Republic of the Philippines
DEPARTMENT OF TRANSPORTATION
CIVIL AVIATION AUTHORITY OF THE PHILIPPINES
MIA Road, Pasay City 1300

AIRCRAFT ACCIDENT INVESTIGATION AND INQUIRY BOARD

FINAL REPORT

RP-C8598
TEXTRON AVIATION INC. CESSNA 152

OPERATOR: ECHO AIR INTERNATIONAL AVIATION ACADEMY, INC.

TYPE OF OPERATION: FLIGHT TRAINING

DATE OF OCCURRENCE: AUGUST 1, 2023

PLACE OF OCCURRENCE: SITIO MATAD, BARANGAY SALVACION, LUNA, APAYAO, CORDILLERA ADMINISTRATIVE REGION, PHILIPPINES

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(Textron Aviation Inc. Cessna 152, RP-C8598 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.

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FINAL REPORT

TITLE: Accident involving a Textron Aviation Inc. Cessna 152 aircraft with Registry Number RP-C8598, owned and operated by Echo Air International Aviation Academy Inc., occurred at Sitio Matad, Barangay Salvacion, Luna, Apayao, Cordillera Administrative Region, Philippines, on August 01, 2023, at around 1330H.

Notification of Occurrence to National Authority

The accident was relayed to the CAAP AAIIB by the CAAP Operations Center on August 01, 2023.

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 the provisions of Philippine Civil Aviation Regulation (PCAR) Part 13, an Investigator-In-Charge and a Deputy Investigator-In-Charge were appointed.

In addition, an Expert from the Aircraft Accident Investigation Bureau of India was appointed in accordance with Annex 13 provisions due to the involvement of a fatality of one of its citizens.

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 **14 March 2024.**

Synopsis:

On or about 1330H on August 1, 2023, a Textron Aviation Inc. Cessna 152 aircraft with registry number RP-C8598 was declared missing after another company flight reported the occurrence to the Tuguegarao Airport tower. The aircraft had taken off from Laoag International Airport (RPLI), bound for Cauayan Principal Airport (RPUY), with a flight instructor and a student pilot on board. The aircraft was operated by Echo Air International Aviation Academy Inc. The accident site was located at Sitio Matad, Barangay Salvacion, Luna, Apayao, Cordillera Administrative Region, Philippines with both occupants found fatally injured and the aircraft completely destroyed. The investigation determined that the probable cause of the accident was the flight instructor's decision to continue the VFR flight in deteriorating weather conditions, which resulted in a loss of control in flight, compounded by the decision to deviate from the published training route.

LIST OF ACRONYMS AND ABBREVIATIONS

AAIIB	:	Aircraft Accident Investigation and Inquiry Board
AANSOO	:	Aerodrome and ANS Safety Oversight Office
AIP	:	Aeronautical Information Publication
ASL	:	Above Sea Level
AFP	:	Armed Forces of the Philippines
ATOC	:	Aviation Training Organization Certificate
AMO	:	Approved Maintenance Organization
AMT	:	Aircraft Maintenance Technician
CAR	:	Cordillera Administrative Region
CAAP	:	Civil Aviation Authority of the Philippines
CFI	:	Chief Flight Instructor
CoA	:	Certificate of Airworthiness
CoR	:	Certificate of Registration
CPL	:	Commercial Pilot License
CTAF	:	Common Traffic Advisory Frequency
DARP	:	Disabled Aircraft Removal Plan
ELT	:	Emergency Locator Transmitter
FI	:	Flight Instructor
FIR	:	Flight Information Region
FSIS	:	Flight Standards Inspectorate Service
GPS	:	Global Positioning System
HOT	:	Head of Training
IMC	:	Instrument Meteorological Condition
IFR	:	Instruments Flight Rules
LGU	:	Local Government Unit
LOC-I	:	Loss of Control In-Flight
NOTAM	:	Notice to Airmen
OFSAM	:	Office of the Flight Surgeon and Aviation Medicine
PA	:	Philippine Army
PAF	:	Philippine Air Force
PARCC	:	Philippine Aeronautical Rescue Coordination Center
PCG	:	Philippine Coast Guard
PCAR	:	Philippine Civil Aviation Regulations
PDRRMC	:	Provincial Disaster Risk Reduction Management Council
PNP	:	Philippine National Police
PPL	:	Private Pilot License
RON	:	Remain Overnight
SAR	:	Search And Rescue
SMS	:	Safety Management System
SOP	:	Standard Operating Procedure

SP	:	Student Pilot
SSR	:	Secondary Surveillance Radar
TAF	:	Terminal Area Forecast
TOCID	:	Training Organization Certification and Inspection Division
TOG 2	:	Tactical Operations Group Region 2
UTC	:	Coordinated Universal Time
VFR	:	Visual Flight Rules
VMC	:	Visual Meteorological Condition

1. FACTUAL INFORMATION

Aircraft Registration No.	:	RP- C8598
Aircraft Type/Model	:	Textron Aviation Inc., Cessna 152
Operator	:	Echo Air International Aviation Academy, Inc.
Address of Operator	:	Echo Air International Aviation Hangar, Apple St. Extension, Airport Village, Pengue Ruyu, Tuguegarao, Philippines
Place of Occurrence	:	Sitio Matad, Barangay Salvacion, Luna, Apayao, Cordillera Administrative Region (CAR), Philippines
Date/Time of Occurrence	:	August 01, 2023 at about 1247H/0447 UTC
Type of Operation	:	Flight Training
Phase of Flight	:	Cruise
Type of Occurrence	:	Aircraft collision - level terrain

1.1 History of Flight

On or about 1330H local time, August 1, 2023, a Textron Aviation Inc. Cessna 152 type of aircraft with registry number RP-C8598 was declared missing after another company flight reported the occurrence to the Tuguegarao airport tower. Said aircraft took off from Laoag International Airport (RPLI) bound for Cauayan Principal Airport (RPUY) with a flight instructor and a student pilot on board.

On the same day, at around 1400H, Echo Air International Aviation Academy Inc. (EAIAAI) initiated a search and rescue (SAR) operation within 32 nautical miles of the aircraft's last reported location, but to no avail. Additionally, Tactical Operations Group 2 (TOG 2), PDRRMC 2, PA, PCG, and PNP, as well as AFP and civilian drone operator's volunteers, launched a coordinated SAR operation in the mountainous terrain of Apayao, Cordillera Administrative Region (CAR) at around 1700H.

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At about 1130H of August 3, 2023, TOG 2 Search and Rescue Group and PAF drone operators found the location of the crash site at an elevation of about 660 feet ASL within the vicinity of Sitio Matad, Barangay Salvacion, Luna, Apayao, CAR. At about 1600H, AFP/PNP Search and Rescue personnel reached the crash site (Figure 1) at coordinates 18° 15' 2.16" N, 121° 18' 9.24" E. The crash site has traces of a post-fire event isolated within the aircraft engine perimeter, and the terrain slope was about 35 degrees with steep ridges, dense vegetation, and trees covering the stream area. Rescue personnel found the bodies of the two pilots on the aircraft, both fatally injured. The cadavers were brought about three (3) miles away from the crash site to Pudtol Central School for the PAF helicopter to pick up and ferry the body of the flight instructor to Manila, while the remains of the student pilot was transferred to Tuguegarao via land travel.

Based on CAAP records, a Visual Flight Rule (VFR) flight plan had been filed at Tuguegarao Principal Airport (RPUT) for a round-robin cross-country training flight starting at RPUT, then Laoag International Airport (RPLI), and Cauayan Principal Airport (RPUY) before terminating at RPUT.

Figure 1: The aircraft at its final resting point.

1.2 Injuries to Person (s)

Injuries	Crew	Passengers	Others	TOTAL
Fatal	2	0	0	2
Serious	0	0	0	0
Minor	0	0	0	0
None	0	0	0	0

1.3 Damage to Aircraft

The aircraft was destroyed upon impact with the ground.

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1.4 Other Damages

There were no reported other damages in relation with the event.

1.5 Personnel Information

1.5.1 Flight Instructor (FI)

Gender	:	Male
Date of Birth	:	March 24, 1999
Nationality	:	Filipino
License	:	135352 CPL/FI valid until March 31, 2025 (CPL) and March 31, 2024 (FI)
Type rating	:	Airplane, Single Engine Land Instrument-C152, C172
Medical Certificate	:	Class 1 valid until September 23, 2023
Date of last medical	:	September 19, 2022
Total flying time	:	384 + 00 Hours
Total flying time on type	:	157 + 00 Hours

1.5.2 Student Pilot (SP)

Gender	:	Male
Date of Birth	:	October 05, 2003
Nationality	:	Indian
License	:	160008 SPL valid until May 18, 2025
Type rating	:	Airplane, Single Engine Land Instrument-C152, C172
Medical Certificate	:	Class 2 valid until May 18, 2025
Date of last medical	:	May 18, 2023
Total flying time	:	29 + 45 Hours
Total flying time on type	:	29 + 45 Hours

1.6 Aircraft Information

The Textron Aviation Inc. Cessna 152 (Figure 2) is an American two-seat, fixed-tricycle-gear, general aviation airplane, used primarily for flight training and personal use. It was based on the earlier Cessna 150 incorporating a number of minor design changes and a slightly more powerful engine with a longer time between overhaul.

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Figure 2 – The C152 aircraft.

1.6.1 Aircraft Data

Registration Mark	:	RP-C8598
Manufacturer	:	Textron Aviation Inc.
Country of Manufacturer	:	United States of America
Type/Model	:	Textron Aviation Inc./Cessna 152
Operator	:	Echo Air International Aviation Academy Inc.
Serial No.	:	15282279
Year of Manufacture	:	1979
Certificate of Airworthiness	:	Valid until 12 October 12, 2023
Certificate of Registration	:	Valid until July 08, 2024
Category	:	Normal
Gross Weight	:	757 Kgs.
Number of Flight Crew	:	2
Number of Passenger	:	0
Airframe total time	:	16,025 + 47 Hours

1.6.2 Engine Data

Manufacturer	:	Lycoming
Type	:	Piston
Model	:	O-235-L2C
Engine Serial No.	:	L-19154-15
Engine TSO	:	1,073 + 50 Hours
Engine Total Time	:	14,199 + 10 Hours

1.6.3 Propeller Data

Manufacturer	:	McCauley
Type	:	Fixed Pitch
Model	:	1A103/TCM6948
Propeller Serial No.	:	RP771823
Date last Installed	:	March 13, 2019

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Propeller TSO	:	1,073 + 50 Hours
Propeller total time	:	14,185 + 08 Hours

1.7 Meteorological Information

Visual Meteorological Conditions (VMC) prevailed at the time of the occurrence. The pilot managed to acquire weather information through the duty Air Traffic Controller at the departure airport, which indicates wind at 210 degrees at 9 knots, visibility of 8,000 meters with showers in the vicinity, sky conditions scattered at 1,700 feet to 2,900 feet and broken at 7,000 feet, a temperature of 29º C, a dew point at 26ºC, barometric setting of 1,005 hPa, and cloud build-up at the south-west.

1.8 Aids to Navigation

The flight departed under VFR. Using VFR, the pilot must be able to operate the aircraft with visual references to the ground and visually avoiding obstructions and other aircraft.

1.9 Communications

The aircraft is equipped with a standard radio transceiver. Communications were carried out between the pilot and the duty air traffic controller within the area.

1.10 Aerodrome Information

Laoag International Airport, IATA: LAO, ICAO: RPLI, is the main airport serving the general area of Laoag, the capital city of the province of Ilocos Norte in the Philippines. It is the only airport in Ilocos Norte and is the northernmost international airport in the Philippines. A single terminal building serves both passenger and cargo traffic. As an international airport, it houses immigration desks for screening of departing/arriving international passengers. The Airport is listed in the Airmen Information Publication (AIP) and is under the Civil Aviation Authority of the Philippines - Aerodrome and Air Navigation Services Oversight Office (CAAP-AANSOO) approved aerodrome facility data.

1.10.1 General Information

Aerodrome Name	:	Laoag International Airport (RPLI)
Coordinates	:	181034N, 1203152E.
Aerodrome Operator	:	Civil Aviation Authority of the Philippines Laoag International Airport Laoag City, Ilocos Norte 2900, Philippines
Runway Direction	:	01/19 (005.40º MAG) / (185.40º MAG)
Runway Length	:	2784M
Runway Width	:	45M
Surface	:	PCN 48 R/B/W/U CONC
Types of traffic permitted	:	VFR/IFR

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AD Operator	:	Airport Operations: 2200 - 1400.
Security	:	24H
ATS Communication Facility	:	Tower: 118.1Mhz (Prim- Freq.), 124.0Mhz (A/G Freq.) Approach: 122.3 Mhz
Radio Navigation and Landing Aids	:	112.9 Mhz (LAO) Coverage: DVOR/DME - 90 NM. 1117 M FM start of RWY 19 and 242.05 M right of RWY 19 CL.
Aircraft Refueling	:	Service requires prior notice.
Restaurants	:	At AD and in the Municipality/City
Transportation	:	Vehicle for hire.
Medical facilities	:	Clinic at AD and nearest hospitals, 3KM from the AD
AD category for fire fighting	:	CAT VII.
Rescue equipment	:	Four (4) Fire trucks [Two (2) SIDES (2500 liters each), one (1) Oshkosh (6000 liters) and one (1) FUSO (3000 liters)].
Capability for removal of disabled aircraft	:	A321 largest aircraft removal by an aircraft owner/operator. Contact information of Disabled Aircraft Removal Plan (DARP) Coordinators: 1. Laoag International Airport Team Leader Phone: (6377) 670-8446 (Landline), +639154528702 (Mobile) 2. Laoag International Airport Safety Manager Phone: (6377) 670-8446 (Landline), +639163714860 (Mobile) 3. DARP Third Party Contractor Phone: +639399165737 (Mobile)
RWY Area/Obstacle type	:	01/TKOF - Antenna Tower, 391ft, 181240.7N, 1203231.0E 01/APCH - Terrain, 3754 ft, 173852.4N, 1203027.5E 19/TKOF - Tower 143 ft, 180939.7N, 1203138.9E 19/APCH - Terrain 3754 ft, 173856.8N, 1203031.9E 19/APCH - Radio Antenna, 412 ft, 181229.7N, 1203233.2E
TORA 01/19	:	2784M
TODA 01/19	:	2984M
ASDA 01/19	:	2784M
LDA 01/19	:	2784M

1.11 Flight Recorders

The aircraft is not equipped with any flight recorders, and existing Philippine Civil Aviation Regulation (PCAR) does not require it to be installed for that type of aircraft.

1.12 Wreckage and Impact Information

The aircraft wreckage (Figure 3) was found at coordinates 18º 15’ 2.16” N, 121º 18’ 9.24” E at an elevation of 660 feet ASL and with a general heading of 307º NW. The site was

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approximately 82 kilometers from Laoag International Airport and 80 kilometers from Tuguegarao Airport.

Inspection of the crash site revealed the following:

a. The aircraft was completely destroyed after impact with the ground.

b. The engine and propeller were buried approximately 1 meter in the ground upon impact (Figure 4).

c. All significant components of the aircraft were located within the main wreckage area, approximately ten (10) meters in diameter.

d. The entire fuselage and wings sustained substantial damage, with the cockpit and flight controls highly fragmented. The instrument panel was destroyed, and most instruments were displaced from their panel mounts.

Figure 3 – The aircraft wreckage.

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Figure 4 - The aircraft engine with its propeller buried in the ground.

1.13 Medical and Pathological Information

Both pilots possess valid medical certificates issued by the CAAP Office of the Flight Surgeon and Aviation Medicine (OFSAM).

Based on the death certificate obtained from the Municipal Health Officer of Luna, Apayao, both pilots cause of death were brain evisceration antecedent to multiple physical injuries as determined in the postmortem examination.

1.14 Fire

Inspection of the wreckage revealed evidence of a post-crash fire.

1.15 Search and Survival Aspects

The accident was not survivable, as the aircraft was almost completely destroyed upon impact with the ground. No distress signal was received by any Emergency Locator Transmitter (ELT) monitoring center worldwide. Further, the ELT was recovered by military personnel during the retrieval operations last August 03, 2023. It was then turned over by the Luna Municipal Police Station to the CAAP AAIIB Investigators last August 04, 2023.

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1.16 Test and Research

The aircraft engine was recovered on August 5, 2023, and the teardown inspection was conducted on August 22, 2023, at an Aircraft Maintenance Organization (AMO) facility of Fliteline Aviation in Plaridel, Bulacan. The activity was supervised by a CAAP AAIIB Investigator and maintenance personnel of the operator. On the completion of the inspection, the AMO stated that the engine was found to have no evidence of pre-impact mechanical malfunctions or anomalies that would have affected the aircraft's normal operation. Internal examination also showed that the other components of the engine were all in good condition. The engine teardown report also stated that the engine was delivering power at the moment of the accident. However, the examination could not conclude on the amount of power that was then delivered. In addition, the damage to the engine propeller indicates that it resulted from the impact of vegetation debris while it was still in motion at the time of the accident.

As for the aircraft ELT, a functional test was made on October 17, 2023, at the AIA facility in Subic Bay International Airport. The result of the test indicates that the ELT is operational and functioning according to its standard specifications. However, in investigating why the distress signal was not transmitted at the time of the accident, the report suggests that the probable cause could be the disconnection of the cable or antennae from the ELT equipment itself. The latter cannot be further verified since the ELT had already been removed from the aircraft by the time AAIIB investigators arrived at the accident site.

1.17 Organizational and Management Information

Echo Air International Aviation Academy, Inc. is a holder of a CAAP-issued Aviation Training Organization Certificate (ATOC) No. 2021-002 issued on July 8, 2022, and valid until July 7, 2025. The company's base operation is located at Tuguegarao Principal Airport, Tuguegarao, Philippines. The company is an approved Pilot School for the following courses:

- **a.** Private Pilot License course for airplane single-engine land.
- **b.** Commercial Pilot License course for airplane single-engine land.
- **c.** Instrument Rating Course for airplane.
- **d.** Airline Transport Pilot ground course.

Moreover, the aircraft RP-C8598 is listed on the company's ATOC Operations Specification. The aircraft maintenance requirements for Echo Air are contracted to Pegasus Air Services, Inc., located at Plaridel Community Airport, Plaridel, Bulacan, Philippines.

2. ANALYSIS

2.1 Pilot

2.1.1 Trainings and Qualifications

A review was made of the available pilot's records and was able to establish the following:

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a. The flight instructor (FI) and the student pilot (SP) are holders of valid CAAP-issued licenses and medical certificates.

b. The flight instructor was released as FI for the C152 type of aircraft on July 5, 2022, with restrictions to fly only students who had already completed their solo flight. This restriction was lifted by Echo Air's Chief Flight Instructor on January 31, 2023.

c. Based on Echo Air's files, the subject FI was able to attend the following additional trainings:

d. Safety Management Safety Manual, June 15, 2022.

e. Flight Instructor Standardization Seminar, July 17, 2021.

f. As for the SP, he completed his first solo flight on July 7, 2023. This was after accumulating a total flying time of 21+50 hours and receiving an endorsement from his FI to fly solo.

g. Based on the above information and requirements under the company's Training Manual (1st Edition, issued February 21, 2020), it can be said that during the time of the accident, the FI and the SP are qualified to operate the said flight.

2.1.2 Flight Duty/Training Schedule

Echo Air's published training schedule for the involved FI and SP revealed the following:

a. For the month of July 2023, they have a total of seven (7) flights with the below details:

Date	Time	Route
July 03, 2023	0800H-1030H	Local
July 04, 2023	0800H-1030H	Local
July 05, 2023	0800H-1030H	Local
July 06, 2023	0800H-1030H	Local
July 07, 2023	0800H-1030H	Local
July 28, 2023	0800H-1030H	Local
July 30, 2023	0800H-1030H	Local

b. On the above data, this schedule conforms with the standards published under Echo Air's Training Manual Chapter 1, Section VII – Training Program and Approval.

2.2 Aircraft Status

2.2.1 Pre-Flight Inspection

According to the statement of the maintenance personnel assigned to RP-C8598 on August 1, 2023, the required pre-flight inspection was conducted on the aircraft before its flight. During the investigation, a Pre-Flight Inspection Checklist file was presented showing that there were no discrepancies on the aircraft before its departure from Tuguegarao airport.

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Subsequently, it was released for its scheduled training flight to Laoag International Airport. Upon arrival and departure in Laoag, the aircraft had no maintenance discrepancies, and there were no pilot reports of problems. Further checking of records disclosed that the maintenance personnel who conducted the pre-flight inspection on RP-C8598 hold an Aviation Maintenance Technician (AMT) license issued by the CAAP on March 9, 2021, and valid until March 8, 2026. Additionally, his records show that he was able to complete his initial type rating for the Cessna 152 on November 24–25, 2022.

2.2.2 Maintenance Records

A review of the aircraft documents revealed the following:

The application for the renewal of the Certificate of Airworthiness (COA) for RP-C8598 was submitted on September 13, 2022, following the completion of the required annual inspection conducted by an Approved Maintenance Organization (AMO) on September 2, 2022.

a. The CAAP Flight Standards Inspectorate Service (FSIS) - Airworthiness Department conducted an inspection of the aircraft from September 27-29, 2022. Subsequently, the COA was issued on October 12, 2022, and is valid until October 12, 2023.

b. On June 6, 2023, the aircraft underwent the required 100-hour inspection based on the Cessna 152 Maintenance Manual. Similarly, the 50-hour required inspection was completed on the aircraft on July 7, 2023. Based on the mentioned scheduled periodic inspections, no significant issues were noted on the aircraft that could be attributed to the accident.

2.3 Flight Training

2.3.1 Private Pilot Navigation Training Requirement

Navigation training is one of the requirements for obtaining a Private Pilot License - Airplane (PPL-A). Under this, the SP had to undergo the necessary ground training on various navigation topics, such as:

a. Practical aspects of air navigation and dead-reckoning techniques;
b. Use of aeronautical charts.

For operational procedures:

a. The use of aeronautical information such as AIP, NOTAM, aeronautical codes, and abbreviations;
b. Appropriate precautionary and emergency procedures, including action to be taken to avoid hazardous weather, wake turbulence, and operating hazards.

The above trainings are in consonance with the requirements stipulated in PCAR Part 2. In line with this requirement, the SP was scheduled for cross-country navigation training on August 1, 2023. Echo Air's records show that this was the SP's first "round-robin"

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cross-country dual flight training, following the successful completion of his first solo flight.

During navigation training, flight instructors commonly employ a GPS mobile application to plot training waypoints and routes (Figure 5). In addition to the GPS mobile app, both Flight Instructors and Student Pilots are said to be required to utilize the navigational log developed by the school and an appropriate map for tracking and successfully navigating the planned training flight route. The navigational log serves as one of the tools for planning a certain flight route, especially during navigation training sessions. The execution of the plotted route on the navigation log is imperative to fulfill this specific training requirement.

For the Tuguegarao/RPUT-Laoag/RPLI v.v. navigation flight training, there is an available navigation log prepared for this route (Figure 6). In addition to the navigation log, the route is also documented in Echo Air's Procedures Manual (1st Edition, issued February 21, 2020), Chapter III – Routes, Section VII – Training Routes and Areas, Item 2 – Training Routes, Letter B – Tuguegarao-Laoag (RPUT-RPLI). Likewise, interviews with other Echo Air's FIs confirmed the availability of such a navigation log being used for the said flight training.

On review of the available navigation log and the documented route under its Procedures Manual, inconsistencies were noted on both documents, particularly regarding the identified check points for that specific route. The check points indicated on the navigation log are different from the published route (Figure 7) in its manual. In addition, there is no specific documentation under their manual that a navigation log is specifically required during cross-country flight training.

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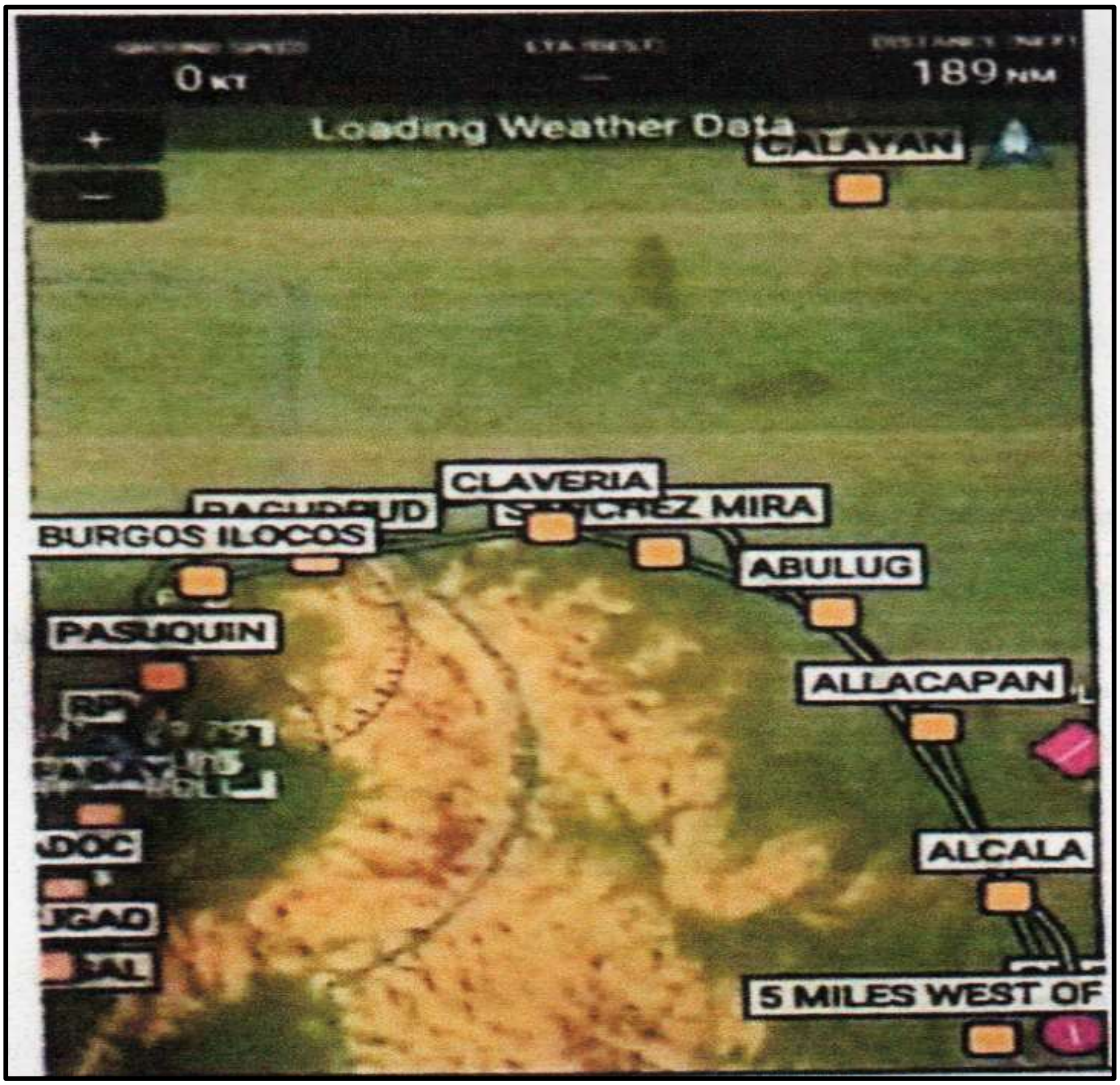

Figure 5 – Screenshot of the training waypoints plotted on the mobile GPS app.

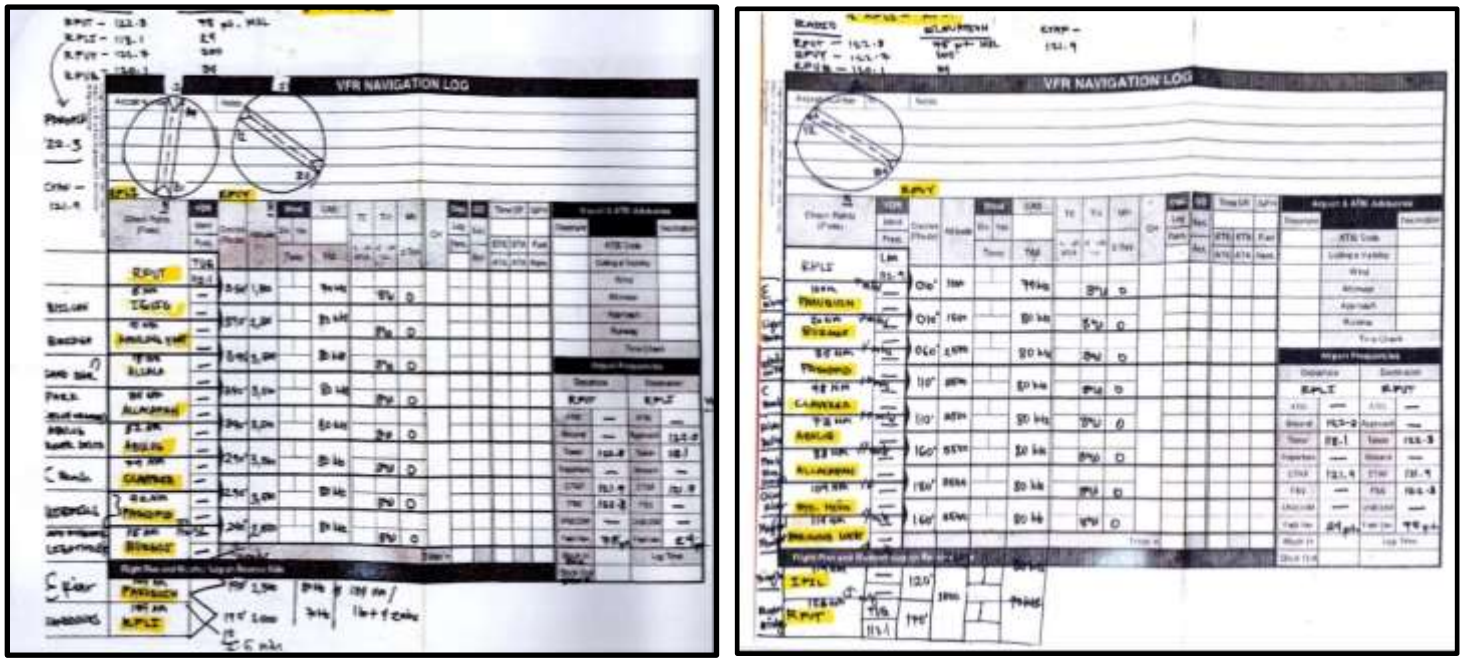

Figure 6 – Navigation log for RPUT-RPLI-RPUT navigation training

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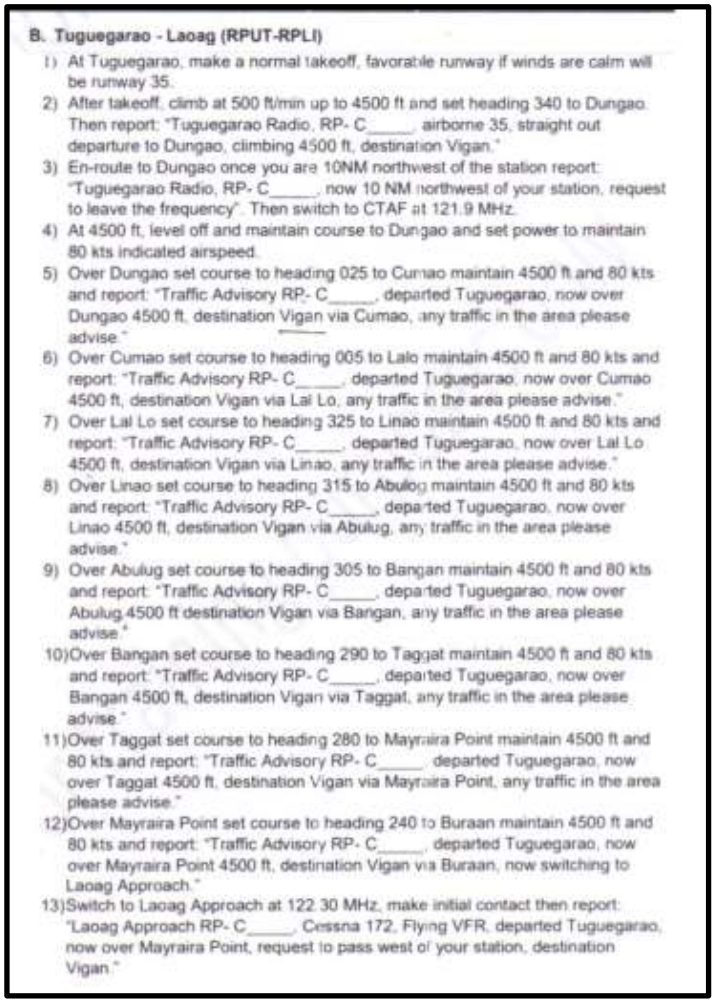

B. Tuguegarao - Laoag (RPUT-RPLI)

1) At Tuguegarao, make a normal takeoff, favorable runway if winds are calm will be runway 35.
2) After takeoff, climb at 500 ft/min up to 4500 ft and set heading 340 to Dungao. Then report: "Tuguegarao Radio, RP- C_____, airborne 35, straight out departure to Dungao, climbing 4500 ft, destination Vigan."
3) En-route to Dungao once you are 10NM northwest of the station report: "Tuguegarao Radio, RP- C_____, now 10 NM northwest of your station, request to leave the frequency". Then switch to CTAF at 121.9 MHz.
4) At 4500 ft, level off and maintain course to Dungao and set power to maintain 80 kts indicated airspeed.
5) Over Dungao set course to heading 025 to Cumao maintain 4500 ft and 80 kts and report: "Traffic Advisory RP- C_____, departed Tuguegarao, now over Dungao 4500 ft, destination Vigan via Cumao, any traffic in the area please advise."
6) Over Cumao set course to heading 005 to Lalo maintain 4500 ft and 80 kts and report: "Traffic Advisory RP- C_____, departed Tuguegarao, now over Cumao 4500 ft, destination Vigan via Lal Lo, any traffic in the area please advise."
7) Over Lal Lo set course to heading 325 to Linao maintain 4500 ft and 80 kts and report: "Traffic Advisory RP- C_____, departed Tuguegarao, now over Lal Lo 4500 ft, destination Vigan via Linao, any traffic in the area please advise."
8) Over Linao set course to heading 315 to Abulog maintain 4500 ft and 80 kts and report: "Traffic Advisory RP- C_____, departed Tuguegarao, now over Linao 4500 ft, destination Vigan via Abulug, any traffic in the area please advise."
9) Over Abulug set course to heading 305 to Bangan maintain 4500 ft and 80 kts and report: "Traffic Advisory RP- C_____, departed Tuguegarao, now over Abulug 4500 ft destination Vigan via Bangan, any traffic in the area please advise."
10) Over Bangan set course to heading 290 to Taggat maintain 4500 ft and 80 kts and report: "Traffic Advisory RP- C_____, departed Tuguegarao, now over Bangan 4500 ft, destination Vigan via Taggat, any traffic in the area please advise."
11) Over Taggat set course to heading 280 to Mayraira Point maintain 4500 ft and 80 kts and report: "Traffic Advisory RP- C_____, departed Tuguegarao, now over Taggat 4500 ft, destination Vigan via Mayraira Point, any traffic in the area please advise."
12) Over Mayraira Point set course to heading 240 to Buraan maintain 4500 ft and 80 kts and report: "Traffic Advisory RP- C_____, departed Tuguegarao, now over Mayraira Point 4500 ft, destination Vigan via Buraan, now switching to Laoag Approach."
13) Switch to Laoag Approach at 122.30 MHz, make initial contact then report: "Laoag Approach RP- C_____, Cessna 172, Flying VFR, departed Tuguegarao, now over Mayraira Point, request to pass west of your station, destination Vigan."

Figure 7 – Training route for RPUT-RPLI under Echo Air's Procedure Manual.

2.3.2 Flight from RPUT to RPLI

A flight plan (Figure 8) to depart VFR for round-robin cross-country training was submitted by the crew of RP-C8598 to Tuguegarao/RPUT Airport Tower on August 1, 2023. The flight itinerary was to fly from RPUT to Laoag International Airport/RPLI as its first leg, then proceed to Cauayan Principal Airport/RPUY and perform a touch-and-go before returning to RPUT.

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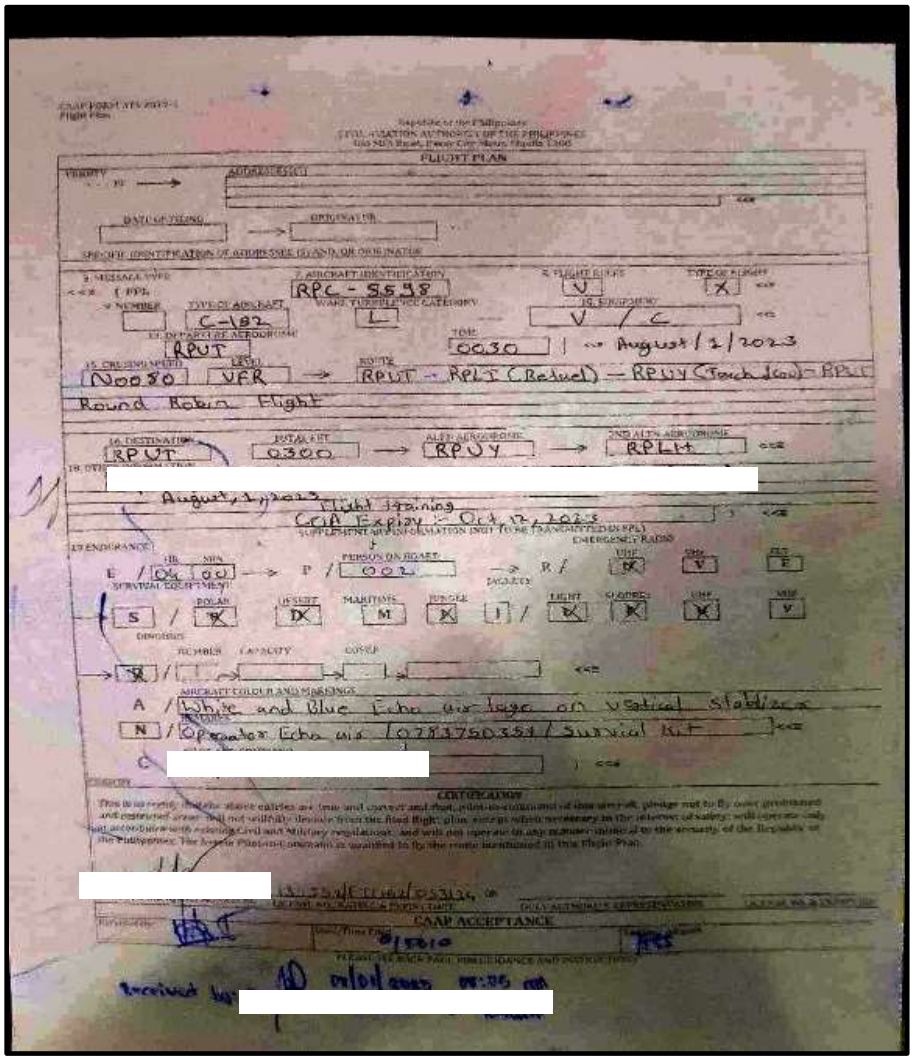

Figure 8 - RP-C8598 filed Flight Plan.

For this specific cross-country training route, RPUT-RPLI v.v., approval from CAAP Deputy Director General of Operations (Figure 9) was secured by Echo Air via a letter dated November 26, 2021. Under the said letter, the following conditions should be met for this training route:

a. Prior coordination should be made with Laoag LGU and the Airport Manager before the cross-country training flight.

b. Minimum of at least two (2) aircraft for the cross-country training flight with the instructor on at least one (1).

c. In-depth reviews of flight over mountainous terrain for all Flight Instructors and student pilots should be conducted by the Chief Flight Instructor (CFI) or by the Head of Training (HOT).

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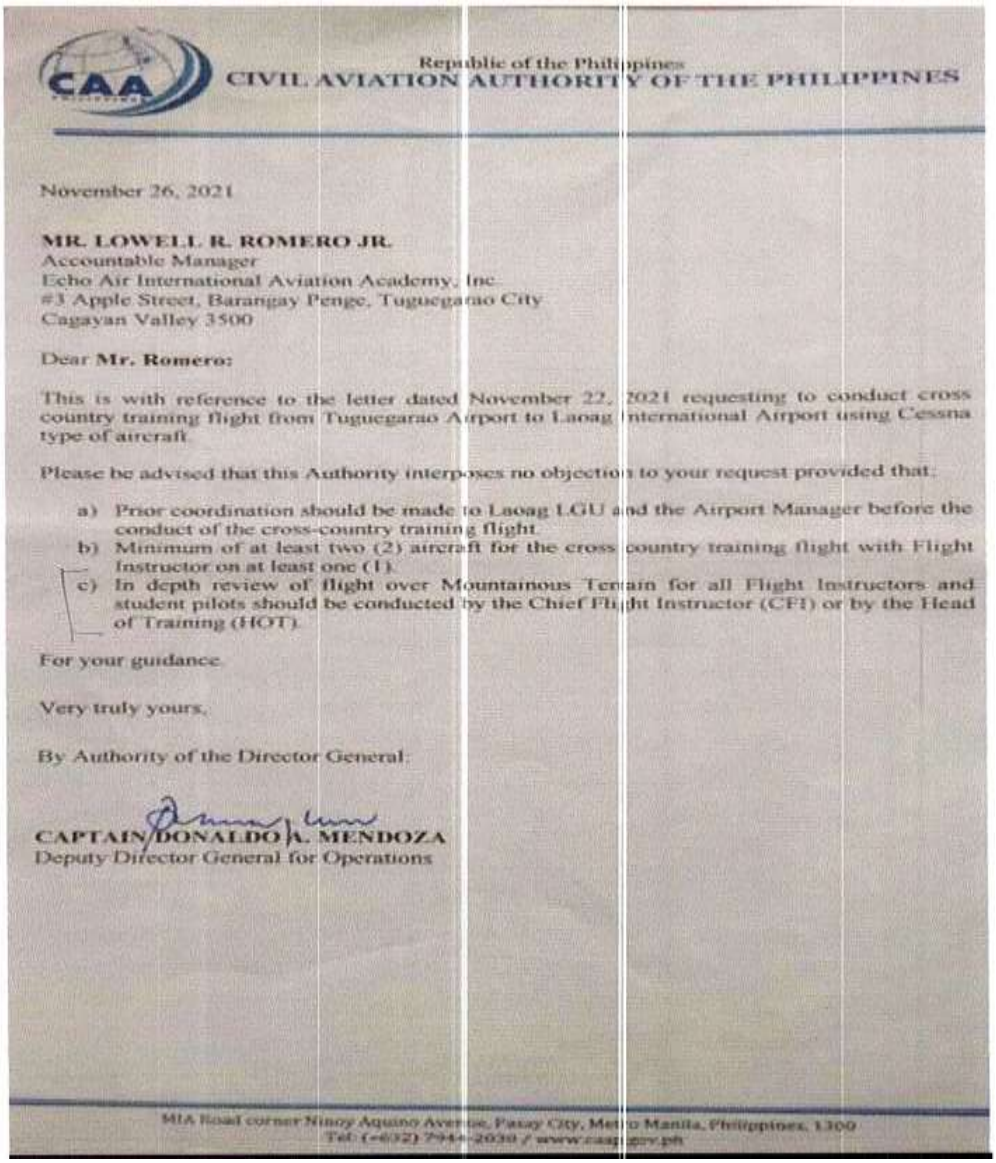

Republic of the Philippines
CIVIL AVIATION AUTHORITY OF THE PHILIPPINES

November 26, 2021

MR. LOWELL R. ROMERO JR.
Accountable Manager
Echo Air International Aviation Academy, Inc.
#3 Apple Street, Barangay Penge, Tuguegarao City
Cagayan Valley 3500

Dear **Mr. Romero:**

This is with reference to the letter dated November 22, 2021 requesting to conduct cross country training flight from Tuguegarao Airport to Laoag International Airport using Cessna type of aircraft.

Please be advised that this Authority interposes no objection to your request provided that:

a) Prior coordination should be made to Laoag LGU and the Airport Manager before the conduct of the cross-country training flight.
b) Minimum of at least two (2) aircraft for the cross country training flight with Flight Instructor on at least one (1).
c) In depth review of flight over Mountainous Terrain for all Flight Instructors and student pilots should be conducted by the Chief Flight Instructor (CFI) or by the Head of Training (HOT).

For your guidance.

Very truly yours,

By Authority of the Director General:

CAPTAIN DONALDO A. MENDOZA
Deputy Director General for Operations

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Figure 9 - CAAP letter of approval for RPUT-RPLI cross-country training.

With this flight, a review was made on the compliance of Echo Air with the above-stated requirements.

Under requirement no. 1, prior coordination with the Laoag LGU was required for all training flights going to the said destination. However, this requirement had not been met, as it was only relevant during the pandemic and is no longer necessary at this time after the government lifted all applicable pandemic travel restrictions.

For requirement no. 2, two (2) aircraft were dispatched for RPUT-RPLI flight training on August 1, 2023. Both aircraft, RP-C9062/C172 and RP-C8598/C152, are each manned by a qualified Flight Instructor. The two (2) aircraft will fly together to RPLI but will have a different flight itinerary out of RPLI. The aircraft with registry no. RP-C9062 will proceed directly to RPUT, while RP-C8598 will fly over RPUT, proceed to RPUY, then return to RPUT to terminate its flight. With this information, it can be said that Echo Air was able to comply with the requirement, but it should be noted that a review of their existing internal documents revealed that there are still no available implementing guidelines for

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this, such as what type of aircraft can be flown in tandem, what the performance restrictions are, etc. The significance of having these guidelines in place cannot be overstated, as they are integral to the effective management and control of this particular type of flight training. By establishing a well-defined operational framework, these guidelines ensure the safe and effective execution of every cross-country flight along the designated route.

In essence, the presence of these guidelines not only ensures a well-structured and controlled environment but also underscores the organization's commitment to the safety of its flight instructors and trainees undertaking this specific training.

With regards to requirement no. 3, an inquiry was made with Echo Air's HOT and CFI to determine if there was any evidence of training or discussion conducted for all Echo Air pilots about flight operations over mountainous terrain. During the interview, they stated that operations over the mountains are strictly prohibited based on their procedure, and this CAAP requirement has been a regular subject during their monthly meetings. However, there was no available documentation within Echo Air's manual or internal memorandum released regarding restrictions on flying over mountainous terrain, nor was there any evidence of meetings conducted with such subjects being discussed.

On this scheduled training flight, RP-C8598 departed RPUT at around 0939H instead of its originally planned departure time of 0800H. The delay was attributed to adverse weather conditions that morning, specifically the ceiling condition, which was below the minimum required for flight. The pilots opted to wait for an improvement in weather conditions before initiating departure. Once the weather conditions became favorable, the aircraft took off from RPUT, heading north towards the shoreline. The flight followed the published training route as outlined in Echo Air's Navigation Log form (Figure 10). On the other hand, the second aircraft scheduled to fly with RP-C8598, which was RP-C9062, departed RPUT for RPLI at around 0918H. Though with the same flight destination, RP-C9062 deviated from the published route, as disclosed during the interview of its assigned FI/PIC and the other FI who was also onboard the flight for his route familiarization. According to the flight FI, he anticipated inclement weather conditions along the published route, leading to his decision to deviate. However, this deviation did not have prior approval from the school's HOT or CFI. Additionally, the aforementioned FI stated that this was not his first time flying this particular route, and he had a history of using this deviated path, which involves crossing mountainous terrain from RPUT to RPLI v.v. This information was further corroborated by other FIs who had heard from their colleagues and students that this specific FI had been navigating over this mountainous terrain without obtaining consent from Echo Air's management. Notably, this deviation from the published route was never reported to the relevant HOT and CFI within the organization.

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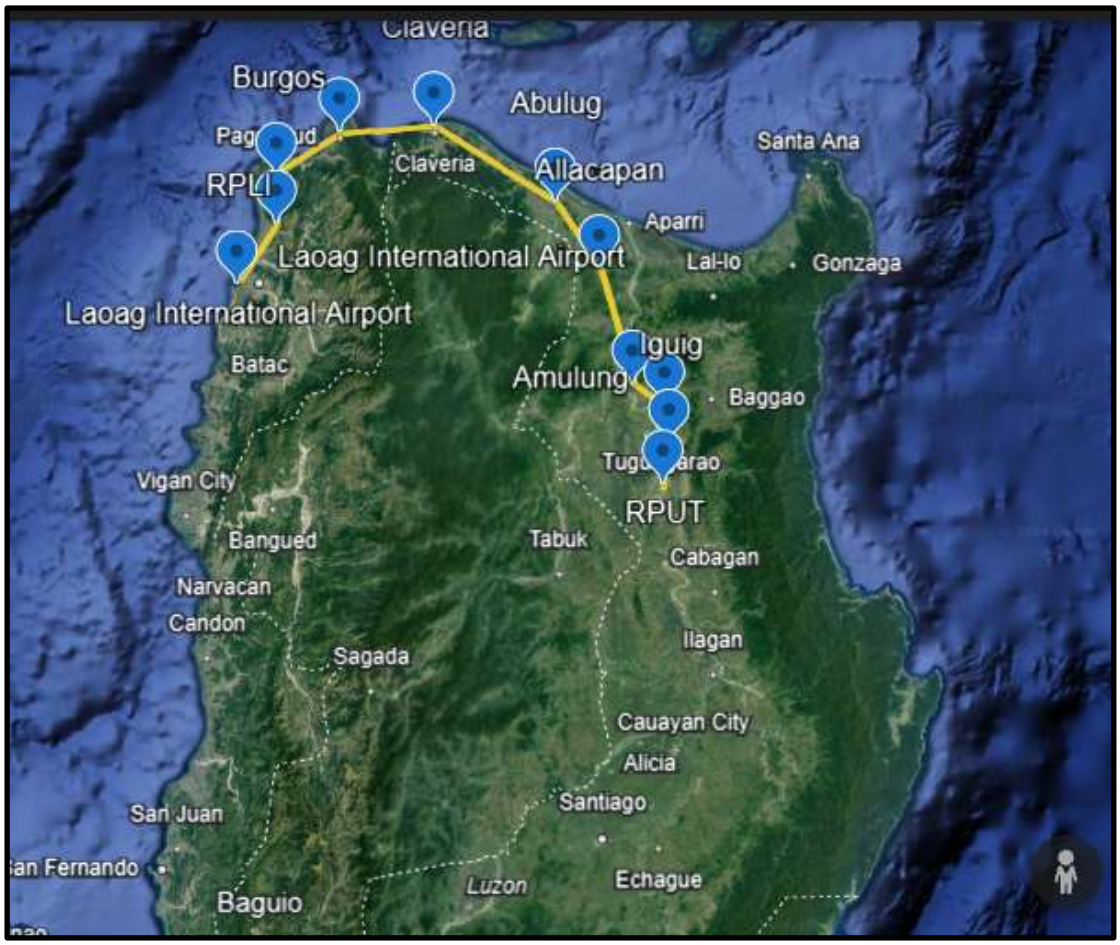

Figure 10 – RP-C8598 flight route for RPUT-RPLI.

Further verification of the chronology of events leading to the departure of the two (2) aircraft from RPUT revealed that the FI of RP-C8598 was able to secure the day's weather information from the Tuguegarao Airport tower prior to their departure. It was also said that the FIs and SPs usually obtained additional weather data from the "Windy" mobile application. This mobile app provides interactive weather forecasting with hourly METAR and Terminal Aerodrome Forecast (TAF) information on the expected meteorological conditions significant to aviation, impacting an airport during the 24-hour forecast period. In addition to the weather information from the Tower and the Windy app, the CFI and the crew of RP-C9062 mentioned during the interview that, as per their SOP, the HOT should also conduct the pre-flight briefing about the flight, including the weather, for both the FI and the SP before each flight. For the flights on that particular day, the CFI assumed that this procedure was also followed. As for the interview with the HOT, he said that he was not able to perform the regular weather briefing on the flights that departed that day because he assumed that this had already been made by the CFI, considering that he saw that morning the latter talking to the concerned flight crew. Relatively, Echo Air's manuals and documents outline the following published procedure pertaining to weather information during the conduct of flight training:

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a. Procedures Manual 1st Edition/Issue date 21 Feb 2000, Chapter I-General, Section VII, Article A - Preparation for Flying Program, no. 3 – Limitations

EAIAA aircraft are not allowed to fly in poor visibility. VFR flights are conducted with the following limitations:

- 6km or 4 miles visibility
- Ceiling not less than 1,500 ft.
- 10 kts demonstrated crosswind limitations for dual flight
- 7 kts demonstrated crosswind limitations for solo flight
- No storm signal forecasted

b. Procedures Manual 1st Edition/Issue date 21 Feb 2000, Chapter I-General, Section VII, Article N - Flight Planning, no. 3 – Weather Reports and Forecasts

1. Before commencing a flight, the Pilot-in-Command shall be familiar with all available meteorological information appropriate to the intended flight.
2. The PIC shall include, during preparation for a flight away from the vicinity of the place of departure, and for every flight under VFR.
3. A study of available current weather reports and forecasts; and
4. The planning of an alternative course of action to provide for the eventuality that the flight cannot be completed as planned, because of weather conditions.

c. Procedures Manual 1st Edition/Issue date 21 Feb 2000, Chapter I-General, Section VII, Article N - Flight Planning, no. 4 – Weather Limitations for VFR Flight.

No Flight Instructor and/or Student Pilot shall commence a flight under VFR rules unless available current meteorological reports, or a combination of current reports and forecasts, indicate that the meteorological conditions along the route, or that part of the route to be flown under the VFR, will, at the appropriate time, allow VFR operations.

d. Procedures Manual 1st Edition/Issue date 21 Feb 2000, Chapter I-General, Section VII, Article O – Safety, no. 3 – Situational Awareness, item j – Flight Hazards

At the ECHO AIR INTERNATIONAL AVIATION ACADEMY (EAIAA) the following are considered flight hazards:

1. Weather

We make sure that before any flight all persons concerned are briefed with the weather for the day.

The above sets forth the requirements and restrictions pertaining to weather that every Echo Air pilot should always adhere to.

Additionally, the school has an available “Flight Log” form (Figure 11) to which, prior to each departure, the crew (FI/SP) must input or receive information regarding the aircraft and the flight that they will conduct for the day. Other data included in the form encompasses dispatch details (e.g., NOTAM, weather, weight, balance, etc.) and

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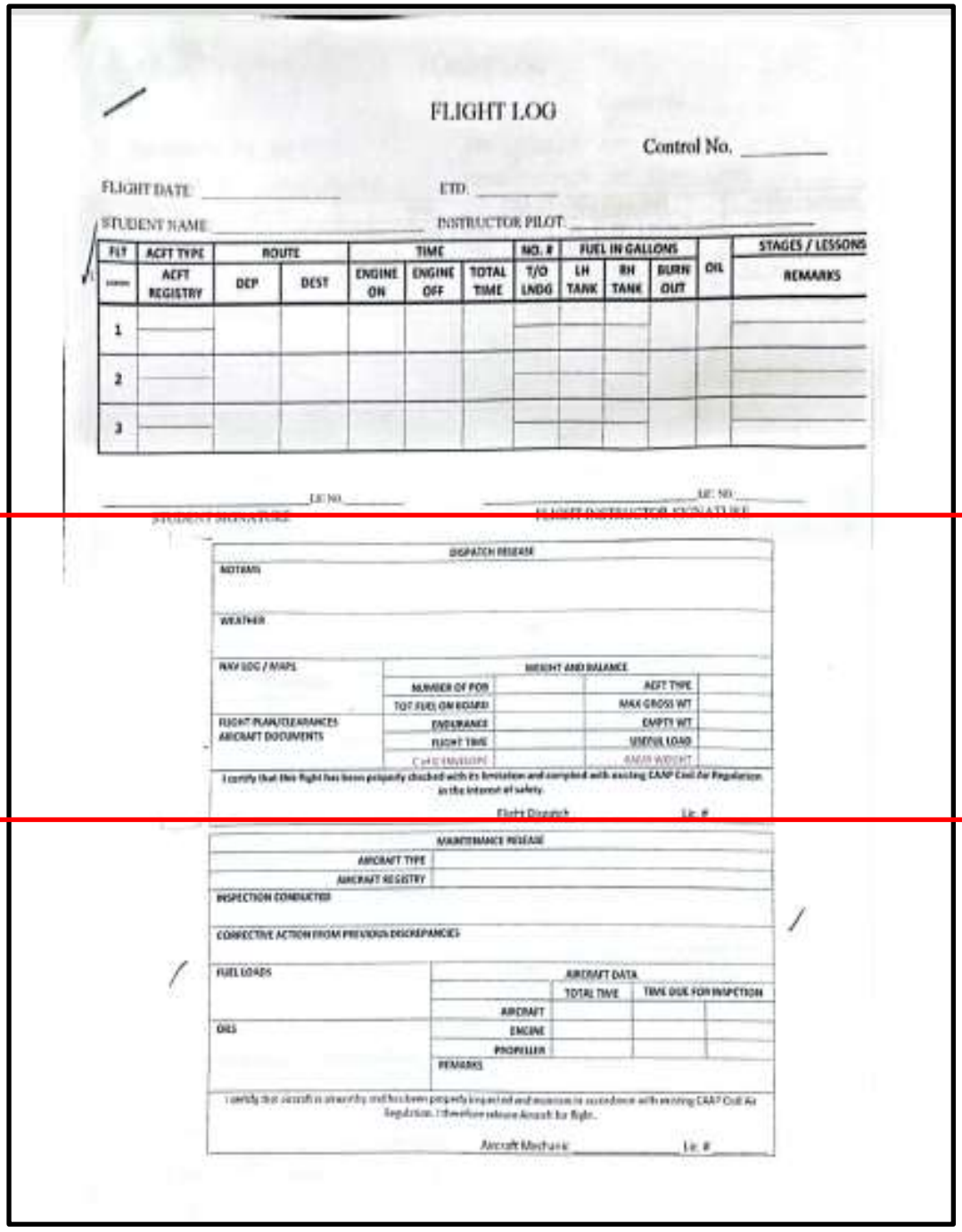
maintenance release information (e.g., inspection conducted, corrective action from previous discrepancies, etc.) that are pertinent to the flight.

Through interviews with concerned personnel, it was learned that while this form is utilized during flight operations, not all information, particularly details related to dispatch releases covering NOTAMs, weather, and the like, is consistently provided to the pilots. Likewise, the use of this form is not yet incorporated or documented in the existing Echo Air manual.



FLIGHT LOG

Control No. _____

FLIGHT DATE _____ ETD: _____

STUDENT NAME _____ INSTRUCTOR PILOT _____

FLT	ACFT TYPE	ROUTE		TIME			NO. #	FUEL IN GALLONS			OIL	STAGES / LESSONS
	ACFT REGISTRY	DEP	DEST	ENGINE ON	ENGINE OFF	TOTAL TIME	T/O LNDG	LH TANK	RH TANK	BURN OUT		REMARKS
1												
2												
3												

_____ LIC NO _____ _____ LIC NO _____

STUDENT SIGNATURE FLIGHT INSTRUCTOR (PRINT & SIGN)

DISPATCH RELEASE

NOTAMS

WEATHER

NAV LOG / MAPS

WEIGHT AND BALANCE

NUMBER OF POB | ACFT TYPE

TOT FUEL ON BOARD | MAX GROSS WT

FLIGHT PLAN/CLEARANCES / AIRCRAFT DOCUMENTS

ENDURANCE | EMPTY WT

FLIGHT TIME | USEFUL LOAD

CHECKLIST | RAMP WEIGHT

I certify that this flight has been properly checked with its limitation and complied with existing CAAP Civil Air Regulations in the interest of safety.

Flight Dispatch Lic. #

MAINTENANCE RELEASE

AIRCRAFT TYPE

AIRCRAFT REGISTRY

INSPECTION CONDUCTED

CORRECTIVE ACTION FROM PREVIOUS DISCREPANCIES

FUEL LOADS

OILS

AIRCRAFT DATA

	TOTAL TIME	TIME DUE FOR INSPECTION
AIRCRAFT		
ENGINE		
PROPELLER		

REMARKS

I certify that aircraft is airworthy and has been properly inspected and maintained in accordance with existing CAAP Civil Air Regulation. I therefore release Aircraft for flight.

Aircraft Mechanic _____ Lic. # _____

Figure 11 – Highlighted part of the Echo Air Flight Log form wherein "Dispatch Release" is not fully utilized.

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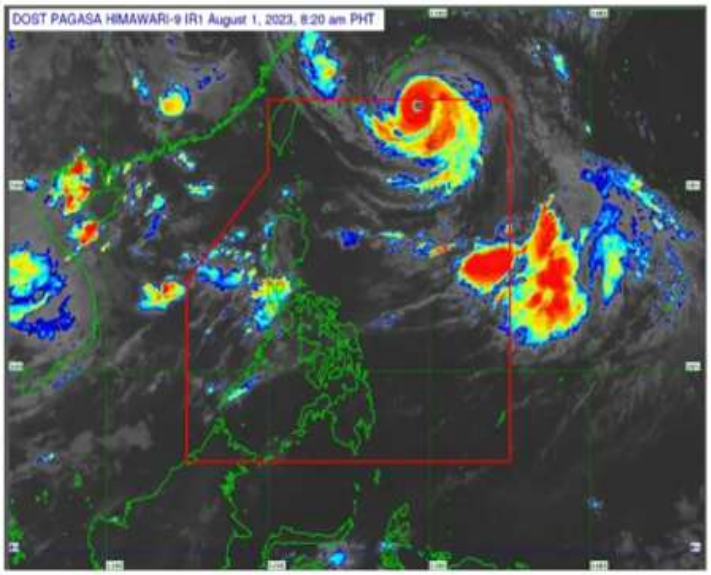
On the day of the accident, the following weather information are available (Figure 12-16):

PAGASA reported that Falcon was last spotted 925 kilometers east northeast of Extreme Northern Luzon. It has maximum sustained winds of 175 kilometers per hour and gustiness of up to 215 kph.

Falcon is moving northwest at a speed of 20 kph. The typhoon enhances the southwest monsoon, which will bring occasional monsoon rains over the western portion of Luzon in the next three days.

Habagat will bring monsoon rains over Zambales and Bataan. It will also bring occasional rains over Metro Manila, Pangasinan, Pampanga, Bulacan, and Occidental Mindoro.

The southwest monsoon will bring cloudy weather conditions with scattered rain showers and thunderstorms over Cordillera Administrative Region, Cagayan Valley, Calabarzon, the rest of Ilocos Region, the rest of Central Luzon, the rest of MIMAROPA, and Antique.



Partly cloudy to cloudy weather conditions are expected over the remaining parts of the country.

PAGASA also said that Falcon may intensify into a super typhoon after leaving the Philippine Area of Responsibility.

"Falcon is potentially at its peak intensity at this time and likely to maintain its strength for the next 48 hours, although intensification into a super typhoon is not ruled out," PAGASA said.

The weather disturbance is expected to leave the country's vicinity on Tuesday afternoon or evening.

The weather agency has warned the public of possible flash floods and landslides due to moderate to heavy rains and severe thunderstorms.

Meanwhile, the coastal water condition over most parts of the country will be moderate to rough, according to the weather bureau.

What can you say about the latest weather update? Just feel free to leave your comments and reactions to this article.

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Figure 12 – PAGASA weather satellite data

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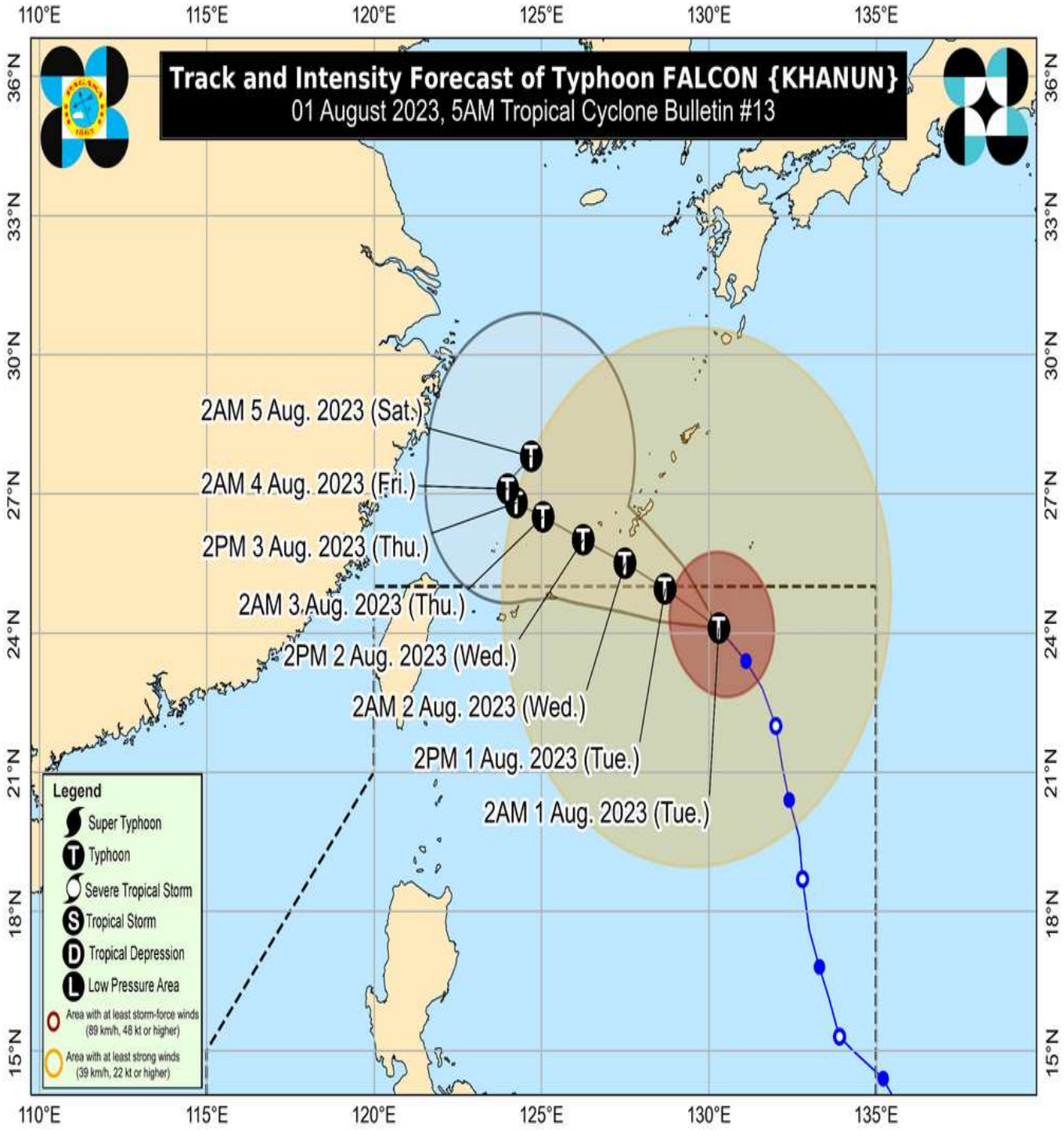

Figure 13 –Track forecast of typhoon Falcon

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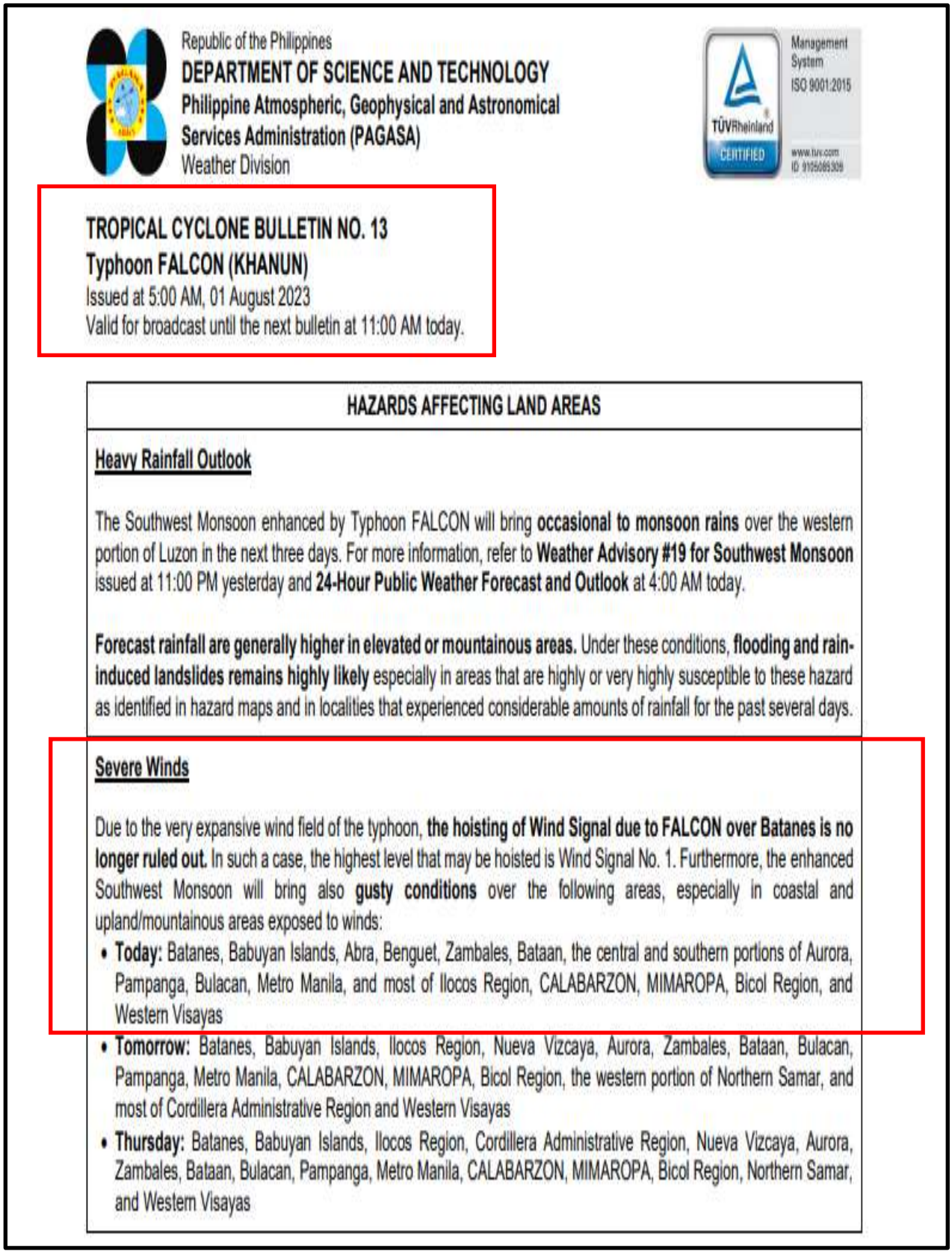

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Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA)
Weather Division

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TROPICAL CYCLONE BULLETIN NO. 13
Typhoon FALCON (KHANUN)
Issued at 5:00 AM, 01 August 2023
Valid for broadcast until the next bulletin at 11:00 AM today.

HAZARDS AFFECTING LAND AREAS

Heavy Rainfall Outlook

The Southwest Monsoon enhanced by Typhoon FALCON will bring **occasional to monsoon rains** over the western portion of Luzon in the next three days. For more information, refer to **Weather Advisory #19 for Southwest Monsoon** issued at 11:00 PM yesterday and **24-Hour Public Weather Forecast and Outlook** at 4:00 AM today.

Forecast rainfall are generally higher in elevated or mountainous areas. Under these conditions, **flooding and rain-induced landslides remains highly likely** especially in areas that are highly or very highly susceptible to these hazard as identified in hazard maps and in localities that experienced considerable amounts of rainfall for the past several days.

Severe Winds

Due to the very expansive wind field of the typhoon, **the hoisting of Wind Signal due to FALCON over Batanes is no longer ruled out.** In such a case, the highest level that may be hoisted is Wind Signal No. 1. Furthermore, the enhanced Southwest Monsoon will bring also **gusty conditions** over the following areas, especially in coastal and upland/mountainous areas exposed to winds:

- **Today:** Batanes, Babuyan Islands, Abra, Benguet, Zambales, Bataan, the central and southern portions of Aurora, Pampanga, Bulacan, Metro Manila, and most of Ilocos Region, CALABARZON, MIMAROPA, Bicol Region, and Western Visayas
- **Tomorrow:** Batanes, Babuyan Islands, Ilocos Region, Nueva Vizcaya, Aurora, Zambales, Bataan, Bulacan, Pampanga, Metro Manila, CALABARZON, MIMAROPA, Bicol Region, the western portion of Northern Samar, and most of Cordillera Administrative Region and Western Visayas
- **Thursday:** Batanes, Babuyan Islands, Ilocos Region, Cordillera Administrative Region, Nueva Vizcaya, Aurora, Zambales, Bataan, Bulacan, Pampanga, Metro Manila, CALABARZON, MIMAROPA, Bicol Region, Northern Samar, and Western Visayas

Figure 14 – Tropical Cyclone Bulletin no. 13, Typhoon Falcon, issued at 0500H August 01, 2023.

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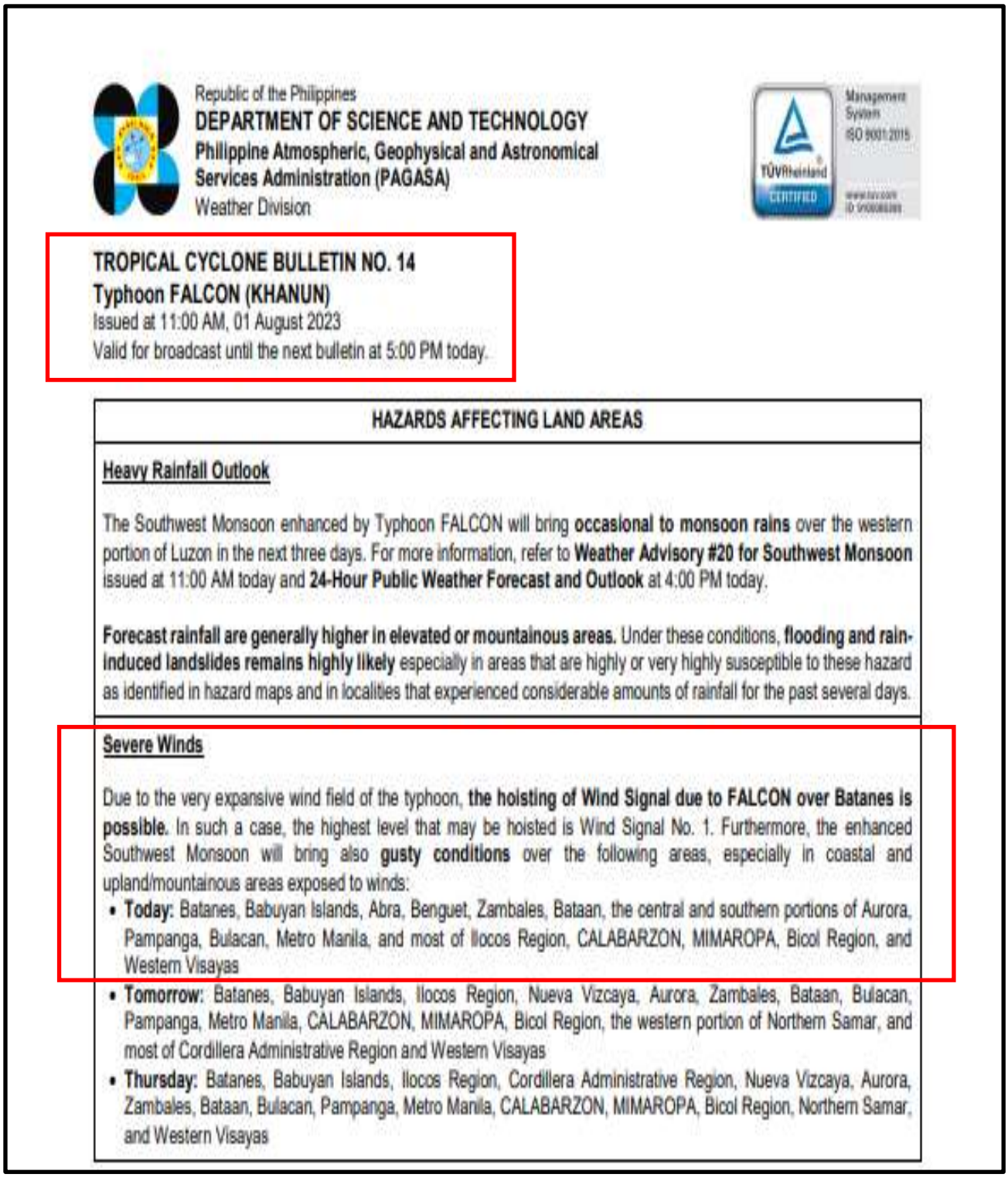

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Weather Division

TROPICAL CYCLONE BULLETIN NO. 14
Typhoon FALCON (KHANUN)
Issued at 11:00 AM, 01 August 2023
Valid for broadcast until the next bulletin at 5:00 PM today.

HAZARDS AFFECTING LAND AREAS

Heavy Rainfall Outlook

The Southwest Monsoon enhanced by Typhoon FALCON will bring **occasional to monsoon rains** over the western portion of Luzon in the next three days. For more information, refer to **Weather Advisory #20 for Southwest Monsoon** issued at 11:00 AM today and **24-Hour Public Weather Forecast and Outlook** at 4:00 PM today.

Forecast rainfall are generally higher in elevated or mountainous areas. Under these conditions, **flooding and rain-induced landslides remains highly likely** especially in areas that are highly or very highly susceptible to these hazard as identified in hazard maps and in localities that experienced considerable amounts of rainfall for the past several days.

Severe Winds

Due to the very expansive wind field of the typhoon, **the hoisting of Wind Signal due to FALCON over Batanes is possible.** In such a case, the highest level that may be hoisted is Wind Signal No. 1. Furthermore, the enhanced Southwest Monsoon will bring also **gusty conditions** over the following areas, especially in coastal and upland/mountainous areas exposed to winds:

- **Today:** Batanes, Babuyan Islands, Abra, Benguet, Zambales, Bataan, the central and southern portions of Aurora, Pampanga, Bulacan, Metro Manila, and most of Ilocos Region, CALABARZON, MIMAROPA, Bicol Region, and Western Visayas
- **Tomorrow:** Batanes, Babuyan Islands, Ilocos Region, Nueva Vizcaya, Aurora, Zambales, Bataan, Bulacan, Pampanga, Metro Manila, CALABARZON, MIMAROPA, Bicol Region, the western portion of Northern Samar, and most of Cordillera Administrative Region and Western Visayas
- **Thursday:** Batanes, Babuyan Islands, Ilocos Region, Cordillera Administrative Region, Nueva Vizcaya, Aurora, Zambales, Bataan, Bulacan, Pampanga, Metro Manila, CALABARZON, MIMAROPA, Bicol Region, Northern Samar, and Western Visayas

Figure 15 – Tropical Cyclone Bulletin no. 14, Typhoon Falcon, issued at 1100H August 01, 2023.

Note: Data Source for Figure 14 and 15 is from the Climate and Agrometeorological Data Section (CADS), Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA).

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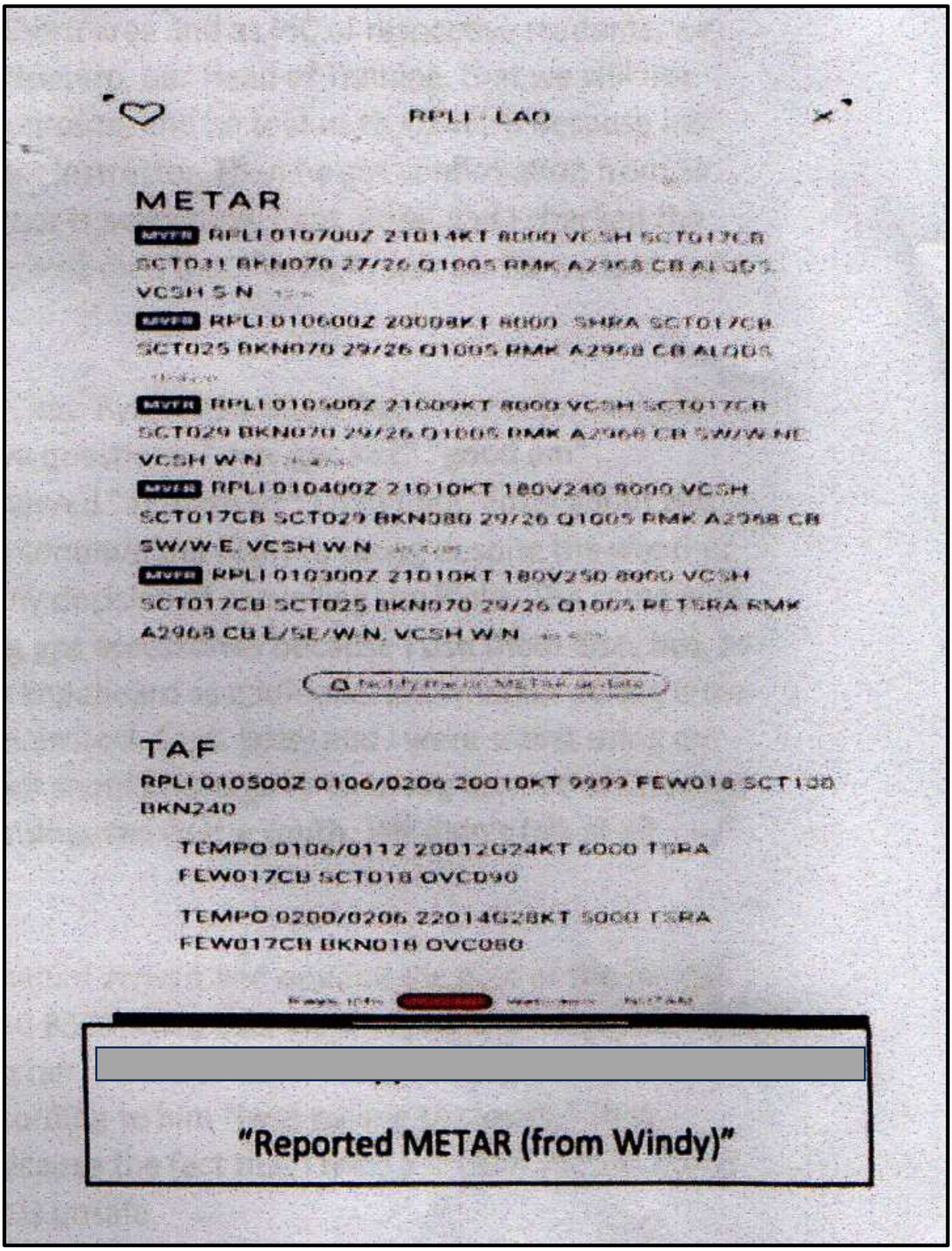

Figure 16 – Reported METAR

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Based on the information above, gusty conditions, especially in coastal areas and upland/mountainous areas exposed to wind (see particularly Tropical Cyclone Bulletin Nos. 13 and 14 – Typhoon Falcon, issued at 0500H and 1100H on August 1, 2023), are forecasted due to the enhanced southwest monsoon caused by Tropical Cyclone Falcon. Although the mentioned weather disturbance is already outside the Philippine area of responsibility, it still has some forecasted impact on various areas, such as Zambales, Batanes, Babuyan Islands, Abra, Benguet, Zambales, Bataan, the central and southern portions of Aurora, Pampanga, Bulacan, Metro Manila, and most of the Ilocos Region, CALABARZON, MIMAROPA, Bicol Region, and Western Visayas. Significantly, the published and actual route of RP-C8598 traverses through some of these impacted areas. This weather condition was further confirmed based on the information and documents provided by the next-of-kin (NOK) of RP-C8598's FI, wherein it was disclosed that the private message between the SP and his family member revealed their encounter with bad weather along the route.

The SP referred to it as a "small typhoon," during which his FI was in control for most of the flight due to the challenging weather. Remarkably, despite the forecasted adverse weather conditions, both aircraft that took off from RPUT safely landed at RPLI without any untoward events.

2.3.3 Flight from RPLI to RPUY-RPUT

Upon their arrival at RPLI at about 1034H and 1112H, respectively, both flight crews of the two (2) aircraft, RP-C9062 and RP-C8598, had some snacks before departing again for their next flight. While having their snacks, the FI of RP-C9062 mentioned that they discussed the weather conditions along the shoreline, which was the one taken by RP-C8598. During their conversation, the deteriorating weather in the area was highlighted, including the fast build-up of Cumulonimbus clouds within RPLI. As they continued their discussion, the RP-C9062 FI proposed the idea that, for their departure from RPLI, they consider taking the east side route over the mountains (Figure 17) to navigate away from the deteriorating weather. This suggested route was also the route taken by RP-C9062 on its way to RPLI. Following this discussion, both FIs agreed to proceed with the proposed route via the east of the station, despite the RP-C8598 FI being unfamiliar with this new route.

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Figure 17 - RPLI-RPUT flight route via the east side.

The two (2) aircraft then departed RPLI at around 1215H for RP-C9062, followed by RP-C8598 at around 1220H. Once airborne, both aircraft were reported to be closely monitoring each other through the RPLI Tower frequency. Likewise, between 10 NM out of RPLI and 32 NM from Alcala, both FIs continued to communicate with each other via CTAF, updating each other about their positions and locations. Nothing unusual has been reported between the two (2) aircraft during the times that they had communication other than the information from RP-C8598 that the weather started to deteriorate in his area. As for the crew of RP-C9062, weather was clear when they started cruising at around 7,500 ft., and after passing the mountain area, visibility was clear, so they could now see RPUT on the horizon. When the time has come for RP-C9062 to report to RPUT Tower, he leaves the CTAF frequency to contact the Tower. After this, the latter then again switched to the CTAF frequency to check with the pilot of RP-C8598. However, there had been no response from the crew of the other aircraft, and they can no longer establish any contact with them via CTAF or Facebook Messenger. Prior to their last communication with RP-C8598, its crew reported that they were approximately 32 NM north west of Alcala, heading 040° and climbing to look for some clearing. RPUT Tower's last communication with RP-C8598 was when it was reported that they were 10 NM east of the station, passing 4,900 ft. and climbing 7,500 ft. Thinking that it

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was just a lost communication with the other aircraft, the pilot of RP-C9062 initiated an orbit, hoping that they would re-establish contact with RP-C8598. Verification was also made at that time with RPUT Tower to ascertain whether RP-C8598 had made its initial report or if it had returned to RPLI. However, confirmation was received that no communication had been received from the said flight. After some time spent searching and attempting to communicate with RP-C8598 without success, the crew of RP-C9062 proceeded to land at RPUT and report the situation to Echo Air management. A discussion ensued regarding the action plan to be taken, and since there was another scheduled flight for RP-C9062, the FI of the previous flight initiated to be on board and accompany them in searching for the lost aircraft. In addition, RPUT Tower started activating their emergency procedure for the reported occurrence. Efforts were exerted to locate the aircraft, but the day ended without any success.

To further investigate what might have happened to RP-C8598 after it lost communication with ATC and other traffic, coordination was made with the CAAP Air Traffic Services – Manila Radar, as monitoring of flights within the RPLI Flight Information Region (FIR) falls within their jurisdiction. A file copy of the Secondary Surveillance Radar (SSR) data last August 01, 2023 was obtained with the following information:

a. The radar track of RP-C8598 disappeared on the radar display at about 0446 UTC/1246H (Figure 19).

b. By overlaying the obtained radar track of RP-C8598 on the current RPLI FIR chart alongside the prevailing weather data at the time of the accident suggests that RP-C8598 may have inadvertently transitioned from visual meteorological conditions (VMC) into instrument meteorological conditions (IMC).

c. The Manila radar information confirmed that the flight deviated from its published Nav Log flight route out of RPLI to RPUT.

In addition to the above, the weather conditions on the area where the aircraft disappeared from the radar were corroborated by the crew of RP-C9062 who initiated the initial search for the missing company aircraft. Their search was hindered by the deteriorating weather conditions in the area, which complicated the search operation.

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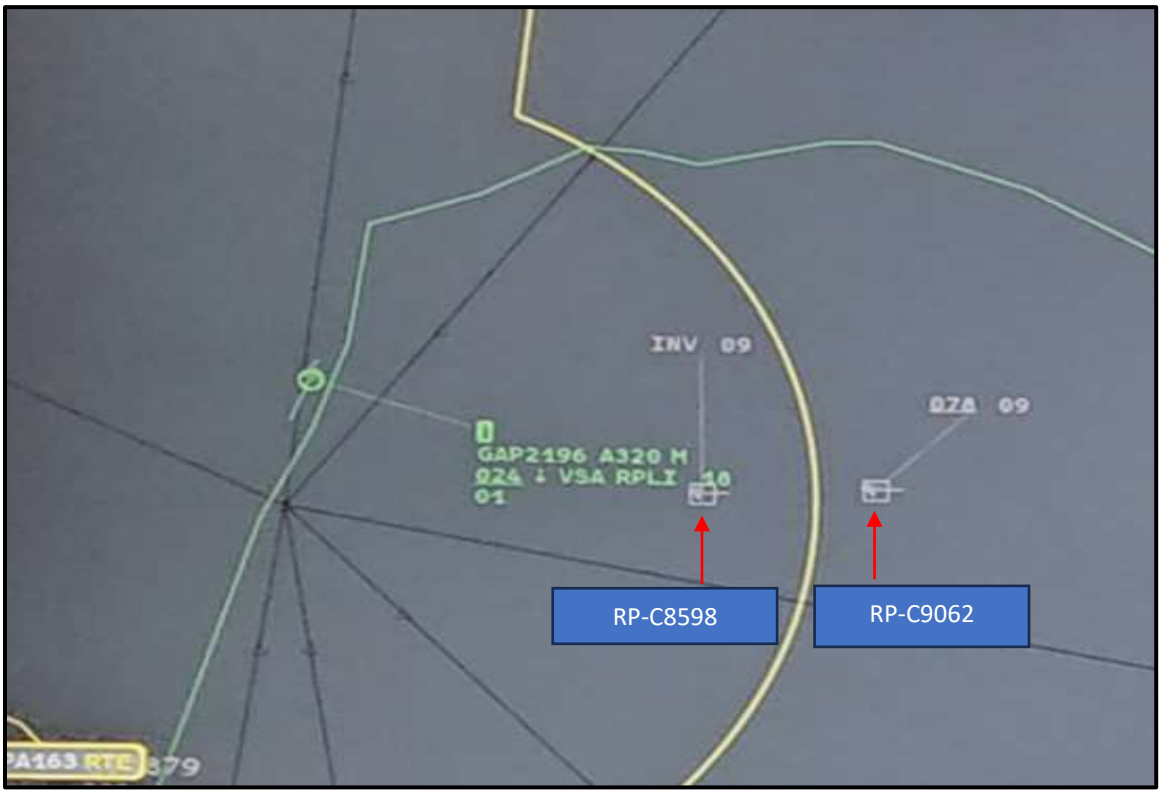

Figure 18 - Radar depicting both aircraft at flight at about 0443 UTC

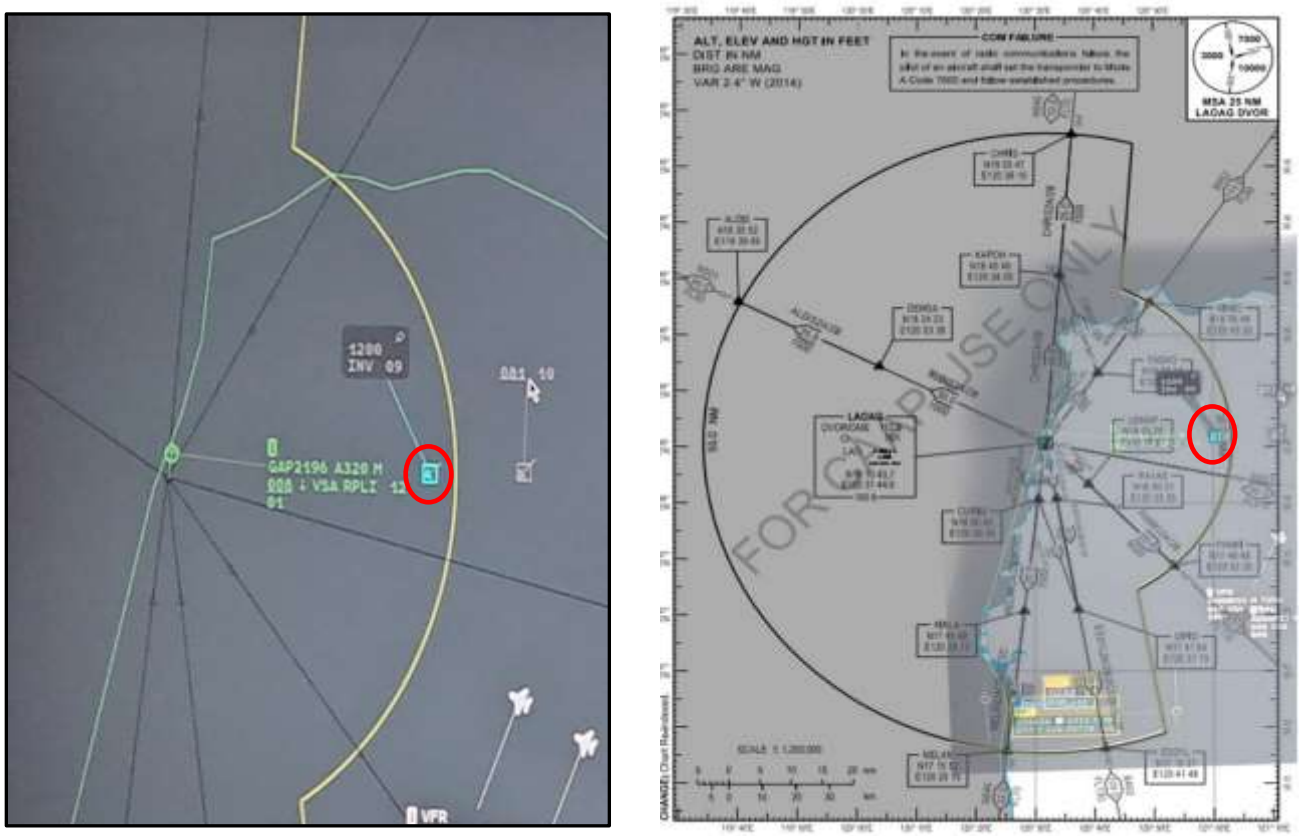

Figure 19 - The Flight route with radar track overlay

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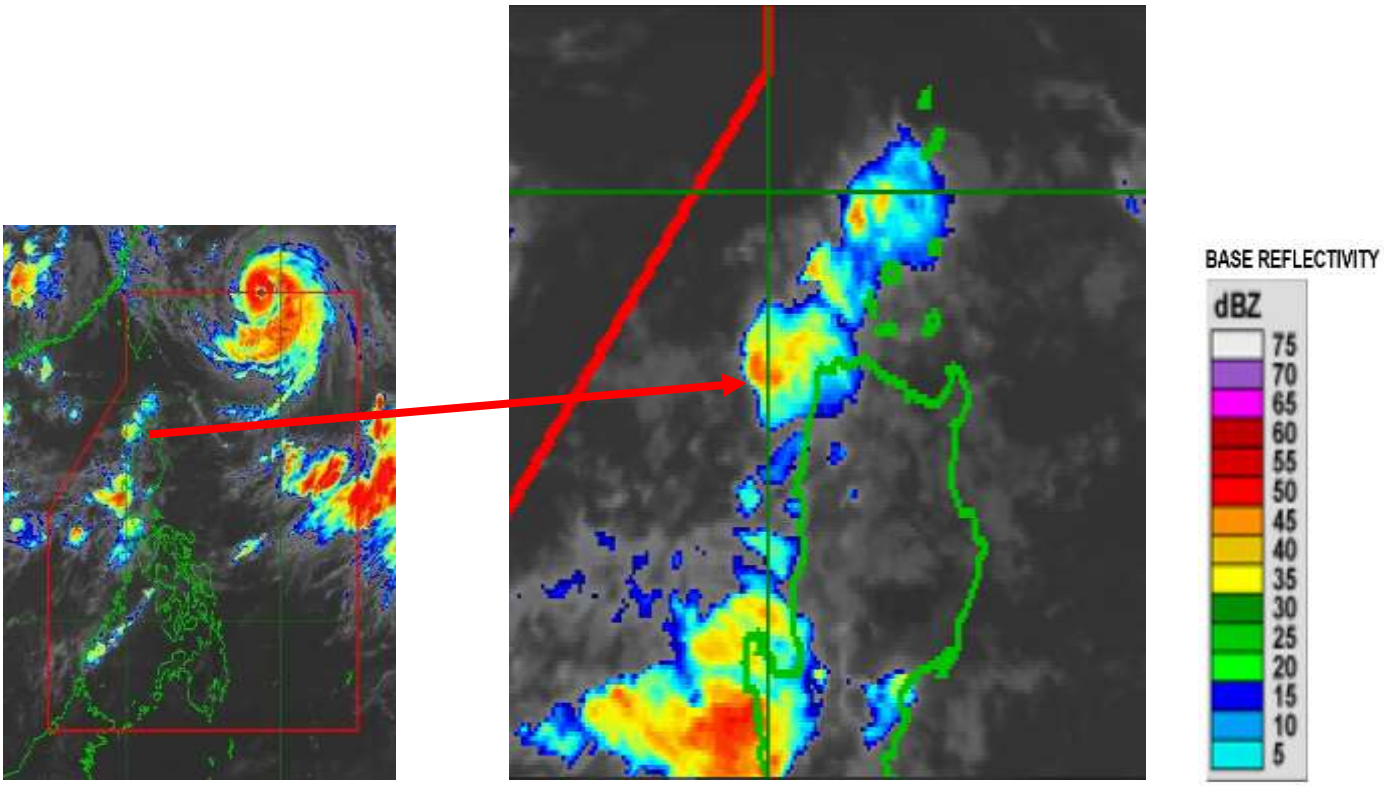

Figure 20 - The Laoag weather radar image.

Based on this compiled information, it is highly probable that RP-C8598 was maintaining its intended flight path in a deteriorating weather condition and entered into an instrument meteorological condition. This resulted in the crew experiencing spatial disorientation, ultimately leading to the pilot losing control of the aircraft. This scenario underscores the critical importance of pilots maintaining situational awareness and adhering to proper procedures, especially when confronted with adverse weather conditions. Navigating through clouds and weather build-up carries inherent risks, often resulting in tragic and fatal accidents. Therefore, it is imperative for all pilots to always adhere to VFR weather minimums. A prudent approach to avoiding such situations, such as weather build-up or thunderstorms, is to maintain a safe distance, adjust your flight path accordingly, or even cancel the flight if necessary.

As for the potential cancellation of the flight or the crew's decision to remain overnight (RON) at RPLI, the interview disclosed that this is always a viable option for pilots to consider when faced with safety concerns such as adverse weather conditions. However, this procedure is not documented within the internal documents and manuals of the involved flying school, including specific guidelines for its implementation. Moreover, it can be said that the hasty decision of the pilots involved to return to RPUT proved to be the one that mattered the most to them when they decided to depart RPLI on the day of the accident.

In addition to the above, an inquiry was also made with Echo Air regarding their standard operating procedures (SOP) for implementing a flight following process for their day-to-day flights. During the interview, they mentioned having a radio in the hangar to monitor communication and flight status for both outbound and inbound flights. However, further verification revealed that while the equipment is available in the hangar, there are no specific

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personnel assigned to closely monitor flight status. Instead, they often rely on updates from pilots via Facebook Messenger. It's worth noting that these monitoring practices are not documented in any Echo Air manuals or documents. If such procedures were clearly established and implemented, they could serve as a platform for flight crews and operations personnel in the hangar or office to efficiently relay or receive important information, upon which decisions could be made to ensure flight safety.

2.3.4 Pilot-In-Command/FI Duties and Responsibilities

Under the PCAR, the Pilot-In-Command (PIC) is defined as "The pilot designated by the operator, or in the case of general aviation, the owner, as being in command and charged with the safe conduct of a flight".

In addition, PCAR 8.5 list the following crew member duties and responsibilities particularly for the PIC as:

8.5.1.1 AUTHORITY AND RESPONSIBILITY OF THE PIC

(a) Pilot-in-command (PIC): Each operator shall designate one pilot to act as PIC for each flight.

(b) The PIC shall be responsible for the operations and safety of the aircraft and for the safety of all crew members, passengers and cargo on board, when the doors are closed. The PIC shall also be responsible for the operation and safety of the aircraft from the moment the aircraft is ready to move for the purpose of taking off until the moment it finally comes to rest at the end of the flight and the engine(s) used as primary propulsion units are shut down (and in the case of helicopters, rotor blades stopped).

(c) The PIC of an aircraft shall have final authority as to the operation of the aircraft while he or she is in command.

(d) The PIC of an aircraft shall, whether manipulating the controls or not, be responsible for the operation of the aircraft in accordance with the rules of the air, except that the PIC may depart from these rules in emergency circumstances that render such departure absolutely necessary in the interests of safety.

(e) In an emergency during flight, the PIC shall ensure that all persons on board are instructed in such emergency action as may be appropriate to the circumstances.

Relatively, Echo Air's Procedure Manual (1st Edition issued 21 February 2020) Chapter 1, Section IV, Article G states the following Duties and Responsibilities of a Flight Instructor (FI):

(g) Flight Instructors School instructors are the front-line of EAIAA. Each Flight Instructor shall hold professional pilot license and instructor rating and appropriate ratings or authorization in accordance with 2.3, relevant to the instruction given.

It is their duty to ensure that technical skills and knowledge are of the highest

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standards to perform their duties safely and efficiently.

Based on the above, the regulation and available internal manual of the flying school clearly define the responsibility of the PIC/FI when it comes to the safety of the flight. Prior to the accident, it is evident based on the information gathered that while en route from RPUT to RPLI, RP-C8598 had already encountered adverse weather conditions. This resulted in the FI taking control most of the time due to the challenging weather and thereby deviating from the primary purpose of their cross-country navigation training because instead of focusing on becoming familiar with their training route, their attention was diverted to overcoming the weather conditions. If these factors had been considered prior to the departure of RP-C8598 from RPLI and appropriate risk assessments had been made, this accident might have been prevented.

As for the actions of the involved FI of RP-C9062, it can also be said that his decision to deviate from the school's published navigation route without prior approval clearly demonstrates his inability to perform his duties safely and efficiently as an FI. By doing so, he not only exposed the aircraft and its occupants to unwanted risk but also blatantly disregarded the restrictions imposed by the regulatory and standard procedures of the concerned Approved Training Organization (ATO). Moreover, his actions in deviating from the published route defeat the purpose of imparting the navigation lesson to his trainees.

2.4 CAAP Oversight Function on ATO

The oversight function for an ATO falls under the jurisdiction of the FSIS, particularly its Licensing Certification Department—Training Organization Certification Inspection Division (LCD-TOCID). Based on records, TOCID performed the scheduled renewal audit of Echo Air International Aviation Academy on March 4–7, 2022. This is in line with the renewal of the issued ATOC no. 2021-002 of the mentioned training organization. The audit covers the following references:

- **a.** PCAR Parts 1,2,3,4,5,6,8,9 and 11
- **b.** TOCID Operations Job Aids 01-19
- **c.** Memorandum Circular dated October 14, 2014
- **d.** AC-02-07, AC-02-10, and AC-02-11

Subsequently, an Annual Inspection was also conducted on the subject organization on June 13-16, 2023.

On the review of both renewal audit and annual inspection reports, investigators were able to note, particularly under the Safety Management System (SMS) section, that on the audit conducted last CY 2022, there was no significant finding on this part of the compliance. However, this was no longer the case with the CY 2023 inspection. The latter inspection revealed a number of non-compliances by the involved ATO on this requirement. Further verification was conducted by comparing the Job Aid used to check this SMS compliance, and it was found to be the same for both inspections, with identical compliance items. The only notable difference between the two oversight functions conducted on Echo Air was the inspector that carried out the audit and inspection. Further examination of Echo Air's documentation after the accident also revealed that the only change made to the organization's SMS was the replacement of its Accountable Manager.

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While the above observation cannot be considered one of the major factors contributing to the accident that occurred on August 1, 2023, it is a fact that the organization's SMS is intended to address the requirement of identifying hazards and managing risks within the operations of Echo Air. Several crucial components under the SMS were noted to be non-compliant with the requirement during the audit conducted in CY 2023, which may be related to the circumstances and decision-making of the involved pilots at the time of the accident. These are:

a. No procedure to encourage voluntary reporting of hazards/threat by employees;

b. No clear differentiation between hazard and risk;

c. No policy for immunity for employees that report safety related deficiencies, threats or hazards;

d. No procedure for periodic review of existing risk analysis records;

e. No evidence of a safety publication, circular or channel for communicating safety matters to employees.

The above list may have addressed the known history of repeated deviations of the RP-C9062 FI from the published navigation route as well as the application of applicable risk management strategies by the involved flight crew when confronted with such kind of decision-making situations on August 1, 2023.

3. CONCLUSIONS

3.1 Findings

3.1.1 The involved pilots (FI and SP) are holders of valid pilot licenses and medical certificates issued by the CAAP.

3.1.2 The FI is rated to perform his functions for that specific type of aircraft.

3.1.3 The aircraft has valid Certificates of Airworthiness and Registration.

3.1.4 The aircraft was released for flight without any recorded maintenance issues. Likewise, teardown inspection of the engine revealed no evidence of pre-impact mechanical malfunctions or anomalies that would have affected the aircraft normal operation.

3.1.5 The involved ATO's navigation log form is not consistent with the published route under its Procedure Manual.

3.1.6 The ATO has been found to be not fully compliant with the restrictions imposed by the CAAP FSIS on its approved RPUT-RPLI cross-country flight training.

3.1.7 The ATO's current practice lacks the following documented procedures/guidelines:

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a. Procedure/guidelines on how to safely implement and manage cross country flight training for RPUT-RPLI v.v. particularly during two (2) aircraft tandem flight training;

b. Requirement regarding the utilization of the company's navigation log form during cross country flight training;

c. Published procedure that assigns the specific responsibility of conducting pre-flight briefings;

d. Use of the current Flight Log form for each flight;

e. Policy on RON;

f. Procedure regarding the implementation of flight following and monitoring.

3.1.8 There is inconsistency in how the oversight function was conducted by the concerned FSIS unit during the ATO's renewal of its ATOC.

3.2 Probable Cause

3.2.1 Primary Cause Factors

a. The Flight Instructors' decision to continue the VFR flight in a deteriorating weather condition resulted in a loss of control inflight.

b. The Flight Instructor's decision to deviate from the published training route.

3.2.2 Contributory Cause Factor

a. Insufficient weather information during pre-flight briefing;

b. The organization and pilot's lack of competency to perform threat and error management;

c. Absence of documented guidelines within the organization regarding the procedure for RON.

4. SAFETY RECOMMENDATIONS

4.1 The AAIIB provides the following recommendation to the **CAAP-FSIS** in view of the investigation conducted:

a. To ensure that the operator conducts additional training for their FI's on reduced visibility operation under adverse weather condition to include flight operations over mountainous areas.

b. To ensure that the operator establishes a clear policy on VFR operations in deteriorating weather conditions.

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c. To ensure that the operator reinforces their FIs and SPs competency on threat and error management through additional training sessions.

d. To ensure that the pre-flight briefing procedures of the operator are established and the specific responsibilities for each identified task is documented.

e. To ensure that operators regularly conduct reviews of internal procedure in case of diversion or emergency during cross-country training.

f. To ensure that all procedures and processes implemented by the organization are fully documented and updated in the manuals.

g. To review the competency of its LCD-TOCID inspectors and ensure the diligent evaluation of any documents and records during the conduct of audit and inspection.

-----End-----

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