AIRCRAFT ACCIDENT INVESTIGATION AND INQUIRY BOARD

FINAL REPORT

RP-C6903
DE HAVILLAND CANADA, DHC-6-400

OPERATOR: ISLAND AVIATION INC.

TYPE OF OPERATION: NON-SCHEDULED COMMERCIAL

DATE OF OCCURRENCE: SEPTEMBER 14, 2024

PLACE OF OCCURRENCE: RWY 13, PAMALICAN AIRPORT, PAMALICAN ISLAND, CUYO, PALAWAN, PHILIPPINES

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(De Havilland Canada, DHC-6-400, RP-C6903 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: Serious Incident involving a DHC-6-400 type of aircraft with Registry Number RP-C6903 owned and operated by Island Aviation Inc. had a runway side excursion at RWY 13, Pamalican Airport, Pamalican Island, Cuyo, Palawan, Philippines, on September 14, 2024/0828H.

Notification of Occurrence to National Authority

The Notification of the serious incident to AAIIB CAAP was relayed by the Operator of the aircraft at 1530H (LOCAL) on September 14, 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 and Deputy Investigator-In-Charge were 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 **11 March 2025.**

Synopsis:

On September 14, 2024, at about 0828H, a DHC-6-400 type of aircraft with registry number RP-C6903 operated by Island Aviation Inc. had a runway side excursion at RWY 13, Pamalican Airport, Pamalican Island, Cuyo, Palawan, Philippines. The two (2) flight crew and fourteen (14) passengers did not sustain any injuries; however, the aircraft sustained minor damage as a result of the incident. Visual Meteorological Condition (VMC) prevailed at the time of the incident. The cause of the occurrence was attributed to the pilot in command's decision to continue to land with reduced visibility, landing at higher airspeed and in a strong crosswind on the runway that resulted in a runway-side excursion.

LIST OF ACRONYMS AND ABBREVIATIONS

AAIIB	:	Aircraft Accident Investigation and Inquiry Board
AANSOO	:	Aerodrome and Air Navigation Safety Oversight Office
AD	:	Aerodrome
AGL	:	Above Ground Level
AOC	:	Air Operator Certificate
AMO	:	Approved Maintenance Organization
AMSL	:	Above Mean Sea Level
CAAP	:	Civil Aviation Authority of the Philippines
CAM	:	Cockpit Area Microphone
CCTV	:	Closed Circuit Tele Vision
COA	:	Certificate of Airworthiness
COR	:	Certificate of Registration
CPL	:	Commercial Pilot License
CRM	:	Crew Resource Management
CSMU		Crash Survivable Memory Unit
DOST	:	Department of Science & Technology
ELT	:	Emergency Locator Transmitter
FO	:	First Officer
FT	:	Feet
FMS	:	Flight Management System
GPS	:	Global Positioning System
IAI	:	Island Aviation Inc.
IFR	:	Instrument Flight Rules
ICAO	:	International Civil Aviation Organization
M	:	Meter(s)
MHZ	:	Megahertz
OFSAM	:	Office of the Flight Surgeon and Aviation Medicine
PCAR	:	Philippine Civil Aviation Regulation
PIC	:	Pilot-in-command
PF	:	Pilot Flying
PM	:	Pilot Monitoring
PNF	:	Pilot Not Flying
PR	:	Pamalican Radio
RWY	:	Runway
RH	:	Right Hand
RPUA	:	ICAO four letter code for Pamalican Airport
SA	:	Situational Awareness
TSIB	:	Transport Safety Investigation Bureau
UTC	:	Universal Time Coordinated
VFR	:	Visual Flight Rules

1. FACTUAL INFORMATION

Aircraft Registration No.	:	RP-C6903
Aircraft Type/Model	:	De Havilland Canada, DHC-6-400
Operator	:	Island Aviation Inc.
Address of Operator	:	Soriano Hangar, Lima Gate, Domestic Airport, Pasay City, Philippines
Place of Occurrence	:	RWY 13, Pamalican Airport, Pamalican Island, Cuyo, Palawan, Philippines
Date/Time of Occurrence	:	September 14, 2024 at about 0828H/0028UTC
Type of Operation	:	Non-Scheduled Commercial
Phase of Flight	:	Landing
Type of Occurrence	:	Runway side excursion

1.1 History of Flight

On or about 0828H, September 14, 2024, a DHC-6 series 400 type of aircraft with registry number RP-C6903, call sign Soriano Seven Zero-Zero, encountered a runway side excursion incident at RWY 13 in Pamalican Airport, Pamalican Island, Cuyo, Palawan, Philippines.

Approaching 10 miles to Pamalican Airport, the reported weather was 250 degrees, 16 knots gusting to 23 Knots, with heavy rain widespread over Pamalican. The PIC informs the Pamalican Radio that they will be holding on to the final leg until the weather improves. After Pamalican Radio reported that the weather had improved, the PIC decided to continue its approach to land.

The approach to touchdown on Runway 13 was uneventful. However, while the aircraft was on the landing roll, it suddenly veered to the right side of the runway, exiting the right-hand main landing gear from the pavement 15 meters wide. The aircraft re-entered the runway pavement and again exited to the left side of it. The aircraft continued to roll,

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re-entered the runway pavement towards the right side, and finally exited the runway before it collided with the bushes at the side of the terminal ramp. The aircraft stopped at coordinates 11.3562282N 120.730004E, approximately 10 meters from the right runway edge lights. The flight crew taxied the aircraft back to the runway pavement. The airport duty personnel and company mechanics ran to the scene to help and secure the aircraft. The passengers disembarked normally on the runway. The two (2) pilots and fourteen (14) passengers did not sustain any injuries. Visual inspection of the aircraft revealed that it sustained minor damages. There were no significant remarks listed on the aircraft logbook before the event.

Figure 1 - The aircraft at its final resting point.

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
None	2	14	0	**16**

1.3 Damage to Aircraft

The aircraft sustained minor damage.

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Figure 2 - Damaged incurred by RP-C6903.

1.4 Other Damages

The aircraft collided with one (1) wooden security signage along its path (Figure 3).

Figure 3 - Caution signage hit by RP-C6903.

1.5 Personnel Information

1.5.1 Pilot-In-Command (PIC)

Pilot-In-Command	:	Male
Date of Birth	:	11 February 1985
Nationality	:	Filipino
License	:	105755-ATPL

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Valid up to	:	May 30, 2029
Type Rating	:	Airplane: Multi- Engine Land-Instrument: DO228, DHC-6-400
Medical Certificate	:	Class I, Expiry 15 October 2024
Time on DHC-6-400	:	692+57 Hours as per Pilot logbook
Grand Total time	:	5,671+02 Hours as per Pilot logbook

1.5.2 First Officer (FO)

Pilot-In-Command	:	Male
Date of Birth	:	22 October 1993
Nationality	:	Filipino
License	:	126852-CPL
Valid up to	:	November 30, 2027
Type Rating	:	Airplane: Multi-Engine Land-Instrument: DO228, DHC6-400
Medical Certificate	:	Class I, Expiry 25 January 2025
Time on DHC-6-400	:	161+30 Hours as per Pilot logbook
Grand Total time	:	2,727+43 Hours as per Pilot logbook

1.6 Aircraft Information

The De Havilland Canada DHC-6 Twin Otter is a Canadian STOL (Short Takeoff and Landing) utility aircraft developed by de Havilland Canada in the mid-1960s and still in production today. DHC-6 Series 400 Twin Otter aircraft is an all-metal, high wing monoplane, powered by two wing-mounted turboprop engines, each driving a three-bladed, reversible pitch, fully feathering propeller. The aircraft carries a pilot, co-pilot, and up to 19 passengers, depending upon the seating configuration. The subject aircraft was bought by the company as “brand new” in May 2023 and started operation the following month.

Figure 4 - The DCH-6-400” Twin otter” aircraft.

1.6.1 Aircraft Data

Registration Mark	:	RP-C6903
Manufacturer	:	De Havilland Canada
Country of Manufacturer	:	Canada
Type/Model/Type Certificate	:	De Havilland Canada /DHC-6-400/A-82
Operator	:	Island Aviation Inc.
Serial No.	:	991
Maximum Take-off weight	:	5,670Kgs
Date of Manufacture	:	February 2023
Certificate of Airworthiness valid up to	:	Valid until July 7, 2025
Certificate of Registration valid up to	:	Valid until June 13, 2029
Category	:	Normal
No. of crew	:	2
Airframe total time	:	1,106+22 Hours as September 14, 2024

1.6.2 Engine Data

The engines have been upgraded to the new PT6A-34. The engine continues to be flat rated to 620 horsepower, and all take-off and landing distances remain unchanged. Full flat rated take-off power from the PT6A-34 is available to ISA +27°C.

Manufacturer	:	Pratt & Whitney
Type	:	Turbine
Type/Model	:	Turbo-Prop/PT6A-34
Engine SN #	:	(LH) PCE-RB-1251; (RH) PCE-RB-1253
Engine TSO	:	New
Engine Total Time	:	(LH) 1,106+22 Hours as of September 14, 2024 (RH) 1,106+22 Hours as of September 14, 2024

1.6.3 Propeller Data

The propellers blades are Hartzell HC-B3TN-3D, metal, counterweight, three-bladed, fully feathering, reversible, and speed governed units. Each propeller is 8 feet 6 inches (2.6 m) in diameter. Each propeller system incorporates a propeller overspeed governor and an automatic feathering system.

Manufacturer	:	Hartzell
Type	:	Metal Alloy
Type/Model	:	Variable Pitch / (LH) HC-B3TN-3D/T10282N (RH) HC-B3TN-3D/T10282N
Prop Blade SN #	:	(LH) BUA33578 (RH) BUA33589
Propeller TSO	:	New

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Propeller total time	:	1,106+22 Hours

1.7 Meteorological Information

Visual Meteorological Conditions prevailed at the time of the occurrence.

1.8 Aids to Navigation

The flight departed under Instrument Flight Rules (IFR) and then transitioned to Visual Flight Rules (VFR) on the descent. Using VFR, the pilot must be able to operate the aircraft with visual references to the ground and visually avoid obstructions and other aircraft.

1.9 Communications

The aircraft was equipped with a standard radio transceiver. Communications were carried out between the pilot and Pamalican radio operator.

1.10 Aerodrome Information

Pamalican Aerodrome (RPUA) is a small airport in Pamalican Island, Cuyo, Philippines. The ICAO designator of this facility is AG4820. It is listed as private aerodrome facility and was certified by the Aerodrome and Air Navigation Safety Oversight Office (AANSOO).

1.10.1 General Information

Aerodrome Name	:	Pamalican Aerodrome (AG4820) RPUA
Coordinates	:	11°21’31.341” N 120°43’39.674” E
Aerodrome Operator	:	Island Aviation Inc. /Seven Seas Resorts and Leisure, Inc., Pamalican island, Cuyo, Philippines
Runway Direction	:	13(132MAG)/31(321MAG)
ATS Frequency	:	Pamalican Radio:122.8Mhz
Runway Length	:	1320 meters
Runway Width	:	80 meters
Runway Elevation	:	4.50 m AMSL at 34 Degrees Celsius
Surface	:	10m Center concrete (flushed Macadam) Strength: 15,625AUW (Macadam Surface)
Slope	:	0.14%
Types of traffic permitted	:	VFR

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AD Operation	:	Airport Operations: 2200Z – 1000Z.
Security	:	H24
Restaurants	:	At the Club house
Apron	:	70M x 50M Flushed Macadam
Transportation	:	Club Vehicle
Visual Ground Aids	:	PAPI RWY 13; Painted Day markers. Lighted WDI; RWY end light identifier
Medical facilities	:	Clinic at AD and club house
AD category for fire fighting	:	CAT III.
Rescue equipment	:	Three (2) Fire trucks [One (1) Morita (3000 liters) and one (1) Isuzu (2000 liters)]. 135Kgs. Dry Chemical Extinguisher.
Facilities	:	Hangar, flight dispatch station, radio transceiver, refueling station, first aid kit, firefighting equipment and land transportation.
Capability for removal of disabled aircraft	:	Nil.
Cautions:	:	No RWY 31 approach as per operator and adequate clearance from trees covering the villas & club house.
Declared distances	:	

	TORA	TODA	ASDA	LDA
RWY 13	1200M	1230M	1230M	1200M
RWY 31	1200M	1230M	1230M	1200M

There are notable hills on the sides of the threshold on runway 13 in which strong crosswinds are encountered as aircrafts touchdown the runway of Pamalican Island.

1.11 Flight Recorders

1.11.1 General

The Aircraft Accident Investigation and Inquiry Board (AAIIB), Civil Aviation Authority of the Philippines (CAAP), took custody of the Cockpit Voice Recorder and sent it to the Singapore Transport Safety Investigation Bureau (TSIB) laboratory for readout and analysis. The AAIIB requested assistance from TSIB Singapore for the readout of the aircraft's cockpit voice recorder (CVR) to aid the investigation. This activity was performed by TSIB recorder specialists and was successfully downloaded at the Singapore TSIB data recovery facility. The audio conversation was extracted and transcribed by AAIIB investigators and TSIB personnel. The AAIIB received all recovered data from the recorder to support the ongoing Annex 13 investigation.

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1.11.2 Cockpit Voice Recorder

The aircraft was equipped with a Honeywell Solid-State Cockpit Voice Recorder (SSCVR) with serial number ARCVR-20046 and part number 980-6023-002 manufactured by Honeywell International Inc., capable of recording continuously for 120 minutes of radiotelephone communication and cockpit/interphone conversation. The SSCVR has four channels: Channel 1 for the Captain audio panel; Channel 2 for the First Officer audio panel; Channel 3 for additional crew and Channel 4 for the Cockpit Area Microphone (CAM). The Honeywell Solid State Cockpit Voice Recorder utilized a modular crash-survivable memory unit (CSMU) for protection of the solid-state voice recording memory. The CSMU retains the most recent 30 or 120 minutes of audio, digital, and timing information. This model was equipped with an underwater locator beacon.

The audio information was extracted from the CVR normally without difficulty. The quality of the audio was characterized as good. The summary of the voice recording was interpreted, and a transcript was prepared starting at 01:43:30 UTC, where the PIC was saying, “For landing,” and it ended at 02:03:11 UTC when the PIC ordered, “Let us shut down.” The transcript of the conversation between the PIC, FI, and Pamalican radio operator from the time the flight crew completed the landing checklist up to the time the aircraft shutdown lasted for 20 minutes.

1.12 Wreckage and Impact Information

The aircraft touched down approximately 300 meters after the runway 13 threshold. The PIC activated thrust reverse, followed by application of the pedal brakes; however, he noticed that the aircraft was veering to the right side of the runway. The PIC stated that he struggled for control to return the aircraft to runway center, but the succeeding yaw of the aircraft sent it out of the concrete surface to about 230 meters from the touchdown area. As soon as the pilot centered the aircraft, it veered to the left side of the runway, traveling about 150 meters before skidding down to a distance of about 80 meters. The aircraft veered to the right and traveled about 200 meters, causing damage to its right main landing gear tire. The aircraft then collided with some vegetation and the signage post, coming to a momentary stop. The pilot observed that both engines were still running and decided to bring the aircraft to the runway, where they shut down and deplaned. Figure 5 illustrates the aircraft's landing track.

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Figure 5 - RP-C6903 landing track.

During the visual inspection, the aircraft sustained minor damage. The visual inspection also revealed a puncture in the RH main landing gear tire. There were dents on the right rudder area, RH elevator tip, RH horizontal stabilizer, RH fuselage skin, and the right propeller.

1.13 Medical and Pathological Information

The medical certificates of the flight crew were current and met the CAAP and ICAO Annex 1 medical standards for exercising the privileges of the license held. There were no medical impediments for the pilots that could have affected the event.

1.14 Fire

There was no post-crash fire reported.

1.15 Search and Survival Aspects

The occurrence was survivable since it happened in an aerodrome where an emergency responder was able to reach the site immediately. The aircraft remained intact and only sustained minor damages.

1.16 Test and Research

On October 8, 2024, at the operator's hangar facility in Pasay City, an inspection of the aircraft RH wheel and its nomenclatures took place to determine the dynamic performance under transient conditions and the general kinematics of the wheel. The

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inspection result showed that a puncture occurred in the RH landing gear during the event.

1.17 Organizational and Management Information

1.17.1 Operator

Island Aviation, Inc. (IAI) is an Air Charter company operating in the Philippines with Air Operator Certificate No. AOC # 2009009 valid to operate up to 24 October 2026 issued by the Civil Aviation Authority of the Philippines. IAI is the aviation arm of A. Soriano Group of Companies, a holding company. IAI was established on May 1, 2003, as a direct spin-off from the Aviation Department of A. Soriano Corporation (ANSCOR), for which it has been conducting corporate flying for many years. The company was reorganized as an Air Charter to support the air transport needs of Amanpulo Resort and Leisure Inc.

IAI currently operates the two (2) DHC6-400 Twin Otter and two (2) Dornier 228-2020. Both aircraft are 19-seater (configured) twin-turbine powered propeller (turboprop) aircraft capable of operating and landing in the most rugged conditions. The aircraft RP-C6903, is listed on IAI AOC Operations specification.

1.17.2 Maintenance

The maintenance functions of RP-C6903 is being undertaken by Island Aviation Inc., Approved Maintenance Organization (AMO) with current Certificate number 89-10 issued by CAAP with facility located at Soriano Hangar, Lima Gate, Domestic Airport, Pasay City.

2.0 ANALYSIS

2.1 General

The incident involves a DHC-6 series 400 type of aircraft with registry number RP-C6903 that encountered a runway side excursion at RWY 13 in Pamalican Airport, Pamalican Island, Cuyo, Palawan, Philippines. Approaching 10 miles to Pamalican Airport, the reported weather was 250 degrees, 16 knots gusting to 23 knots, with heavy rain widespread over Pamalican Island. The PIC informed the Pamalican radio that they will be holding on to the final leg until the weather improves. After Pamalican radio reported that the weather had improved, the PIC decided to continue its approach to land.

The approach speed to the touchdown zone on runway 13 was above the aircraft's landing speed, as confirmed by the CVR. The runway was wet, and the rain contributed to the reduced visibility with a prevailing right crosswind. The PIC may have probably employed a landing-to-approach technique to counter the prevailing crosswind

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condition. However, the FO only called for the high approach speed but did not call for a go-around. The aircraft was on its landing roll when it abruptly drifted to the right side of the runway, without any indication from the instrument panel. The aircraft's right-hand main landing gear momentarily left the concrete pavement for the 15-meter-wide macadam area, then re-entered the runway pavement before exiting again to the left side of the macadam pavement. As the aircraft continued to roll, it re-entered the runway pavement, moved towards the right side, and eventually crossed the runway before colliding with bushes, hitting the wooden signage near the terminal ramp, and coming to a stop. The PIC maneuvered the aircraft back to the runway approximately 10 meters from the right runway edge lights. The PIC gave no command to evacuate the aircraft but did deplane using the left passenger door. A nearby security CCTV camera, approximately thirty (30) meters away, captured the moment after the aircraft touches down, during which it appears that the surrounding aerodrome had reduced visibility. (Figure 6).

Figure 6 - RP-C6903 on landing roll.

2.2 Flight Operations

2.2.1 Approach to final

The crew performed the approach to RPUA runway 13 using RNAV and completed the approach checklist. The flight proceeded uneventfully until they entered the right holding pattern and then made their final approach to land. The aircraft maintained a holding pattern for approximately ten miles at an altitude of 1,500 feet above ground level (AGL) before reaching the island. Observing two (2) approaching storm clouds, they waited for the first one to pass and then attempted to land before the second storm cloud reached the island.

Between 01:53:20 UTC and 01:57:29 UTC, the Pilot-in-Command (PIC) and Pilot Flying (PF) decided to land before the next storm cloud arrived on the island. The flight crew discussed the weather in the process of landing with advice from the Pamalican radio

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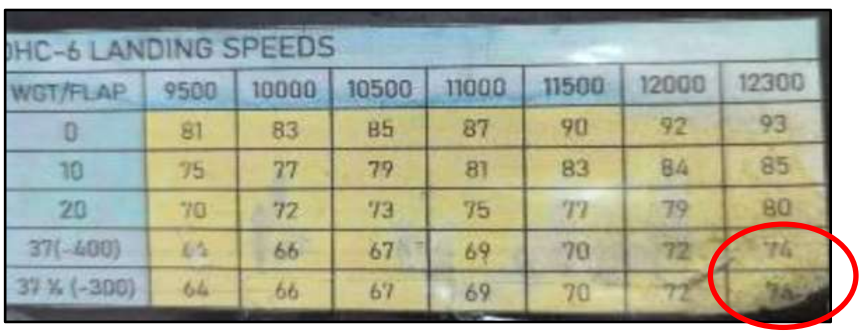
operator. They even requested runway high-intensity lights to aid their landing. Additionally, they configured the aircraft for landing with a full flap configuration on a wet runway. As the aircraft continued its approach, the radio operator gave them clearance to land on RWY 13 with updated weather of wind 242 degrees 13 gusting of 18 and QNH of 1003 and just drizzling over the island with a wet runway.

At about 01:58:25 UTC, the FO advises the PIC that their reference speed (VREF) was seventy-four (74) knots. The FO called out for airspeed correction, and the PIC replied, “Correction.” At this point, the Pamalican radio reported that the rain was intensifying again, but the PIC proceeded with the approach. At 01:59:32 UTC, the PIC was heard saying, I will disengage at one (1) mile. But unfortunately, the FO had already disconnected the aircraft autopilot. Hence, the PIC is manually flying the aircraft in such conditions.

From 02:00:03 and 02:00:41 UTC, the FO was heard saying, “We have one mile three hundred.” The PIC was heard saying, “Ok, runway in sight, landing,” and 18 seconds later he was asking the FO, where is the runway? Although the PIC found his mark on the touchdown zone and asked for airspeed, it was given by the FO to be 99 knots, which is beyond the desired VREF of 74 knots. The FO did call out to reduce the airspeed, but the aircraft had already touched down on the runway, and the sound “#clap sound #prop rev decreases” was heard. No further callout from the FO followed.


DHC-6 LANDING SPEEDS

WGT/FLAP	9500	10000	10500	11000	11500	12000	12300
0	81	83	85	87	90	92	93
10	75	77	79	81	83	84	85
20	70	72	73	75	77	79	80
37(-400)	64	66	67	69	70	72	74
37 ½ (-300)	64	66	67	69	70	72	74

Figure 7 - Aircraft landing speed reference.

2.2.2 Touchdown

Based on the gathered events, the PIC as Pilot Flying (PF) stated in the interview that a gust of wind led the aircraft to drift to the right side of the runway and, with more than the appropriate landing speed, destabilized the flight. The aircraft not being aligned with the runway shows a lack of assertiveness on the part of the FO as Pilot Monitoring (PM) when no calls for a “go around” were made. As PM, he should have closely monitored the vertical flight path instruments and made a callout on any deviations from the normal. The decision of the PM to call out for an” unstabilized go-around” should have been made since an early go-around is much safer.

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At about 02:00:50 UTC, the FO was heard saying “two nine.” This indicated the aircraft touchdown time callout. The PIC landed the aircraft on the center concrete pavement of the runway.

2.2.3 Landing roll

At about 02:00:54 UTC, the FO was heard saying “brakes, brakes, brakes,” and at about 02:01:01 UTC, while on landing roll, the FO also said “reverse, reverse, reverse” together with a sound of “propeller revving.”

At this point the aircraft made a stop, and at about 02:01:21 UTC, the FO said, “Go forward, captain,” and then followed by an increase in propeller revving sound and a “no take-off” aircraft system announcement. When the PIC observed that the engines were still running, he brought the aircraft to the runway approximately 10 meters from the right runway edge lights. After deplaning, the Pamalican radio operator advised them to make a shutdown. At about 02:03:11 UTC, the PIC ordered the shutdown.

In this event, the aircraft experienced a crosswind after-landing roll. A drift occurred as the aircraft made the landing roll, making it almost improbable for the PF to make the necessary correction on the misalignment. This is usually the result of the pilot realizing too late that the aircraft was not in the proper attitude.

The cause of the aircraft getting off the runway pavement was due to the pilots not making adequate corrective actions during the crosswind landing and allowed the aircraft to weathervane into the wind. The reverse thrust side force and the crosswind component combined caused the aircraft to drift to the downside of the runway. Additionally, as the brakes were operated at the maximum braking effectiveness, the main gear tire cornering forces were thus reduced, and the split-second decision to align the aircraft to the runway centerline was not achieved.

2.2.4 Post landing

After the aircraft had shut down on the runway, it was observed that the flight crew did not carry out any emergency evacuation procedure. No evacuation instruction was given to the passengers from the flight deck. The passengers normally disembarked from the runway. As observed no airport recovery program was activated during the event.

Review of the company’s procedures showed that they do not have an emergency evacuation plan and aircraft recovery program when encountering such event.

2.3 Flight Crew Records

A review of the available pilot’s records established the following:

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a. The two (2) pilots were trained and qualified to operate the aircraft in accordance with Civil Aviation Authority of the Philippines (CAAP) PCAR Part 2, Part 9 Regulations.
b. The PIC has a total time of 5,671+02 Hour and 692+57 Hours on type of aircraft while the FO has a total time of 2,727+43 Hour and 161+30 Hours on type of aircraft prior to the incident.
c. The flight crew completed the following trainings:

Training	Date Completed	
	PIC	FO
Line/Proficiency Check	13 March 2023	11 June 2024
DHC-6-400 Pilot Initial Theory		04 April 2024
DHC-6-400 Pilot Initial Type Course	22 March 2024	

Based on available records, the DHC-6-400 training acquired by both pilots was conducted at De Havilland Aviation Training, Calgary, Alberta, Canada. The PIC completed his proficiency check on DHC-6-400 Twin Otter type of aircraft on March 13, 2023 at Calgary, Alberta, Canada by the Company's Check Pilot with Standard assessment.

2.4 Aerodrome Status

Based on AANSOO surveillance inspection report dated September 28-29, 2023. The physical characteristics of Pamalican aerodrome runways were as follows:

a. Nonstandard threshold markings.
b. No touchdown zone and aiming point marking.
c. No transverse stripe marking.
d. No runway edge markers (30 meters width).
e. No provision for runway end safety area (RESA).

Excerpts from AANSOO surveillance inspection report, as per aerodrome Manual of Standards (MOS) is shown in table 6.2-1.

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6.2.4.1 **The width of a runway must not be less that that determine using Table 6.2-1.**

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Code number	Code letter					
	A	B	C	D	E	F
1[a]	18 m	18 m	23 m	—	—	—
2[a]	23 m	23 m	30 m	—	—	—
3	30 m	30 m	30 m	45 m	—	—
4	—	—	45 m	45 m	45 m	60 m

Notes: 1[a] Runway width may be reduced to 15 m or 10 m depending on the restrictions placed on small aeroplane operations. See MOS 13.

2[a] The width of a precision approach runway shall be not less than 30 m where the code number is 1 or 2.

Note - 1 The combinations of code numbers and letters for which widths are specified have been developed for typical aeroplane characteristics.

Note - 2 Factors affecting runway width are given in the Aerodrome Design Manual (Doc 9157), Part 1.

Table 6.2-1: Minimum runway width.

After the said surveillance, it revealed that most of the findings of CAAP-AANSOO had not been acted upon by the operator and were still left open to date.

2.5 Flight Weather Information

As stated by the pilot, approaching 10 miles to Pamalican Airport, the reported weather was 250 degrees, 16 knots gusting to 23 knots, with heavy rain widespread over Pamalican.

According to the weather information provided by the Antique airport air traffic service nearest and available during the time of occurrence, the wind was 220 degrees at 18 knots, visibility was 10 kilometers, cloud conditions were overcast at 2,000 feet AGL, a field temperature of 29 degrees Celsius with a dew point of 26 degrees Celsius, altimeter settings of 1003 millibars, and there was cloud buildup on all quadrants.

The weather captured by DOST-PAGASA, RADAR satellite station revealed that during the time of the occurrence at about 0828H, there were large areas of cloud concentration with rain over the vicinity of Pamalican Island. (Figure 8).

When the aircraft landed at Pamalican aerodrome, the weather was already severe, and it was raining hard over the island.

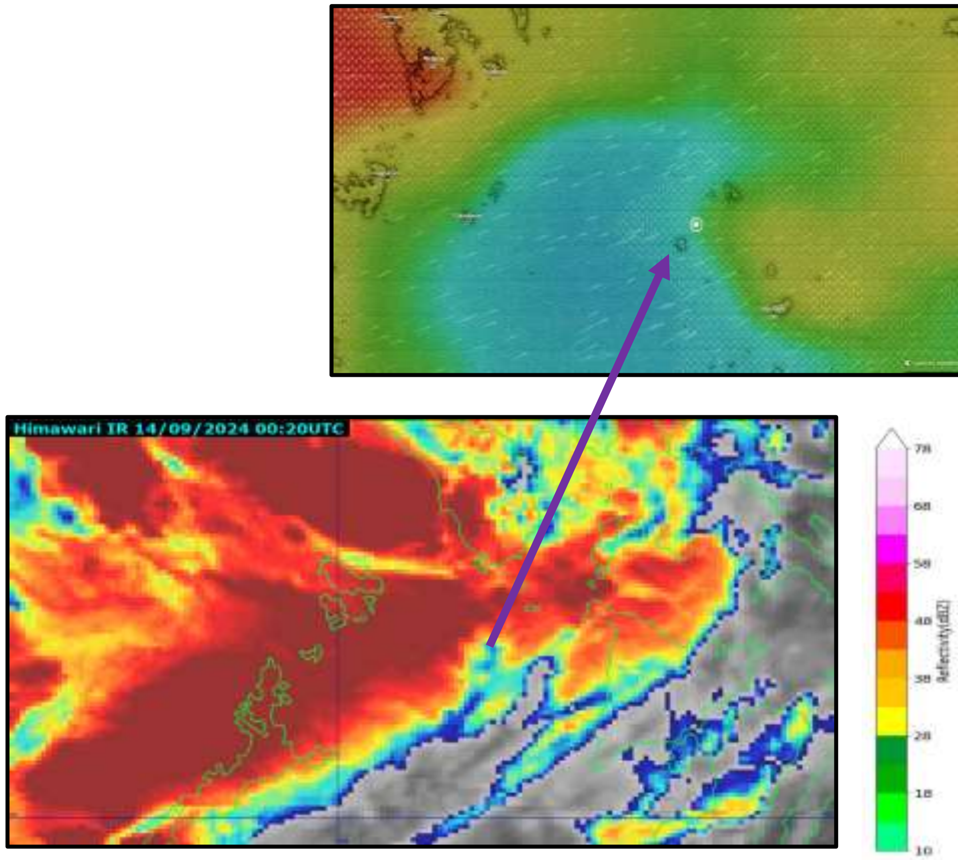

Figure 8 – The weather RADAR satellite image from DOST-PAGASA.

2.6 The Right Main Landing Gear Wheel

The PIC stated during the interview that the aircraft touched down on the landing zone with the right main landing gear first. The landing area presented him with a contaminated runway and a challenging crosswind. On this event, the right landing gear wheel experienced undue dynamic performance, carrying all the aircraft load for a brief moment as the aircraft momentum delivered it outside the concrete part of the runway. The combination of this situation and heavy braking caused flat spots. During this transient condition, the PIC lost directional control of the aircraft as the tire was deflated/punctured and the general kinematics of the aircraft landing gear wheels were lost.

AAIIB Investigator, together with the company personnel, conducted a runway ocular inspection to find the material that may have caused the deflation/puncture; undoubtedly, it was never found. Following the incident, the company sent the affected wheelset to its hangar facility in Manila for CAAP-AAIIB observations, as detailed below:

1. The tire was manufactured by Goodyear USA, Aircraft Rib 30 inches x 11.00-12.
2. The tire had visible asymmetrical/uneven tread wear (figure 9).
3. The tire had visible flat spots and a variety of cuts (figure 10).
4. The tire incurred sidewall damage (figure 11).
5. The tire was found to have tread cut/puncture which penetrated the carcass (figure 12).

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Figure 9 – The uneven tread wear.

Figure 10 - Flat spots and cuts.

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Figure 11 – Sidewall damage.

Figure 12 – Cut inside the carcass.

During the investigation, the operator failed to show any procedures on how to inspect the aircraft's landing gear. A procedure for inspecting the aircraft's tires as part of the company's maintenance program should be developed, adhering to the maintenance publications provided by the aircraft manufacturer.

2.7 Crew Resource Management

Crew Resource Management (CRM) is the effective use of all available resources for flight crew personnel to assure a safe and efficient operation, reducing errors, avoiding stress,

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and increasing efficiency. While retaining a command hierarchy, the concept is intended to foster a less authoritarian cockpit culture in which co-pilots are encouraged to question captains if they observed them making mistakes.

CRM training is a mandatory requirement for air operators under the Philippine Civil Aviation Regulations (PCARs). Commercial operations often involve the use of a two-person flight crew. IAI operates the DHC-6-400 using a two-crew concept. Effective CRM is essential to ensuring a safe flight operation.

Based on the company operation manual reference 8.10.7 "Stabilized Approach," it states that "unique approach conditions or abnormal conditions requiring a deviation from the above elements of a stabilized approach require a special briefing."

In this event, the crew did not conduct a special briefing about the flight's particular environmental conditions, which left them without situational awareness as they anticipated landing on the island. No discussion was recorded on the CVR about the procedures for conducting the approach, such as runway in use and atmospheric conditions. Also, the flight crew missed discussing aircraft limitations or the possible visual signs from the annunciators, aircraft instrumentation, and audio indications.

During the landing, the PIC served as the PF and was also responsible for radio communications. The PIC narrated during the interview that he wanted to directly communicate with the Pamalican radio operator so that he can react accordingly when there was a change in the weather conditions, if necessary. He also added that "during that high workload of flying VFR, he seldom looked at the airspeed indicator on the instrument panel and mostly looked outside to observe the flight with reference to landmarks on the landing zone and the sound of the aircraft engines as the aircraft touched down. Further, he stated that it was common at Pamalican airport that moderate to heavy crosswinds occur during landing, and at the time of occurrence, it was of no difference".

A 'callout' is required if either pilot observes a deviation from the specified limits of the flight. If a deviation has been observed first by the PF, his callout will advise the PNF that he is aware and attempting to make a correction; if observed by the PNF, his callout will bring the PF's attention to the deviation. Each callout requires a corresponding acknowledgement from either pilot, which can directly assist during flight, thus enhancing situational awareness. The flight crew stated that "No company policy was written that the PM can make a call out on aircraft speed, altitude, and distance during the landing phase." In this event, the FO should have talked to the PIC regarding his observations or

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suggestions. The visibility reduction and prevailing wind condition were supposedly considered for a go-around during the approach phase.

3.0 CONCLUSIONS

3.1 Findings

a. Both pilots' licenses and medical certificates were valid in accordance with PCAR Part 2.
b. Both pilots were trained and qualified to operate the aircraft in accordance with PCAR Part 2 and PCAR Part 9 regulations.
c. There were no reported injuries to all occupants on board the aircraft.
d. The crew did not conduct a briefing during the flight.
e. The PIC landed the aircraft with reduced runway visibility.
f. The aircraft landed above the desired airspeed parameters.
g. The FO did not assert any callout during the landing process.
h. The Operator does not have an emergency plan and aircraft recovery program for similar event.
i. The aircraft was properly released for flight without any discrepancies noted on its logbook on the day of occurrence.
j. The aircraft has current certificates of airworthiness and registration.
k. The aircraft maintenance activities of the company was performed by IAI, Approved Maintenance Organization.
l. The surveillance report of AANSOO on the aerodrome showed that some of the findings were still not acted upon.

3.2 Probable Cause

3.2.1 Primary Cause Factor

a. The PIC's decision to continue to land the aircraft with reduced runway visibility.

3.2.2 Contributory Cause Factors

b. Lack of situational awareness.
c. Landing the aircraft above the desired landing speed.
d. The crosswind component that the pilot encountered during landing.
e. Insufficient crew resource management between pilots.
f. Non-inclusion in the pre- and post-flight tire pressure inspection checklist of the main landing gear tire for discoloration or casting marks as an indication that unusual tire condition was developing.

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4.0 SAFETY RECOMMENDATION

The safety deficiencies detailed in this report have been fully addressed as a result of the safety measures implemented by the Operator. Consequently, no further safety recommendations are being proposed.

5.0 SAFETY ACTIONS

5.1 Following the occurrence, Island Aviation Incorporated initiated the following safety corrective actions that would improve operational capabilities thus preventing future occurrence of the same. (Appendix A):

- **a.** Conducted meeting to reinforce go around procedures especially when not stabilized at minimum visibility.
- **b.** Working with De Havilland for a revised simulator syllabus to prepare pilots for operations in special case aerodromes such as the one in Pamalican.
- **c.** Revised aircraft checklists and including a new approach briefing format for special case aerodromes such as Pamalican.
- **d.** Revised company Emergency Response Program to include the procedures we have done with the incident to create a provision for an Aircraft Recovery Program.
- **e.** Currently working with Goodyear (Tire manufacturer) on providing a workshop for all maintenance and pilots on tire condition and inspection.
- **f.** Incorporated in the manual a special maintenance inspection program for the inspection of the aircraft's landing gears and tires that adheres to the aircraft manufacturer’s maintenance publications.

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