

**PRELIMINARY REPORT ON THE SERIOUS INCIDENT INVOLVING VIKING  
TWIN OTTER AIRCRAFT WITH NATIONALITY AND REGISTRATION MARKS  
5N-SHE OPERATED BY CAVERTON HELICOPTERS WHICH OCCURRED DURING  
LANDING ROLL AT FORCADOS AIRSTRIP, DELTA STATE ON 13TH JUNE, 2022**

<b>Registered owner and operator:</b>	Caverton Helicopters Limited
<b>Aircraft type and model:</b>	Twin Otter DHC-6-400
<b>Manufacturer:</b>	Viking Air Limited, Canada
<b>Date of manufacture:</b>	August, 2012
<b>Nationality and registration marks:</b>	5N-SHE
<b>Serial number:</b>	864
<b>Location:</b>	Forcados Airstrip with coordinates 05°21.30'N 005°20.93'E
<b>Date and Time:</b>	13th June 2022 at about 14:01 h. <i>All times in this report are local time (UTC +1) unless otherwise stated</i>



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## **INTRODUCTION**

Accident Investigation Bureau (AIB) was notified by Caverton Helicopters Limited of this occurrence via phone call on the 13th of June 2022. AIB contacted the operator and subsequently, investigators were dispatched on 14th June 2022 to Forcados Airstrip where the aircraft was stuck in grassy mud.

The Accident Investigation Bureau commenced investigation into the circumstances of the occurrence under the provisions of Civil Aviation (Investigation of Air Accidents and Incidents) Regulations 2019 and Annex 13 to the Convention on International Civil Aviation.

The purpose of this preliminary report is to provide details of initial facts, discussions and findings surrounding the occurrence; it includes information from witness statements, flight recorders, Air Traffic Control (ATC) recordings, weather reports and preliminary inspection of the aircraft.

**The investigation is ongoing.**



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## **1.0 FACTUAL INFORMATION**

### **1.1 History of the flight**

On 13th June 2022, a Twin Otter DHC-6-400 aircraft with nationality and registration marks 5N-SHE operated by Caverton Helicopters Limited was scheduled to depart Nigerian Air Force (NAF) Base Port Harcourt (DNPM) for Forcados Airstrip on a Command Line Training flight in TAKE-OFF, APPROACH and LANDING procedures. On board the aircraft were four crewmembers, including the Line Training Captain, Trainee Pilot, Observer and Engineer. The endurance was two hours 50 minutes. The Trainee Pilot was the Pilot Flying (PF) while the Line Training Captain was the Pilot Monitoring (PM).

According to the Air Traffic Control (ATC), 5N-SHE was cleared to 5,000 ft Above Mean Sea Level (AMSL) for a right turn pattern in the circuit runway 20.

At 13:26 h, 5N-SHE got airborne, completed right hand traffic pattern and landed on runway 20 Forcados Airstrip at 13:37 h.

At 13:50 h, the aircraft got airborne again and completed the second traffic pattern.

At 14:01 h, 5N-SHE was cleared for the second touchdown on runway 20. The reported meteorological condition at the time was as follows: wind 210/05 kt, visibility 8 km in nil weather, Cloud – No cloud detected (NCD), Temperature/dew point 30/26 °C, QNH 1010 hPa.

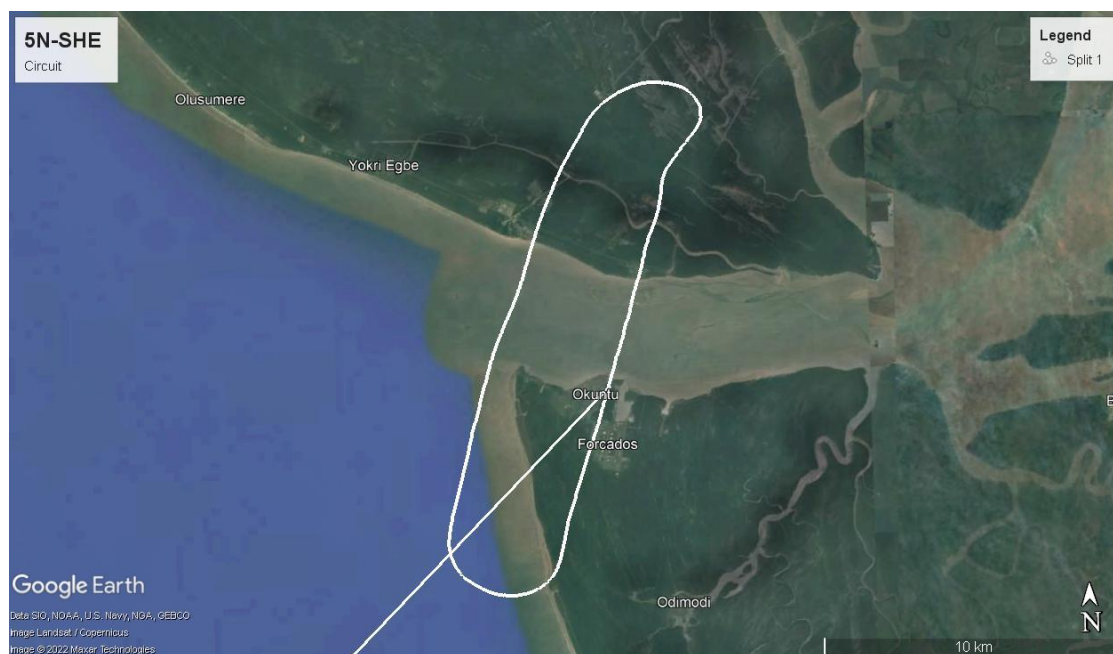


Figure 1: Flight Track

At 14:01 h, 5N-SHE landed on runway 20 and on landing roll, 5N-SHE veered off to the left centerline runway at about 182.7 m from the runway threshold, vacated left side shoulder at points between 238.7 m and 254.6 m from the threshold into the grass verge with the left main wheel crossing fire hydrant at 6.4 m.

The aircraft continued towards the concrete fire truck driveway. In a slight right turn, the left Wing Tip area of the aircraft collided with the Fire Tender shelter pole, causing damage to the Wing Tip Fairing, Wing Tip Strobe Light and Navigation Light assembly. The aircraft thereafter got into grassy-mud, travelled 20 m and got stuck. The left Wing was substantially damaged as evident during post incident inspection with debris from the Wing found at various locations.

At 14:02, h ATC activated the crash alarm bell.

The occupants disembarked uninjured.

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	Nil
None	4	Nil	4	Nil
Total	4	Nil	4	Nil

## 1.3 Damage to aircraft

The aircraft was substantially damaged.

## 1.4 Other damage

Nil.

## 1.5 Personnel information

### 1.5.1 Trainee Pilot

Nationality:	Nigerian
Age:	39 years
Licence type:	Airline Transport Pilot License (Aeroplane)
Licence:	Valid till 3rd January 2023
Aircraft ratings:	Boeing 737-NG, Cessna CE-500, De Havilland Canada DHC-6-300/400
Medical certificate:	Valid till 3rd January, 2023



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Simulator validity:	Valid till 19th September, 2022
Instrument rating:	Valid till 19th March, 2023
Proficiency check:	19th September, 2022
Total flying time:	3,282 h
Total on type:	2,770 h
Total on type (PIC):	855 h
Last 90 days:	12:21 h
Last 28 days:	0:31 h
Last 24 hours:	0:31 h

### **1.5.2 Line Training Captain (Pilot Monitoring)**

Nationality:	Filipino
Age:	30 years
Licence type:	Airline Transport Pilot License (Aeroplane)
Licence validity:	27th February, 2023
Aircraft ratings:	De Havilland Canada DHC -6-300/400
Medical certificate:	Valid till 27th February, 2023
Instrument rating:	Valid till 30 <sup>th</sup> November, 2022
Proficiency check:	Valid till 30th June, 2022
Route/line check:	Valid till 17th May, 2019
Total flying time:	10,482:23 h
Total on type:	5,800 h
Last 90 days:	3:34 h
Last 28 days:	3:34 h
Last 24 hours:	3:34 h



### 1.5.3 Engineer

Nationality:	Nigerian
Age:	42 years
Licence type:	Aircraft Maintenance Engineer's License (A&P)
Licence validity:	27th July 2026
Aircraft ratings:	Twin Otter DHC 6-300 Airplane Agusta AB/139/AW 139 Helicopter

### 1.5.4 Observer

Nationality:	Nigerian
Age:	61 years
Licence type:	Airline Transport Pilot License (Aeroplane)
Licence validity:	27th October, 2020
Aircraft ratings:	Boeing 737-300/400/500, Boeing 737-NG, Boeing 767-200
Medical certificate:	Valid till 5th December, 2022
Simulator:	Valid till 1st October, 2022
Instrument rating:	Valid till 1st April, 2023
Proficiency check:	19th September, 2022

## 1.6 Aircraft information

### 1.6.1 General information

Type:	Twin Otter DHC-6-400
Manufacturer:	Viking Air Limited, Canada
Date of manufacture:	August 2012
Serial number:	864
Registered owner/operator:	Caverton Helicopters
Registration number:	5N-SHE



Certificate of Airworthiness:	Valid till 12th May, 2023
Certificate of Insurance:	Valid till 30 <sup>th</sup> June, 2022
Certificate of Registration:	issued on 14th March, 2013
Noise certificate:	issued on 17th April, 2013
Airframe time:	6,036:59 h
Cycles since new (CSN):	12,674

### 1.6.2 Engines

Engine	Number 1	Number 2
Manufacturer	Pratt & Whitney, Canada	Pratt & Whitney, Canada
Type/Model	PT6A-34	PT6A-34
Year of manufacture	12 <sup>th</sup> December 2017	12 <sup>th</sup> December 2017
Serial number	PCE-RB1132	PCE-RB1166
Time Since New	2073:25 h	2074:53 h
Cycle since New	4313 h	4315 h

### 1.6.3 Propeller

Propeller	Number 1	Number 2
Propeller model	HC-B3TN-3D	HC-B3TN-3D
Manufacturer	Hartzell Propeller Inc. USA	Hartzell Propeller Inc. USA
Year of Overhaul	8th October 2020	27th October 2021
Serial number	BUA33228	BUA21439
Time since New	579:05 h	4,190:8 h
Time Since overhaul	608:57 h	29:24 h
Number of blades	3	3

Fuel type used:

Jet A-1





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### 1.7 Meteorological information

**Time: 1200Z**  
Wind: 240/05 kts  
Visibility: 10 km  
Weather: Nil  
Cloud: SCT 390 m  
Temperature/dew point: 33/24 °C  
QNH: 1012 hPa  
Trend: Nil

**Time: 1300Z**  
Wind: 180/03 kts  
Visibility: 10 km  
Weather: Nil  
Cloud: SCT 420 m  
Temperature/dew point: 33/24 °C  
QNH: 1011 hPa  
Trend: Nil

**Time: 1400Z**  
Wind: 180/05 kts  
Visibility: 10 km  
Weather: Nil  
Cloud: SCT 450 m  
Temperature/dew point: 34/24 °C  
QNH: 1010 hPa  
Trend: Nil



## **1.8 Aids to navigation**

The Very High Frequency (VHF) 118.325 MHz was available and serviceable as at the time of the incident.

## **1.9 Communications**

There was effective communication between the crew and Air Traffic Control.

## **1.10 Aerodrome information**

Forcados Airstrip with location indicator DNFD has runway with designations 02 and 20.

Runway has a dimension of 799 m by 18 m (2,621 ft by 59 ft). Aerodrome Reference Point is 05°21.30'N 005°20.93'E while the elevation is 11.0 ft AMSL.

## **1.11 Flight Recorders**

The aircraft was fitted with Cockpit Voice Recorder (CVR) and Flight Data Recorders (FDR).

### **1.11.1 Cockpit Voice Recorder**

Model:	SSCVR
Part Number:	980-6023-002
Serial Number:	ARCVR-11184
Manufacturer:	Honeywell



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### **1.11.2 Flight Data Recorder**

Model: SSFDR  
Part Number: 980-4710-003  
Serial Number: ARFDR 00780  
Manufacturer: Honeywell

The Flight Data Recorder was successfully downloaded at the Accident Investigation Bureau, Nigeria Flight Safety Laboratory in Abuja.

The Cockpit Voice Recorder (CVR) was successfully downloaded at Caverton Helicopters while the transcription was done at Accident Investigation Bureau, Nigeria Flight Safety Laboratory in Abuja.

### **1.12 Wreckage and impact information**

After touch-down, 5N-SHE veered-off to the left of runway 20 centreline at a distance of about 182.7 m (the left main wheel exited runway at a distance of 238.7 m from the threshold while and the right main wheel exited at a distance of 254.6 m. The aircraft travelled through the grass for a distance of about 34.05 m before colliding with the fire tender shelter poles. It continued for about 20 m from the concrete floor of the fire tender shelter where it got stuck in a grass mud.

The left Wing Tip outboard area, left Wing Tip Navigation Light, Strobe Light and Wing Fore Flap Aileron were damaged and severed from the Wing upon collision with the pole of the shelter.



The damaged left Wing of 5N-SHE



The aircraft stuck in grassy-mud



Right Main Wheel stuck in grassy-mud



The Main Wheel track marks on the grass



Picture of Nose Wheel stuck in the grassy-mud



Picture of debris from damaged left Wing Tip assembly of the aircraft

### **1.13 Medical and pathological information**

No medical or pathological tests were conducted.

### **1.14 Fire**

There was no pre or post-impact fire.



## **Initial Findings**

1. The flight crew were licensed and qualified to conduct the flight in accordance with applicable regulations.
2. The aircraft had a valid Certificate of Airworthiness as at the time of occurrence.
3. A post-incident inspection of the aircraft confirmed substantial damage to the left Wing Tip area.
4. The CVR and FDR were recovered in good condition and recordings were intact after the occurrence.
5. 5N-SHE veered off to the left of centerline runway 20 at a point 182.7 m from the runway threshold.
6. The left Wing Tip area collided with the fire truck shelter pole damaging the Wing Strobe and Navigation Lights.
7. The aircraft got stuck in the mud at about 20 m from the concrete floor of the fire tender shelter.
8. At 14:02h ATC activated the Crash Alarm Bell.
9. The Fire Service was on standby at the time of the occurrence.

## **Further information and investigative actions**

1. Analysis of the flight data recorder
2. Compilation of draft final report