Republic of the Philippines
CIVIL AVIATION AUTHORITY OF THE PHILIPPINES

AIRCRAFT ACCIDENT INVESTIGATION AND INQUIRY BOARD

FINAL REPORT

RP-C5911
DE HAVILLAND AIRCRAFT OF CANADA LIMITED
DHC-8-402

OPERATOR: AIR PHILIPPINES CORPORATION, DBA PAL EXPRESS

TYPE OF OPERATION: COMMERCIAL AIR TRANSPORT

DATE OF OCCURRENCE: DECEMBER 27, 2024

PLACE OF OCCURRENCE: BACOLOD-SILAY INTERNATIONAL AIRPORT, SILAY, NEGROS OCCIDENTAL, PHILIPPINES

TABLE OF CONTENTS

(DHC-8-402 RP-C5911 Final Report)

FOREWORD

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

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

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

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

FINAL REPORT

TITLE: A serious incident involving a DHC-8-402 type of aircraft with Registry Number RP-C5911, operated by PAL Express, had a runway side excursion at Bacolod-Silay International Airport, Silay, Negros Occidental, Philippines, on December 27, 2024, at around 0535H (local time).

Notification of Occurrence to National Authority

The serious incident was reported by PAL Express Flight Safety to the CAAP AAIIB on December 27, 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 the provisions of the Philippine Civil Aviation Regulation (PCAR) Part 13, an Investigator-In-Charge was appointed.

Authority Releasing the Report

The Final Investigation Report was released by the Aircraft Accident Investigation and Inquiry Board (AAIIB) and published on the CAAP website on **02 February 2026.**

Synopsis:

On or about 0535H (local time) of December 27, 2024, a DHC-8-402 (Q400) type of aircraft with registration number RP-C5911 and with flight no. 2P-2285 experienced a runway-side excursion incident after landing on runway 03 of Bacolod-Silay International Airport, Silay, Negros Occidental, Philippines. The aircraft was operated by PAL Express, a local commercial airline headquartered at PAL Gate 1, Andrews Ave., Nichols, Pasay City 1300, Philippines. The aircraft came from Mactan-Cebu International Airport for a scheduled commercial flight to Bacolod. On board the aircraft were two (2) flight deck crew and two (2) cabin crew, along with sixty-eight (68) passengers. The investigation determined that the probable cause of the serious incident was the flight crew's inability to maintain directional control during the landing roll following an initial landing bounce, which resulted in reduced wheel-to-runway contact and the loss of effectiveness of directional control inputs.

LIST OF ACRONYMS AND ABBREVIATIONS

AAIIB	:	Aircraft Accident Investigation and Inquiry Board
AANSOO	:	Aerodrome and ANS Safety Oversight Office
ARP	:	Airport Reference Point
ASDA	:	Accelerate-Stop Distance Available
ATC	:	Air Traffic Controller
ATPL	:	Air Transport Pilot License
CoA	:	Certificate of Airworthiness
CoR	:	Certificate of Registration
CPL	:	Commercial Pilot License
CVR	:	Cockpit Voice Recorder
DBA	:	Doing Business As
DFDR	:	Digital Flight Data Recorder
DME	:	Distance Measuring Equipment
FO	:	First Officer
FSIS	:	Flight Standards Inspectorate Service
GNSS	:	Global Navigation Satellite System
IFR	:	Instrument Flight Rules
ILS	:	Instrument Landing System
LDA	:	Landing Distance Available
OFSAM	:	Office of the Flight Surgeon and Aviation Medicine
PALS	:	Precision Approach Lighting System
PAPI	:	Precision Approach Path Indicator
PIC	:	Pilot-In-Command
PCN	:	Pavement Classification Number
RNP	:	Required Navigation Performance
RWY	:	Runway
SALS	:	Simplified Approach Lighting System
TBO	:	Time Before Overhaul
TSO	:	Time Since Overhaul
TODA	:	Take-Off Distance Available
TORA	:	Take-Off Run Available
UTC	:	Coordinated Universal Time
VFR	:	Visual Flight Rules
VOR	:	VHF Omnidirectional Range
WOW	:	Weight-On-Wheels

1. FACTUAL INFORMATION

Aircraft Registration No.	:	RP-C5911
Aircraft Manufacturer/Model:		De Havilland Aircraft of Canada Limited/ DHC-8-402 (Q400)
Operator	:	Air Philippines Corporation, DBA PAL Express
Address of Operator	:	PAL Gate 1, Andrews Ave., Nichols, Pasay City 1300, Philippines
Place of Occurrence	:	Bacolod-Silay International Airport, Silay, Negros Occidental, Philippines
Date/Time of Occurrence	:	December 27, 2024, at about 0535H/2135 UTC
Type of Operation	:	Commercial Air Transport
Phase of Flight	:	Landing
Type of Occurrence	:	Runway side excursion

1.1 History of the Flight

On or about 0535H (local time) of December 27, 2024, a DHC-8-402 type of aircraft with registration number RP-C5911 experienced a runway side excursion incident after landing on runway 03 of Bacolod-Silay International Airport, Silay, Negros Occidental, Philippines.

The aircraft is owned and operated by Air Philippines Corporation, DBA PAL Express. The aircraft came from Mactan-Cebu International Airport for a scheduled commercial flight to Bacolod as flight PR-2285. On board the aircraft were two (2) flight deck crew and two (2) cabin crew, along with sixty-eight (68) passengers plus one (1) infant.

In the interviews of both pilots, the PIC was at the controls during the landing. The approach was stabilized, with moderate rain and wind at 030° at 8 knots. Upon touchdown, the aircraft suddenly drifted toward the right-hand side of the runway, and the PIC immediately attempted to correct the direction by applying left rudder and differential power. However, the aircraft continued moving toward the right-hand side of the runway, eventually veering off the paved surface and moving onto the grassy portion

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adjacent to the runway. The PIC subsequently managed to regain control of the aircraft and steered it back onto the runway's paved surface. The aircraft finally came to a full stop at taxiway B, where it was towed to the apron for passenger deplaning. There were no reports of injuries to the crew or passengers of the said flight, as well as damage to the aircraft.

1.2 Injuries to Person (s)

Injuries	Crew	Passengers	Others
Fatal	0	0	0
Serious	0	0	0
Minor	0	0	0
None	4	68 + 1 infant	0
TOTAL	**4**	**68 + 1 infant**	**0**

1.3 Damage to Aircraft

The aircraft did not sustain any damage.

1.4 Other Damages

There was no other reported damage because of this incident.

1.5 Personnel Information

1.5.1 Pilot-In-Command (PIC)

Gender	:	Male
Age	:	43 years old
Nationality	:	Filipino
License type and validity	:	ATPL, valid until June 30, 2026
Type rating	:	Airplane: Multi-Engine Land – BE55, Dash 8 Q400
Medical Certificate	:	Class 1, valid until February 15, 2025
Date of last medical	:	July 17, 2024
Total flying time	:	8,324 + 27 Hours as of December 26, 2024
Total flying time on type	:	2,300 + 00 Hours as of December 26, 2024

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1.5.1 First Officer (FO)

Gender	:	Male
Age	:	29 years old
Nationality	:	Filipino
License type and validity	:	CPL, valid until March 31, 2027
Type rating	:	Airplane: Single and Multi-Engine Land – Instrument – C152, C172, Dash 8 Q400
Medical Certificate	:	Class 1, valid until December 28, 2025
Date of last medical	:	December 04, 2024
Total flying time	:	1,262 + 39 Hours as of December 26, 2024
Total flying time on type	:	912 + 00 Hours as of December 26, 2024

1.6 Aircraft Information

The De Havilland Canada DHC-8, or Dash 8, is a turboprop regional airliner introduced in 1984, developed from the Dash 7 to improve cruise performance and reduce operating costs. Powered by two (2) Pratt & Whitney Canada PW150 engines, it was produced in four variants: Series 100 (37 seats), Series 200 (37–40 seats), Series 300 (50–56 seats), and the stretched Series 400 (68–90 seats), built between 1984 and 2022.

From 1996 onward, all models included the Active Noise and Vibration System (ANVS), with the "Q-Series" (Q200, Q300, Q400) branding introduced to highlight cabin quietness. The Series 400 features a longer fuselage, enhanced wings, and improved performance, with a cruise speed of 360 knots and a maximum altitude of up to 27,000 feet with optional oxygen masks.

1.6.1 Aircraft Data

Registration Mark	:	RP-C5911
Manufacturer	:	De Havilland Aircraft of Canada Limited
Country of Manufacturer	:	Canada
Type/Model	:	DHC-8-402 (Q400)
Operator	:	PAL Express
Serial No.	:	4587
Year of Manufacture	:	October 2018
Certificate of Airworthiness	:	Valid until October 24, 2025
Certificate of Registration	:	Valid until October 24, 2029
Category	:	Transport
Gross Weight	:	29,574 kgs.
Number of Flight Crew	:	2
Number of Passengers	:	86
Airframe total time	:	7, 430 + 09 Hours as of last C of A

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1.6.2 Engine Data

Manufacturer	:	Pratt and Whitney
Type	:	Turboprop
Model	:	PW150A
Engine Serial No.	:	PCE-FA1324 (ENG 1) PCE-FA1325 (ENG 2)
Engine TBO	:	Modular Overhaul
Engine TSO	:	Both ENG 1 and ENG 2 are new as of the last C of A issuance.
Engine Total Time	:	7,430 + 09 Hours for ENG 1 and ENG 2 as of last C of A

1.6.3 Propeller Data

Manufacturer	:	Dowty
Type	:	Constant Speed
Model	:	R408/6-123-F/17
Propeller Serial No.	:	DAP1307 (ENG 1) DAP1306 (ENG 2)
Propeller TBO	:	On Condition
Propeller TSO	:	New
Propeller Total Time	:	7,430 + 09 Hours for ENG 1 and ENG 2 as of last C of A

1.7 Meteorological Information

Based on records from the Bacolod-Silay Airport Control Tower, the available METAR information was as follows:

Time (UTC)	Wind Condition	Sky Condition	Visibility	Temp.	Dewpoint	QNH	Remarks
2100	030^{o} at 8 knots	-	2 km	24.6 ^{o}C	-	1011.6 hPa	MOD RA

1.8 Aids to Navigation

The approach was conducted under instrument flight rules (IFR) utilizing the RNP approach procedure for Runway 03.

The airport is equipped with multiple ground-based and visual navigation aids that support both precision and non-precision approaches. It has a VOR/DME facility that provides en route and terminal navigation assistance, as well as an Instrument Landing

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System (ILS) serving Runway 03, capable of supporting precision approaches. In addition, Precision Approach Path Indicators (PAPI) are available to provide visual glide-path guidance to approaching aircraft. The runway is also equipped with Simple Approach Lighting System (SALS) and Precision Approach Lighting System (PALS), enhancing visual reference during approach and landing, particularly under reduced visibility or night conditions.

At the time of the occurrence, all listed navigation aids were reported to be serviceable, and there were no recorded outages or anomalies affecting their operation. The aircraft's navigation and approach were therefore primarily based on the RNP (Required Navigation Performance) procedure, utilizing GNSS-based navigation, while the ground-based aids and visual aids remained available for reference or backup as required.

1.8.1 Radio Navigation and Landing Aids

Type of aid, MAG VAR, Type of supported OP (For VOR/ILS/MLS, give declination)	ID	Frequency	Hours of Operation	Position of transmitting antenna coordinates	Remarks
DVOR	BCD	115.3MHZ	H24	104631.0215N 1230113.9294E	Coverage: DVOR/DME- 59NM at 8000FT R182. Output - 1KW.
DME	BCD	CH100X		104630.8256N 1230114.2257E	
ILS RWY 03 LOC	IBCD	109.7MHZ		104726.2951N 1230138.2384E	Coverage: 25NM (±10º); 17NM (±35º). Power Output 15W (Course), 7.5W (Clearance). WID 4.3º. 791.1M FM THR03.
GP		333.2MHZ		104614.6520N 1230101.0022E	Coverage: >10NM. Power Output 3W (Course SB1), 0.4W (Course SB2), 2.5W (Clearance). Path WID 0.75º.

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					Path Angle 3.0º 120M FM RWY CL 320M FM THR of RWY03.
DME		CH34X		104614.6520N 1230101.0022E	Coverage: >10NM. Power Output 100W.
Middle Marker		75MHZ		104541.4874N 1230037.1120E	Power Output 3W.

1.9 Communications

The aircraft was equipped with a standard radio transceiver. Air–ground communications were maintained between the pilot and Bacolod Airport Tower. Bacolod-Silay International Airport is equipped with an operational control tower and approach control service under the Air Traffic Service. No irregularities or difficulties in communication were reported.

1.9.1 ATS Communication Facilities

Service Designation	Call Sign	Frequency	Hours of Operation	Remarks
TWR	Bacolod Tower	118.8MHZ 5205KHZ 3872.5KHZ 121.5MHZ	H24	PRI FREQ. P/P PRI FREQ (Mactan Network). P/P SRY FREQ. EMERG FREQ
APP	Bacolod Approach	121.0MHZ		PRI FREQ.

1.10 Aerodrome Information

Bacolod-Silay International Airport (IATA: BCD, ICAO: RPVB) is an airport serving the general area of Metro Bacolod, located in the Negros Island region of the Philippines. Capable of handling international air traffic, the airport is the busier of the two major airports serving Negros island, the other being Dumaguete Sibulan Airport in Sibulan, Negros Oriental. Despite being billed as an international airport, Bacolod–Silay is designated as a Class 1 Principal domestic airport by the Civil Aviation Authority of the Philippines.

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1.10.1 Aerodrome Geographical and Administrative Data

ARP coordinates and site at AD	104635.7744 N, 1230108.7677 E
Elevation	26.174 m (85.873 ft)
Geoid undulation at AD ELEV PSN	60.5 m (196.964 ft)
MAG VAR/Annual Change	1.0°W (2014) / 2.6' increasing.
AD Operator, address	Civil Aviation Authority of the Philippines Bacolod Airport Brgy. Bagtic, Silay City 6116 Negros Occidental
Types of traffic permitted (IFR/VFR)	IFR - VFR.

1.10.2 Operational Hours

AD Operator	MON - FRI: 0000 - 0900
ATS Reporting Office (ARO)	H24
MET Briefing Office	H24
ATS	MON - FRI: 0000 - 0900
Remarks	Airport Operations: H24

1.10.3 Rescue and Fire Fighting Services

AD category for fire fighting	CAT VIII
Rescue equipment	Four (4) fire trucks [(2) IVECO MAGIRUS & (2) Oshkosh Striker 4x4].

1.10.4 Aprons and Taxiways

Apron surface and strength	Surface: Concrete Strength: PCN 51 R/C/X/T
Taxiway width, surface and strength	Width: 23 m Surface: Concrete Strength: PCN 51 R/C/X/T.

1.10.5 Runway Physical Characteristics

RWY	TRUE BRG	Dimensions of RWY	Strength (PCN) and surface of RWY and SWY	THR coordinates RWY end coordinates THR geoid undulation	THR elevation and highest elevation of TDZ of precision APP RWY
03	030º GEO 030º MAG	2002 m X 45 m	PCN 51 R/C/X/T RWY: CONC	104607.5404N 1230052.2979E	THR 26.061m/ 85.502ft

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			SWY: CONC	(60.492 m/ 198.464 ft)	TDZ 26.169m/ 85.856ft
21	210º GEO 210º MAG	2002 m X 45m	PCN 51 R/C/X/T RWY: CONC SWY: CONC	104704.0084N 1230125.2375E (60.502 m/ 198.497 ft)	THR 25.707m/ 84.340ft TDZ 26.174m/ 85.873ft

1.10.6 Declared Distances

RWY	TORA	TODA	ASDA	LDA
03	2,002 m	2,642 m	2,062 m	2,002 m
21	2,002 m	2,282 m	2,062 m	2,002 m

1.10.7 Approach and Runway Lighting

RWY	APCH LGT type, LEN, INTST	THR LGT colour, WBAR	VASIS, (MEHT), PAPI	TDZ, LGT LEN
03	PALS 900 m LIH	Green w/ WBAR	PAPI Left 3.0°	NIL
21	SALS 420 m LIH	Green	PAPI Left 3.0º	NIL

RWY	RWY Centre Line LGT Length, spacing, colour, INTST	RWY edge LGT LEN, spacing, colour, INTST	RWY End LGT colour, WBAR	SWY LGT LEN, colour	Remarks
03	NIL	2,002 m, 60 m White/Yellow LIH	Red	60 m Red	Path WID 0.6º, VIS RG >4NM DAY. VER OBST CLR >1º. Horizontal OBST CLNC ± 10º FM RWY CL.
21	NIL	2,002 m, 60 m White/Yellow LIH	Red	60 m Red	Path WID 0.3º, VIS RG >4NM DAY. VER OBST CLR >1º. Horizontal OBST CLR ± 10º FM RWY CL.

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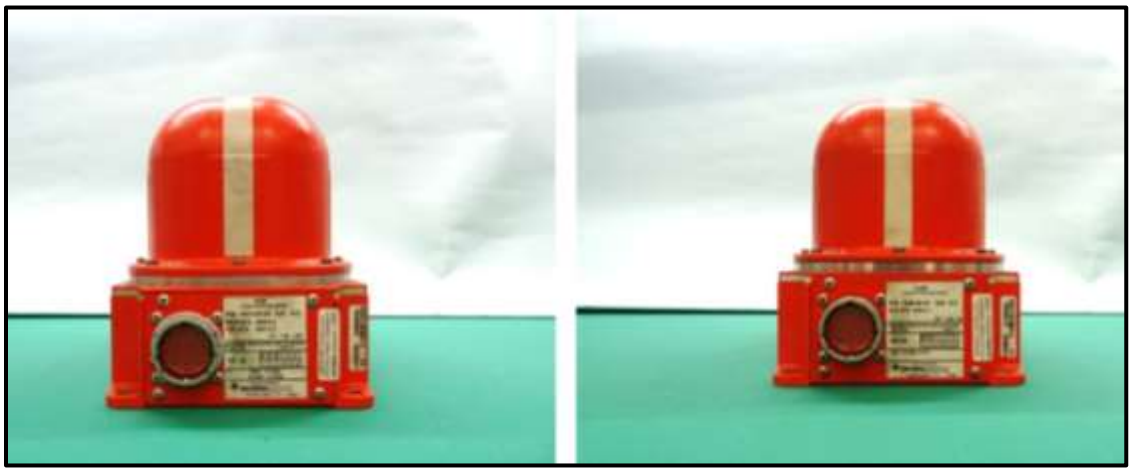
1.11 Flight Recorders

The aircraft is equipped with a Digital Flight Data Recorder (DFDR) and a Cockpit Voice Recorder (CVR) as required by the Philippine Civil Aviation Regulations (PCAR).

The recorded parameters and data were intact, allowing for an accurate reconstruction of the incident dynamics. The data were analyzed and validated with the assistance of the Japan Transport Safety Board (JTSB) using the appropriate interpretation tools.



Figures 1 and 2 – RP-C5911's DFDR and CVR.

1.11.1 DFDR

Manufacturer : Universal Avionics Systems Corp.
Model : L12556
Part No. : 1607-00-00
Serial No. : 913

The FDR recording was of good quality, containing 1,918,936 seconds of synchronized subframe data, including the incident flight. The data frame consisted of 128 words and 268 parameters. The document "Flight Data Recorder – Q400 Parameters Data Map(s)" (Service Letter No. DH8-400-SL-31-008E), provided by the operator, was used to convert the FDR data into engineering units. Additionally, the data was imported into APS Insight Analysis software to verify its accuracy. Notably, the downloaded FDR data showed no entries after the incident flight. All recorded timings were based on UTC, with each subframe incrementing by one second.

1. DFDR data on Final Turn to Touchdown

On the flight data readout, the aircraft departed from Mactan-Cebu International Airport on runway 04 and landed on runway 03 of Bacolod-Silay International Airport.

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At 21:27:47 UTC, the aircraft completed a left turn onto final and continued its descent on the final approach course toward the airport at an altitude of 3,090 feet mean sea level (MSL) and an indicated (computed) airspeed of 185 knots. At the same time, the flaps were extended from 0° to 5°. The on-board calculated wind was 21 knots from 090°, indicating that the wind was coming from the right side of the aircraft.

The landing gear handle was selected to the "EXTEND" position, and the landing gears transitioned to the "DOWNLOCK" position at 21:28:09 UTC. At this time, the aircraft was at an altitude of 2,680 feet and an airspeed of 179 knots.

At 21:28:41 UTC, the flaps were extended from 5° to 15°. The wind was 21 knots from 090°, coming from the right side of the aircraft. As the aircraft continued its descent, the wind gradually decreased in strength and shifted from the right to a headwind.

At 21:31:38 UTC, the autopilot was disengaged when the aircraft was at 371 ft MSL. At this time, the airspeed was 124 knots, and the wind was 8 knots from 011°, coming from the left side of the aircraft.

2. DFDR data on Touchdown to Landing Roll

At 21:32:06 UTC, the main gear "Weight-On-Wheel (WOW)" ground signal was recorded. At that time, the aircraft's pitch angle was 1.05°, the airspeed was 108 knots, the ground speed was 111 knots, and the wind was 12 knots from 342°, coming from the left side of the aircraft. The maximum and minimum vertical accelerations associated with this landing were 2.32 G and 0.27 G, respectively. Half a second after the first main gear touchdown, the main gear "WOW" air signal was recorded.

Another half second later, the main gear "WOW" ground signal was recorded again. At that time, the aircraft pitch angle was -0.3°, the airspeed was 109 knots, the ground speed was 111 knots, the wind speed was 12 knots, and the wind direction was 340°.

At approximately 0.2 seconds later, the nose gear "WOW" ground signal was recorded. At that time, the aircraft pitch angle was 0.6°, the airspeed was 108 knots, the ground speed was 110 knots, the wind speed was 12 knots, and the wind direction was 339°.

One second later, the nose gear "WOW" air signal was recorded. Another second later, the nose gear "WOW" ground signal was recorded again. At that time, the aircraft pitch angle was 1.8°, the airspeed was 103 knots, the ground speed was 108 knots, the heading was 018°, the wind speed was 12 knots, and the wind direction was 333°.

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At 21:32:07 UTC, 0.1 second before the first nose gear "WOW" ground signal was recorded, the throttle lever was moved to the reverse position. Five (5) seconds later, at 21:32:12 UTC, the throttle lever was advanced forward from the reverse position. Between 21:32:14 and 21:32:20 UTC, only the throttle lever of engine no. 2 was advanced, increasing the no. 2 engine torque.

It was also recorded that between 21:32:07 and 21:32:21 UTC, the rudder deflected to the left, with the maximum deflection occurring after 21:32:11 UTC.

From 21:32:13 to 21:32:20 UTC, maximum brake pressures exceeding 2,800 psi were recorded. This brake pressure was applied only to the left brake system, corresponding to the left cockpit controls. Differential braking was being used on the aircraft during this period.

Between 21:32:07 and 21:32:20 UTC, an attempt was made to turn the aircraft to the left using rudder input, differential thrust, and differential braking. However, the heading remained approximately aligned with the runway centerline until 21:32:19 UTC. After 21:32:20 UTC, the heading began to change to the left, consistent with the rudder input and brake operation.

Vertical acceleration showed a large variation due to ground bounce, followed by smaller fluctuations between 0.7 G and 1.3 G that continued until 21:32:25 UTC.

The aircraft came to a complete stop at 21:33:03 UTC with a heading of 289°, a pitch angle of 1.93°, and a roll angle of 0.35°.

No rudder, engine, or brake system malfunctions were identified in the recorded data.

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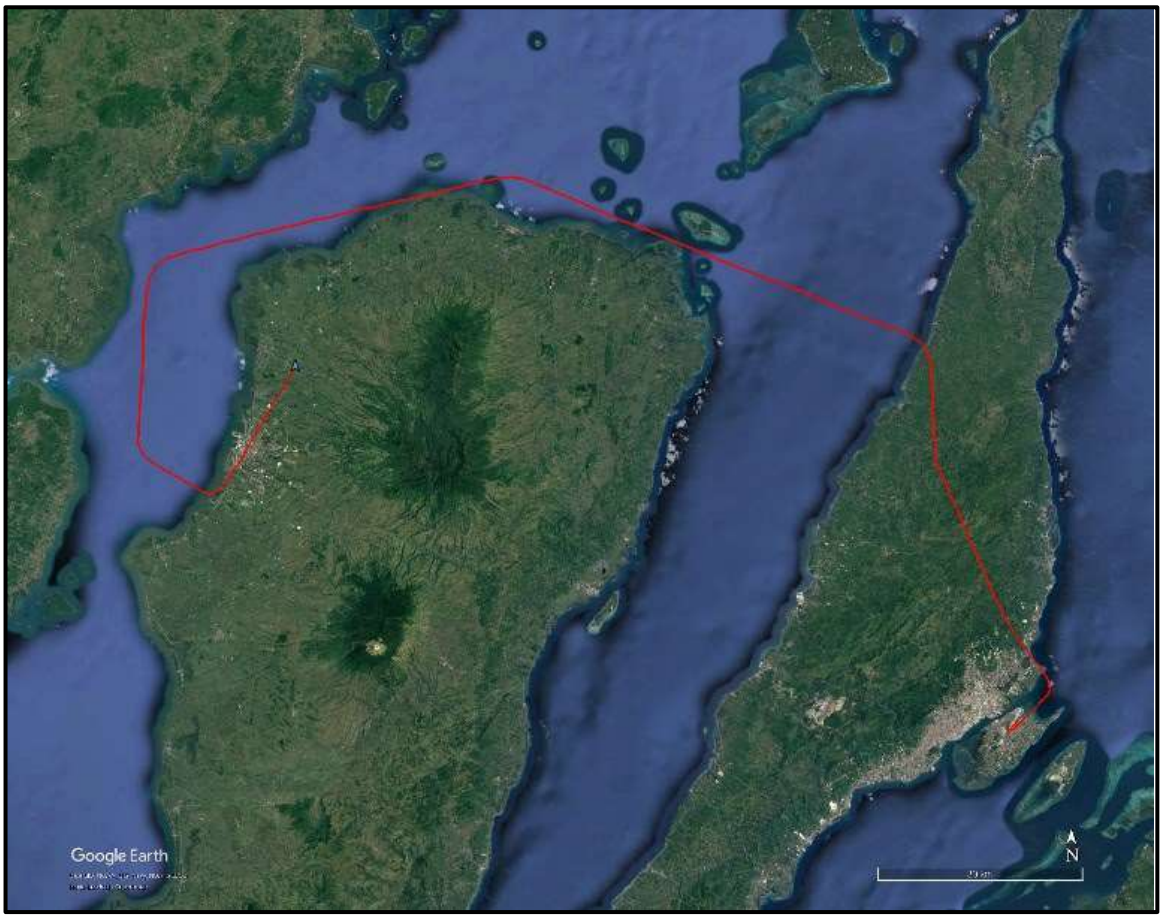

Figure 3 – Flight route based on FDR.

UTC Time	Baro Altitude	Computed Airspeed	Ground -speed	Main Gear wow	Nose Gear wow	Pitch Angle	Roll Angle	Magnetic Heading	Wind Direction	Wind -speed	Flap Position	AP Engaged	Main Gear DL	Nose Gear DL	Note
21:27:47	3090	185	185	AIR	AIR	0.62	1.14	038	090	21	5	ENGAGED	-	-	Flap 5
21:28:09	2662	179	178	AIR	AIR	-0.70	-3.34	039	091	23	5	ENGAGED	DOWN -LOCKED	DOWN -LOCKED	Gear down
21:28:41	2252	136	133	AIR	AIR	2.20	-3.78	035	090	21	15	ENGAGED	DOWN -LOCKED	DOWN -LOCKED	Flap 15
21:29:54	1394	120	114	AIR	AIR	2.29	-2.29	036	059	16	35	ENGAGED	DOWN -LOCKED	DOWN -LOCKED	Flap 35
21:30:43	952	120	113	AIR	AIR	-0.44	1.14	030	030	13	36	ENGAGED	DOWN -LOCKED	DOWN -LOCKED	WindDirection 030
21:31:39	372	124	120	AIR	AIR	-1.76	-1.32	030	011	8	36	-	DOWN -LOCKED	DOWN -LOCKED	AutoPilot disengaged
21:32:07	76	108	111	WOW	AIR	1.05	0.53	027	342	12	36	-	DOWN -LOCKED	DOWN -LOCKED	Landing
21:32:09	106	109	110	AIR	WOW	-0.44	0.44	026	342	12	36	-	DOWN -LOCKED	DOWN -LOCKED	Nose Touch down

Figure 4 – FDR recorded values from final turn to touchdown.

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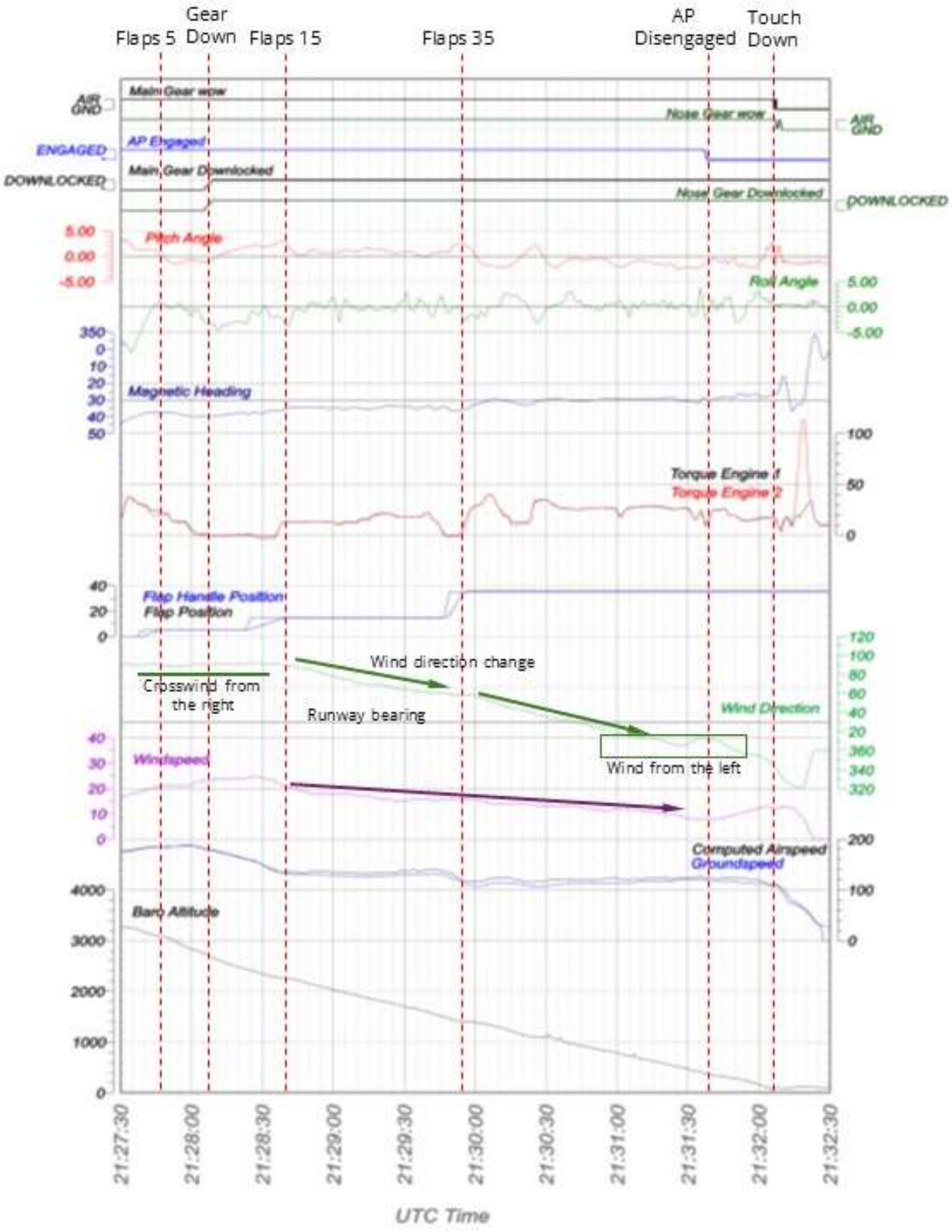

Figure 5 – FDR data during the approach.

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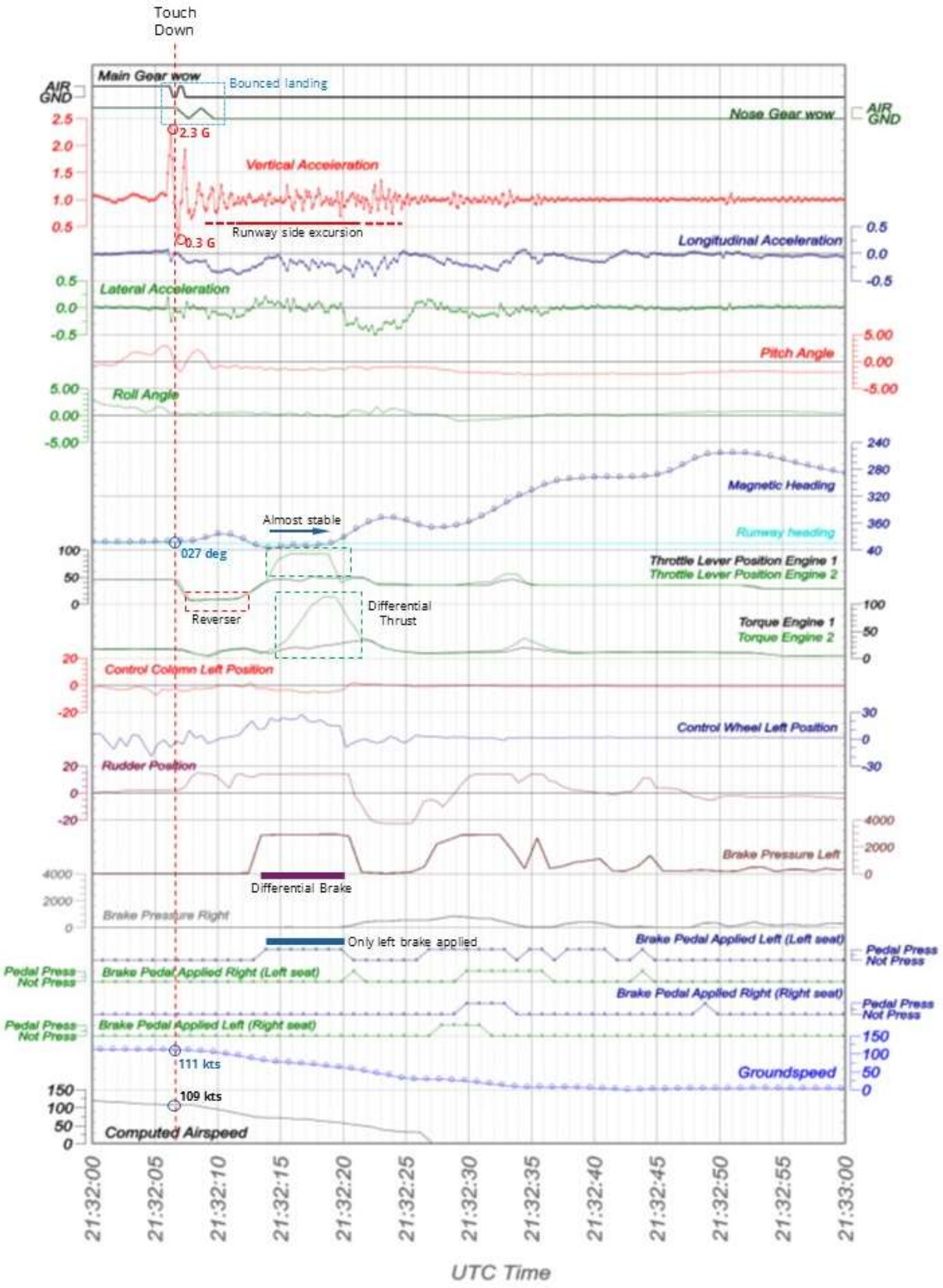

Figure 6 – FDR data during the landing.

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1.11.2 CVR

Manufacturer : Universal Avionics System Corp.
Model : L12556
Part No. : 1606-00-01
Serial No. : 317

The recovered CVR data contained four (4) audio tracks of two (2) hours, two (2) minutes, and forty-four (44) seconds of recording. The CVR audio recording was verified to have been properly recorded and was reviewed using Adobe Audition.

Upon analysis of the recording, a review from taxi out through take-off and up to the final approach revealed no events indicating maintenance issues or operational limitations with the aircraft or with the flight itself. Throughout the recording, cockpit communications were clear, respectful, and demonstrated effective Crew Resource Management (CRM) practices. The PIC and FO performed the required briefings, checklists, and callouts in accordance with established procedures and demonstrated effective teamwork. The CVR captures a well-coordinated, professional cockpit environment, with no abnormal occurrences or concerns noted during any phase of the flight.

During the final approach, the recording indicated that the pilots were aware of moderate rain conditions in the vicinity of the aerodrome. The PIC was at the controls at this time. At 2,000 feet, a callout was captured indicating that the aircraft was in a stable approach condition. Eleven (11) seconds before touchdown, the FO was heard calling out “three whites,” to which the PIC responded, “Correcting.” Upon touchdown, approximately three (3) seconds later, the FO made a callout indicating that the aircraft was veering off the runway and was heard prompting the PIC to apply corrective action. Twenty-nine (29) seconds thereafter, the FO called out “Stop,” followed by an instruction to correct towards the left, which the PIC acknowledged by saying, “Okay.”

No other significant or unusual events were captured in the remainder of the CVR recording.

1.12 Wreckage and Impact Information

Examination of the runway surface revealed evidence of tire marks corresponding to the aircraft’s landing and subsequent excursion. The initial touchdown marks were located at coordinates 10°46'13.38" N, 123°0'56.58" E, approximately 218.85 meters from the threshold of runway 03. The touchdown point was situated on the right-hand side of the runway centerline, approximately 10.62 meters from it.

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The right main landing gear (MLG) tire marks indicated that the tires exited the runway edgeline approximately 36.42 meters (10°46'14.4" N, 123°0'57.18" E) from the touchdown point. The nose landing gear (NLG) tire marks exited the edgeline approximately 108.05 meters (10°46'22.08" N, 123°1'1.68" E) from the touchdown point, while the left MLG tire marks exited approximately 581.74 meters (10°46'29.64" N, 123°1'6.42" E) from the touchdown point.

The marks showed that all the aircraft's tires were off the paved surface for approximately 147.84 meters before returning toward the runway centerline. The right MLG tires remained outside the runway edgeline for approximately 729.39 meters and reached a maximum lateral distance of approximately 36.31 meters from the runway centerline.

The aircraft came to a complete stop on taxiway B located on the left side of runway 03, at coordinates 10°46'37.2" N, 123°1'6.18" E. No evidence of structural breakup or major impact damage was observed on the runway or surrounding area.

Figure 6 – Tire marks from the aircraft's MLG at the touchdown point.

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Figure 7 – Aircraft tire marks abeam the runway edgeline.

Figure 8 – Aircraft tire marks on the grassy area beside the runway.

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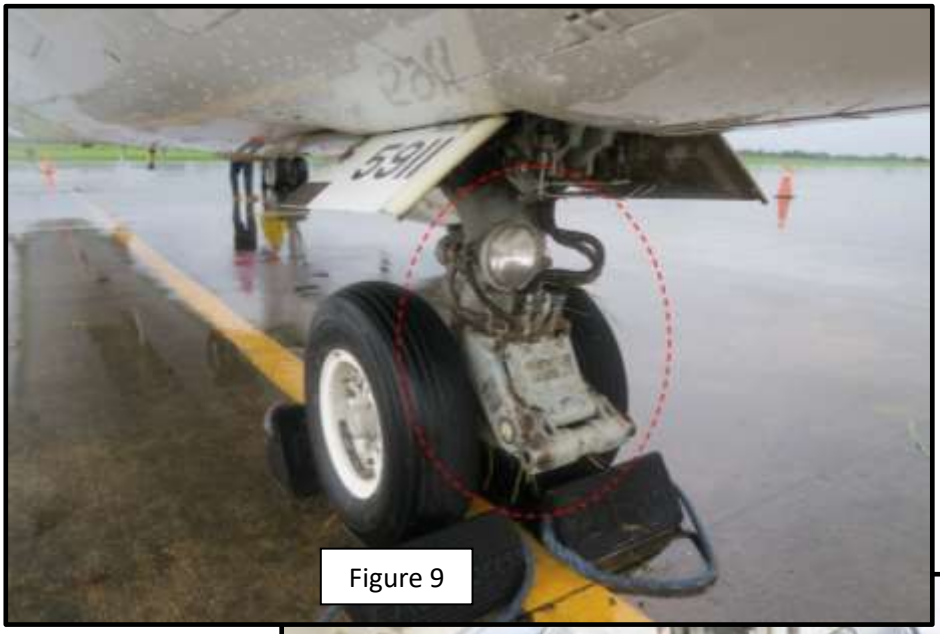

Figure 9

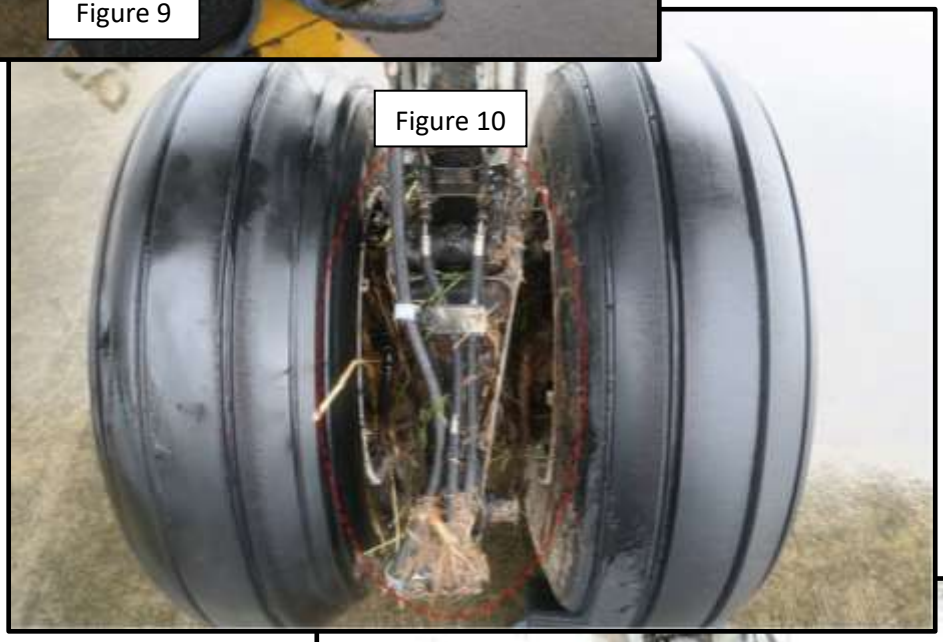

Figure 10

Figure 11

Figure 9-11 – Aircraft landing gears with traces of mud and grass.

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1.13 Medical and Pathological Information

Both pilots underwent medical check-ups and mandatory drug and alcohol testing upon their arrival in Manila. The results were subsequently endorsed to the CAAP OFSAM for the required post-accident medical examination. The PIC and FO were eventually issued medical clearances by the said CAAP office.

1.14 Fire

No reports were received regarding any post-incident fires.

1.15 Survival Aspects

The occurrence was survivable. No damage was observed to the aircraft's primary structure during the runway side excursion. After the aircraft was towed and positioned at the apron, passengers deplaned uneventfully. The cabin crew facilitated the deplaning, assisted by ground personnel.

1.16 Test and Research

No tests were conducted on the aircraft, as there were no reported technical issues prior to or following the incident.

1.17 Organizational and Management Information

Air Philippines Corporation, operating as PAL Express and formerly branded as Air Philippines and Airphil Express, is a wholly-owned subsidiary of Philippine Airlines. It is PAL's regional brand, with services from its hubs in Manila, Clark, Cebu, and Davao.

Over the years, the airline has undergone several organizational and branding changes. Air Philippines ceased operations until it was acquired by investors from Philippine Airlines. After the acquisition, the airline was re-launched as PAL Express, operating some routes and slot assignments of its sister company, Philippine Airlines, until its management decided to rebrand the carrier as a budget airline known as Airphil Express.

However, in March 2013, the airline name reverted to PAL Express. As a codeshare partner of Philippine Airlines, PAL Express operates as a full-service carrier within a low-cost business model.

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2. ANALYSIS

2.1 Human Factor

2.1.1 Personnel Training and Competence

The pilots involved in the occurrence both held valid CAAP-issued licenses with appropriate aircraft ratings at the time of the event.

The PIC began his flying career in 1998 and obtained his Commercial Pilot License (CPL) in 2003. He later worked as a Flight Instructor and conducted charter operations before joining the airline in 2013 as an FO on the Q300. After upgrading to Captain, he obtained cross-qualification as PIC on the Q400. In 2020, his employment was affected by the pandemic, resulting in temporary separation from the company. During this period, he obtained a BE-55 type rating and flew general aviation flights. He rejoined the airline in 2022.

The FO joined the airline in January 2023 for his first professional flying job. He completed his flying lessons in 2017 and obtained his CPL, Instrument Rating, Flight Instructor Rating, and an Airbus A320 type rating.

According to operator records, the involved crew completed all required training in accordance with the airline's manuals. The PIC passed his Proficiency Check and recurrent training in September 2024, while the FO completed his Proficiency Check and recurrent training in October 2024.

Based on the above, the flight crew were trained, qualified, and competent to perform their assigned duties on 27 December 2024.

2.1.2 Fatigue and Health Factors

A review of the two pilots' schedules from October 1 to December 27, 2024, found no significant patterns indicating an overwhelming workload that could have resulted in fatigue, nor were there any factors suggesting diminished performance or alertness. Both the actual and published schedules reflected no exceedances of duty time limitations during the week of the incident.

Regarding the PIC, interviews revealed that he had recently undergone a medical procedure that required him to be temporarily grounded from flying duties beginning in January 2024. Upon obtaining his medical clearance, he returned to regular flight operations in October 2024. Before resuming line duties, he completed the required simulator sessions and ground training to restore his proficiency.

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Although the PIC met all regulatory and company requirements for reinstatement, the extended period away from active flying (approximately nine (9) months) is noted as a potential human performance consideration, as prolonged inactivity may impact operational fluidity or procedural rhythm. While there is no conclusive evidence that this period of inactivity contributed to the incident, it is acknowledged that such a break may have influenced his operational performance to some degree. Nonetheless, there were no indications that the PIC was experiencing medical symptoms or fatigue at the time of the occurrence.

Based on the above information, including schedule records, medical test results, and the CAAP OFSAM evaluation, it is concluded that fatigue and the pilots' physical condition were not factors in this incident, despite the PIC's extended period away from active flying.

2.1.3 Situational Awareness and Decision Making

Analysis of the interviews and CVR indicates that the flight crew maintained strong situational awareness throughout the flight. Their briefings, preparations, and cockpit communications were clear and well-coordinated.

During the final approach, the crew demonstrated full awareness of the prevailing conditions, including moderate rain at the destination. When the aircraft became slightly above the glide path, the FO promptly informed the PIC, who initiated corrective action based on the callout, reflecting the crew's vigilance and effective monitoring. Just before touchdown, the PIC sensed a crosswind and applied corrective input to maintain alignment.

Although post-event evidence indicated that the aircraft touched down on the right-hand side of the runway centerline, as discussed under Section 2.2.1 (Flight Execution – Approach and Landing), this is assessed to be attributable to prevailing weather and visual conditions at the time of touchdown rather than deficiencies in the crew's situational awareness or decision-making.

Upon touchdown, as the aircraft began to deviate from the runway centerline, the crew's situational awareness remained evident through their coordinated and timely exchanges. The PIC promptly applied corrective control inputs, while the FO provided appropriate callouts to assist in maintaining control.

Based on the above information, there is no indication that the runway excursion resulted from issues in the crew's situational awareness or decision-making. The crew consistently demonstrated effective monitoring, communication, and timely actions from takeoff through landing. Their coordinated responses during the final approach and touchdown reflect sustained situational awareness up to the point of the excursion, suggesting that other operational and environmental factors played a more significant role in the event.

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2.2 Operations

2.2.1 Flight Execution – Approach and Landing

The flight departed Cebu (Mactan–Cebu International Airport) for Bacolod (Bacolod–Silay International Airport) at around 0449H. At the time of departure, the reported visibility in Bacolod was 8 kilometers. The takeoff was uneventful, and while en route, the crew noted weather buildup in the vicinity of waypoints CADIZ and RAVIA. Upon establishing contact with Bacolod Tower, the crew was advised of moderate rain over the field. In response, they discussed their planned course of action, including the possibility of executing a go-around should conditions become unfavorable.

As the aircraft continued its approach, the crew observed cloud formations at about 1,000 feet. By approximately 540 feet, the approach lights became clearly visible, allowing the approach to continue. Just before the flare, the PIC sensed a crosswind and applied corrective input to maintain alignment.

Although the pilot reported that the aircraft remained within the runway centerline during touchdown, tire marks on the runway indicated that all landing gears touched down on the right-hand side of the centerline. This observation suggests a possible visibility limitation during actual touchdown due to prevailing weather conditions.

Upon touchdown, the aircraft began to veer to the right side of the runway, prompting the PIC to promptly apply left rudder. The FO also called out to reduce power, but the correction appeared ineffective. The PIC then noticed the runway edge lights drawing increasingly closer, indicating continued lateral deviation.

This sequence of crew actions and aircraft behavior aligns with the recorded flight data, which shows that the aircraft experienced a runway excursion shortly after touchdown. Based on the flight crew interview and DFDR analysis, there were no noted issues with the rudder, engines, or braking systems at the time of the occurrence.

According to the DFDR data, the main landing gear touched down at 108–109 knots with slight pitch variations. Shortly thereafter, the nose gear made contact. The vertical acceleration data show significant fluctuations consistent with a ground bounce, indicating that the aircraft did not achieve a stable landing attitude or continuous runway contact during touchdown. This initial bounce likely reduced wheel-to-runway friction and contributed to subsequent directional-control difficulties.

Reverse thrust was applied immediately after nose gear touchdown, but only briefly. Shortly afterward, only engine no. 2's torque increased, creating

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asymmetrical thrust. In response, the rudder deflected left, and maximum differential braking (left brake) was applied as the crew attempted to regain directional control.

Despite the combined use of rudder, differential thrust, and differential braking, the aircraft's heading initially remained aligned with the runway. Only after approximately 13 seconds did the heading begin to deviate left. This delayed response suggests that the combination of ground bounce, asymmetrical thrust, and heavy braking on one side compromised the crew's ability to control the aircraft's direction effectively.

At the time of the event, moderate rain was reported with visibility around 2 km and a light crosswind of 8 knots from 030°. The wet runway conditions likely reduced tire-to-runway friction, compounding the directional-control challenges during and after the bounce.

Based on the recorded data, the runway excursion appears to have resulted from a combination of factors, including the initial bounce that affected the landing attitude, the application of asymmetrical thrust and differential braking, and the reduced friction associated with the wet runway and light crosswind.

Overall, this analysis indicates that the excursion was primarily influenced by operational and environmental factors rather than any aircraft system malfunction.

2.2.2 Runway Condition

During the flight crew interview, it was reported that a thin film of water was observed on the runway surface during landing, which in some areas partially covered pavement surface markings. An ocular inspection conducted after the occurrence confirmed the presence of patches of standing water along the runway, however, no significant water ponding was observed. Additionally, buildup of moss and dirt, as indicated by dark patches, was noted along the runway edges. These deposits, combined with surface wetness, can create localized slippery areas, particularly along the runway sides.

Under such conditions, the potential for viscous or dynamic hydroplaning increases, especially where thin water films overlay smooth or contaminated surfaces such as moss, dirt, or painted markings. These types of hydroplaning can reduce tire-to-runway contact, adversely affecting braking effectiveness, directional control, and the aircraft's ability to maintain friction during landing or rollout.

According to CAAP Manual of Standards (MOS) 10.15.3 – Removal of Contaminants, standing water, mud, dust, sand, oil, rubber deposits, and other contaminants shall be removed from the surface of runways in use as rapidly and completely as possible to minimize accumulation. While the runway surface did not exhibit

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widespread contamination or significant water ponding, the observed wet patches and moss/dirt accumulation indicate areas where contaminants were present, creating conditions conducive to localized hydroplaning.

This assessment indicates that runway surface conditions, though not extreme, created localized areas of reduced friction. When combined with other factors such as a crosswind, initial landing bounce, or asymmetrical thrust, these conditions could have contributed to the aircraft's reduced directional control during landing.

2.3 Organizational Factor

2.3.1 Safety Culture, Management Support, and Safety Oversight

PAL Express places strong emphasis on safety as one of the core principles of its organizational culture. Its Safety Management System (SMS) is being implemented in accordance with regulatory standards and industry best practices, and is supported by management through ongoing investment in safety programs and personnel training. The organization promotes a just culture, encouraging non-punitive reporting and open communication throughout the company. Regular safety training further strengthens individual awareness, accountability, and operational competence.

These practices indicate that the airline maintains a structured and active approach to risk management and continuous safety enhancement. Furthermore, the investigation found no organizational factors, such as operational pressure or performance-driven influences, that contributed to this occurrence.

2.3.2 Maintenance Program

The maintenance program for PAL Express aircraft is carried out by its internal Approved Maintenance Organization (AMO) under its Aircraft Maintenance and Engineering Group. A review of maintenance records revealed that the aircraft maintenance schedules for RP-C5911 were consistently followed in accordance with both regulatory and the manufacturer's requirements. An evaluation of the aircraft's flight and maintenance logbooks covering the period from October 2024 up to the date of the incident confirmed that all recorded defects were addressed appropriately and in accordance with approved maintenance procedures. Furthermore, the aircraft was released for that specific flight with no outstanding issues or limitations that could have contributed to the occurrence.

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3. CONCLUSIONS

3.1 Findings

a. The involved pilots hold a valid pilot license and medical certificates issued by the CAAP.

b. The pilots involved were duly rated for the specific aircraft type and had fulfilled all required training in accordance with both company policies and regulatory standards.

c. Review of the pilots' duty schedules revealed no exceedance of flight time limitations or any indications of fatigue that could have contributed to diminished performance or alertness during the flight at the time of the incident.

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

e. The aircraft was released for flight without any recorded maintenance issues that is related to the aircraft overrun. Likewise, documentation of the aircraft maintenance is available and in proper order.

f. The PIC had been inactive for nine (9) months, and although all reinstatement requirements were met, this extended break may have affected operational familiarity. However, there was no evidence of fatigue or medical issues at the time of the incident.

g. DFDR data, runway inspection findings, and the pilot interview indicate that the runway excursion resulted from combined operational and environmental factors such as the initial landing bounce, asymmetrical thrust with differential braking, and reduced friction from the wet runway and light crosswind. There was no indication of any aircraft system malfunction.

h. Patches of standing water and accumulations of moss and dirt along the runway created localized areas of reduced friction conducive to hydroplaning. These contaminants, inconsistent with CAAP MOS 10.15.3, which mandates prompt removal, may have contributed to reduced directional control during landing when combined with other operational factors.

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3.2 Probable Cause

3.2.1 Primary Cause Factors

a. The flight crew's inability to maintain directional control during the landing roll following an initial landing bounce, which resulted in reduced wheel-to-runway contact and the effectiveness of directional control inputs.

3.2.2 Contributory Cause Factor

a. Reduced runway surface friction due to wet conditions and localized contamination, including standing water and accumulations of moss and dirt, which were inconsistent with CAAP MOS 10.15.3 and created conditions conducive to localized hydroplaning.

b. Asymmetrical thrust application during the landing roll, which introduced yawing moments that further degraded directional control following touchdown.

c. Differential braking inputs applied in an attempt to regain directional control, which, under reduced friction conditions, limited braking effectiveness and contributed to directional instability.

d. Light crosswind conditions during landing, which increased lateral control demands during touchdown and rollout on a wet runway.

4. SAFETY RECOMMENDATIONS

4.1 In consideration of the internal corrective actions already undertaken by the airline, as outlined in 5.1 – Safety Actions, the Aircraft Accident Investigation and Inquiry Board proposes the following additional safety recommendations based on the findings of the investigation:

4.1.1 For the CAAP – AANSOO:

a. Safety Recommendation no. 24C14-5911-SR1: Ensure that the aerodrome operator implements timely removal of standing water, moss, dirt, and other runway contaminants in accordance with CAAP MOS 10.15.3 to maintain friction and reduce the risk of hydroplaning during flight operations.

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5. SAFETY ACTION

5.1 The operator has taken the following safety actions as part of its internal safety measures related to the subject occurrence:

a. Issuance of Pilot Information File No. FOD-DHC8-2024-069, dated December 31, 2024, regarding heading exceedance.

PAL express

PILOTS INFORMATION FILE

TO : DE HAVILLAND PILOTS

FROM : CHIEF PILOT - DE HAVILLAND

SUBJECT : HEADING EXCEEDANCE

We have recently experienced 15 occurrences of heading exceedance during the landing roll. To reduce these incidents, I encourage everyone to pay closer attention to this matter starting from the final approach.

Key Points to Focus On:

1. **Track and Runway Awareness**: Ensure you are aware of the track and runway alignment. Proper Crew Resource Management (CRM) through attentiveness in approach briefings and making accurate callouts will help eliminate this issue.
2. **De Havilland Recommendations**: Remember to keep the fuselage aligned with the runway track and centerline, using a wing-low zero crab technique as recommended by De Havilland. Refer to AOM 2.7.3 and AFM 4.4.3.
3. **Runway Centerline Maintenance**: Maintain the runway centerline during the takeoff roll. By practicing this consistently, it will help prevent heading exceedance during approach, landing, and deceleration.
4. **Go-Around Procedures**: A go-around may be performed at any time prior to the deceleration phase, even in the case of a balked landing.

By focusing on these practices, we can work together to eliminate heading exceedance incidents.

Thank you for your attention to this important matter.

FOR YOUR GUIDANCE AND STRICT COMPLIANCE

b. Reiteration of Memorandum No. NZ/0724/0340, dated July 22, 2024, regarding vigilance during marginal weather approaches and landings.

Philippine Airlines

July 22, 2024

To : ALL PAL & PAL EXPRESS FLIGHT CREW

Thru : OIC/Senior Vice President- Operations Group

From : Vice President- PAL Flight Operations Department

Vice President- PAL Express Flight Operations Group

Acting Lead- PAL Safety Department

Manager- PAL Express Safety Department

Subject : VIGILANCE DURING MARGINAL WEATHER APPROACHES & LANDINGS

Dear PAL and PAL Express Flight Crew,

Recent flight incidents have underscored the importance of our Standard Operating Procedures (SOP) and constant vigilance for flight safety. As we enter the season of inclement weather, it is even more crucial to maintain a go-around mindset. Some pilots hesitate to initiate a go-around, even when the aircraft is not stabilized for the landing. Failure to execute a go-around is a leading cause of approach and landing accidents.

Pilots should be ready to abandon an approach if visibility is below minimums, the approach is not stabilized, there is doubt about the aircraft's position, confusion with automation, or if visual references are inadequate. Adherence to SOPs, the conduct of briefings, and the elimination of deviations, continuation bias, and perceived pressures are crucial.

A commitment to safety principles ensures we manage both expected and unexpected situations effectively.

PAL: PAL EXPRESS:

VP-Flight Operations Department VP- Flight Operations Group

Acting Lead- PAL Safety Department Manager- Safety Department

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c. Implementation of enhanced standard operating procedures (SOPs) on flight briefings, as published in the PAL Express Standard Operating Procedures, DHC-8-400, Chapter 4.1.1.

d. Enhancement of the Recurrent DHC-8-400 Training Syllabi, as documented in the PAL Express Operations Manual – Part D (Training).

e. Implementation of the Flight Data Monitoring (FDM) Safety Risk Dashboard for runway excursions.

f. Completion of simulator training by the involved pilots on 14 February 2025.

-----End-----

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