Plaridel. The forced landing occurred at 1415h, for a total flying time of 1 hour and 30 minutes. Apparently, the SP reported a fuel quantity of nine (9) gallons on board, which aligns with the inaccurate fuel status report he gave to the FI. The aircraft's fuel quantity consisted of what remained after the first flight and was depleted during the second flight. The incident's circumstances are consistent with fuel exhaustion.

AVG. Fuel Consumption last 7 days
(February 03 -10, 2024) involving RP-C2673

Date	Destination	Time	Total Fuel Consumption	Fuel Burn/Hour	Takeoff/ Landing
February 3, 2024	RPUX-RPLU-RPUX	2+30	13 US gal	5.2	2T/L
February 5, 2024	RPUX-RPT20-RPUX	3+30	17 US gal	4.9	4T/L
February 6, 2024	RPUX-RPLU-RPUX	2+36	14 US gal	5.4	3T/L
	RPUX-RPUX	1+12	6 US gal	5	3T/L, 2G/A
February 7, 2024	RPUX-RPUX	1+30	6 US gal	4	3T/L, 2G/A
	RPUX-RPLB-RPUX	2+00	8 US gal	4	4T/L
	RPUX-RPLB-RPUX	2+00	9 US gal	4.5	2T/L
February 8, 2024	RPUX-RPUX	2+00	9 US gal	4.5	4T/L
	RPUX-RPLB-RPUX	2+00	12 US gal	6	3T/L
	RPUX-RPUX	1+42	5 US gal	3	3T/L
February 9, 2024	RPUX-RPUX	1+00	3 US gal	3	3T/L
	RPUX-RPUX	1+00	3 US gal	3	4T/L
	RPUX-RPUX	1+30	6 US gal	4	2T/L
February 10, 2024	RPUX-RPUG-RPUS-RPUX	4+00	17 US gal	4.3	2T/L

Figure 10 - RP-C 2673 fuel average fuel consumption.

3. CONCLUSION

3.1 Findings

a. Both pilots have a valid license and medical certificate issued by Licensing and Certification Department (LCD) and Office of the Flight Surgeon and Aviation Medicine (OFSAM)- CAAP respectively.

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b. Visual meteorological condition prevailed at the time of the incident.

c. The aircraft was properly released for flight without any discrepancies noted on its logbook.

d. The aircraft has current Certificates of Airworthiness and Registration.

e. The flight instructor flew the same aircraft as first sortie and second sortie when the incident happened.

f. The aircraft was on way back from a navigation cross country when the incident happened.

g. The aircraft did not sustain any damage.

3.2 Probable Cause

3.2.1 Primary Cause

a. Fuel exhaustion resulting to total engine loss of power.

3.2.2 Contributory Cause

a. The pilots failed to adequately plan the fuel needed for the flight.

b. Both pilot's omission of the key steps in the pre-flight checklist.

c. Lack of situation awareness

4. SAFETY RECOMMENDATION

As a result of the investigation, the Aircraft Accident Investigation and Inquiry Board (AAIIB) hereby proposed the following safety recommendations.

4.1 For CAAP-FSIS to ensure that the operator, Fliteline Aviation School, Inc.:

a. Includes in their in-house safety meeting:

1. Remind Pilots and Maintenance Personnel of the Standard Operating Procedures for refueling the aircraft and fuel management during flight.

2. Basic Safety Practices and Procedures be emphasized and adhered to by both Flight Instructors and Student during dual instruction flights.

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b. Strictly impose the mandatory use of a pre-flight inspection checklist on its pilots.

c. That the pilots measure and visually confirm the fuel quantity inboard the aircraft before flight.

d. That the pilots determine how much fuel will be needed and have reserve fuel for the flight.

e. Reinforces the training of their pilots in the area of situational awareness as well as threat and error management.

----END---

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