PRELIMINARY REPORT ON THE SERIOUS INCIDENT INVOLVING DORNIER 328-100 AIRCRAFT OPERATED BY DORNIER AVIATION NIGERIA AIEP (DANA) LIMITED WITH NATIONALITY AND REGISTRATION MARKS 5N-DOX WHICH OCCURRED AT PORT HARCOURT MILITARY AIRPORT ON 23RD JANUARY, 2019

Registered Owner:	Dornier Aerospace International (DASI) GMBH, 6020 Innsbruck, Austria
Registered Operator:	Dornier Aviation Nigeria AIEP (DANA) Limited, Kaduna
Aircraft Type and Model:	Dornier 328 - 100
Manufacturer:	Fairchild Dornier Luftfahrt GMBH, Germany
Date of Manufacture:	1997
Registration Marks:	5N-DOX
Serial Number:	3073
Location:	Port Harcourt Military Airport, Port Harcourt
Date and Time:	23rd January, 2019 at about 10:03 h *All times in this report are local time (UTC +1) unless otherwise stated*

INTRODUCTION

Accident Investigation Bureau (AIB) was notified of the serious incident by the operator in the evening of 24th January, 2019. Investigators were dispatched and arrived at Port Harcourt Military Airport on 25th January, 2019. Post incident assessments commenced immediately under the provisions of Civil Aviation (Investigation of Air Accidents and Incidents) Regulations 2016 and ICAO Annex 13.

The purpose of this preliminary report is to provide details of initial facts, discussions and findings surrounding the occurrence; it includes information gathered from Witness Statements and a preliminary inspection of the aircraft.

The investigation is ongoing.

1.0 FACTUAL INFORMATION

1.1 History of the Flight

On 23rd January, 2019 a Dornier 328-100, 5N-DOX with flight number DAV462 was operated as a scheduled passenger flight from Finima Airstrip, Bonny to Abuja via Port Harcourt Military Airport.

At 09:47 h, DAV462 departed Finima Airstrip for Port Harcourt with 16 persons on board (including 4 crew members) and total fuel uplift of 1,120 kg. According to the crew, the flight was originally scheduled to depart Finima Airstrip for Port Harcourt at 09:15 h but was delayed due to bad weather at the destination airport.

The First Officer was the Pilot Flying (PF) while the Captain was the Pilot Monitoring (PM). The take-off, climb, cruise and descent phases were said to be normal and the aircraft was configured for approach and landing.

At 09:58 h, about 6 miles to touchdown; the crew reported 'Runway in sight' to the Air Traffic Controller (ATC) and were cleared to land but to exercise caution as the runway surface was wet. The prevailing wind at the time of landing was 250°/06 knots and Runway 22 in use.

According to the crew, at short finals and with the power lever at flight idle position, the torque on Engine Number 1 indicated 24% while the torque on Engine Number 2 indicated 20%.

At 10:03 h, the aircraft landed to the right of the runway centre line. The crew further stated that during the landing roll, with the power levers at ground idle position, torque on Engine Number 1 was 27% and increased to a maximum of 34%. The torque on Engine Number 2 decreased below 10%. The aircraft veered further to the right of the runway centre line and could not be controlled with rudder application. According to the First Officer, the crew shared responsibilities in accordance with the company's Standard Operating Procedure (SOP); the Captain took over control while the First Officer engaged the emergency brake, set both condition levers to minimum and feather positions in an attempt to stop the aircraft.

The aircraft exited Runway 22 at a distance of about 1, 190 metres from the threshold and travelled on the runway shoulder for a distance of about 105 metres, during which the No.4 right main tyre impacted and broke a runway edge light at about 98 metres before it entered the grass verge and covered a distance of about 262 metres. The aircraft travelled an additional distance of about 259 metres on the apron and stopped at about 3 metres to the airport perimeter fence by the Aero Contractor's ramp.

The crew and passengers disembarked normally without any injury.

The incident occurred in daylight and Visual Meteorological Conditions (VMC) prevailed.

1.2 Injuries to persons

Injuries	Crew	Passengers	Total in the Aircraft	Others
Fatal	Nil	Nil	Nil	Nil
Serious	Nil	Nil	Nil	Nil
Minor	Nil	Nil	Nil	Not Applicable
None	4	12	16	Not Applicable
Total	4	12	16	

1.3 Damage to Aircraft

The aircraft was slightly damaged.

1.4 Other Damage

One runway edge light was damaged.

1.5 Personnel Information

1.5.1 Captain

Nationality:	Nigerian
Gender:	Male
Age:	59 years
Licence Type:	ATPL (A)
Licence Validity:	30th December, 2020
Aircraft Ratings:	HS - 125, Dornier 228, Dornier 328, B 737, BE 300/350
Medical Validity:	16th December, 2019
Simulator Validity:	17th February, 2019
Proficiency Check:	17th February, 2019
Route/Line Check:	October, 2018
Total Flying Time:	18, 400 h
Total on Type:	6, 500 h
Total on Type (PIC):	6, 500 h
Last 90 Days:	150 h
Last 28 Days:	59 h
Last 24 Hours:	1:50 h

1.5.2 First Officer

Nationality:	Nigerian
Gender:	Male
Age:	35 years
Licence Type:	ATPL (A)
Licence Validity:	24th October, 2021

Aircraft Ratings:	BE 58, TB-20, Dornier 328-100
Medical Validity:	9th July, 2019
Simulator Validity:	17th June, 2019
Proficiency Check:	17th June, 2019
Route/Line Check:	October, 2018
Total Flying Time:	3,900 h
Total on Type:	3,650 h
Total on Type (PIC):	1, 700 h
Last 90 Days:	100 h
Last 28 Days:	Not Available
Last 24 Hours:	1:5 h

1.6 Aircraft Information

1.6.1 General Information

Nationality and Registration Marks:	5N-DOX
Manufacturer:	Fairchild Dornier Luftfahrt GMBH
Model:	DO 328 -100
Serial No.:	3073
Date of Manufacture:	1997
Registered Owner:	Dornier Aerospace International (DASI) GMBH, Innsbruck, Austria
Operator:	Dornier Aviation Nigeria AIEP Limited, Kaduna
Certificate of Airworthiness:	4th June, 2019
Total Hours Since New:	22,141.1 h
Total Cycles Since New:	22,218

Total Hours since last inspection: 35 h

1.6.2 Power Plant	Engine No.1	Engine No.2
Manufacturer:	Pratt & Whitney	Pratt & Whitney
Engine Type:	PW 119B	PW 119B
Year of Manufacture:	1994	1995
Serial No.:	PCE -116064	PCE -116157
Total time since new:	31,457.4 h	20,697 h
Cycles:	28,689	21,414

1.6.3 Propeller	No.1	No.2
Manufacturer:	Hartzell Propeller Inc.	Hartzell Propeller Inc.
Type:	HD-36C-3B	HD-36C-3B
Year of Manufacture:	1999	1997
Serial No.:	HL- 224	HL- 128
Total time since new:	27,339 h	22,202.8 h
Total time since overhaul:	127.1 h	367 h

The incident aircraft engines were run after the replacement of the Left Engine PCU on 24th January, 2019.

The following defects were recorded in the technical log:

I. "L/H engine propeller will not come out of feather" and the corrective action taken was "L/H PCU replaced IAW Do 328 MM 61-21-00. OPS, Rig check, Leak check, OK".

II. "#1, #2, #3, #4 tires flat spotted" and the corrective action taken was "Replaced #1, #2, #3, #4 main wheel ASSYS IAW Do 328 MM SC 32-41-10".

1.7 Meteorological Information

Time:	**0820 UTC**
Wind:	250°/06 kt
Visibility:	7 Km
Weather:	Thunderstorm
Cloud:	BKN 210 m
Temp/Dew:	25/24 °C
QNH:	1012 hPa

Time:	**0900 UTC**
Wind:	VRB/02 kt
Visibility:	8 Km
Weather:	Slight Rain
Cloud:	BKN 240 m
Temp/Dew:	25/24 °C
QNH:	1012 hPa

1.8 Aids to Navigation

Status of the navigational aids at the Port Harcourt Civil and Military Airports on the day of the occurrence is as follows:

VOR/DME - 'S' -

ILS/DME - 'S'-

NDB - 'S'-

1.9 Communications

There was two-way communication between the crew and the ATC.

1.10 Aerodrome Information

The Port Harcourt Military Airport is a controlled by Nigerian Airforce (NAF). The coordinates of the airport are 4°50'45"N and 7°01'15"E. It is on elevation of 63 ft AMSL with an asphalt-coated, bi-directional runway orientation of 04/22. The length of the runway is 6, 923 ft.

1.11 Flight Recorders

The aircraft is fitted with Cockpit Voice Recorder (CVR) and Flight Data Recorder (FDR). The recorders, whose particulars are given below were retrieved and taken to the Bureau's Flight Safety Laboratory in Abuja for download and analysis. The recorders were successfully downloaded. The Cockpit Voice Recorder (CVR) recordings were found to have been overwritten.

	Cockpit Voice Recorder	**Flight Data Recorder**
Model	SSCVR	FA2100
Part Number	980-6020-001	2100-4043-00
Serial Number	0442	000126168
Manufacturer	Honeywell	L3-Communications

1.12 Wreckage and Impact Information

The aircraft was structurally intact although the main wheel tyres were flat-spotted as a result of the braking action.

Figure 1: Photo showing the aircraft's flat spotted main wheel tyres

The No. 4 right main tyre impacted and broke a runway edge light before the aircraft entered the grass verge.

Figure 2: Photo showing the damaged runway edge light

1.13 Medical and Pathological Information

There was no medical or toxicological test conducted on the crew.

1.14 Fire

There was no pre or post-impact fire.

1.15 Survival Aspects

The occurrence was survivable because the aircraft was intact and there was liveable volume of space.

1.16 Test and Research

Nil.

Initial Findings

1. The aircraft had a valid Certificate of Airworthiness.
2. The mass and centre of gravity of the aircraft were within the prescribed limits.
3. The Flight Crew were licensed to operate the flight.
4. The flight was scheduled to depart Finima, Airstrip Bonny to Abuja via Port Harcourt Military Airport.
5. The departure was delayed for about 30 minutes due to bad weather at Port Harcourt Military Airport.
6. The first officer was the Pilot Flying while the captain was the Pilot Monitoring.
7. The take-off, climb, cruise and descent phases were reported to be normal and the aircraft was configured for approach and landing.
8. At about 6 miles to touchdown; the crew reported 'Runway in sight' to the Air Traffic Controller (ATC) and were cleared to land but to exercise caution as the runway surface was wet.
9. The First Officer reported that at short finals and with the power levers at flight idle position, the torque on Engine Number 1 indicated 24% while the torque on Engine Number 2 indicated 20%.
10. At 10:03 h, DAV 462 landed to the right of the Runway 22 centre line.
11. The Captain took over control after touch down and an attempt was made to stop the aircraft.
12. The aircraft stopped at about 3 metres to the airport perimeter fence by the Aero Contractor's Ramp.
13. The crew and passengers disembarked normally without any injury.

Figure 3: Photo showing the incident aircraft

Figure 4: Photo showing the Threshold of runway 22

Figure 5: Photo showing the aircraft's tyre marks on the runway and the exit point

Figure 6: Photo showing the aircraft tyre marks on runway shoulder

Figure 7: Photo showing the aircraft's tyre marks on the grass

Figure 8: Photo showing the aircraft's tyre marks on the Apron

Figure 9: Photo showing the defective left engine PCU

Further Investigative Actions

- Analysis of the FDR data.
- Awaiting Original Equipment Manufacturer (OEM) tear down report on defective Left Engine PCU.